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**MARKET INTRODUCTION OF LOW COST
NUTRITIONAL FOODS IN DEVELOPING
COUNTRIES**

PN-ABD-535
ISN 53255

Vol. I Final Report Narrative

**Cooperative Agreement No.
58-319R-7-002
(previously 12-17-07-8-2239-x)**

between the

**Texas Agricultural Experiment Station
The Texas A&M University System**

and

**United States Department of Agriculture
Office of International Cooperation and Development**

September 1989

**John P. Nichols
Principal Investigator**

**The Texas Agricultural Market Research
and Development Center
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FOREWORD

This document contains the final report on research and development activities relating to the use of commercial market channels for the achievement of nutrition intervention objectives. The activities and results are summarized in the first part of the report. Documents which provide extensive detail on various project activities are appended. Questions regarding this project may be directed to the author at the Department of Agricultural Economics, Texas A&M University, College Station, Texas 77843-2124.

John P. Nichols
Professor
September 1989

MARKET INTRODUCTION OF LOW COST NUTRITIONAL FOODS IN DEVELOPING COUNTRIES

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1.0 INTRODUCTION AND BACKGROUND

Food product development and enhancement efforts are often used as a strategy for alleviating nutritional shortages in at-risk populations in developing countries. The successful implementation of these projects has depended on integration of expertise in food science, technology and engineering. Marketing and economics dimensions, while recognized as important, have not always been included as a specific component of project planning and execution. The primary purpose of the Cooperative Agreement, reported herein, was to provide the necessary expertise, and marketing and economic analysis to guide technical planning and investment decisions relating to selected nutrition intervention projects.

At the project inception in 1976, the U.S. Department of Agriculture (USDA) had initiated several nutrition intervention programs around the world for the introduction of low cost, nutritionally improved food in developing countries. These programs were designed to improve the nutritional status of the low income and nutritionally needy people either through sale of the nutritionally improved product or through local government sponsored feeding programs. In addition to technological input provided by USDA, there was recognized to be a need for marketing expertise in planning and implementation of these projects. The Agricultural Market Research Center at Texas A&M University was requested to provide the needed marketing expertise. This was envisioned to include consumer survey planning, conduct of test markets, development of data sources, assessment of marketing efforts and the preparation of documentation and reports.

1.1 Objectives

The specific objectives as set forth in the original agreement provided a guide to each project as it was undertaken.

1. To provide marketing and market research expertise on a continuing basis to USDA for USAID nutrition intervention programs.
 2. To assist appropriate organizations in developing countries in planning and
- ^

conducting marketing aspects of the introduction of low-cost nutritionally improved foods.

3. To supply expertise in marketing and data collection phases of nutrition intervention programs conducted by the USDA and prepare case study evaluations of prototype programs.

The cooperative agreement was amended annually over the period from 1977 through 1986 and a new agreement was executed in 1986 with continuation through 1989. During that entire period, however, the guiding objectives have remained the same. Resource needs changed and specific work activities evolved over the duration of the agreement.

1.2 Cooperator Capabilities

The Agricultural Market Research and Development Center of Texas A&M University was established in 1969 as a component of the Department of Agricultural Economics. The primary motivation for this innovation was to respond to the growing need for agricultural producers and their commodity organizations to take a more proactive view of the marketing dimension of their business. It was no longer sufficient to view their markets as being limited to commodities. The concepts and tools of marketing management were needed by producers just as much as by the processor and marketers of consumer food products. Texas A&M, by initiating the Center, led the way in rethinking how agricultural producers might use marketing as a profit potential for their businesses. The expertise of the Center was drawn primarily from marketing economists on the faculty at Texas A&M. These resources were augmented by inclusion of food scientists and technologists from other Departments and specialized expertise from other Universities and the private sector as specific project needs evolved. Since its inception, The Center has conducted over 50 major projects with external funding in excess of 2 million dollars.

Because of the Center's work on marketing management research and development relating to food and fiber systems and projects, it provided a natural base of marketing research techniques. This expertise was appropriate to the design and conduct of

marketing studies related to nutrition intervention projects where development and distribution of food products were a primary strategy.

Throughout the duration of the agreement Dr. John P. Nichols has been the Principal Investigator. Two other Texas A&M faculty members, Dr. Robert Branson and Dr. Clive Harston, as well as outside consultants, several graduate students and student workers have been employed in specific phases of work related to the agreement.

The resources which the Cooperator has brought to this agreement are primarily the professional faculty and marketing research expertise embodied in them. Facilities provided consisted mainly of normal office and faculty working accommodations. However, access to well developed library and computing services provided valuable assistance at various stages of the project. In addition, the existence of the contracting support and long-term research focus inherent in a major Land Grant University provided a balanced focus and continuity which has contributed to the successful completion of many project activities. Human resources, in the form of students and technicians are more readily obtained in this environment to fulfill short-term work needs.

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2.0 SUMMARY OF ACTIVITIES

2.1 Introduction

Over the course of this project numerous activities were undertaken in response to initiatives of OICD and requests from USAID and various private voluntary organizations (PVOs). In most cases the initial involvement was one of consultation and review regarding the logic and possible content of marketing components for proposed nutrition intervention projects. In many cases this initial contact and review evolved into an on-going involvement as the project documents were prepared and the scope of work developed. As is often the case in project development, many of the activities investigated were not initiated for a variety of technical, economic, political or administrative reasons. However, several were identified as high priorities and evolved into larger commitments extending over several years.

In the following summary of activities, several levels of involvement are used as a means of organizing the presentation. The primary delineation among activities is: (1) major marketing activities, (2) other field studies, (3) research and consultation services.

This first section is devoted to those project activities which required higher levels of resources to plan and conduct and which in most cases involved data collection and some type of field research. For each of these the purpose, procedure, results and implications of the activity are summarized. More detailed reports and supporting materials are contained in the Appendices. The major activities selected for inclusion in this first group are:

1. Soy-fortified bread in Korea (1976-1979)
2. Weaning food in Sri Lanka (1977-1985)
3. Weaning food in Guyana (1978-1983)
4. Weaning food in Tanzania (1979-1981)
5. Weaning food in Sudan (1988-1989)

The second group of activities involved coordination of consultants as they assessed the market potential or consumer market issues related to selected nutrition intervention projects. These include:

1. Enriched bread in El Salvador (1976-1977)
2. Infant and children's foods in Jamaica (1977-1978)
3. Fortified wheat flour in Haiti (1980)

Activities reported on in the third section are those involving research and consultation in preparation of planning documents, supervision of other consultants, preparation of papers and presentations at conferences, data analysis, original research and one-time response to inquiries regarding the role of commercial marketing in nutrition intervention. A wide variety of activities are grouped under several headings, some country specific, others subject or function oriented.

2.2 Major Marketing Activities

The evolution of project activities under the Cooperative Agreement resulted in several primary country specific studies. These are summarized below.

2.2.1 Soy-fortified Bread Introduction in Korea

2.2.1.1 Purpose and Objectives

The Agency for International Development (AID) in conjunction with the U.S. Department of Agriculture (USDA) initiated programs in Korea in 1974 to assist in the development and marketing of low-cost nutritionally improved foods and in the demonstration of the commercial implementation of protein fortification technology.

The goal of the program specific program studied was to demonstrate the technical and economic feasibility of manufacturing and marketing a protein fortified low-cost bread product which might result in an improvement in the nutritional status of the people. To achieve this the objectives were to utilize commercial protein fortification technology and successfully introduce into the market place a soy fortified bread product competitive in quality and price with regular bread.

2.2.1.2 Procedures and Accomplishments

Product development was carried out by Sam Lip Foods with technical assistance

supplied by USDA. The development included the transfer of soy fortification technology and formulation modification to accommodate changes in the protein content of the available wheat flour. Based on the results of laboratory evaluations and limited consumer acceptance tests, it was concluded that a soy fortified bread could be produced which was comparable in quality and costs with the Sam Lip Foods regular bread.

A survey of bread consuming households in Seoul, Korea, was conducted. It was found that bread users were more likely to be in college educated, upper class families, housewives aged 30 to 39 with a western style kitchen. Bread consumption was found to be of fairly recent origin in a majority of households.

A test market was set up in selected areas of Seoul, Korea. The soy fortified bread was produced and distributed by Sam Lip through company distribution channels. Government retail price controls on bread influenced the Sam Lip Company to examine price level for soy fortified bread higher than that for regular bread. To accommodate this concern a three level pricing experiment was set up. Regular bread was marketed at 95 won (w) in all three matched market areas. Soy fortified bread was priced at three levels; w 95, w 140, and w 180. Other marketing variables were held constant.

Sales records were maintained for the test market areas covering approximately 80 retail outlets over a two month period. A survey of 247 soy fortified bread purchasers was conducted to obtain evaluations of the product.

Sales data indicated that soy fortified bread sales per store-day averaged slightly more than regular bread when priced the same. When soy fortified bread was priced higher, its sales level was considerably diminished to the point that many stores in the "high price" test area discontinued stocking the product during the later stages of the test. When priced the same as regular bread, 20-25 percent of the bread units sold were soy fortified bread. When priced at w 140, sales of soy fortified bread were 3 to 13 percent of the total and where priced w 180, soy fortified bread accounted for 1 to 9 percent.

Consumer evaluation of soy fortified bread quality attributes indicated relatively low ratings, particularly with reference to taste or flavor. Nearly 50 percent of those purchasing

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soy fortified bread at least once rated its flavor as "poor" or "very poor". Survey results also revealed that consumers considered "taste" as the primary factor in determining which brand or type of bread to buy. Forty-five percent of the respondents bought soy fortified bread only one time while only 20 percent purchased it more than four times.

Promotion efforts were limited to in-store activities since the market test was not being conducted over the entire market area. A lack of concerted, continuous sales merchandising and advertising was cited as a significant factor in the failure to achieve better sales at the higher prices.

Sales promotion efforts were redesigned and a market-wide product launch was undertaken by the Company. Soy fortified bread was priced at w 160 which management felt was necessary to recover all costs. A sales level of 11 to 12 percent of total bread units sold was maintained during the first two months of market-wide distribution. A decline in sales was observed beginning in the third month which coincided with a discontinuation of Company advertising programs.

The goal of the project was achieved in that commercial protein fortification technology was successfully applied to produce a product with cost and quality characteristics comparable to the generally available regular bread. When priced at a comparable level it outsold the regular bread in the test market.

When priced substantially above regular bread continued sales success was not achieved. This failure was traced to problems of poor flavor and inadequate promotion which, when combined with higher price, deterred consumers from regular purchase.

The problem with flavor or taste of the soy fortified bread was not expected in light of positive results obtained in the earlier consumer taste tests conducted by the Company. This discrepancy was traced to a change in the quality of soy flour used in the bread for the test market compared to that used in the earlier consumer acceptance tests.

Further details of this activity are provided in a published report *The Development and Marketing of a Soy-Fortified Bread Product in Korea: A Case Study*. This report is included as Appendix A-1.

2.2.2 *Thriposha Weaning Food: Sri Lanka*

2.2.2.1 Purpose and Objectives

Thriposha is a cereal-based, low cost extrusion cooked weaning food designed to address nutritional needs among targeted at-risk populations in Sri Lanka. Texas A&M's role included the development and oversight of marketing plans, and consumer and marketing research relating to the commercial market phase of the project. This involvement required collaboration with food technologists, processing engineers and food scientists at Colorado State. Overall coordination was provided by The Food Technology Branch, OICD, USDA and operational management in Sri Lanka was vested in CARE throughout most of the project. The activities of these other agencies are reported elsewhere.

This project extended over a six year period from 1977 through 1983 with periodic communication, correspondence and review extending through 1985. It represents the most complex project undertaken through the Cooperative Agreement and included five separate field visits over the six year period.

The fundamental objective of this project was to assess the potential for utilizing commercial market channels as one strategy for meeting the nutritional needs of weaning age children. More specifically, the overall objective as stated in 1977 was "to determine whether or not a commercially viable market exists for Thriposha and whether this market includes the target population of interest to the Ministry of Health and CARE."

The activities undertaken to reach this overall objective were designed to accomplish specific objectives which can be listed as follows.

1. Assist CARE, USDA and private sector cooperators in identifying and developing all components of marketing plan.
 2. Identify marketing and marketing research resources in Sri Lanka to carry out action phase of plan.
 3. Design primary components of marketing research and evaluation plans.
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4. Coordinate marketing research activities with project development and production planning activities of all participants.
5. Provide regular advice and counsel regarding implementation and analysis of marketing research activities.
6. Conduct periodic review of all aspects of consumer evaluations, market test and commercial marketing activities.

2.2.2.2 Procedures and Accomplishments

The major activities undertaken in the Thriposha project are summarized in Table 1. During the initial TDY in 1977 marketing needs and objectives were identified and a plan for research and information gathering was developed and initiated. In-depth discussions with a broad cross-section of private sector firms and public agencies provided the basis for the planned activities.

In order to support the development of a commercial marketing plan for Thriposha a two-stage research plan was designed. Phase I was a consumer use survey and Phase II an extensive test market. This plan guided the evolution of the project through 1983. As the project progressed several marketing research surveys were undertaken to examine issues and problems as revealed in early stages of the market test.

Resulting from preliminary analyses of information available during the initial TDY a working arrangement with Lever Brothers (Ceylon) Ltd. was established. Marketing research, marketing management and sales activities were organized and managed by Lever's personnel. Also, previous survey data indicated widespread awareness and a positive image for the Thriposha name which had been previously established for the free distribution program. It was decided to extend the use of this name to commercial marketing activities.

The Phase I survey was conducted in 750 households in early 1978. It consisted of a usage and attitudes survey and an in-home placement and evaluation of product samples. Several primary conclusions were drawn. First, product concept had a strong level of

Table 1. Chronological Summary of Major Marketing Activities; Thripasha Project, Sri Lanka 1977-1985.

Date	Activity	Documents^{1/}
October 1977	Nichols TDY to examine marketing needs, establish marketing plan	■ Trip Report No. 1
January - March 1978	Phase I consumer survey conducted	
November - December 1978	Nichols TDY to review results of Phase I and redesign Phase II	■ Trip Report No. 2
January 1979	Thripasha Project Reports at the LEC Workshop, Tanzania	■ Proceedings Papers
October 1980	Phase II: Market Test, Product Launch	
February - April 1981	Follow-up consumer survey of Thripasha purchases conducted	
May 1981	Nichols TDY to review market test and develop plans for continuation of Phase II	■ Trip Report No. 3
May 1982	Nichols TDY to review market test and survey results; establish plans for expanded promotion efforts and survey of infrequent users	■ Trip Report No. 4 ■ LMRB Report June 1982
November 1982	Lanka Market Research Bureau (LMRB) survey of infrequent users conducted	■ LMRB Report: Vols. I & II January 1983
November 1983	Nichols TDY to review marketing research and assist CARE in planning future marketing activities	■ Trip Report No. 5
September - October 1984	Survey of Advertising Awareness conducted	■ LMRB Report January 1985

^{1/} Trip Reports included as Appendices B-1 thru B-5.

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acceptance which was reinforced after use. This product concept was properly understood as "nutritious product" and "good for children". A second conclusion was that consumers would be sensitive to pricing decisions.

With regard to product characteristics most were found to be very acceptable to consumers. The one pound package size was highly desirable to consumers. Extensive detailed information was also obtained and analyzed to provide guidance to product development and market planning decisions. It was concluded as the result of these findings that the project should continue to Phase II.

Phase II, the market test, could not be launched until the new factory was constructed. October 1980 was the launch date for the commercial test market. Lever's sales and distribution system provided marketing and logistical support. The test was run in four sales territories in Sri Lanka, two in the south and two in the central region. A full program of promotional support was provided to simulate regular product launch conditions.

Assessment of the test market was done through tracking of sales, consumer usage surveys and periodic interviews of wholesale and retail trade personnel. An assessment done in May 1981 revealed that monthly sales were averaging 821 packages per 1000 households with some regional variations. Monthly volume per retail outlet was 178 packages.

Three months after launch a survey of 1200 households was conducted. Widespread familiarity with Thriposha was found. Thirty-six percent indicated they had purchased Thriposha at least one time; of these 9 percent indicated they had purchased Thriposha at least once per week. Primary conclusions at this point may be summarized as follows:

- The test-market appeared to be a commercial success
- Evidence suggested that the product was reaching households in the target group
- Long term market building efforts would be needed to increase usage rates and frequency

- No evidence was found of any significant problem with product quality, packaging or price.

The second stage of follow-up consumer surveys, reviewed in May 1982, confirmed these results but also revealed that there was a lack of frequency or consistency in consumer buying patterns. Other conclusions at this time included the need for an aggressive promotion and advertising campaign to support sales and that the market could be expanded to new areas as available supplies and production resources permitted.

A plan was established to conduct a survey of less-than-frequent users to determine the factors and attitudes that governed their purchase and usage behavior. Lanka Market Research Bureau (LMRB), a local market research firm, was contracted to do further analysis on the existing survey data set and to undertake the study of less frequent users.

In early 1983 two new sales territories were added and prices were increased from the original level of Rs. 5.50 to Rs. 6.50. Sales in existing regions showed no negative effect of the price increases despite the fact that the plan for rejuvenated advertising efforts were not yet implemented.

Consumer survey analyses are reported in LMRB reports dated June 1982 and January 1983. The expected direct relationship between household use and income was found: 11.8% of all households (1200) surveyed in January and April of 1981 bought Thriposha once per month or more frequently. For households with monthly income below Rs. 300, the penetration rate was 7.7%; for households with monthly income of Rs. 301 - 600 the rate was 13.8% and, for those above this income level the rate was 19.6%. The causes of irregular use were found to be based on three things. First, many infrequent using households indicated a high level of satisfaction with their existing level of nourishment for weaning age children. In a sense they didn't believe they had a problem. Second, there was a feeling of "fatigue" with the taste of Thriposha. The third concern expressed was the lack of financial resources to buy and use Thriposha regularly.

Subsequent to these survey results and another review of the project in November 1983 several actions were taken. A price increase was recommended. This was adopted

and a new price of Rs. 9.50 per pound was planned in the Spring of 1984 but not initiated. Secondly a new advertising campaign was designed to be undertaken for the purpose of expanding frequency and level of use and to broaden the market. No advertising for Thriposha had been done since the original project launch period in 1980-81. A third major activity planned was a new stage of consumer surveys. The purpose was to measure market penetration, determine the profile of users, examine purchase and usage patterns and evaluate the effect of the advertising campaign.

The survey and advertising assessment were conducted in September-October 1984 and reported in LMRB report dated January 1985. Thriposha was found to be consumed, as intended, primarily by younger groups, although all age groups indicated some degree of usage. Thriposha was generally consumed once a day except for very young children.

It was concluded also that the particular advertising campaign used had had minimal effect in gaining new users. The usage of Thriposha appeared to be limited to a set of loyal, regular users which had not widened despite the advertising effort. A high level of advertising awareness was achieved (75% overall) but specific recall was lower and measurable action was not evident in the aggregate. While recall was highest for radio advertisements used in the campaign, the impact of the message was greater through print media. A recommendation was made that future advertising efforts be focused in newspapers, that the content of specific materials be evaluated, and that it be maintained in a consistent pattern over time to achieve maximum benefit.

The sales history of commercial Thriposha is summarized in Table 2 covering the period from product launch in late September 1980 through mid-1984. Sales levels increased fairly consistently throughout this period. Gains from 1982 through 1984 resulted in large part from the expansion of sales territories in August 1983 and February 1984, and despite a price increase in June 1983.

Specific sales data beyond mid 1984 are not available but evidence indicates that sales levels held up until early 1985. At that time a number of management issues developed and plant production capacity was not able to support commercial market

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Table 2. Sales Summary for Commercial Thripsha Test Market, Sri Lanka 1980-1984.^{1/}

Month	Year				
	1980	1981	1982	1983	1984
	----- cases ^{2/} -----				
January		1,030	375	1,030	1,323
February		600	840	1,055	1,423 ^{5/}
March		525	640	855	2,439
April		100	211	685	1,087
May		520	835	630	2,495
June		735	485	880 ^{3/}	1,550
July		400	655	775	2,552
August		615	710	978 ^{4/}	2,057
September	835	640	1,230	1,153	
October	1,859	810	525	1,295	
November	1,672	885	625	1,420	
December	800	590	385	925	
TOTAL	5,166	7,450	7,516	11,711	14,926

^{1/} Cases delivered from factory to Nominated Levers Wholesalers (NLW's).

^{2/} One case equals 48 one-pound consumer packages.

^{3/} Retail price increased from Rs. 5.50 per package to Rs. 6.50 in June 1983.

^{4/} Sales territories expanded from 4 to 6 beginning in August 1983.

^{5/} Renewed advertising promotion campaign launched. Also three new sales territories added: Summary:

1980 - July 1983: Matale, Kandy, Galle, Matara

Aug. 1983 - Jan. 1984: Added Ambalangoda and Tangalle

Feb. 1984: Added Nuwara Eliya, Ranapura and Balangoda

production in the face of increasing demands for extruder capacity to meet free distribution targets. The retail price was increased to Rs. 9.00 in late 1984. In October 1985 production of commercial Thriposha was shifted entirely to local ingredients. Due to the lack of data and field surveys beyond mid-1984 no conclusions can be drawn regarding these subsequent commercial marketing experiences.

2.2.2.3 Conclusions and Recommendations - Thriposha

Test markets are difficult to maintain over long periods of time. Because production capacity was not increased, the test market could not be expanded and developed when the momentum of sales and promotion results was at its peak in 1982-1983. The primary conclusion drawn from the commercial marketing experience is that both commercial and nutritional objectives can be reached through the careful development and use of low-cost extrusion cooking technology for infant weaning foods.

1. Sales levels of over 2000 cases (50 tons) per month was achieved.
2. The objective of low retail price was achieved consistent with covering costs. Retail price was consistently only 5 to 10 percent of comparable imports and 20 to 50 percent of the price of non-fat dry milk. The price was generally 2 to 3 times the price of bulk grains and flour in the local markets.
3. Lower income households purchased Thriposha. Forty percent of rural households which purchased Thriposha had monthly incomes below 750 rupees (\$37.50) with 19 percent having income below Rs. 500. In urban areas 20 percent of purchasing households had incomes of Rs. 750 per month and 8 percent below Rs. 500.
4. Commercial marketing incentives can be structured within a program that has nutritional and social objectives. However, commercial marketing activities, particularly advertising, promotion and distribution need to be consistently managed over the entire life of the product.
5. When production capacity for Thriposha is expanded, the commercial marketing program should be redeveloped and pursued with vigor. It can

successfully meet the nutritional needs of at-risk populations in many parts of the country.

2.2.3 *Cerex Weaning Food: Guyana*

Cerex, a nutritious, cereal based weaning food, was developed under the Guyana Weaning Food Project by Guyana Pharmaceutical Corporation (GPC) in cooperation with the United States Agency for International Development (USAID). Although some indigenous commodities are used in the production of Cerex (rice and sugar), the majority are imported under a PL480, Title II, grant (corn meal, soybean flour, soybean oil, milk powder, vitamins, and minerals). The basic raw ingredients are processed through a low-cost extrusion cooking system before blending with ICSM and a vitamin-mineral premix. The final product is packaged in 8-ounce polyethylene consumer packets. From November 1978 to May 1979 Cerex was test marketed with small consumer groups and in June 1980 the product was officially launched.

2.2.3.1 Purpose and Objectives

The goal of the Guyana Weaning Food Project was to improve the nutritional status of Guyana's infants and preschool children (4 months to 2 years of age). A three year pilot project began on October 1, 1978. The purposes of the pilot project were: 1) to establish the production capacity for a nutritious weaning food made from indigenous commodities, and 2) to test the feasibility of retail distribution of the product (Guyana, Project Paper, *Weaning Food Development*).

It was envisioned that the weaning food would be distributed to the target group primarily through commercial marketing channels and secondarily, through maternal child health (MCH) clinics. An evaluation of Phase I (ending December 31, 1982) would indicate if the distribution system had been "effective". If so, project activities could continue (Phase II) as an ongoing nutrition intervention program, Phase II, having a duration of three years, would expand distribution to its maximum potential and phase out Title II ingredients in favor of local ingredients.

The objectives of Texas A&M through the cooperative agreement were to provide consultation and guidance in developing and executing a marketing plan for Phase I and to oversee and evaluate marketing research needed to facilitate the marketing program.

2.2.3.2 Activities and Accomplishments

Field work and analysis were coordinated through four in-country work periods from 1978 through 1982. An overview of the sequence is presented in Table 3. Details are provided in trip reports and the case study publication on consumer acceptance (Appendices C-1 thru C-5).

Procedures included analysis of existing food consumption and expenditure data, field surveys with trade channel personnel and government agencies and extensive sample surveys of households. The commercial marketing of Cerex was undertaken with significant emphasis on social objectives in concert with the central planning focus of the government of Guyana. A subsidized pricing scheme was employed and nutrition education objectives were also structured into project concerns. This lead to unique marketing management opportunities and limitations.

The 1981 Cerex consumer evaluation survey provides the best measure of the results of this project. It indicated that Phase I was reasonably successful in meeting project objectives.

Cerex has been widely distributed (and accepted) throughout Guyana among all segments of the population (different ethnic, education and income backgrounds). The pilot project expected to "reach" 24-30% of the 150,000 pre-school children. The term "reach" is open ended but by any definition the goal has been met: 79.1% of the children under two have used Cerex (61.6% of the children 2-5); 58.2% were still using Cerex 13 months after the product was launched (40.6% of children 2-5); over 80% consumed Cerex 2-3 times/day (65% of the children 2-5); over half consumed 1/4 cup or more, and 27% consume "sufficient" quantities of Cerex (17% of the children 2-5).

Since "insufficient" consumption appears to be due mainly to dilution, a strong

Table 3. Chronological Sequence of Major Activities for Marketing Component of Cerex Project, Guyana, 1978-1982.

Date	Activity	Documents
August 1978	Nichols TDY	Guyana Trip Report No. 1
Spring 1979	Mini Market Test	
September 1979	Nichols TDY	Guyana Trip Report No. 2
June 1980	Country-wide market test launched	
September 1980	Nichlos TDY	Guyana Trip Report No. 3
July 1981	Consumer Survey conducted (737 households)	Market Research Center Report MRC 83-2
June-July 1982	Hopkins TDY	Guyana Trip Report No. 4

educational effort is needed, perhaps through the clinic system, to encourage the use of increased quantities per serving. A large part of this effort should be directed at the Indian population which was a higher percentage of children who do not consumer Cerex, who consume less than 1/4 cup/serving and who use a bottle.

In view of the general success of Phase I no further marketing research or consultation was undertaken. Several areas of concern were identified however for future management evaluation. Substantial increases in price for other commodities required a doubling in Cerex retail prices. The effects of this if any should be assessed. Larger, one-pound packages also could be tested when introduced. Nutrition education activities needed to be better integrated. These were identified as opportunities for GPC management at the close of the formal involvement of marketing inputs by the cooperator.

2.2.4 Lisha Weaning Food in Tanzania

2.2.4.1 Purpose and Objectives

The purpose of this activity was to assist the National Milling Corporation (NMC) in developing and marketing a commercial weaning food (Lish). This is an LEC processed food, the production of which had been initiated in the late 1970's for free distribution through the MCH Centers.

2.2.4.2 Procedures and Accomplishments

The primary activity undertaken was the preparation for, and a field visit undertaken, in 1979. During this TDY, in July 1979, field interviews were conducted and activities coordinated with food technologists and production personnel at NMC. The primary result of this TDY was the identification of potential commercial marketing cooperator and preparation of a preliminary document to guide market planning. Tanzania Tea Blenders (TTB) was identified as a potential private sector cooperator with marketing and distribution capabilities.

Details of the preliminary marketing program conveyed to USAID, TTB and NMC are provided in the Trip Report (Appendix D-1). In summary it concluded that a market

existed for a cereal based weaning food in Tanzania. However, the commercial market would likely be limited to households in the upper one-third of the income distribution. Basic components of the marketing strategy were outlined and areas identified where further information was needed for decision-making. Actions recommended include:

1. Finish product development work and conduct limited consumer evaluation
2. Establish responsibilities for marketing in NMC
3. Initiate formal negotiations with NMC regarding product distribution
4. Once cooperation is achieved, conduct a thorough review of product concept and marketing plans.
5. Review brand name (Lisha) and assess alternatives
6. Finalize packaging plans
7. Make production plans, estimate costs, establish pricing plan for test market
8. Plan test market
9. Execute test market

Subsequent to the 1979 TDY the cooperator had no direct involvement in the development of marketing plans. Further correspondence was exchanged through 1982 which indicated that production and commercial marketing plans were being pursued. Further cooperative assistance in carrying out consumer acceptance studies and marketing test was offered. However, lack of follow-up from NMC and others in Tanzania resulted in termination of this project activity.

2.2.5 Weaning Food Assessment in Sudan

2.2.5.1 Purpose and Objectives

The main goal of this activity was to provide collaborative marketing support for a new LEC based weaning food initiative in Sudan. Technical aspects were provided by other cooperators and are reported elsewhere. Specific objectives were to (1) provide an assessment of the current market conditions for consumer packaged food products in Sudan, (2) develop a preliminary statement of the essential elements of a marketing plan for the proposed weaning food, and (3) identify and describe further consumer and

marketing research needed to refine and guide both product and market development efforts.

2.2.5.2 Procedures and Accomplishments

The major activity undertaken in this project was preparation for, and completion of a TDY in Sudan in March and April, 1988. The major tasks were similar to the initial phase of several earlier projects described above. Analysis of secondary data and field interviews with trade channel participants, government personnel and others involved in nutrition and food problems in Sudan provided the basic information set.

The results of the TDY are reported in the combined trip report to USAID. The marketing component is attached to this report (Appendix E-1). Local firms and cooperating groups were identified with capability of coordinating and conducting marketing activities necessary for later stages of the project.

In summary, a limited commercial market was identified. Since specialized weaning foods are not commonly understood in Sudan, market development will be difficult and slow. The conclusions and recommendations made are summarized below.

1. A significant commercial market potential exists. Its initial size may range from 1000MT to 1500MT per year once full production and distribution is achieved. Expansion beyond this level is possible but depends on many economic and marketing conditions.
2. No clear product concept for a centrally processed, locally-produced, weaning food exists in the Sudan. Development will require concerted marketing and consumer education efforts.
3. The recently tested weaning foods provides many desirable consumer characteristics. However, further testing of the refined product is recommended with a consumer acceptance test and in-home placement of the product in a representative sample of households large enough to identify differences among major market segments.

4. An appropriate name for the product is needed and it is recommended that the name "Nasha" not be used because the current product concept has significantly different characteristics.
5. It is recommended that the marketing plan for the product include the following considerations:
 - a. Position the product as a relatively low-cost nutritious cereal-based weaning food for infants and children from six months to 5 years.
 - b. An integrated advertising and promotion program is needed with linkage to package design and overall product concept development. Instructions for preparation and use need to be developed and incorporated into the packaging design and advertising messages.
 - c. Set the retail price at approximately LS 5.0 per 500g package.
 - d. Develop a package with a high quality appearance consisting of paperboard exterior and polyethelene bag insert; graphic design and printing should be consistent with the best domestically available in Sudan.
 - e. Select distribution channels to insure a positive sales effort through extensive direct distribution.
 - f. Further dimensions of the marketing plan should be developed by the private sector entity which is selected to carry out the project.

The TDY and the resulting report led to further planning for a consumer acceptance test and survey of consumer knowledge and usage of infant weaning foods. Through correspondence and other communications plans were developed to undertake this work. However, political and economic instability in Sudan have caused the project to be placed on hold. Further development will depend on initiatives in Sudan once a stable market environment is achieved.

2.3 Other Field Studies

Throughout the cooperative agreement several additional field studies were undertaken by TAMU staff and consultants. Three of these, highlighted below, involved a TDY to collect information and provide marketing guidance.

2.3.1 Enriched Bread Products in El Salvador

In 1976 a local contractor, working with the baking industry and USAID in El Salvador, conducted a market assessment and that market for enriched bread products. These studies were reviewed by Dr. Clive Harston in 1977 with the objective of synthesizing the results and making recommendations for further development.

The study verified the feasibility of improving the diets of bread consumers in El Salvador by changing the bread formula to include up to 12 percent soybean flour. In addition to nutritional improvements, other quality factors such as taste and freshness were enhanced. There was sufficient evidence that consumers would accept the enriched product in the market without hesitation. Reaction to price variation was not measured in the study but opinions indicated that sales might not be retained if prices increased. The TDY report is included in Appendix F-1.

2.3.2 Marketing Factors Affecting Nutrition in Jamaica

In 1977 USAID was assessing nutritional concerns in Jamaica. Texas A&M, through the cooperative agreement, provided an evaluation of marketing and consumer acceptance problems associated with the development of nutritionally fortified new food products. Dr. Robert Branson traveled to Jamaica to gather information and provide an assessment. This work was coordinated with food technology studies being carried out concurrently.

The assessment included a discussion of the size of the infant nutrition problem, underlying economic conditions, current food usage patterns, and on-going food programs. Based on this, the recommendations included a proposal for marketing research activities. An outline for product concept tests and consumer usage surveys was also prepared.

Guidelines for developing and administering these marketing research surveys were detained in the report. The TDY report is included in Appendix F-2.

2.3.3 Fortification of Wheat Flour in Haiti

Wheat flour fortification is another area of food technology investigated and supported by the Food Technology Branch of OICD/USDA. Texas A&M, through this cooperative agreement, provided periodic assessments of the marketing implications of some of the fortification opportunities.

In 1980, Dr. Robert Degner was employed as a consultant to examine the marketing distribution and consumption implications of wheat flour fortification in Haiti. Of particular concern during his TDY was to ascertain whether or not specific at-risk consumer target groups consumed wheat flour in various forms. Dr. Degner assessed existing secondary food consumption data, interviewed government and trade channel personnel and identified potential marketing research firms should subsequent in-country studies be needed.

It was concluded that wheat flour consumption was wide-spread among the target, at-risk population. Suggestions were made for further analysis of existing data. Also it was recommended that Vitamin A and Iodine fortification be further developed. Other recommendations regarding pricing, consumer evaluation of reformulated flour products and examination of other products as vehicles for fortification were also presented. The TDY report is included in Appendix F-3.

2.4 Research and Consultation Services

Over the course of the cooperative agreement, many activities have been undertaken that did not involve direct field work. These were in response to needs arising from new project assessment, coordination of the work of outside consultants, or research and analysis based on secondary data. At times substantial resources were committed to the process of evaluating and commenting on new project prospects or finding and monitoring the activities of other professionals. Several of these activities which required significant resources are described briefly in the following sections.

2.4.1 Rice Bran Stabilization in Philippines

2.4.1.1 Purpose and Objectives

USDA investigated the application of extrusion processing to the problem of stabilizing rice bran in the rice milling industry. A demonstration project in the Philippines was proposed. Texas A&M was involved for the purpose of identifying opportunities and needs relating to the marketing of stabilized rice bran, rice bran oil and defatted rice bran in the Philippines.

2.4.1.2 Procedures and Accomplishments

During 1985 and 1986 the cooperator participated in developing a scope of work for the project. Particular emphasis was given to the inclusion of analysis of the potential animal feed market and consumer markets for vegetable oil. Discussion was initiated with marketing research consultants regarding a potential project. The program was carried to the point of installation but political instability in the Philippines resulted in the termination of studies of the markets and economic feasibility.

2.4.2 Legume Consumption Survey

2.4.2.1 Purpose and Objectives

OICD undertook a project to assess the problem of energy use and fuel requirements for preparing various beans and peas for home consumption. This information was needed to guide development of strategies to improve cooking procedures and reduce fuel requirements where that was a problem. Texas A&M was involved to assist in developing the consumer survey component of the project.

2.4.2.2 Procedures and Accomplishments

From 1985 through 1988 the cooperator assisted in questionnaire design, translation, editing and coding completed questionnaires, computer analysis and drafting reports for the survey results. A total of 210 household units were surveyed in five countries. Field work was undertaken by Catholic Relief Services due to funding

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limitations. While responses were limited, the results in the aggregate were of good quality.

Food legumes were commonly used as a source of protein in the countries surveyed. Boiling the legumes was the most common method of cooking. Time for preparation included soaking often exceeded twelve hours. Respondents were interested in, but generally not aware of, methods for minimizing time requirements, including modifiers to reduce soaking requirements. Fuel wood availability was also found to be a major problem. Other details are available in a report drafted by Dr. Fred Barrett of the Food Technology Branch of OICD.

2.4.3 Weaning Food in Zaire

2.4.3.1 Purpose and Objectives

In 1986 a request was received from Victoria Associated Products (VAP) in Zaire to assist in developing and LEC based weaning food. Texas A&M was involved to assist in developing a marketing plan and to convey information learned in earlier weaning food projects.

2.4.3.2 Procedures and Accomplishments

Meetings were held with VAP personnel in the U.S. to outline the nature and needs of the project. Information from previous studies was provided and an outline for a marketing plan prepared. The cooperator also reviewed an interior evaluation report on the project in 1987. It was observed that VAP had adapted the appropriate components of a marketing plan and were following appropriate marketing practices.

2.4.4 Self-Targeting Weaning Foods

2.4.4.1 Purpose and Objectives

This project was designed to identify methods and product attributes which could be used to better target weaning food consumption in the marketplace and in the household. Texas A&M provided contract management services and research methodology consultation.



2.4.4.2 Procedures and Accomplishments

Kolassa and Associates were contracted to conduct the work. This was a study of the available experience, theoretical basis and behavioral and educational concepts needed to design foods which would be perceived as being intended primarily for weaning age children. The contract report was delivered to OICD and used to guide development of other projects.

A related analysis was proposed for consumption of a targeted dietary food in Calcutta, India. Consultation and evaluation was provided regarding methods of analysis of this secondary data source.

2.4.5 Workshops and Conferences

Presentations were made at conferences in Tanzania (1979) and Lesotho (1982). Papers presented reported recent marketing research experiences and provided overviews of marketing and economic principles important in nutrition intervention.

The 1979 LEC Workshop was held in Dar es Soloam, Tanzania. A paper was prepared and presented which documented the marketing dimension of LEC food development projects. Also presented at this conference was a paper by Nihal Corea of Lever Brothers (Ceylon) Ltd. which described the results of consumer acceptance tests for Thripasha in Sri Lanka. These papers are in the proceedings of the Second LEC Workshop published by the department of Agricultural and Chemical Engineering at Colorado State University.

Two papers were also presented at the Food Fortification Symposium in Maseru, Lesotho in 1981. These presentations discussed the role of consumer acceptance and market tests in food fortification projects and provided a perspective on economic analysis in food fortification. These two papers are included in Appendices G-1 and G-2.

Presentations were also made periodically to various groups in USAID and CARE to inform and assist planners in dealing with marketing components of nutrition intervention projects.

2.4.6 Continuing Consultation Services

Throughout the duration of the cooperative agreement numerous requests were received for review, advice and recommendations on a one-time basis. The cooperator maintained regular contact with OICD and other cooperators to assist and facilitate projects by providing marketing and economic perspective. Some of these involved desk or library research. Others involve correspondence or identification of third party consultants. Such inquiries or requests were distributed unevenly throughout the project but averaged ten to twelve consultations per year.

2.4.7 Analysis of World Trade Flows for Infant Foods

2.4.7.1 Purpose and Objectives

The development of many of the weaning food projects described above involved the evaluation of existing market channels for related products. Existing secondary data in many developing countries were examined. Food consumption or nutrition surveys were sometimes available. Consumer expenditure surveys were also available, but usually did not provide enough detail on specific foods. One source of data needed was the level of imports of processed cereal-based infant weaning foods. The quality of import statistics was found to be highly variable. In many cases trade personnel suggested that imports were under-reported due to poor data collection or black market activities. In order to better understand the international movement of processed cereal-based infant foods, an assessment of trends in world trade in such products was undertaken in 1989.

2.4.7.2 Procedures and Results

Data were obtained from the United Nation Statistical Office for infant foods in Standard International Trade Code (SITC) 048.8. This is the most disaggregated level available by country and year. It includes cereal-based infant foods, culinary preparations and malt extract. Historical evidence for earlier years when more disaggregated data were

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available suggests that malt extract is a very small portion of this total. The data for SITC 048.8 for the years 1979 through 1987 were obtained and analyzed.

The primary trends in value of exports and imports are shown in Tables 4 and 5. Reported exports for all countries totaled \$491 million in 1987 with the top five countries accounting for 68 percent. France and the United States are the two leading exporters. Over the period the U.S. share has declined from 22 percent of world exports in 1979 to 11 percent in 1987. From being the leading exporter in 1979, the U.S. is now ranked fourth. West Germany, The Netherlands, Belgium and Singapore each show significant increases in share of world exports.

Imports are reported to total \$409 million in 1987. Due to reporting discrepancies and potential chronic under-reporting of imports, world exports exceed world imports by approximately 15 percent over this period. This is not a surprising finding in data of this type and suggests that reported imports for many countries need to be examined and verified in other ways.

Imports are much less concentrated than exports with the top five countries accounting for 44 percent in 1987. European countries are the leading importers as well as major exporters, reflecting recent growth of trade within the European Community. The U.S. is not a significant importer. Thailand, Malaysia and India do import notable quantities.

Analyses of these data are continuing at the time this cooperative agreement is being closed out. Further analyses will include examination of quantity data in addition to value and identification of economic or development variables which might be correlated with trade patterns. These results will be reported elsewhere.

Table 4. Distribution of Export Market for Baby Food and Dietetic and Culinary Foods (SITC 048.8) Top Ten Exporting Countries by Value (\$X1,000), 1979-1987^a

COUNTRY / RANK ^b	YEAR																		TOTAL ALL YEARS	
	1979		1980		1981		1982		1983		1984		1985		1986		1987			
1)FRANCE	71450	20.8%	95282	22.3%	83345	19.4%	69352	18.9%	67847	19.1%	70280	18.1%	81608	19.7%	81675	19.2%	89470	18.2%	710309	19.5%
2)US	76431	22.3%	85598	20.0%	80481	18.7%	62637	17.0%	59213	16.7%	68835	17.7%	82688	20.0%	57042	13.4%	55315	11.3%	628240	17.2%
3)UK	42740	12.4%	63380	14.8%	76206	17.7%	57854	15.7%	49091	13.8%	50042	12.9%	54433	13.1%	56525	13.3%	63201	12.9%	513472	14.1%
4)FRG	38530	11.2%	47016	11.0%	40071	9.3%	36351	9.9%	39462	11.1%	41221	10.6%	48890	11.8%	61101	14.3%	77503	15.8%	430148	11.8%
5)NETHER	27947	8.1%	31091	7.3%	31531	7.3%	30636	8.3%	30414	8.6%	39503	10.2%	38358	9.3%	43366	10.2%	49903	10.2%	322749	8.9%
SUBTOTAL FIRST 5	257098	74.9%	322367	75.3%	311634	72.4%	256830	69.9%	246027	69.4%	269884	69.6%	305977	73.9%	299709	70.3%	335392	68.3%	2604918	71.5%
6)BELGIUM	23019	6.7%	28973	6.8%	24752	5.8%	25258	6.9%	27641	7.8%	30248	7.8%	32183	7.8%	40048	9.4%	53289	10.9%	285411	7.8%
7)SING	6259	1.8%	9393	2.2%	12499	2.9%	13860	3.8%	15104	4.3%	16284	4.2%	16915	4.1%	18700	4.4%	22595	4.6%	131609	3.6%
8)SWIT	9137	2.7%	12815	3.0%	13671	3.2%	12651	3.4%	11870	3.3%	10516	2.7%	10448	2.5%	14678	3.4%	20144	4.1%	115930	3.2%
9)AUSTRI	11016	3.2%	12650	3.0%	12968	3.0%	11484	3.1%	11281	3.2%	10862	2.8%	8208	2.0%	9903	2.3%	16563	3.4%	104935	2.9%
10)SWE	6054	1.8%	6550	1.5%	6252	1.5%	8082	2.2%	7099	2.0%	6647	1.7%	6633	1.6%	8419	2.0%	10831	2.2%	66567	1.8%
SUBTOTAL 2ND 5	55485	16.2%	70381	16.4%	70142	16.3%	71335	19.4%	72995	20.6%	74557	19.2%	74387	18.0%	91748	21.5%	123422	25.1%	704452	19.3%
ALL OTHERS	30844	9.0%	35159	8.2%	48500	11.3%	39483	10.7%	35733	10.1%	43544	11.2%	33582	8.1%	34827	8.2%	32002	6.5%	333674	9.2%
TOTAL	343427	100.0%	427907	100.0%	430276	100.0%	367648	100.0%	354755	100.0%	387985	100.0%	413946	100.0%	426284	100.0%	490816	100.0%	3643044	100.0%

a- SITC Code 048.8 specifically reads: Malt Extract; preparations of flour, meal, starch or malt extract, of a kind used as infant food or for dietetic or culinary purposes, containing less than 50% by weight of cocoa.

b- rankings were obtained through ranking from highest to lowest, the aggregate value of exports over all 9 years for all countries.

SOURCE: Statistical Office of the United Nations(New York, NY) for SITC 048.8(Limited data available in the World Trade Annual).

Table 5. Distribution of Import Market for Baby Food and Dietetic and Culinary Foods (SITC 048.8) Top Ten Importing Countries by Value (\$X1,000), 1979-1987^a

COUNTRY/ RANK ^b	YEAR																		TOTAL ALL YEARS	
	1979		1980		1981		1982		1983		1984		1985		1986		1987			
1)FRG	48917	14.8%	62938	16.6%	57834	15.8%	50689	14.7%	47085	14.5%	46512	15.1%	46852	15.2%	61787	16.7%	76125	18.6%	498740	15.9%
2)UK	14060	4.3%	19494	5.1%	19115	5.2%	18340	5.3%	19819	6.1%	20819	6.8%	22541	7.3%	29061	7.9%	35498	8.7%	198747	6.3%
3)FRANCE	12864	3.9%	14890	3.9%	15732	4.3%	16648	4.8%	16244	5.0%	17636	5.7%	19020	6.2%	24435	6.6%	31797	7.8%	169266	5.4%
4)BELG	15196	4.6%	16569	4.4%	13712	3.8%	10821	3.1%	11379	3.5%	11743	3.8%	12213	4.0%	17756	4.8%	22685	5.5%	132074	4.2%
5)GREE	17996	5.5%	18019	4.7%	14393	3.2%	15795	4.6%	13402	4.1%	11351	3.7%	11123	3.6%	14218	3.9%	14890	3.6%	131187	4.2%
SUBTOTAL FIRST 5	109033	33.1%	131910	34.7%	120786	33.1%	112293	32.7%	107929	33.1%	108061	35.1%	111749	36.3%	147257	39.9%	180995	44.2%	1130016	36.0%
6)THA	11844	3.6%	12389	3.3%	12522	3.4%	12031	3.5%	13504	4.1%	14075	4.6%	13633	4.4%	13335	3.6%	14985	3.7%	118318	3.8%
7)MAL	13280	4.0%	13439	3.5%	12251	3.4%	10066	2.9%	11684	3.6%	13830	4.5%	12769	4.1%	12918	3.5%	14360	3.5%	114597	3.7%
8)NETH	12815	3.9%	13014	3.4%	10684	2.9%	10929	3.2%	9726	3.0%	10633	3.5%	11316	3.7%	14785	4.0%	17871	4.4%	111783	3.5%
9)INDIA	9719	2.9%	12892	3.4%	8948	2.5%	6597	1.9%	31290	9.6%	13374	4.3%	21498	7.0%	c		c		104318	3.3%
10)ITALY	10114	3.1%	11850	3.1%	6352	1.7%	5170	1.5%	6737	2.1%	7151	2.3%	11067	3.6%	16341	4.4%	22358	5.5%	97140	3.1%
SUBTOTAL 2ND 5	57772	17.5%	63584	16.7%	50757	13.9%	44793	13.0%	72951	22.4%	59063	19.2%	70283	22.8%	57379	15.6%	69574	17.0%	546157	17.4%
ALL OTHER	162972	49.4%	184215	48.5%	193602	53.0%	186618	54.3%	144806	44.5%	141069	45.8%	125669	40.8%	164350	44.5%	158484	38.7%	1461789	46.6%
TOTAL	329777	100.0%	379709	100.0%	365145	100.0%	343704	100.0%	325686	100.0%	308193	100.0%	307701	100.0%	368986	100.0%	409053	100.0%	3137962	100.0%

a- SITC Code 048.8 specifically reads: Malt Extract; preparations of flour, meal, starch or malt extract, of a kind used as infant food or for dietetic or culinary purposes, containing less than 50% by weight of cocoa.

b- rankings were obtained through ranking from highest to lowest, the aggregate value of exports over all 9 years for all countries.

c- India did not report imports for 1986 and 1987.

SOURCE: Statistical Office of the United Nations(New York, NY) for SITC 048.8(Limited data available in the World Trade Annual).

3.0 SUMMARY OF EFFORT AND EXPENDITURES

3.1 Allocation of Effort

Professional time allocated to this project has ranged from 2 to 4 months per year over the life of the cooperative agreement. Allocation by principal project activity is presented in Table 6. During years of intense activity several projects were underway simultaneously thus calling for additional resources. Travel and field activity was most intense during the 1978-1983 period. Changing project requirements dictated the year-to-year variation noticeable in the data. Also changing professional commitments of the cooperator influenced time allocation. Professional time decreased over the last five years of the agreement.

3.2 Expenditure Summary

During the 13 year life of the cooperative agreements \$294,000 was expended. In addition approximately \$100,000 of supporting resources were allocated by the cooperator, primarily in the form of secretarial, clerical and research associate time and indirect costs. Annual expenditures under the cooperative agreement are summarized in Table 7. The data presented reflect the peak years of greatest activity between 1978 and 1983. Also reflected is the somewhat reduced, though stable, level of program activity in the last several years. Personnel services provided directly by the cooperator accounted for about 55 percent of total expenditures. Additional consultant services are included in the other expenses category.

Table 6. Allocation of Effort to Project Activities by Fiscal Year, 1977-1989.

Fiscal Year	Months of Professional Time	Project Activities
1977	1.0	Korea/Bread Fortification
	1.5	Sri Lanka/Weaning Food
	0.5	El Salvador/Enriched Bread
	0.5	General Project Support
1978	0.5	Korea/Bread Fortification
	1.5	Sri Lanka/Weaning Food
	1.5	Guyana/Weaning Food
	0.5	Jamaica/Market Survey
	0.5	General Project Support
1979	1.5	Sri Lanka/Weaning Food
	1.0	Guyana/Weaning Food
	1.0	Tanzania/Weaning Food
	0.5	LEC Conference/Tanzania
	0.5	General Project Support
1980	1.0	Sri Lanka/Weaning Food
	1.0	Guyana/Weaning Food
	0.5	Tanzania/Weaning Food
	0.5	Haiti/Flour Fortification
	0.5	General Project Support
1981	1.5	Sri Lanka/Weaning Food
	1.0	Guyana/Weaning Food
	0.2	Tanzania/Weaning Food
	0.5	General Project Support
1982	1.0	Sri Lanka/Weaning Food
	2.0	Guyana/Weaning Food
	0.2	Tanzania/Weaning Food
	0.5	General Project Support
1983	1.5	Sri Lanka/Weaning Food
	1.0	Guyana/Weaning Food
	0.25	Self-Targeted Weaning Foods
	0.5	General Project Support
1984	0.5	Sri Lanka/Weaning Food
	0.25	Self-Targeted Weaning Foods
	0.5	Legume Use Survey
	0.5	General Project Support

Table 6 (Continued).

Fiscal Year	Months of Professional Time	Project Activities
1985	0.5	Sri Lanka/Weaning Food
	0.5	Self-Targeted Weaning Food
	0.5	Rice Bran Stabilization/Philippines
	0.5	Legume Use Survey
	0.5	General Project Support
1986	0.5	Self-Targeted Weaning Foods
	0.5	Rice Bran Stabilization
	0.2	Legume Use Survey
	0.5	Weaning Food Potential in Zaire
	0.5	General Project Support
1987	1.0	Legume Use Survey
	0.2	Weaning Foods Potential in Zaire
	0.5	General Project Support
1988	0.5	Legume Use Survey
	1.0	Sudan/Weaning Food
	0.5	General Project Support
1989	0.2	Sudan/Weaning Food
	0.5	Analysis of Trade Flows
	1.5	General Project Support

Table 7. Summary of Expenditures Billed to Cooperative Agreement, by Fiscal Year, 1977 through 1989.

Fiscal Year	Expenditure Type		TOTAL
	Direct Personnel Services	Other	
	----- dollars -----		
1977	9,400	11,299	14,063
1978	15,743	11,299	27,042
1979	15,669	15,926	31,595
1980	13,193	10,774	23,967
1981	12,143	14,074	26,217
1982	14,749	12,415	27,164
1983	14,368	17,209	31,577
1984	3,510	18,591	22,101
1985	14,978	8,417	23,395
1986 ^{1/}	12,500	2,454	14,954
1987	11,793	2,590	14,383
1988	111,008	7,092	18,100
1989 ^{2/}	12,647	6,953	19,600
TOTAL	161,701	132,457	294,158

^{1/} Personnel services are estimated

^{2/} Projected

4.0 RECOMMENDATIONS AND CONCLUSIONS

An assessment of the marketing activities undertaken in this Cooperative Agreement over the past decade lead to several general conclusions. Based on these experiences and conclusions several recommendations for future projects are offered.

4.1 Conclusions

1. Evidence from the analysis of the two key market tests undertaken (Thriposha and Cerex) indicate clearly that a commercial market can be established for low-cost, centrally processed fortified food products. Furthermore, this market includes at-risk populations in lower income households and weaning age infants.
2. While target populations can be reached through commercial products and marketing channels, this should not, and cannot be considered as a sufficient strategy. There are many households outside the market economy and others who cannot be motivated through commercial appeals to purchase and use the tested products appropriately.
3. Commercial incentives can be structured in many cases to insure appropriate market development attention among trade channel participants at processing, wholesale and retail levels. However, success requires more careful planning than normal to insure continuity and performance in light of the mixture of commercial and social objectives.
4. Retail pricing substantially below most typically available imported, packaged infant weaning foods can be achieved. Retail prices for low-cost, centrally processed foods using LEC technology can also be established at a level that is only two to four times the related prices of unprocessed cereal grains, legumes, and flours sold in bulk in local markets. This is an important price ratio because these are ingredients used in home-prepared weaning foods.

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5. Integrated nutrition messages can be conveyed as part of the commercial marketing messages inherent in the products tested, but significant behavioral change is not likely to be achieved in this manner. Weaning patterns are deeply ingrained social and cultural patterns. To achieve a significant shift towards nutritionally preferred methods, a well developed fully integrated nutrition education program is needed. Commercial products such as those tested, with their attendant marketing programs, should not be expected to impact weaning behavior by themselves.

4.2 Marketing Management, Research and Planning Model

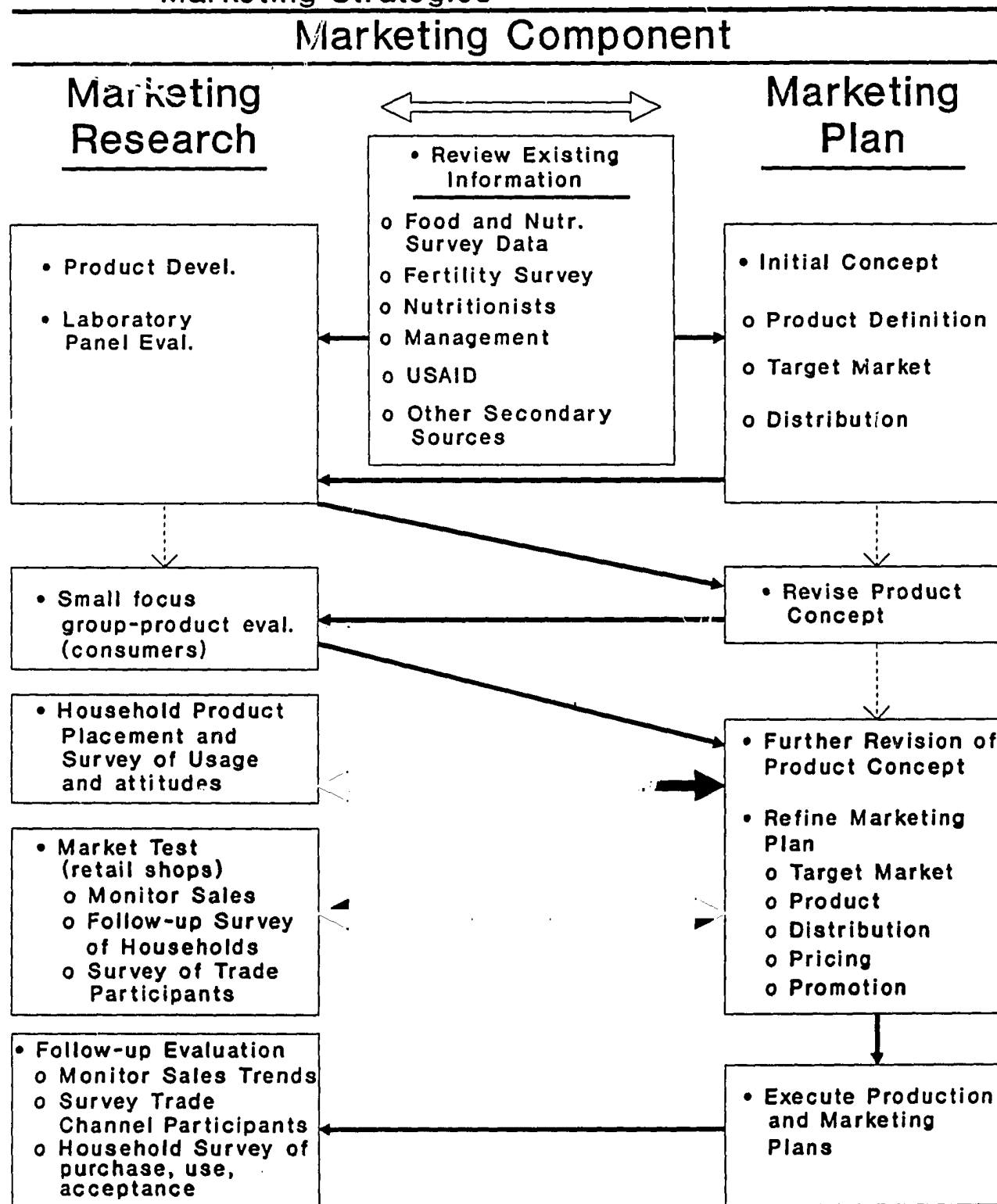
Activities undertaken through the cooperative agreement led to the development of a model for developing market information sources, assessing the marketing potential of low-cost fortified foods, and using this information in the development of organized plans to guide the commercial marketing activity. Figure 1 provides a representation of this paradigm.

An integrated, sequential marketing research and planning process was designed and used in several separate projects. Specific stages included and the timing of such a process is conditioned by the availability of existing secondary data relating to the product class and household food consumption behavior and other environmental variables. Project objectives will also be important in directing both the overall process and the detailed requirements of specific stages.

The model starts from the general and moves to the specific using available secondary information. Product development activities are guided by a series of small laboratory taste panels and consumer acceptance tests. As alternatives are eliminated, a broader consumer acceptance and usage survey is usually necessary. Information from each successive stage flows into the market planning and decision-making process. Based on indicators of potential market success the marketing plans are further refined and coordinated with production and related activities to prepare for a test of the product under real market conditions. The test market can be achieved even in relatively

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Figure 1. Marketing Research and Planning Model for Nutrition Intervention Projects which Incorporate Commercial Marketing Strategies



unsophisticated marketing channels if care is taken to plan for product distribution, marketing support and information collection. Resulting from the test market, information is available to guide further decisions on investment and project planning. Should the results be favorable, then refinements are made in all aspects of project plans and the product is launched in a total marketing context. Formal follow-up evaluations can be conducted to assess market penetration, usage patterns and the degree of achievement of other project criteria.

This model, followed in several projects, is the implementation of traditional marketing techniques in a project setting constrained by mixed commercial and social objectives on the one hand, and often limited access to important marketing and consumer information on the other. This cooperative agreement has demonstrated that it can be done.

4.3 Recommendations

With the termination of this Cooperative Agreement it is important to indicate how the knowledge gained can and should be incorporated in future nutrition intervention programs.

1. There should be an organized effort to follow-up on existing projects which have been initiated under the cooperative agreement. Studies documented in this report provides a benchmark against which longer term progress can be evaluated.
2. There is a documented need for greater attention to marketing variables in food product based nutrition intervention programs. This report provides guidance for an organized integration of information drawn from marketing research. Marketing variables should be broadly interpreted to include cultural, social and demographic factors that condition food availability, purchase and consumer behavior with respect to food.

More broadly viewed, marketing considerations should also be examined in relation to food-based nutrition intervention programs through free distribution

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systems as distinct from commercial market channels. There are many non-pecuniary costs associated with accessing and using nutritious foods distributed through so-called "free" distribution systems. A good marketing program can help meet the objectives of such programs.

3. It is further recommended that existing commercial market channels and food processing and distribution infrastructure be views as a resource by planners of nutrition intervention projects. Tremendous investments exist in physical and human capital in commercial food processing and marketing systems. It is short-sighted indeed to ignore these resources simply because it is believed that the institutional arrangements and commercial incentive structures are not conducive to reaching nutrition objectives stated in a societal context. Careful planning and mutual goodwill are necessary. But, it is possible to take advantage of a system which is designed, by its very nature, to deal with physical, financial and marketing logistics inherent in providing food to people. Project planners are encouraged to include commercial food marketing systems as one strategy for delivering low-cost centrally processed fortified foods to at-risk populations.

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**MARKET INTRODUCTION OF LOW COST
NUTRITIONAL FOODS IN DEVELOPING
COUNTRIES**

PN-ABD-535

Vol. II Final Report Appendices

**Cooperative Agreement No.
58-319R-7-002
(previously 12-17-07-8-2239-x)**

between the

**Texas Agricultural Experiment Station
The Texas A&M University System**

and

**United States Department of Agriculture
Office of International Cooperation and Development**

September 1989

**John P. Nichols
Principal Investigator**

**The Texas Agricultural Market Research
and Development Center
Department of Agricultural Economics**

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Department of Agricultural Economics**

FOREWORD TO VOLUME II

This document (Volume II) contains the Appendices of the final report on research and development activities relating to the use of commercial market channels for the achievement of nutrition intervention objectives. The activities and results are summarized in Volume I. Questions regarding the project may be directed to the author at the Department of Agricultural Economics, Texas A&M University, College Station, Texas 77843-2124.

John P. Nichols
Professor
September 1989

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APPENDIX A - 1

The Development and Marketing of a Soy-Fortified Bread in Korea: A Case Study, 1980.

THE DEVELOPMENT AND MARKETING OF A
SOY-FORTIFIED BREAD IN KOREA:
A CASE STUDY

John P. Nichols

Fred F. Barrett

June 1980

The Texas Agricultural Market Research
and Development Center

of

Texas A&M University

in cooperation with

The Nutrition and Agribusiness Group
Office of International Cooperation and Development
USDA

for

Office of Nutrition
Agency for International Development

PREFACE

In 1976 the Market Research and Development Center at Texas A&M University undertook a cooperative program with the Nutrition and Agribusiness Group, Office of International Cooperation and Development of the United States Department of Agriculture. The purpose of this program was to assist in the design and evaluation of food marketing programs related to nutrition intervention projects in developing countries. More specifically the focus was on intervention efforts involving the commercial marketing of nutritionally improved food products aimed at particular at-risk target populations in these selected developing countries.

This publication reports on the first of the projects undertaken, the development and market testing of a soy-fortified bread product in South Korea. It is an overview of the entire effort and a review of the specific development activities, market research procedures and findings and the conclusions which may be drawn from the project. Other reports of the groups which conducted the specific market research activities are listed in the references and may be consulted for more detail.

It is anticipated that this report will be useful to readers who wish to review the specific project as well as those who may be interested in the general design and approach to consumer and market testing of a product such as this in a developing country. For this reason the logic and organization of the research design and procedures are reviewed in addition to the presentation of the results of the project activities and the conclusions drawn from them.

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REPORT HIGHLIGHTS

-- The Agency for International Development (AID) in conjunction with the U.S. Department of Agriculture (USDA) initiated programs in Korea in 1974 to assist in the development and marketing of low-cost nutritionally improved foods and in the demonstration of the commercial implementation of protein fortification technology. This report summarizes the objectives, procedures and results of the part of those programs dealing with a soy fortified bread developed and market-tested by the Sam Lip Foods Company, Ltd.

-- The goal of the programs was to demonstrate the technical and economic feasibility of manufacturing and marketing a protein fortified low-cost bread product which might result in an improvement in the nutritional status of the people. To achieve this the objectives were to utilize commercial protein fortification technology and successfully introduce into the market place a soy fortified bread product competitive in quality and price with regular bread.

-- Product development was carried out by Sam Lip Foods with technical assistance supplied by USDA. The development included the transfer of soy fortification technology and formulation modification to accommodate changes in the protein content of the available wheat flour. Based on the results of laboratory evaluations and limited consumer acceptance tests, it was concluded that a soy fortified bread could be produced which was comparable in quality and cost with the Sam Lip Foods regular bread.

-- A survey of bread consuming households in Seoul, Korea, was conducted. It was found that bread users were more likely to be in college educated,

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upper class families, housewives aged 30 to 39 with a western style kitchen. Bread consumption was found to be of fairly recent origin in a majority of households.

-- A test market was set up in selected areas of Seoul, Korea. The soy fortified bread was produced and distributed by Sam Lip through company distribution channels. Government retail price controls on bread influenced the Sam Lip Company to examine a price level for soy fortified bread higher than that for regular bread. To accommodate this concern a three level pricing experiment was set up. Regular bread was marketed at 95 won (w) in all three matched market areas. Soy fortified bread was priced at three levels; w 95, w 140, and w 180. Other marketing variables were held constant.

-- Sales records were maintained for the test market areas covering approximately 80 retail outlets over a two month period. A survey of 247 soy fortified bread purchasers was conducted to obtain evaluations of the product.

-- Sales data indicated that soy fortified bread sales per store-day averaged slightly more than regular bread when priced the same. When soy fortified bread was priced higher its sales level was considerably diminished to the point that many stores in the "high price" test area discontinued stocking the product during the later stages of the test. When priced the same as regular bread, 20-25 percent of the bread units sold were soy fortified bread. When priced at w 140, sales of soy fortified bread were 3 to 13 percent of the total and where priced at w 180, soy fortified bread accounted for 1 to 9 percent.

-- Consumer evaluation of soy fortified bread quality attributes indicated relatively low ratings, particularly with reference to taste or flavor.

Nearly 50 percent of those purchasing soy fortified bread at least once rated its flavor as "poor" or "very poor". Survey results also revealed that consumers considered "taste" as the primary factor in determining which brand or type of bread to buy. Forty-five percent of the respondents bought soy fortified bread only one time while only 20 percent purchased it more than four times.

-- Promotion efforts were limited to in-store activities since the market test was not being conducted over the entire market area. A lack of concerted, continuous sales merchandising and advertising was cited as a significant factor in the failure to achieve better sales at the higher prices.

-- Sales promotion efforts were redesigned and a market-wide product launch was undertaken by the Company. Soy fortified bread was priced at w 160 which they felt was necessary to recover all costs. A sales level of 11 to 12 percent of total bread units sold was maintained during the first two months of market-side distribution. A decline in sales was observed beginning in the third month which coincided with a discontinuation of Company advertising programs.

-- The goal of the project was achieved in that commercial protein fortification technology was successfully applied to produce a product with cost and quality characteristics comparable to the generally available regular bread. When priced at a comparable level it outsold the regular bread in the test market.

-- When priced substantially above regular bread continued sales success was not achieved. This failure was traced to problems of poor flavor and inadequate promotion which, when combined with higher price, deterred consumers from regular purchase and use.

-- The problem with flavor or taste of the soy fortified bread was not expected in light of positive results obtained in the earlier consumer taste tests conducted by the Company. This discrepancy was traced to a change in the quality of soy flour used in the bread for the test market compared to that used in the earlier consumer acceptance tests.

INTRODUCTION

The Office of Nutrition of the Agency for International Development (AID) in conjunction with the U.S. Department of Agriculture, initiated a program in 1974 for the conduct of a series of bread demonstration projects which were to implement the newly developed soy fortification technology in programs for the market introduction of soy fortified bread. The rationale for the bread demonstration projects was that protein fortification technology could be valuable in alleviating protein malnutrition, if it could be implemented in developing countries where low-cost, nutritionally improved bread products would be produced and distributed through commercial channels on a nationwide basis. It remained to be demonstrated that protein fortified bread could be economically viable by being produced at no increase in cost over regular bread and thus require no higher selling price than comparable unfortified products. Successful completion of one or more demonstration projects would serve as a model for the introduction of soy fortified bread products in other developing countries.

Korea was evaluated as a possible site for a bread demonstration project on the basis of the rapid increase in bread consumption in the country. This increased consumption was due to a gain in popularity of bread as indicated by increased sales in the market and to a government program which required the increased use of bread by restaurants. The per capita consumption of wheat flour had increased three-fold between 1961 and 1974 and the percentage of flour used in the baking industry had nearly doubled in the previous decade to a level of about 20 percent of the flour consumed. With this rapid increase in bread consumption, it appeared

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that bread had the potential of becoming a staple food in Korea in the near future even among the low income group. This significant increase in bread consumption was attributed to: (1) the availability of bread of a quality accepted by the people, and (2) the Korean government's program for controlling the price of bread to maintain a low price in the marketplace. This combination of factors was accelerating the acceptance and the change in consumption from rice to bread. It appeared that the introduction of high protein bread would result in its wide consumption by a significant portion of the population including the lower income and nutritionally needy segments and thus provide a good way to provide more and better quality protein to lower income families. In consideration of all of this, Korea was identified as a promising site for a bread demonstration project for the production and marketing of soy fortified bread. A bread baking company was needed as a cooperator for such a project.

Coincidental with the consideration of implementing a bread demonstration project in Korea, AID through the Korean Foods Industry Association was initiating a program in Korea for awarding grants to local food companies to assist them in the development and test marketing of low-cost nutritionally improved (high protein) foods. This activity was part of a three year program started by AID in 1972 to assist local food processing and marketing organizations in developing countries to carry out programs for the development of low-cost protein foods for their domestic markets. The program called for grants to be provided for preinvestment feasibility studies which were to include product testing, market analysis, and test marketing. The low-cost nutritionally improved foods to be developed as a result of this program were to be formulated from readily available raw

materials produced locally or from those soon to be locally produced.

The anticipated nutritive impact of such products was expected to be small initially but over the long run the process of up-grading the nutritional level of local foods was expected to contribute to the solution of local malnutrition problems.

One of the companies who applied for consideration in the Grants Program was the Sam Lip Foods Company Ltd. who wished to study the feasibility of producing and marketing a soy fortified bread in the Korean market. The Company was selected from among several companies who had applied for the program because it adequately met the selection criteria of: (1) successful experience in the food industry, (2) access to sufficient capital to make the required investment if the feasibility study so indicated; (3) possession of established technology in food formulation to permit nutritious food concepts to be translated into practicable products, and (4) possession of management skills to interpret the market data and to implement programs.

The Sam Lip Foods Company Ltd. also was considered an excellent candidate as a cooperator for the bread demonstration project both because of its qualifications mentioned above in relation to the Grant Program and because it had a major position in the rapidly growing bread market, an excellent record of product development, extensive distribution channels and well-established advertising and marketing capabilities. A grant was awarded to Sam Lip and an agreement was reached with the Company that AID through USDA would provide the needed technical assistance and support for the transfer of soy fortification technology and for the marketing studies related to a bread demonstration project.

The following sections of this report describe the goals and objectives and various technical and marketing activities undertaken in connection with the bread demonstration project. The results obtained are reviewed and analyzed and conclusions drawn regarding the introduction and marketing of soy fortified bread in Korea.

GOALS AND OBJECTIVES

The goals of the combined activities of the Grant program and the bread demonstration project were:

1. The utilization of protein fortification technology for the commercial production of fortified bread acceptable to the consumers; and
2. Successful introduction into the marketplace of a soy fortified bread competitive in quality and price to unfortified bread.

The activities described in this report were carried out in phases in support of the objectives and included product modification, test market introduction, and market-wide distribution. Also carried out was a comprehensive bread survey to determine the buying and consumption habits of bread users in the general population. The results of that survey were coupled with data gathered from the test market introduction and used by Sam Lip Foods Company Ltd. to assist them in reaching their decision to proceed with the market-wide distribution phase.

PRODUCT MODIFICATION

The product modification phase involved the basic transfer of soy fortification technology, its application to sustained commercial production,

limited product acceptability testing, and resolution of formulation problems.

Technology Transfer

The soy flour fortification technology that was transferred and used in this project for the production of soy fortified bread (SFB) was developed in the United States by Kansas State University through the sponsorship of AID. Specific details on the development of this protein fortification technology and its various applications can be found in the scientific literature (10,12,13,14). Basically the technology as developed and used in Korea is based on (1) the addition of 12 parts of soy flour for each 100 parts of wheat flour used in the dough, (2) the inclusion of 0.5 part of the dough conditioner sodium stearoyl-2-lactylate (SSL) for each 100 parts of wheat flour, and (3) the use of additional water to accommodate the absorption requirement of the soy flour. The technology as developed requires the use of the SSL dough conditioner to strengthen and improve the dough properties to compensate for the deleterious effects that result from the addition of soy flour alone to a dough. The use of SSL allows the production of bread with acceptable quality when 12 parts of soy flour are added in the bread formula.

The soy flour used in the technology transfer baking tests and subsequently through all of the commercial production of SFB was food-grade, defatted, toasted soy flour produced in Korea by the Dong Bang Oil Company. It was of acceptable quality but not as light in color or as mild in odor as similar flours produced in the U.S. A sample of U.S. soy flour had been provided for initial demonstration purposes before the start of the technology transfer studies but the project was designed for and based on the use

of locally available soy flour. The selection of using domestically produced soy flour was based on two primary considerations (1) price and (2) ease and constancy of availability. The factor of price was quite important because as one of the objectives of the project was the production of a fortified bread that would be competitive in price to unfortified bread, it was necessary to retain a low manufacturing cost so the selling price of fortified bread would not be increased over that of regular bread.

The technology transfer involved two steps. The first consisted of experimental and pilot-scale baking tests to establish the functionality of soy fortification technology using local ingredients and the regular bread formulation. The results of these tests demonstrated the overall feasibility of the production of SFB with acceptable market quality as judged by baking technologists and Sam Lip officials. The second stage was the testing of the formulation and procedures in sustained commercial-scale production to ensure the ability to provide SFB of commercial quality on a continuing basis in the quantities needed to support a test market introduction and eventual market-wide distribution. This testing also was concluded satisfactorily.

The major complication that was experienced in the technology transfer activities was a change in policy by the Korean government which for awhile resulted in only low protein flour being available for the production of bread. This problem is reviewed later in more detail. Eventually medium quality flour was made available for use in bread production. This flour was not as high in protein content nor had the overall quality for bread production as the high protein (strong) flour originally available. A final series of commercial production trials was made in May 1976 to check

the quality of the SFB produced from medium strength flour before initiating the test market introduction of SFB. The final formula established for SFB is shown in Table I and is compared to the formula for regular bread.

All through the technology transfer baking activities, the SFB was judged and evaluated by Sam Lip personnel both for general bread quality per se, i.e., physical characteristics, odor, and flavor, and as regarded its being of commercial (market) quality by having typical bread quality attributes. The fortified bread produced as a result of these activities was considered to be of market quality and capable of receiving consumer acceptance.

As indicated earlier, the production costs and potential selling price of SFB were important factors in the project. Preliminary cost analysis calculations were made at different stages throughout the technology transfer phase. The analyses were based on a comparison of the ingredient costs between regular and fortified bread since the method of manufacture of each type of bread was essentially the same. The initial cost analysis showed SFB to be approximately 10 percent less than for regular bread. The latest cost analysis as shown in Table 1 shows SFB to be five percent higher. It should be pointed out that the product modification stage stretched over about one and one-half years and the prices of ingredients changed although not always increasing on every ingredient. For example, the cost of soy flour rose from 210 won to 240 won per kilogram while the cost of SSL declined from 1800 won down to 1650 won per kilogram. These variations in ingredient costs resulted in the production cost of SFB to range from -10 to +5 percent of that of regular bread.

Table 1. Final Formulation and Cost Analysis of Fortified Bread Used in Test Market

Ingredient	Price Won/kg.	Amount Used (Kg.)		Formula Cost (Won)	
		Regular	Fortified	Regular	Fortified
Flour	137	100.0	100.0	13,700	13,700
Yeast food	383	0.2	0.2	77	77
Yeast	280	3.0	3.0	840	840
Sugar	431	3.0	3.0	1,293	1,293
Glucose	270	2.0	2.0	540	540
Salt	45	2.0	2.0	90	90
MSG	800	0.2	0.2	160	160
Fat	431	2.0	2.0	862	862
Soy Flour	240	---	12.0	---	2,880
SSL	1,650	---	0.5	---	825
Water	---	60.0	72.0	---	---
TOTAL		172.4	196.9	17,562 ^{1/}	21,267 ^{2/}

^{1/} Cost per Kg. of regular dough 102 won.

^{2/} Cost per Kg. of fortified dough 107 won.

Acceptance Testing

In order to get a broader evaluation of the physical and organoleptic qualities of SFB in addition to the judging and evaluation of the SFB carried out by Sam Lip personnel, several taste and acceptance tests were conducted by the Company in order to measure the consumer acceptance of SFB.

One test involved seventy-one company employees representing all job types and levels but heavily weighted in the lower income positions. The results showed a generally favorable response to the fortified bread although differences in odor and texture were noted between the fortified bread and regular bread. Among those who regularly eat bread a willingness to buy the fortified bread was expressed if the price was the same as for regular bread.

A second acceptance test was carried out with 63 members of a Federation of Housewife's Club. Again a slight difference in odor was noted in the fortified bread but no serious defects were reported. Samples both of fortified and regular bread were supplied to Club members to be taken home and tried by the family. Follow-up telephone interviews reached only a small number of the participants but the general summary of the responses was that their families did not note a quality difference in the breads and in cases where difference was noted, it was not considered objectionable.

A third consumer acceptance test was carried out using the system of distributing both regular and fortified bread through the milk deliveryman and following-up to the participants with a questionnaire. Of 200 families contacted, 101 responses were obtained. The summary of these responses showed (1) a difference was noted between regular and fortified bread,

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(2) the fortified bread was preferred on the basis of flavor which was the difference noted, and (3) the quality factors of color and texture were essentially equal between the two types of breads. In response to an inquiry about pricing, about 50 percent indicated an intent to buy fortified bread as long as the price was the same as for regular bread but reflected strong resistance to buying fortified bread if it were priced higher than regular bread.

In two of the three consumer acceptance tests responses expressed a willingness to purchase SFB if available "at the same price" as regular bread. Since as indicated earlier the "manufacturing cost" of fortified bread was no more than that of regular bread and might be lower, it appeared that the market price of fortified bread could be the same as that of regular bread and not need to be priced higher because of manufacturing costs. At this point, pricing did not appear to pose a problem in the consideration of marketing fortified bread.

The results of these tests were to indicate the degree of consumer acceptance for SFB of the quality expected to be supplied in the test market introduction and market-wide distribution. However, in the final project report recently issued by the Sam Lip Company titled "The Low-Cost Nutritious Bread Development Program" it is stated that the bread evaluated by the consumers in these tests was of better quality than that subsequently produced and used in the marketing activities since the test breads were made with the high protein (strong) flour and imported soy flour instead of domestic soy flour. (7) The reasons given were that the Company did not believe the prohibited importation of high protein wheat would be sustained and that the imported soy flour was of better quality than the locally

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available flour. Similar tests were never repeated with SFB made from medium strength flour and domestic soy flour such as was actually used in the test market introduction.

The summary of the results of these consumer acceptance tests even as they were conducted indicated a general though not overwhelming acceptance to SFB. These results did not seem to cause concern to the Company management and based on these (favorable) results and on the optimistic view of the marketing prospects, the Company decided to move on to the test market introduction of soy fortified bread.

Modification for Low Protein Flour

Soy flour fortification technology was developed using, and was designed to be used with high protein (12-13 percent) flour with strong baking characteristics capable of producing bread of good quality. Flour of this quality was available and used in the early technology transfer stage of this project. However, a policy was adopted by the Government of Korea just before the scheduled start of the test market introduction in 1975 which prohibited the importation of wheats with more than 10 percent protein which in effect eliminated the availability of high protein flour for bread production. This policy presented new technical problems for the program regarding formulation and procedures since neither regular nor fortified bread generally are produced from flours with such low protein content or weak characteristics.

Baking tests were carried out to resolve the technical problems and adjustments were found which produced SFB with what was considered of acceptable quality in general and when compared to regular bread made from

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the same flour. However these modifications were never implemented as the Korean government reversed the earlier policy and established a program for the importation of wheats which produce flours of medium (11.0 - 11.5 percent) protein content and baking characteristics. Medium strength flours were used to produce the breads for the test market introduction and market-wide distribution.

Summary of Product Modification

The results of the product modification phase included the successful transfer of the technology for the production of soy fortified bread and a demonstration of its feasibility and applicability for the commercial production of fortified bread. This was accomplished despite the highly unusual situation of having to use three flours of considerably varying qualities during the product modification phase. In addition, it was demonstrated that the production cost of SFB is essentially the same as that of regular bread which should allow the fortified bread to be placed in the market at a price equal to or competitive with that of regular unfortified bread.

The quality of the SFB was shown to be essentially the same as regular bread made from the same flour in regards to general bread characteristics and commercial (market) quality. These evaluations of quality and marketability were made by the technical and marketing personnel of the Company. Consumer acceptance results obtained for SFB of better quality than that eventually used in the test market was generally favorable and rated as acceptable. These evaluations produced a general impression regarding the quality, consumer acceptability and marketability of SFB which when coupled with an optimistic view of the marketing prospects led to the Company's decision to carry on with the test market introduction.

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MARKET TESTING AND CONSUMER EVALUATIONS

Establishing the feasibility of introducing fortified bread requires both the technical studies and activities described in earlier sections of this report and an evaluation of the market for bread in general and the new product in particular. While it was known that bread consumption in Korea was increasing, little current data were available regarding the nature of bread purchasing and use by Korean consumers. Also undocumented were the characteristics of those households which account for the majority of bread consumption. In addition, the quality of the fortified bread, while judged to be of comparable quality in laboratory and limited consumer tests, needed to be evaluated in a more realistic market setting.

The activities undertaken to study the bread market and consumers' opinions regarding the fortified bread included both surveys and consumer evaluations of product quality. A general survey was conducted to identify basic bread usage patterns among households. In the test market phase sales were monitored to evaluate the level of sales which could be achieved. In conjunction with this, a sampling of fortified bread purchasers was obtained who then were questioned regarding their evaluations or acceptance of fortified bread based on product quality.

The purposes of the marketing studies were twofold: (1) to establish basic information about bread consumption in Korea and, (2) to evaluate the sales of fortified bread under market conditions and obtain opinions of representative consumers regarding the product. Procedures and results are discussed in the following sections. Only the highlights are presented here as the details are available in several reports relating to specific parts of the study (1,2,4,5,6). The final report submitted by Sam Lip Foods

Company provides an overview of the project from the Company's perspective (7). Presented here is the general approach used and sufficient detail on findings to permit the reader to understand the observations made and the conclusions reached which are discussed in later sections.

Procedures

Since the concept of selling fortified bread in Korea was the result of a unique set of circumstances as described above, some of the background market information which would normally provide a foundation for the product development stage was not readily available. The fact that bread is not a major food consumption item in Korea also contributed to this lack of data on the product, its market and its consumption. A two stage market research effort was organized consisting of several parts as noted below, part of which focused on obtaining important background information.

Stage I: Study of bread purchase and consumption patterns among a representative sample of households in the Seoul market.

Stage II: Market test and related studies of consumer acceptance.

Part 1. Base line study of bread users in test market stores.

Part 2. Evaluation of consumer opinion regarding fortified bread quality and related factors.

Part 3: Collection and evaluation of sales results from test stores and market areas.

Part 4: Evaluation of responses of consumers who were found to be "non-users".

Stage I: Bread Usage Survey

The purpose of this first study was to describe current bread usage patterns among a representative sample of households. This was designed to provide a base of information against which the usage of the fortified bread could be measured. A local commercial research firm was contracted to carry out this phase of the research.

The sample consisted of 750 households selected at random, using the method of multi-stage probability sampling. These households were selected to be representative of the 1,400,000 households in Seoul, Korea. The city of Seoul was to be used as the test market area because it represented the key consumption area for bread in the country and the area in which the fortified bread was to be marketed. Because of its size, the Seoul market was of paramount importance in the Sam Lip marketing strategy. Without success in Seoul, the Company could not justify marketing the product elsewhere in the country.

Housewives were interviewed on a personal, face-to-face basis, using a structured questionnaire. The questionnaire was designed to obtain information on most aspects of bread purchase, storage, serving and consumption in the household, including both qualitative and quantitative information and relationship of bread to other foods. Household classification questions were also included for the purpose of describing the relationship between levels of bread consumption and basic household characteristics such as socio-economic level or size.

This survey was conducted during the spring of 1976 and results made available during the summer. These results, since they were obtained from a representative sample of households in the market provided a check against the results of later surveys which were limited by the market test design

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to only selected areas of the Seoul market.

Stage II: Market Test and Related Surveys

The critical test of any new product is its performance in the marketplace. Once a product has been evaluated by consumers in a taste panel setting and is judged to be acceptable, a test market may be designed to permit the evaluation of the product in a typical market setting. The product, its price, package, promotion program, distribution system and other marketing components may be evaluated in this way.

The market test for soy-fortified bread was designed and carried out after completion of product development activities and limited consumer acceptance tests had convinced bakery management that the product was sufficiently refined to proceed to this stage. The design and implementation of the market test and related evaluations of sales and consumer acceptance was contracted with the Research Institute for Economics and Business at Sogang University. The procedures and results are described in detail in a report entitled "A Study on the Demand and Market Development of Low Cost Nutritious Bread in Korea" by Whang and Jo (6). A brief description of these procedures is presented here.

Marketing Strategy and Establishing the Test Market: The Sam Lip Company is a consumer food products company emphasizing baked products, primarily bread, with national distribution in Korea. The Company's strategy in developing SFB was to add to their product line and to provide a nutritionally improved bread product to Korean consumers. Product development was discussed in an earlier section. Packaging was planned to complement their existing product line. Promotion consisted of in-store posters,

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information handouts and free samples given out in the test stores (6, pp. 95-103). Mass media advertising could not be used because the product was not available in all the stores in the Seoul market.

The pricing decision was the most difficult to resolve in finalizing the test market strategy. An important consideration in the project was to determine if SFB would be purchased by households thought to be nutritionally at risk if the price were the same as regular bread. These households were hypothesized to have generally lower income and likely to be sensitive to the retail price of bread. Retail prices for many basic food items are government controlled in Korea including regular white bread. While a cost analysis indicated that SFB would be manufactured and consequently sold at approximately the same price as regular bread, the Sam Lip Company felt that the control price (₩ 95 per loaf) was too low to provide an adequate level of profit, and they had applied to the government for permission to raise it. (7) It was also recognized that pricing SFB above the comparable regular bread could have a negative impact on sales particularly among lower income households. Due to these circumstances a pricing experiment was designed in which three different retail prices would be tested, the lowest of which being equal to the current price of regular bread.

Another basic consideration in designing the test market was the importance of maintaining control over distribution. This is necessary both for efficiently gathering sales information and to permit better management of sales and promotion efforts. For these reasons test areas were selected which coincided with the boundaries of existing sales territories.

The Sam Lip Bakery had 60 dealerships (sales territories) in the Seoul market. To maintain a manageable size and yet achieve some representativeness in the sample, eight of these were chosen as test markets. They were

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selected to represent a full range of economic levels found in the market.

Four of the test market areas (dealerships) were assigned a price of w 95 per loaf of SFB, one at w 140 per loaf and the other at w 180. The higher of these two (w 180) was the maximum price the government would permit while the w 140 price represented a point about halfway between the other two. Care was exercised to match the dealerships assigned to the three price level groups according to socio-economic characteristics so that price would be the only major difference among the groups. The label weight of the loaf was 450 grams which was the minimum permitted by the government. In each store the SFB was displayed side-by-side with the small regular bread at w 95 per loaf.

Within each of the eight test market areas, approximately 10 stores were selected to represent the area and provide a basis for sampling purchasers of bread and the soy-fortified bread. In most of the areas one or two larger "supermarket" types of stores were included. The final sample consisted of 84 stores.

Distribution of the SFB was handled through normal company channels from the bakery to dealer warehouses and from there by salesmen using small vehicles or bicycles to the designated retail stores. Dealers and salesmen were instructed to monitor product movement and try to maintain stock on the retail shelves at all times. Procedures included a policy for handling returned goods and for the distribution and placement of posters and handout materials in retail stores. The research team also monitored these activities to insure that instore promotion of the product was adequate.

Part 1. Survey of Bread Purchasers in Test Stores. One of the main objectives of the test market was to determine the level of sales that could

be achieved by SFB under normal market conditions. An equally important objective was to determine who the purchasers were and whether the bread was purchased by consumers who differed in any significant way from typical bread consumers. To achieve this second objective a survey of SFB purchasers was planned (Part 2 below). In order to have a sample of bread users from the same areas against which to compare, a survey of bread purchasers was conducted using the test market stores as a point of contact. The survey discussed above in Stage I was carried out as a means of validating, with a market wide representative sample, the information to be collected here.

This part of the study was conducted using a questionnaire which covered many of the aspects of bread purchase and consumption outlined for Stage I above. Interviews were conducted on a face-to-face basis in the retail store with persons who were observed to be bread purchasers. A total of 381 interviews were completed.

Part 2. Survey of Soy-Fortified Bread Purchasers. This was accomplished by using a two-step procedure involving identification of SFB purchasers in the store and then interviewing them at their homes after sufficient time had elapsed for them to use the product. Interviewers were stationed in the test stores at randomly assigned times to obtain the cooperation of persons observed to have freely made a decision to buy the SFB. The primary purpose was to obtain their cooperation for the follow-up interview. Interviewers then went to the purchaser's home at the agreed upon time with a questionnaire and evaluation form. Topics covered included basic bread purchase and consumption patterns, ways the SFB was used, household demographics, reasons for purchasing and an evaluation of quality of the bread on

several factors including flavor, texture, odor, and color. Of the 455 purchasers of SFB contacted in the stores, 247 completed interviews were obtained. These were fairly well distributed among the test market areas.

Part 3. Collection and Evaluation of Sales Results from Test Stores.

Sales data from the test stores were collected by the bakery sales staff and compiled at the dealership level. Records were maintained for the four major bread items in the store; regular bread in both 400 and 800 gram loaves (priced at ₩ 95 and ₩ 190, respectively), milk bread in a 450 gram loaf (₩ 200) and the soy-fortified bread in a 450 gram loaf.

The test period was planned for a three to six month time period to allow the market to adjust. However, due both to plant production problems and sales problems, which will become apparent in the discussion of results (pp. 31-34), it lasted for a period of less than two months from July 8 through August 27 of 1976. Experimental designs in a test market such as this were not common in Korean marketing research. In fact, test markets were not usually conducted in any form (7). Because of the inexperience of personnel in implementing such a research effort many problems were encountered beyond those typically found. As a result, much variation in the sales data exists reflecting the effects of uncontrolled variables. Despite these problems, the data were found to be reasonably accurate and of sufficient quality to provide one basis for evaluation of the product.

Part 4. Survey of "Non-users". To complete the evaluation of the product it was considered important to examine the reasons why known bread users chose not to purchase the SFB. To accomplish this a survey was conducted using the list of bread purchasers obtained in the bread users survey (Part 1 above) as a basis for sampling. These households were each contacted

after SFB had been available for several weeks to determine if they had purchased it. If they had, they were included in the purchaser group and interviewed as in Part 2 above. Since market penetration was not expected to be high, it was anticipated that the majority of households contacted would be non-users. Those not purchasing the SFB were interviewed using a questionnaire which covered typical bread consumption habits, reasons for not purchasing and household demographics. A sample of 195 respondents, well distributed across all test market areas, was obtained.

Another evaluation was also attempted by using a follow-up mail survey to SFB purchasers interviewed earlier (Part 2 above). The purpose of this was to determine how many had discontinued usage and the reasons why. A limited response was obtained from this (87 completed interviews) and problems of availability of SFB in stores were being encountered by the time the survey was conducted. The results of this survey are therefore of limited value. This survey was conducted after the test market was completed and the marketwide introduction had occurred.

Results

Before reviewing the results of the consumer evaluations and market test it is appropriate to restate the basic questions which this phase of the project was designed to answer. With these in mind the discussion is then organized to provide a summary of those results which bear specifically on these questions.

A major area addressed in this research was "Who are the bread purchasers?" and as an extension of that "Are purchasers of soy-fortified bread different in any significant way from this general group of bread purchasers?"

The answers to these questions provide insight into the potential for reaching target populations with this nutritionally improved product.

A second major area of interest was to answer the question "What do consumers think of the SFB product?" The answer to this question regarding several facets of the product provides guidance to product development and marketing programs. This information also may help in interpreting the results of the test market.

A third major question of interest was "How well will this product sell under typical market conditions?" The results of the test market provide answers to this question which is of course a major measure of success or failure for the product. A fourth question, related to the consumer evaluations, was "What are the reasons why consumers discontinued purchasing SFB or chose not to purchase it at all?"

Characteristics of Bread Purchasers

General Bread Use: Bread use in Korea is of fairly recent origin and usage is still somewhat limited though apparently growing. While statistics on bread consumption are not readily available, data indicate that per capita consumption of wheat flour more than doubled from 1965 to 1975. Expenditures for bread did not grow significantly relative to total expenditures on food from 1971 to 1974. Most observers indicated prior to the study that bread consumption was growing but still limited to higher income households who maintained a western style kitchen and were convenience oriented.

In the general consumer survey (Stage I) it was found that 11 percent of the households in the Seoul market consumed bread more frequently than once per week, while 75 percent never used bread (Table 2). No comparable survey data could be found to provide an assessment of change over time in

Table 2. Characteristics of Bread Users in Seoul, Korea 1976.^{1/}

<u>Housewife Age</u>		<u>Heavy user</u> ^{2/}	<u>Light user</u> ^{2/}	<u>Non-user</u>	<u>Total</u>
20 - 29	(N=115)	3%	10%	87%	100%
30 - 39	(N=230)	15	15	70	100
40 +	(N=255)	11	15	74	100
<u>Education</u>					
None & primary	(N=253)	5	8	87	100
Middle & high	(N=286)	14	18	68	100
College & over	(N= 61)	23	15	62	100
<u>Socio-Economic Status</u>					
Upper	(N= 78)	31	17	52	100
Middle	(N=152)	14	22	64	100
Lower	(N=370)	6	9	85	100
<u>Occupation of Household Head</u>					
Prof. & Mngr.	(N= 23)	17	13	70	100
Self-employed	(N= 33)	15	12	73	100
Cler. & skilled	(N=233)	15	13	72	100
Sales workers	(N=164)	9	19	72	100
Unskilled workers	(N= 88)	2	4	94	100
Unemployed	(N= 59)	8	14	78	100
<u>Kitchen Structure</u>					
Western style	(N=179)	21	14	65	100
Traditional style	(N=421)	7	13	80	100
<u>Electric Oven</u>					
Have	(N= 78)	26	21	53	100
Do not have	(N=522)	9	12	79	100
<u>Toaster</u>					
Have	(N= 98)	31	23	46	100
Do not have	(N=502)	7	12	81	100
<u>Total</u>		<u>(N=600)</u>	<u>11%</u>	<u>14%</u>	<u>75%</u>
					<u>100%</u>

^{1/} Source: Survey of Bread Consumption Patterns in Seoul. ASI Market Research Inc. (Korea) August 1976. Table I-2 pp. 20-31.

^{2/} Note: Heavy user: At least several times week.
Light user: Once a week or less often.

this percentage. In a 1971 study it was found that 83 percent of all Korean households rarely or never consumed bread which suggests a slight increase in usage in 1976 (10, pp. 53-54).

However, because of differences in data grouping, a direct comparison cannot be made.

The results of this survey confirm that bread users were more likely to be in college educated, upper class families, housewives' age 30 to 39 with a western style kitchen (Table 2). Even among the upper class households, however, more than 50 percent did not use bread. The main bread users in the family were found to be 5 to 14 year-old children.

The majority of bread users stated that they started eating bread relatively recently. About 60 percent of the heavy users said they have been eating bread for about four years or less, while two-thirds of the light users said the same. Children were most frequently cited as the members of the household most influential in starting to consume bread.

The survey of bread users conducted in the test market stores confirmed the basic characteristics described above. However, it was found that a much higher proportion of the sample obtained in this fashion was in professional, managerial or self employed categories (Table 3). This suggests that the sample of households obtained through the test stores was not entirely representative of the total population of bread users in the Seoul market.

Comparison with Soy-Fortified Bread Purchasers. Households observed to purchase SFB are compared with all bread using households in Table 4. Income was only available for one of the surveys so occupation of households head was used as a proxy for a more general classification of socio-economic

Table 3. Comparison of Bread Users from General Survey and Survey in Test Market Stores; by Occupation of Household Head.

Occupation of Household Head	Bread Using Households			
	General survey ^{1/}		Test store survey ^{2/}	
	number	percent	number	percent
Managerial and Professional	8	5.5	62	16.5
Self-employed and Middle Management	9	6.2	108	28.8
Clerical and Skilled	65	44.5	84	22.4
Sales Workers and Technicians	46	31.5	68	18.1
Unskilled	5	3.4	16	4.3
Unemployed and Others	13	8.9	37	9.9
Total	146	100.0	375	100.0

^{1/} Derived from Table I-3 of ASI report (1).

^{2/} Derived from Table II-14 of Whang report (6).

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level. A strong correlation between occupation and income was found in those surveys where income was obtained. The occupational classifications in Table 4 are listed in order of descending income levels.

These data clearly indicate that households purchasing SFB are similar to all bread purchasing households in terms of occupation and related characteristics such as income. These data are not available separately for each pricing area, thus the effect of price on the demographic characteristics of SFB purchasing households cannot be evaluated. In the aggregate, there is no evidence to indicate that lower income groups purchased SFB more frequently or in greater volume than other types of bread. The effect of price will be examined later in connection with consumer evaluations and sales data.

Consumer Evaluations of Soy-Fortified Bread

Interviews with purchasers of SFB revealed the opinions held regarding various characteristics of the product. In general it was viewed as a reasonably priced, nutritious bread but of only poor to fair quality depending in part on SFB price and the type of bread normally purchased (6, p.67). The single most important factor in selecting bread was identified as taste.

While SFB was generally thought of as reasonably to inexpensively priced, these opinions were affected by the SFB pricing level. In those areas where SFB was sold at 140 and 180 won per loaf, there were proportionally fewer respondents referring to it as inexpensive (6, Table II-27).

Table 5 provides a useful overview of opinions held by respondents regarding the major quality characteristics of SFB. The majority of responses fall in the fair to poor range for all four characteristics. Flavor is

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Table 4. Comparison of All Bread Purchasing Households with Households Purchasing Soy-Fortified Bread; by Occupation of Household Head.

Occupation of Household Head	<u>All bread purchasers^{1/}</u>		<u>SFB purchasers^{2/}</u>	
	number	percent	number	percent
Managerial and Professional	62	16.5	73	16.0
Self-employed and Middle Management	108	28.8	165	36.3
Clerical Workers	84	22.4	116	25.5
Sales Worker and Technician	68	18.1	51	11.2
Unskilled workers	16	4.3	8	1.8
Others	37	9.9	42	9.2
Total	375	100.0	455	100.0

^{1/} Derived from Table II-14, Results of Survey I; Whang report (6).

^{2/} Derived from Table II-14, Results of Survey II; Whang report (6).

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Table 5. Opinions of Bread Users Regarding Selected Quality Characteristics of Soy-Fortified Bread. 1/

Respondent Opinion	Quality Characteristics			
	Flavor	Odor	Texture	Color
	- - - percent ^{2/} - - -			
Excellent	4.0	1.6	3.2	2.4
Good	21.1	12.6	19.4	29.1
Fair	25.9	46.2	32.4	40.5
Poor	47.0	38.5	42.5	26.7
Very Poor	2.0	1.2	2.4	1.2
Total	100.0	100.0	100.0	100.0

1/ Source: Table II - 29 of Whang report (6).

2/ Total observations for each column is 247.

particularly low with nearly half of the respondents rating it as poor or very poor. Taste panels carried out prior to the market test yielded opinions which were somewhat more positive than this (3). However close examination of the data provided in Sam Lip progress reports show that a significant number of consumers detected a "beany" or "fishy" flavor even in the best quality formulation that was tested. It seems likely that when people purchased the product in a normal market environment they were more willing to express dissatisfaction as reflected in the data in Table 5.

The ratings presented in Table 5 represent a composite of all SFB purchasers interviewed. Some were normal users of regular bread while others typically used milk bread which is considered by many as having better quality characteristics and is priced substantially higher than regular bread. When these two groups of people were separated out it was observed that the SFB fared worse against milk bread than it did against regular bread (6, Table A, II-7). Table 6 presents the distribution of ratings for those respondents who typically used regular bread. While, on average, the opinions regarding SFB are somewhat more favorable, the results are consistent with Table 5 and suggest a concern on the part of respondents regarding quality of SFB. Of the four characteristics, flavor received the lowest rating.

In view of the fact that "taste" was identified as the primary reason for buying a particular bread product this low rating for flavor takes on added significance. While persons interviewed were not asked to compare the quality a SFB directly with regular bread, the fact that ratings for flavor are consistently lower than for any other product attribute suggests that flavor was perceived to be poorer for SFB than for regular bread.

The purchaser opinions regarding SFB shown in Table 5 were also separated into three groups according to the price charged for SFB (8). Some

Table 6. Opinions of "Regular" Bread Users Regarding Selected Quality Characteristics of Soy-Fortified Bread. 1/

Respondent Opinion	Quality Characteristics			
	Flavor	Odor	Texture	Color
	- - - percent ^{2/} - - -			
Excellent	3.0	0.0	3.0	4.0
Good	23.0	13.0	29.0	32.0
Fair	30.0	52.0	31.0	42.0
Poor	43.0	34.0	36.0	22.0
Very poor	1.0	1.0	1.0	0.0
Total	100.0	100.0	100.0	100.0

1/ Source: Table 26; Whang Second Progress Report, June 1977 (5).

2/ Total observations for each column is 100.

differences were found for flavor and odor. In each case the most negative ratings were found in the areas where SFB was priced the same as regular bread. In the two higher priced areas opinions regarding these two factors were less unfavorable. The reason for this difference is not clear since it would seem logical that persons paying a higher price would be more critical of the product. Apparently however, they were somewhat more willing to overlook taste problems. This may indicate that persons who were willing to buy the product at the higher price did so because of some other expected benefit such as nutritional value. When tabulated separately by household income it was observed that higher income households tended to give SFB less favorable ratings.

Although differences in ratings were observed among different subgroups of purchasers, the evaluations were low even in the best of the subgroups. In only one subgroup did more than a third of the respondents indicate that SFB was either good or excellent on any quality factor. In most cases less than 25 percent gave ratings that favorable.

Many of those who purchased SFB once did not continue to use the product. Forty-five percent bought it only once while about 20 percent purchased it more than four times (6, Table II-32). The reason most often cited for discontinuation of purchasing was "poor taste", with availability of product, lack of interest and harsh texture also being contributing factors but at a much lower level of response (6, Table II-33). Price or economy was identified as the problem by less than two percent of the respondents. A limited followup mail survey, conducted after the test market was completed and market wide distribution was underway, confirmed these responses but availability of product in the retail store had become the major limiting factor by that time (6, Table II-34).

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Analysis of Sales Volume During Test Market

The ultimate reflection of success or failure is usually found in a measurement of the sales volume reached by the product. As indicated above, sales records were maintained during the test market and the marketwide distribution period which followed. An examination of these figures reveals some of the problems encountered in trying to successfully market SFB.

Results presented in Table 7 summarize the sales figures during the two month market test period. The relatively low sales levels for all bread in a typical store is evidence of the difficulty encountered in extending the product line by adding soy-fortified bread. With only 10 or 15 total loaves of bread per day being sold in a typical store there is not a great deal of opportunity for gaining additional shelf space for a product line extension. If the few larger supermarkets are excluded average sales levels are even lower than indicated in Table 7. This problem is one which should be considered early in the development of any new product development and marketing strategy.

During the market test soy-fortified bread sales appear to have declined over time. There was a general decline for most bread products from July to August but it was more severe for SFB (Table 7).

The influence of price on sales of SFB is dramatically illustrated. During the first month sales of soy-fortified bread in the stores where the price was w 140 were little more than one-half the sales in w 95 stores. A further reduction is seen in the w 180 stores (Table 7). A similar relationship held true for the second month though sales in all three pricing areas declined, essentially disappearing in high price stores.

Table 7. Summary of Bread Sales per Store-day During Test Market Period for Selected Types of Bread, by Retail Price Level of SFB; Seoul, Korea, July-August 1976. ^{1/}

Price of SFB	No. of stores	Month	Average sales per store-day				
			SFB	Regular bread ^{3/}		Milk	Total for all bread
			450g	800 gr.	400 gr.	bread ^{3/} 450g	
----- units ^{2/} -----							
w 95	40	July	3.3	2.5	0.4	7.2	13.4
		August	2.8	2.2	0.5	8.1	13.5
w 140	22	July	1.8	2.1	0.5	8.9	13.3
		August	0.2	1.5	0.5	5.9	8.1
w 180	22	July	1.2	1.3	1.7	9.0	13.3
		August	0.0	1.8	1.1	7.0	9.9

^{1/} Source: Tables III-10 and III-11 of Whang report (6).

^{2/} A retail unit is defined as a loaf regardless of size.

^{3/} Prices for other bread products were:

Regular bread, 400 gr: w 95

Regular bread, 800 gr: w 190

Milk bread, 450 gr: w 200

It is important to note that when SFB was marketed at the same retail price as regular bread it outsold that bread. It is clear from these sales figures that the strongest sales item in the bread line was milk bread which was relatively high priced and identified generally by consumers as a high quality product.

These results are reinforced when examined on a share of total sales basis (Table 8). SFB achieved a share of nearly 25 percent during the first month when sold at a price equal to regular bread. Its share was much lower where priced higher. While the share dropped during the second month in the w 95 markets, its decline was much more rapid in the higher pricing areas.

Table 8. SFB Share of Total Units of Bread Sold by Pricing Area and Month^{1/}

Pricing area	<u>SFB share of total units sold</u>	
	July	August
	percent	
w 95	24.7	20.6
w 140	13.5	2.9
w 180	9.2	0.2

^{1/} Source: Tables III-12 and III-13, Whang report (6).

as

Discussion of Market Test Results

It is clear from the evidence presented above that the sales achieved during the test market were below the level needed for success except for the stores where SFB sold for the same price as regular bread. The lack of success of the product in the marketplace may be traced to three basic factors. High price perceived poor product quality and inadequate promotion and sales support. The price impact is demonstrated in the sales figures illustrating that SFB did sell when priced comparable to regular bread but did not sell at prices substantially higher.

Product quality as perceived by consumers apparently was a significant problem in markets where it was priced comparable with milk bread. It is evident that the overall quality of SFB was not competitive with milk bread and sales suffered accordingly. Consumer evaluations of SFB revealed a low rating of the product particularly in the area of flavor or taste which many had identified as the key factor in bread purchase decisions. These evaluations of product quality were quite low particularly in light of the fact that the earlier in-house taste panels conducted by Sam Lip did not reveal any significant problems. This difference is apparently due to the fact that the soy flour used was changed after the taste panels were completed to a local soy flour of inferior quality (7).

Inadequate promotion and sales efforts are identified by Whang (6, pp. 121-122) as contributing substantially to lack of success of the product in the test market. Because of the limited areas covered in the test market, mass media advertising was not used and promotion efforts focused on in-store materials. Considerable variation existed in the sales data from store to store and area to area which Whang traces to uneven promotion and sales efforts by company personnel, dealers, salesmen, and retailers.

Volume and margin were highest for milk bread so emphasis at all levels seemed to focus on this apparently more desirable product. If consumers had an interest in SFB this may have been stymied by the lack of availability in the retail store. Store owners and salesmen failed to keep the product on the shelf. In the w 140 and w 180 pricing areas, this progressive decline in SFB sales and in-store promotional efforts was noticeably increased when sales volumes did not materialize early.

While soy-fortified bread was able to compete with regular bread when priced comparably, many consumers compared it with milk bread which sold at a much higher price and was considered to be of much preferred quality. SFB could not compete at any price with milk bread which was by far the dominant item in the product line. Inadequate promotion and sales efforts as well as inherently low average sales volumes per store also contributed to the lack of success of SFB in the test market. It is true that regular bread also suffered from low sales levels, but Sam Lip was required to market this product because of a commitment to the government to offer a low priced bread for consumers.

Market-wide Distribution

The test market was terminated at the end of the second month. After considering the sales results of the market test and alternatives available, the Sam Lip Company decided to proceed with a market wide introduction in November 1976 (7). At that time the full results of the consumer survey were not available and it was felt that the main factor in failure of the product at the intermediate price was lack of adequate promotion. They believed that the product could be sold successfully at a price higher than regular bread but lower than milk bread if a sound sales and promotion program was used in its support.

The Korean government operates a retail price control program which affects many staple food items including regular bread. The controlled price for regular bread was considered by the Company management to be well below that price which would cover all costs and provide a reasonable return on their investment. Since SFB was not subject to this price control program the Company was reluctant to price it at the same level as regular bread. Therefore the SFB price was set at w 160 per loaf even though at the time this was considerably above the price of regular bread. There was hope that the government would permit an increase in the price of regular bread to reflect changing costs thus resulting in a new price level which would be comparable to that for SFB (6, pp. 123-126; 7, pp. 58-62). A more detailed and potentially more effective promotion and sales program including mass media advertising was planned by the Company (6, pp. 128-130).

The results of the market-wide introduction of SFB are clearly summarized in Table 9. These data reflect the share for selected items of total unit sales of the Company during the period SFB was distributed. SFB maintained a share of 11 to 12 percent during the first two full months of distribution but began to decline in the third month and by the sixth month sales were down to slightly more than one percent. The decline in share in the third full month coincides with a discontinuation of promotion advertising programs. During this time total sales of bread were increasing for the Company due almost entirely to the increase in milk bread volume (6, Table III-17). By June 1977 milk bread unit sales exceeded the total of SFB and regular bread by more than five times. When analyzed by area of the market the data illustrates a generally uniform decline (6, Tables III-29, 30 & 31).

Table 9. Unit Sales of Selected Bread Items as Share of Total Units of Bread Sold by Sam Lip Co., December 1976 - June 1977. ^{1/}

Month	Share of total units		
	SFB ^{2/}	Regular ^{3/}	Milk Bread ^{4/}
- - - percent - - -			
1976 Nov. ^{5/}	14.2	29.5	56.3
Dec.	11.0	27.8	61.2
1977 Jan. ^{6/}	11.9	17.1	71.0
Feb.	9.0	18.0	73.0
March	5.5	18.1	76.4
April	3.7	17.6	78.7
May	1.2	17.8	81.0
June	0.1	16.4	83.5

^{1/} Source: Table III-17 of Whamg report (6).

^{2/} SFB represents one product, 450 gram loaf of soy-fortified bread priced at w 160.

^{3/} Regular represents a total units of both units of 400 gram and 800 gram loaves priced at w 95 and w 190, respectively prior to Jan. 17, 1977, and w 105 and w 210 after that date.

^{4/} Milk bread represents total units of both 200 gram and 450 gram loaves priced at w 100 and w 200, respectively.

^{5/} Market test launched during November. Period included last nine days of the month.

^{6/} Promotion and advertising efforts were discontinued during January when budgeted funds had been expended.

The Sam Lip Company made some "minor technical improvements" prior to starting market-wide distribution but no major changes in formulation in part because of no alternative supplies of soy flour were available (7, pp. 59-60). Limited results from a mail survey conducted after market-wide introduction indicate that the product was rated better on all quality factors when compared with earlier test market results (6, Table II-30). In contrast to the earlier survey results where flavor was rated below other quality attributes, flavor was rated no differently than other factors. Because of the limited nature of response to this survey it is not clear that these results are significant.

The evidence indicates that SFB was not considered by the Company to be a high priority item. Its sales potential was not nearly as good as that for milk bread. Consumers continued to view SFB as competing price-wise with milk bread and apparently considered it as a lesser quality product. Bread consumption is concentrated among high income groups and price is of less importance than taste or other quality characteristics. SFB was unable to develop any sustained consumer loyalty or following especially without the continuation of promotion and advertising. Whang observed that in-store promotional materials were ineffectively utilized and in many cases wasted (6, p. 167). He also observed that the advertising budget was inadequate and termination of advertising so soon after market-wide introduction contributed to declining sales. Sam Lip management, dealers, salesmen and retailers all focused their limited resources on the more readily accepted milk bread.

CONCLUSIONS

Conclusions can be drawn at several levels from this study. Some conclusions are appropriate relating to the overall case-study goal and objectives. Others relate more specifically to the implications for introducing a soy-fortified bread in Korea or another country with similar economic conditions and consumption characteristics. These are presented separately below.

General Conclusions

1. The results of the technical aspects of product development and manufacturing indicate that a fortified bread judged to be a good physical quality by an expert panel can be made on a continuing commercial basis. This can be done under varying conditions with respect to quality or strength (protein content) of the flour. Consumer evaluations, however, suggest that flavor problems did exist with the SFB that was test marketed. This may be traced to the use of locally available soy flour which was of a lower quality than the imported soy flour used in original consumer taste studies. The results at this level also show that protein fortification technology was feasible and applicable for the commercial manufacture of soy fortified bread from a technological standpoint and at a production cost essentially the same as that for regular unfortified bread.
2. Results from the marketing phase indicate that when priced equal to the lowest priced competing bread product, soy-fortified bread

can achieve a level of sales sufficient to warrant continued production and marketing. When priced substantially above regular bread, SFB cannot obtain a significant share of the market without a sustained advertising and promotion program. Consistent good quality product and effective continuing promotion and sales programs are of increasing importance to marketing success as the price of soy-fortified bread is raised relative to competing bread products.

3. This study provided no evidence to indicate that successful marketing of a fortified bread will contribute to resolving nutritional deficiency problems if the at-risk population is not among the regular consumers of bread. The fortified bread purchasers were generally of the same group that were already consuming bread products and in this situation were not representative of the nutritionally needy segment of the population.
4. Many of the marketing research procedures used in this study are not commonly employed in many developing economies. These procedures including both consumer surveys and in-store experimental designs can be successfully employed in the market test of such a product. Additional monitoring is necessary, however, because of insufficient familiarity among management personnel at all levels of the systems with the techniques and uses of marketing research. The lack of continuing data series relating to characteristics of consuming households, the level or frequency of product use and the low level individual firm sales contributes to problems encountered in this type of study in a developing country.

Conclusions Specific to This Market Environment

1. Bread consumption in Korea is increasing but is still concentrated among households with higher incomes, higher education and access to western style kitchens. Taste was found to be the single most important factor in bread purchase decisions.
2. The soy-fortified bread outsold regular bread when priced on a comparable level but when priced substantially higher, the fortified bread was not able to achieve a significant level of consumer acceptance and sales declined rapidly.
3. The lack of strong consumer acceptance was attributed to two major sources: a) low consumer opinion of bread quality particularly flavor or taste, and b) insufficient and unevenly distributed sales and promotion efforts.
4. Flavor or taste of SFB was rated particularly low by consumers during the market test. Approximately one-half of all respondents rated the taste of SFB as poor or very poor. This was lower than for any other quality factor.
5. Motivation of dealers, salesmen and retailers was not adequate to produce a consistent merchandising effort in the stores. This is the result in part of the fact that bread turnover in a typical store is quite low and the introduction of a new bread product was viewed as competitive with existing products. Retailers were reluctant to give up additional shelf space for a product which could not clearly demonstrate a high turnover. This problem was greater when SFB was priced closer to milk bread than to regular bread.

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6. Government retail price control programs significantly influenced the manufacturer's pricing decisions. The price for soy-fortified bread was set considerably higher than regular bread because the regular bread price was considered by the Company to be held at an artificially low level by government control. This relatively high price contributed to the failure to gain a significant share of the market.
7. The Company's total bread sales were expanded during the market-wide distribution phase primarily due to increasing success with milk bread, a product which was more expensive but preferred by consumers. In view of this success and other successful new products it was difficult for the Company to justify using limited manufacturing capacity and scarce managerial resources in support of the soy-fortified bread product which was viewed as having a lower profit potential. For these reasons relatively little attention was given to sales and promotion efforts or support in terms of production scheduling for the fortified bread product.

The concept of introducing a fortified bread product has been demonstrated in the project to be technically feasible. It seems possible that such a product can be produced and marketed under favorable market conditions where the price is the same as similar bread products and it is well supported by a promotion program. Its success is highly dependent on local marketing conditions, pricing, product quality, advertising, sales efforts and the motivation of firms involved. SFB can have a significant effect on nutritionally deficient populations only if bread consumption is already established sufficiently among that group or if such bread can otherwise be made to reach the target group, as for example through food stamps.

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B. Other References

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APPENDIX B - 1

**Commercial Marketing of Thriposha,
Report of Activities, October 1977.**

John P. Nichols
October 20, 1977.

COMMERCIAL MARKETING OF THRIPOSHA

REPORT OF ACTIVITIES

The purpose of this assignment was to assist CARE and the Ministry of Health in the development of a program of research to evaluate the feasibility of commercially marketing Thriposha. Three objectives were focused on during this visit: (1) Familiarisation with food marketing and distribution channels, (2) Familiarisation with marketing research capabilities available, and (3) The development of research objectives and plans for accomplishing them including a tentative schedule for the research program.

Schedule of Activities:

After arriving in Colombo on 2 October 1977, a series of meetings were held with 23 different firms and government agencies to gain an understanding of the food marketing system in Sri Lanka and the marketing research resources available. A list of the firms and agencies is attached.

It was decided that the most appropriate organization to carry out the research is the Market Research Section of Lever Brothers. They have both the research experience and the sales staff to carry out the market test and related work. No commitment exists on either side, for any involvement beyond the test market stage. A two-phased research plan was then developed, including objectives, procedures and scheduling of activities.

Research Plan:

The detail of the proposed research plan is described in statements attached to this report. Several additional general comments are appropriate here:

1. The research proposed is not intended to be a general survey of food consumption patterns, nutrition or use of weaning foods. Since Thriposha is a product which has been widely distributed and appears to be accepted, and since research is available which documents its usage, it was deemed appropriate to proceed to the product placement and evaluation stage. The management of survey research will be enhanced by keeping the questionnaires short and and direct without adding extraneous questions.

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2. Marketing research is part science and part art. As such, the exact delineation and structure of the questions and evaluation devices included in the questionnaire reflect the character and interests of the person drawing it up. Changes in the program of research outlined here can be made without "destroying" the research. What is provided here is a general outline which can be modified as warranted by changing circumstances. I do not feel that the basic approach is the most appropriate given the objectives and that the sampling procedure if followed will achieve the objectives of the research.
3. Since availability of ingredients is a problem, and may continue to be, some attention should be paid to the consequences of periodic changes in formulation. Sound commercial marketing cannot be based on a product which varies continuously in colour, texture or other properties. It is recognized that this is a problem faced by many manufacturers in Sri Lanka. However it would be wise to consider some type of evaluation program to the extent to which consumers will discriminate among several alternative standard formulations. This has not been laid in the research plan but might be done with a relatively small sample of households in the Colombo area. It may be possible to use households already receiving Thripesha. Levers would like to assist in this matter if potential product variation were anticipated. In marketing, consistency of product quality is a virtue.
4. I plan to recommend to USDA (Crowley) that we proceed with arrangements to carry out the research program outlined here. The potential of Thripesha in terms of market success is very good and well worth pursuing. There are two aspects of concern however which are discussed below, both of which you are aware of already.

Limiting Factors:

1. Pricing:

The most severe limitation to successful marketing of this product to the target population is its price relative to the price of staple items such as flour and rice. If the test market fails it will likely be because of this. Even if sufficient volume is achieved through the test market the product may not reach the lower income strata (Rs. 200/- to Rs. 400/- per month).

2. Supply of ingredients:

The limited supply of soybeans in the future may be the single most important factor in successful marketing in the long run, even if the test market successfully meets CARE's objectives. Three considerations are important here:

Nichols
20 October 1977

RESEARCH PHASE I

Plans for Product Test (In-home placement) of Thripesha

I. Introduction and General Purpose:

This is the first of a two-phase program designed to accomplish the following overall objectives. To determine whether or a commercially viable market exists for Thripesha and what this market includes the target population of interest to Ministry of Health and CARE.

II. Objectives:

The first phase is designed to build upon previous research, and experience with the product under free distribution, to provide information necessary for the design of the product and marketing program which will be used in the test market in the second phase of the research. Since the product has been widely distributed and significant information is available regarding basic usage patterns it has been decided to proceed directly with the product test through home placement and follow-up evaluations. This is not intended to be a general survey of usage patterns and food consumption habits. More specifically the objectives of the first phase are as follows:

- A. To verify general patterns of usage of weaning foods and Thripesha as found in the earlier "Pre-market" survey.
- B. To obtain from mothers an evaluation of the product relative to each of several important product characteristics.
- C. To evaluate alternative packaging types, sizes and preferences regarding packaging.
- D. To determine general levels of intention to purchase the product at three price levels:
 1. Projected Retail Price (PRP) - Rs.3/- per lb.
 2. PRP + Rs. 1/-
 3. PRP - Rs. 1/-

14. J.L. Morison Son & Jones (Ceylon) Limited.

Mr. B.J. Karunatileka, Director.
Mrs. T. Edwards.

15. Mahanuwara Multipurpose Cooperative Society, Kandy.

Mr. Ariyaratne, President.
Mr. Alahakoon, General Manager.
Mr. P. Mahawela, Dept. Officer, Dept. of Cooperatives.

16. Lever Brothers (Kandy Sales District).

Mr. L.B. Aluvihare, Sales Representative.

17. Department of Agricultural Economics, Faculty of Agriculture, Peradeniya.

Dr. T. Jogaratnam, Head
Mr. K. Jegasothy.

18. U.S. AID, American Embassy.

Mr. Chuck Anholt, Agricultural Development Officer.

19. International Soybean Program.

Dr. Carl Hittle, Project Leader
Dr. James Spata

20. Reckitt and Colman (Ceylon) Ltd.

Mr. Frank R. Samaraweera, Director.

21. Cooperative Wholesale Establishment.

Mr. K. Sittambalam, Deputy Chairman.

22. Secretary of Health, GOSL.

Mr. Vincent Panditha.

23. Vision Group Inc.

Mrs. Milmini Cocray, Managing Director.
Mr. Belling.

List of Firms and Government Agencies interviewed

1. MARK-FED - Sri Lanka Cooperative Marketing Federation Limited.
Mr. Eric R. Jayakody, General Manager.
Mr. T. Ganesh, Deputy General Manager.
2. Paddy Marketing Board.
Mr. Neville Edirisinghe, General Manager.
3. Mr. Terry Louis, Marketing Consultant.
4. Ceylon Biscuits Limited.
Mr. Ranjit Wickremasinghe, Managing Director.
5. Sevum Seva Market Research Service.
Mrs. Celine Aluvihare, President.
6. Milk Board.
Mr. Yalagala, General Manager.
7. Ministry of Food and Cooperatives.
Mr. Hussain, Food Commissioner.
8. Lever Brothers (Ceylon) Limited.
Mr. L. Stanley Jayawardene, Director.
Mr. Abeywickrema, Marketing Manager.
Mr. Nihal Corea, Manager of Marketing, Research and Information Services.
9. Nestles' - Ceylon Nutritional Foods Ltd.
Mr. Kulasingham, Managing Director.
10. Ceylon Tobacco Company Limited.
Mr. Quintus Gunawardene, Manager of Marketing Research.
11. De Alwis Advertising Company.
Mr. Hermon Gunasekera, General Manager.
12. Thompson Associates (Ceylon) Limited.
Mr. Ranjit Jayasiriya, Managing Director.
13. The Maharaja Organization (Distributors) Limited.
Mr. Jayantha Mendis, Director.

- a. Some sort of development work might be undertaken to provide the incentives for farmers to expand production. Price subsidy by government or contract arrangements by CARE might be explored.
- b. Additional quantities of ICSM might be obtained through PL 480 Title I to provide the necessary ingredients. This however does not contribute to the objective of expanding the use of local materials.
- c. If output is limited by ingredient availability and cannot meet demand, then some sort of rationing or allocation system might be undertaken. This could be operated through the current system for ration book holders in much the same way as sugar is now handled. In this way those with lower incomes would have the first opportunity to buy Thripasha. The ration system could however create a black market thus limiting the amount of product which actually consumed by the lower income households.

III. Procedures:

A. Sampling:

1. Target of 650 completed evaluations.
2. Should be representative of households in the wet zone, both urban and rural.
3. Areas and targets tentatively agreed upon are as follows:

a. Rural Areas:

50	Galle	50	Kegalle
50	Matara	50	Ratnapura
70	Kandy	50	Kalutara
70	Colombo	60	Kurunegala
		<u>450</u>	<u>Total</u>

b. Urban Areas:

50	Galle
50	Kandy
100	Colombo
<u>200</u>	<u>Total</u>

- 
4. The sample will be screened to exclude households in the ~~lowest~~ 20 percent and highest 20 percent in income and those without children 6 years and under.
 5. The sample will be split into three equal groups to test the change in purchase intentions relative to the three price levels noted in objective (D) above. This will be done by rotating the price used in asking the question on a house-to-house basis.
 6. Standard acceptable sampling practices will be used in selecting the actual households for testing within each area

B. Questionnaire:

The following are areas for questioning which should be included. The list is not intended to be final or exclusive. The ordering here suggest logical sequencing.

1. First visit (Initial Questionnaire)

- a. Determine number of people in household and number of children by age category.

- b. For children 6 and under determine what they are fed.
 - c. Determine household income.
 - d. If household qualifies then proceed with questionnaire if not, terminate.
 - e. Frequency of usage of products in (b) above.
 - f. For frequently used items, obtain quantity information for a standard period of time.
 - g. If Thripasha is not mentioned spontaneously show a list of brands including Thripasha. Obtain information on Thripasha use.
 - h. Concept testing: present the basic idea of the product to the housewife describing what it is, how it should be used and what its purpose is. Then ask:
 - (i) Willingness to try - record on a 5 point scale.
 - (ii) Willingness to purchase at _____ price - record on a 5 point scale.
 - i. Obtain rest of profile of household: age of housewife, education level of housewife and perhaps a few selected others not noted above (occupation for example).
 - j. Leave product and instructions and give date of interview return. Remind housewife that you will want to see is left on the empty pack when you return.
2. Second visit.
- a. Did you use the product ?
 - b. Quantity used.
 - c. What was it used for ?
 - d. How was it prepared (probe if necessary for each use to find out if it was combined with flour, rice, etc.).
 - e. Overall evaluation - rating on a five point scale.
 - f. Why this rating (open-ended).
 - g. Rating on texture before and after preparation, taste and selected other characteristics. Should determine which type of preparation (use) is referred to in the ratings. Record rating on usual 5 point scale.

- h. For flour based ~~usage~~ obtain comparison with flour.
- i. Packaging size.
- j. Packaging type.
- k. Willingness to try - same as first visit.
- l. Willingness to purchase at _____ price - same as first visit.

C. Field work and analysis:

The field work and analysis will be conducted under the direction of Lavers. Standard instructions will be developed for the conduct of the fieldwork. Interviewer training sessions will be held and standard procedures for checking and verifying employed. Analysis will include frequency tables and cross tabulations on the demographics (particularly income) and other important variables. Data will be kept in a form such that computer analysis could be conducted at a later stage if deemed necessary.

IV. Scheduling and Planning of Activities:

A. Schedule.

Field work to be initiated and completed during January 1977. Preliminary tabulations to be available by the third week of February 1978 so that decisions affecting the test market can proceed.

B. Major Activities needing attention.

- 1. Questionnaire development: Both parts should be completed in draft form early enough for review by CARE and preferably by Nichols. This suggests that a draft be available by third week of November. Responsibility of Corea (Lavers) working closely with (CARE).
- 2. The development of the basic package will need to be done. Responsibility of Jackson (CARE) in conjunction with advertising or design agency. The packages must be available in sufficient quantity by December 31, 1977.
- 3. Development of interviewer instructions and training (Corea)
- 4. Finalization of Projected Retail Price. Responsibility of Jackson with assistance from CARE and Lavers engineers and production personnel. Need this in time to print final questionnaire.

Nichols
20 October 1977

RESEARCH PHASE II
PLANS FOR TEST MARKET OF THRIPOSHA

I. Introduction and General Purpose:

This is the second phase of a two-phase program designed to determine whether or not a commercially viable market exists for Thriposha and whether this market includes the target population of interest to the Ministry of Health and CARE. This could also be considered as a project designed to demonstrate that a low cost nutrition food can be marketed commercially in Sri Lanka. It is not a foregone conclusion that this can be done, but should it be successful it would provide a valuable demonstration for similar projects in other countries.

II. Objectives:

The objective of the test market phase is to provide an opportunity for evaluating performance of the product under actual marketing conditions using a well planned and executed marketing program to introduce the product. More specifically the objectives are as follows:

- A. To determine the level of sales of Thriposha which can be achieved under normal marketing conditions including sales and promotion efforts typical of a new product introduction.
- B. To determine the trend and level of sales over six months of availability in the test market.
- C. To determine any sales differences which may be related to type or location of retail outlet (large or small or rural or urban).
- D. To determine characteristics of households found to be purchasing and using Thriposha.
- E. To determine ways product is used, repeat purchase patterns, and general acceptance of the product among user households.
- F. To determine characteristics of households found not to have purchased Thriposha and reasons for non-use.

III. Procedures:

The procedures are discussed below in three sections: (1) Set-up of test market, (2) Sales evaluation, and (3) Evaluation of consumer reaction. The exact design and operation of the test market will depend on the results of Phase I research, availability of ingredients for manufacturing the product and perhaps even on the status of the new plant. As such the procedures outlined here are not given in great detail and may be subject to some revision.

A. Set-up of test market.

1. Selection of variables to be tested, if any. Ideally the test market would operate best if conducted as a case study where only one product is marketed with one price and one package design under one consistent marketing plan. If after the Phase I research is completed it is deemed important to test alternative levels of some variable (such as price or packaging) this could be built in at some cost and would need some further discussion. The rest of the outline of procedures assumes one product, price, package and marketing program only.
2. Test market area and channels of distribution.
 - a. The distribution channels will be those of Lever Brothers (Ceylon) Ltd. Distribution will be handled through their normal channels. Tentatively the sales staff and wholesalers which currently handle soaps and toiletries have been selected. This is because they reach the largest number of food retailing outlets.
 - b. In selecting the market area several factors must be considered:
 - (i) Target population.
 - (ii) Control over product.

The market areas under current discussion include the sales territories of four Lever sales representatives: Kandy, Matale in the central area and Galle and a neighbouring territory in the South. These give reasonable control over the product, limit its distribution and cover both rural and urban populations in two separate areas of the country.

3. Selection of Sales Promotion Activities.

This area will need considerable development depending in part on the results of the Phase I research but also on creative activities by an advertising agency. Both in-store sales merchandising material as well as media advertising concepts and material must be developed. Tentative themes which appear to have some appeal include:

- a. Concept that Thriposha is a proven product (has acceptance)
- b. Health and nutrition.
- c. Natural type food.
- d. Reasonably priced.
- e. Growth-strength for children.

It also appears logical to avoid trying to compete directly with flour or rice because of the clearly unfavourable price relationships

4. Final design of Product and Production Plans:

This is another area which will need further development based on Phase I results and availability of ingredients at the time of the test market. The following factors be considered:

- a. Formulation: Selecting a blend which is satisfactory and can be assured over a period of time will be very important. There is some evidence that minor changes in formulation have not usually been recognized by Thriposha recipients. As the availability of materials becomes known, a small taste panel may be appropriate to test the level of discrimination among formulations.
- b. Package and Branding: It has been decided that since name Thriposha is so well known and generally accepted should be used directly or incorporated into the brand some way. Also it is tentatively suggested that a type package be used rather than the polyethylene bag - that the retail package be set at one pound. These may be altered based on Phase I results.
- c. Price: The product will probably be priced at the lowest price possible consistent with meeting all relevant costs including fair charges for distribution, retailing and promotion. This is currently estimated at approximately Rs. 3/- to Rs. 3/50 per lb. This is subject to changes in ingredient costs particularly.
- d. Production: Does not appear to be a problem as the production volumes for test market are not that large. This needs further alteration after Phase I results.
- e. Distribution logistics: No problem. Will be handled through Levers.

B. Sales Evaluation.

1. Set up record keeping system.
2. Monitor movement of product by retail outlet.
3. Aggregate and evaluate sales data according to design adopted.

C. Evaluation of Consumer Reaction.

1. Sampling:

- a. Households will be sampled on a random basis throughout the test market area. This will provide an indication of penetration.
- b. If penetration is low additional user households may be identified through the use of interviewers stationed at retail outlets to identify purchasers.

2. Questionnaire.

- a. This will be designed to determine usage patterns, product evaluations and household characteristics for users. Also the household characteristics for non-users and reasons for non-use.
- b. Questionnaire for users will be designed in a manner similar to the second visit questionnaire used in Phase I to evaluate the product. Similar scales may be used to provide an opportunity for comparison.
- c. This may be staged over time in a manner so that a measure of repeat purchasing can be obtained.

IV. Scheduling and Planning of Activities:

A. Time Schedule.

1. Market Test.

Start by June 1, 1978 and run at least 6 months. This starting date is contingent upon satisfactory completion of Phase I.

2. Sales Evaluation: To be monitored continuously and reported at least monthly during the test.
3. Consumer Evaluation: Begin approximately one to two months after product is completely into the distribution channels.

B. Major Activities Needing Attention.

(See Item III A, 1-4 above)

1. Selection of variables to be tested and final product.
Responsibility of CARE but with consultation from Nichols, other marketing consultants, and Levers. Needs to be done in time to arrange for advertising, packaging and production
2. Selection of Market Areas.
Responsibility of Levers and marketing consultants with concurrence from CARE.
3. Sales Promotion Activities.
Responsibility of advertising agency with intervention with CARE and marketing consultants.
4. Evaluation Activities.
 - a. Sales Evaluation forms and system.
Responsibility of Levers (Corea) with concurrence from CARE and marketing consultant.
 - b. Consumer Reaction Evaluation forms.
Responsibility of Lever (Corea) with direct input from marketing consultant and concurrence by CARE and Nichols

APPENDIX B - 2

**Commercial Marketing of Thriposha,
Report of Trip Activities and Supporting Materials,
November - December 1978.**

COMMERCIAL MARKETING OF THRIPOSHA

Report of Trip Activities

November 25 - December 10, 1978

A review, evaluation and planning trip was scheduled to Sri Lanka regarding the commercial marketing potential for Thriposha. The main objectives were to review the results of Phase I, reach a decision regarding potential for proceeding and, if favorable, develop plans for the test market and related activities. Al Lachmann and I arrived in Colombo on Tuesday, November 28 and completed our work on Friday, December 8.

Attached are two documents which expand in more detail on our activities while in Sri Lanka. The first is a partial summary report on Phase I while the second is a description of the plan for the test market.

I. Review of Phase I Research

1. The first objective was to pull together in summary form the results of the consumer survey carried out in Phase I. The data and conclusions presented in the attached draft report represent this effort. The data analysis was sufficiently complete to draw conclusions regarding the major objectives of the study. Further analysis of the data is currently underway and will be presented in a final report of Phase I (see checklist attached to draft report). This draft will be expanded to include several additional tables, a narrative summary of results and revised or expanded conclusions.
2. As may be seen in the report, the results of Phase I were found to be quite positive. On this basis planning was initiated for Phase II.

II. Planning for Phase II

1. This activity was carried out through several meetings with Lever's management personnel and the CARE/Sri Lanka staff. Separate planning sessions were held dealing with test market operations and research.
2. The time required to complete the Phase I review resulted in an extension of the planning sessions through Friday, December 8, in order to complete a reasonable outline of the agreed upon plans.
3. These plans are detailed in the attachment entitled "Plans for Market Test." Included as part of that is the outline for monitoring and evaluation and a preliminary budget for the promotion activities.

III. General Observations

1. The project is moving along quite satisfactorily. Lever Brothers (Ceylon) Ltd. has shown a good deal of interest in it. Although they may not have a long run commercial interest in marketing Thripasha they have undertaken their responsibilities in a very professional manner and have given every indication that they will continue to do so through the completion of Phase II.
2. All parties concerned should seek to follow this project through to the conclusion of Phase II. It is not a foregone conclusion in my mind that the product will be successful in achieving everyone's objectives, but it certainly won't if we fail to carry out the test market in a vigorous professional manner. The only way we will be able to determine the impact that the product will make commercially and/or nutritionally is through the market test. There are no major problems revealed in Phase I that suggest discontinuing the project at this stage.
3. If a final decision is made to proceed as scheduled with Phase II another evaluation meeting on the early results has been suggested for January 1980. A meeting in June or July 1979 in Sri Lanka has also been discussed as a possibility if final test market plans need reviewing and/or modifying at that time.
4. A transition period after Phase II has been discussed in general terms. If the product successfully meets the objectives of CARE and the Ministry of Health then the test market will be phased into a limited distribution program. Assurances were given by Lever's management that they would continue to assist in distribution to test market areas until a plan could be developed and executed for full commercial distribution. This is necessary so that the investment in developing the test market areas would not be lost.

Thriposha Project
Plans for Market Test

In October of 1977 preliminary plans were outlined for a commercial market test of Thriposha. This was to be the second phase of a two stage evaluation of the commercial market potential for Thriposha. After review of the results of the consumer acceptance study (Phase I) the market test plans were further developed in early December 1978. This statement outlines those plans as they stood at that time.

- I. Purpose and Objectives: The main purpose of the test market is to put Thriposha in a representative set of retail outlets supported by a well organized, professional marketing program and then monitor sales performance and consumer reaction. More specific objectives are given in the attached "Research Outline" for Phase II.

II. Test Market Area and Schedule

1. Lever Brothers (Ceylon) Ltd. has agreed to develop the marketing program and distribute the product during the test market period. They will assume the responsibility of planning, developing promotion and related materials, organizing and maintaining distribution, carrying out promotion activities and conducting related sales monitoring and other research activities.
2. The test market is scheduled to start in September 1979 and continue for a period of 8 months. The actual duration will depend on initial levels of sales and ultimately on market penetration among target households.
3. The test market will cover the sales territories discussed in the October 1977 plan. This will include Kandy and Matale in the central area and Galle and Matara in the south. This system provides good control over the product, limits distribution, and covers both rural and urban population in two separate areas of the country.
4. A "network" plan will be developed by Lever marketing staff and CARE/Sri Lanka which identifies all of the activities involved in preparing for and executing the test market. This network will also show time requirements and interrelationships among activities and will be completed early in 1979.

III. Promotion Activities

1. As noted above these activities will be developed and carried out by the marketing and sales staff of Lever Brothers with the appropriate concurrence of CARE/Sri Lanka.
 2. The general tone of the promotion must be designed to promote the products' use in ways that will encourage usage at levels sufficient to be of significant nutritional benefit.
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3. Attached is a list of promotion activities to be carried out and associated budget. This was prepared by Lever Brothers in December, 1978, and was estimated for a six month market test. It will be extended to eight months at some additional cost. However, since much of the promotion activity is concentrated in the first few months the addition to the budget for two months will require a less than proportional amount of money.

IV. Product Development

1. Since the product will be 70 percent ICSM in the test market but was 100 percent ICSM in Phase I studies, it was suggested that a modest taste panel be set up in the Colombo area to determine if the average consumer could detect the difference in usual recipes. This should not be an "experts" panel and could be done using perhaps no more than 100 respondents. See Nichols' letter of March 8, 1978, for more comments on this.
2. This activity could be organized through the market research department of Lever Brothers.
3. Attention needs to be given to developing recipes for suggested use which are consistent with the obvious marketing constraints (tastes, appearance, etc.) and yet also provide a level of intake sufficient to have significant nutritional impact.

V. Pricing

1. Phase I research indicates that consumers will probably be sensitive to price of Thriposha but the level at which this sensitivity becomes restrictive cannot be estimated except through the market test.
2. Cost estimates developed in December 1978 indicate that a realistic selling price for Thriposha will be approximately Rs. 5/50 per pound.
3. In view of recent shifts in the minimum wage for government workers and the inflationary impact on other consumer prices this price for Thriposha is not necessarily too high for lower income households. The price must be set high enough to cover all costs and the market test will determine whether the product will move at that price and who will purchase it. It was decided not to test more than one price level for several reasons: 1) no one is interested in selling Thriposha at a price higher than the "full cost" price, 2) unless a subsidy is considered there is no point in testing a lower price 3) the difficulty of managing a two-price test suggests that it not be done unless of major importance.

VI. Packaging

1. The phase I findings indicated no major changes in packaging concept are in order. The size and type of container are to be basically the same for phase II.

2. Part of the planning for the market test will include a reconsideration of the quality of cardboard, color scheme and information to be presented on the package. Preparation instructions and recipes will be developed as noted in IV. 3 above.

VII. Monitoring and Evaluation

1. To evaluate the results of the market test several types of information must be collected and evaluated. These data relate to sales and distribution performance as well as household purchase and consumption patterns.
2. The attached "Research Outline (Phase II)" presents details on the objectives and procedures planned for these research and evaluation activities.

- 2

RESEARCH OUTLINE (Phase II)

I. Purpose:

The main purpose of the market test to be conducted in Phase II is to determine if Thripsha can be marketed successfully through commercial channels and also reach the nutritionally at risk population. If the product is not successful the reasons for the failure will also be assessed. This outline addresses primarily the evaluation aspects, not the development of the marketing plan for the market test.

II. Objectives:

1. To determine whether Thripsha can achieve a commercially viable level of sales.
2. To develop an estimate of potential market volume under island-wide distribution if objective 1 is reached.
3. To determine the level of market penetration of Thripsha with specific emphasis on those market segments in which the nutritionally at risk population is concentrated.
4. To develop an estimate of the number of "diet deficient" households purchasing Thripsha and estimate frequency and volume of usage in these households (a measure of nutritional impact). Project to island wide population from market test results.
5. To determine the ways commercially purchased Thripsha is prepared and served; which members of the household consume it, in what amounts, and repeat purchase levels or patterns.
6. To identify specific problems consumers encountered in purchasing storage and use of the product (packaging, keeping quality, preparation instructions, etc.,).
7. To identify main reasons for non purchase or use or discontinuing of use, including price, awareness, product attributes, packaging or other similar factors.
8. To identify significant problems which exist at wholesale and retail levels of distribution (storage, packaging, handling damaged goods, returns, appropriateness of margins, etc.).
9. To evaluate appropriateness of promotional efforts with specific reference to point-of-sale material and main themes or approaches to promotion.

III. Procedures:

Data will be collected in several different ways to provide the information necessary for determining whether the objectives are reached. These data include (a) a series of household surveys designed to evaluate the market penetration of the product, usage patterns or reasons for non-use, (b) sales volume data regarding the off-take of Thriposha, and (c) general evaluation of the marketing program and distribution considerations. These are discussed in more detail below.

A. Consumer Surveys:

At this time four interview procedures are envisioned in an integrated sampling and fieldwork plan: (a) penetration studies (b) consumer usage followup, (c) non-user survey, and (d) free Thriposha recipient study. These surveys will provide data relating to objectives 1-7. The outline as presented here is an attempt to develop a consensus statement from the discussion held during November 28 - December 3, 1978 meetings.

1. Market penetration surveys:

In order to determine the share of total households purchasing Thriposha a series of 4 waves of interviews will be conducted on a house-to-house basis.

a. Sample:

It is estimated that 600 households will be contacted in each wave for each of the two areas of the test market. The October 20, 1977 outline for Phase II discusses the Kandy and Galle market areas to be used in the test. The sample will be drawn in a random fashion to be representative of both rural and urban portions of each area. Sampling for each wave will be conducted independently.

b. Timing:

The first wave will begin about the beginning of the third month of the market test. Succeeding waves will follow at approximately equal intervals such that the last wave will be done at the end of the eighth month market test.

c. Questionnaire:

This has yet to be developed but will be relatively brief and designed to obtain basic information on household demographics (income, size, etc) and level of knowledge or use of Thriposha. Included will be questions relating to awareness of commercial Thriposha, if purchased, when first purchased, how frequently purchased, what quantity purchased in the last month (or since the last wave) Information from this survey will be necessary for objectives 1-4.

Households identified as purchasers will be recorded and recontacted with a follow-up usage patterns survey. (described below). This group will be treated as a continuing consumer panel and new members added after each wave of the penetration study.

2. Consumer Usage follow-up (consumer panel):

As noted above, persons identified in the penetration survey will become part of a continuing panel. A more detailed survey will be made of these households to obtain information on the establishment of usage patterns and changes during the test market period.

a. Sample:

The sample will become progressively larger after the second and third waves of the penetration study. If 15% of the households are found to be purchasers there will be 90 in this group from each of the two areas after the first phase (600 x 15). The total 180 may be increased by an equal amount after the second phase and so on. If the total in this group exceeds 600 (as might happen if penetration is higher) then consideration should be given to limiting the size of the panel to about that number (600).

b. Timing:

The questionnaire for this survey could be administered during the week following the penetration survey. From an efficiency point of view it could be ^{given} as the households are identified. Of course, after the second wave, the consumer panel will include households which ^{were} identified in the first wave thus a separate contact would be needed. Four waves of interviews with the consumer panel is envisioned following the same schedule as the penetration study. This could be adjusted to permit the last contact with the panel to be done later if the product was to be marketed beyond the formal eight month limit of the test market.

c. Questionnaire:

This questionnaire would identify all relevant household demographics (similar to Phase I Survey). It should identify the types of foods now being fed to pre-school children, whether free Thripasha is now being received by the household and how much, how Thripasha is being purchased, prepared and served, who in the family is consuming the Thripasha and some method of determining the quantity consumed by each. Information on the evaluation of the product in various uses could be obtained similar to Question 12 of the Phase I Survey. Also to be included is an evaluation of the packaging and preparation instructions. Reasons why the first purchase of Thripasha was made will also be included in the questionnaire.

All of this need not be collected after the first visit to the panel household. During the second visit, the information could be limited to continuing purchase behaviour usage and evaluations. If the household discontinues purchasing the product, the reasons should be determined using questions designed to determine the major casual factors (price, taste, income availability etc.).

3. Non-user Survey:

In order to identify the reasons why some households are not purchasing Thripasha a one time survey will be done in conjunction with the third wave of the penetration study. All households who indicate they have never purchased Thripasha will be asked why. It will be treated as an extension of the penetration survey form. Reasons to be evaluated will include; lack of awareness, no pre-school children, price, influenced by neighbours or others, etc. This survey is directed to objective 7.

4. Free Thripasha Recipient Study:

This study will be conducted somewhat separately from the three surveys discussed above. It is intended to provide more specific information on the relationship between the commercial marketing of Thripasha and the current free distribution. A random sample of households currently receiving Thripasha through the MCH centers will be identified in the test market areas and interviewed on a before and after basis. One reason for conducting this is the possibility that not enough purchasers of Thripasha (consumer panel) will also be free recipients.

a. Sample:

The sample will be obtained from the registers of recipients at the MCH Centers. It will be drawn randomly from randomly selected centers so as to be representative of the population of current recipients in the test market area. A sample of 250 to 300 is currently contemplated but needs further consideration in relation to the nature and depth of information desired by CARE for general program management purposes.

b. Timing:

The first interview with the households will be done about one month prior to the start of the test market. The second interview will be conducted will into the test market at about the fourth month.

c. Questionnaire:

Further decisions are needed regarding this. It could be used as a management tool by CARE for information beyond the question of impact of commercial marketing.

The first interview will be in part similar to that used for the first visit with the consumer panel. Food consumption patterns and habits among pre-school children and pregnant and lactating mothers will be determined. How Thriposha is now being used, how often received, how received, problems with the program will be included. No indication will be given regarding the impending test market on the planned followup interview.

The second questionnaire (followup) will be designed to determine the share of the sample who have purchased Thriposha, whether still receiving free Thriposha, how free Thriposha usage has changed if any, whether any differences are detected in the product, how commercial Thriposha is used if different from free and other related information. Evidence of purchase could be asked for (packages in the home) and an estimate of quantities will be obtained.

B. Sales Volume Data:

This information will be provided through the reports of Lever's sales staff on a continuing basis. A record will be developed of monthly off-take for each outlet. This will be aggregated and reported to all interested parties as soon as available by sales territories. To the extent that classification information by store size is available, the sales data could also be summarized according to that breakdown.

Sales by outlet per unit of time, glotted over time will provide our major basis for projecting sales potential and answering objectives 1 & 2

C. General Evaluation of Distribution

On a continuing basis the Lever's Sales staff will be monitoring distribution channels and identifying any significant problems (Objectives 8 and 9). These evaluations may be summarized periodically by the Lever's sales and marketing staff and reported to all interested parties. This evaluation should include any observations of the effect of the promotion program or any of its components. As one means of assessing any impact on illegal sales of free Thriposha, the sales staff in the field could be asked to report. Any observations they could make which might help quantify this impact.

IV. General considerations:

One of the main points to keep in mind with regard to the survey work is flexibility. If sales levels are exceptionally low over the first two months then certainly the research orientation of the first penetration survey would need to be shifted to try to find out why. Similarly, if penetration is very high early in the market test a sizeable consumer panel would be identified early on and no further additions would be needed from later waves of the penetration study.

It might also be necessary to use some alternative method of identifying purchases more efficiently if penetration is rather low. Among these would be obtaining lists of purchasers through randomly selected stores.

COST OF SIX MONTH TEST MARKET FOR
THRIPOSHA IN GALLE/MATARA AND
KANDY/MATALE AREAS

<u>Items</u>	<u>Rs.</u>
1. Extra expenses of four Detergents Sales Reps who will be also distributing Thriposha in addition to their normal sales.	9,600
2. Extra expenses of two Bakery Specialists who will be working full time in the two test areas topping up sales, carrying out additional display work and reporting back to office on off-take.	48,000
3. One full-time Field Manager who will be supervising the entire operation.	32,000
4. Two house-to-house teams comprising of ten girls and one Supervisor each who will be covering each area for three months.	83,000
5. One propaganda van which will cover both areas for four months.	59,000
6. Point-of-sale material, display units, streamers for 1500 outlets.	49,000
7. Leaflets for house-to-house distribution.	50,000
8. Cinema slide and cost of its display in twenty cinemas, for 26 weeks.	16,000
9. Expenses for housewives demonstrations through one H.A.B. team for 30 days.	18,800
10. Cost of materials/ingredients/utensils, car hire, hall hire for demonstrations.	12,800
11. Cost of Head Office management time and office expenses.	50,000
Total	<u>428,200</u>

3711712

<u>Item</u>		<u>Rs.</u>
1. Cost per call Rs.1/-x400 callsx4 repax6 months		9600
2. Bakery Specialist Rs.4000/- per month x2 D.S.x6 months		48000
3. Area Manager's salary for 6 months	12000.00	
for exp. for 6 months	8000.00	
Other, allowances etc.	<u>6000.00</u>	32000
4. Cost of 2 vans for 6 months - 500/- a day x20 days (a month)x 3 months (500x2x20x3)	36000.00	
Cost of 20 H/H girls Rs.25/- a day x20 girls x 20 days a month x 3 months (25x20x20x3)	30000.00	
Overalls 20x50x3 sets (25x50x3 sets) (20x50x3)	3000.00	
Supervisor's salary and other exp.	12000.00	
Other expenses	<u>2000.00</u>	35000
5. Cost of van Rs.400/- a day x 20 days a month x 4 months	32000.00	
Cost of rep Rs.2500/- x 4 months	10000.00	
Serviceman Rs.1250/- x 4 months	5000.00	
Hire of equipment Rs.1750/- a month x 4 months	7000.00	
Other expenses	<u>3000.00</u>	59000
6. Stickers 1500xRs.2.50	3750.00	} → 49,000 ?
S/Cards 1500 x 2.50	3250.00	
Streamers 1500 x Rs.8.00	12000.00	
Display Unit 1500xRs.10	15000.00	
Other exp. etc.		

Commercial Thriposha Consumer Acceptance Test

(Partial Preliminary Draft)

Introduction

Thriposha, a cereal based fortified product, has been distributed by CARE and the Ministry of Health of the Government of Sri Lanka to medically identified recipients for the purpose of improving nutritional status. Children, pregnant and nursing mothers who are identified as being nutritionally at risk are considered to be the primary target population. Distribution has been handled through the MCH Centers throughout the country. In 1978, the total distribution is expected to be approximately 14 million pounds at a rate of 1.5 kilograms per recipient per month.

It is felt that this system of distribution is operating at near capacity. However, it is also felt that many nutritionally at risk people, particularly in the target population, are not being reached. Since food marketing and distribution systems exist which could be capitalized on to reach additional persons, a study was designed to examine the potential for commercially marketing Thriposha in addition to continuing the free distribution programme at existing levels. The study, as outlined in October 1977, included two phases (1) an in-home consumer acceptance test, and (2) a market test.

The consumer acceptance (or product concept) test (Phase I) was designed to obtain an evaluation of Thriposha from a representative sample of consumers regarding various aspects of product quality, packaging, pricing and usage. The Marketing Research Department of Lever Bros. (Ceylon) Ltd., was commissioned to undertake this first phase which was carried out during the period January to March 1978 and is the subject of this summary report. The following sections contain an outline of the procedures, the major conclusions of the study and the key results summarized in tabular form. It was intended that this first Phase would provide information of value in designing the test market (Phase II). Phase I was not expected to provide all the answers regarding commercial marketing feasibility. The test market will be required to adequately assess potential sales levels and market penetration among target groups.

The Sample

The sample was selected from the Wet Zone sector of the country in which 50% of the country's population and 70% of the country's rural population live.

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Twelve of the twenty-four administrative districts in the country are in the Wet Zone Sector. The sample of 750 was drawn from eight of these twelve. The eight districts are, Colombo, Kalutara, Galle, Matara, Ratnapura, Kandy, Kegalle and Kurunegala and they in total account for 84% of the Wet Zone population. The sample of 750 was divided into two primary strata - urban 250, rural 550. The urban sample was drawn from Galle, Kandy and Colombo and suburbs. The rural sample was drawn from the eight districts mentioned above; the sample for each district is given in Appendix II.

At planning stage, it was decided that the Test Market which was Phase II of the feasibility study would be done in the administrative districts of Matara, Galle and Kandy. An additional rural sample was, therefore, drawn from these areas.

After pre-testing the questionnaire in a pilot test, which also acted as period of training for the investigators, actual field work commenced on 18th January and was completed on the 9th March.

The investigators were divided into three teams of five each. Each team had four investigators and one Supervisor and travelled in a car.

The random route sampling method was adopted in the urban areas and the random village method in the rural areas. Four interviews were done in each village contacted randomly. Each respondent was contacted twice. The first visit to find out general food feeding habits of infants and children, usership and usage habits for Thripasha as well as attitudes and opinions on Thripasha, to find out attitudes to the concept, price and to give the sample for trial. The second visit, one week later, was to find out post trial opinions.

Interviewee Profile

The interviewee profile is given in tabular form in Tables 12 - 14.

The majority of the interviewees were wives and the majority of them functioned as housewives. The majority were also below 40 years, young enough and, therefore, more amenable to change. Between 30-40% of interviewees were educated upto the O'Level.

Seventy percent of the families interviewed had 3-6 persons, an average size of family in Sri Lanka and about 60% had children below the age of 6 years and two-thirds of these families had infants. These groups are the primary target.

Ninety-two percent of the sample had heard of seen, or know of or used Thripasha. Seventy-five percent of this or sixty-seven percent of the total sample had used Thripasha at some time. Of these eighty percent had not used it within the last month. In other words, eighty percent had used Thripasha more than one month ago.

Conclusions

The major conclusion drawn from the study is that the research should proceed to the test market phase. No major problems with the product were revealed which would prevent a successful test marketing effort. The product concept was well received and understood and the product characteristics found to be acceptable to consumers. More specifically the conclusions may be stated as follows:

1. The product concept was found to have a strong level of acceptance among consumers. This level of acceptance was reinforced after use. Consumers are able to identify and accept the concept of Thripasha as being a "nutritious product" and "good for children". In practice, however, consumers used Thripasha in a variety of ways which suggests that it was taken by all members of the household, not just children.
2. The basic characteristics of the product are very acceptable to consumers. Respondents indicated a strong liking for Thripasha in most product uses. Taste is the most important aspect used by consumers in evaluating the product:
3. The package size of one pound was found to be highly desirable. The package should carry the connotation of "airtight and hygienic" as these were emphasized by consumers as strong points of the package as presented.
4. It is concluded that pricing of the product will be important as consumers appear to be sensitive to price levels, this sensitivity varies with income level. Consumers will probably discriminate based on price. No conclusion can be drawn at this time about the price level at which the product will achieve adequate market penetration. This is due to changes in incomes and relative price levels since interviews were conducted and the inadequacy of the interview format for obtaining useful results regarding price.

On the basis of these observations and conclusions, it can be further observed that a market test is appropriate and should be carried out to obtain information regarding both level of sales which can be achieved and the degree of penetration there will be among various market segments, particularly those which include the target population. Since the product concept and basic characteristics appear to be highly acceptable it becomes a question of whether consumers can be persuaded that the product is worth the market price and will buy it on a continuing basis in amounts sufficient to have a nutritional impact.

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TABLE 1 LAST USAGE OF THRIPOSHA IN HOUSEHOLD'S BY INCOME GROUP

Income Group Rs/Mo	USERS					NON USERS	TOTAL
	Within last 2 weeks	Two- Four weeks	One- Three Months	Three- Six Months	Over Six Months		
-----Percent-----							
101-200 (N=260)	12	8	13	11	26	30	100
201-300 (N=167)	7	9	14	10	25	35	100
301-400 (N=111)	12	7	17	9	20	35	100
401-600 (N=80)	5	14	10	7	34	30	100
All Groups	11	8	14	9	25	33	100

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TABLE 2 RESPONDENTS' WILLINGNESS TO TRY COMMERCIAL PRODUCT,
BEFORE AND AFTER USE; BY INCOME GROUP AND INTENSITY
OF RESPONSE.

Income Group (Rs/Mo)	Intensity of Response	BEFORE		AFTER	
		User	Non-user	User	Non-user
-----Percent-----					
< 100	May Try	30	53	38	29
	Certainly Try	49	34	51	58
	Total	79	87	89	87
101-200	May Try	36	44	24	38
	Certainly Try	56	38	69	49
	Total	92	82	93	87
201-300	May Try	31	38	27	28
	Certainly Try	55	41	65	60
	Total	86	79	92	88
301-400	May Try	23	37	27	34
	Certainly Try	71	53	68	45
	Total	94	90	95	79
401-600	May Try	27	29	27	38
	Certainly Try	64	67	63	54
	Total	91	96	90	92
All Groups	May Try	32	40	28	32
	Certainly Try	57	44	65	54
	Total	89	84	93	86

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TABLE 3 PERCENT OF RESPONDENTS INDICATING WILLINGNESS TO BUY THRIPOSHA AT GIVEN PRICE LEVEL EXPRESSED; BEFORE AND AFTER USING SAMPLE, BY INCOME GROUP AND PAST USAGE OF PRODUCT.*

Income Group (Rs/Mo)	Rs 2/-		Rs. 3/-		Rs 4/-	
	User	Non-user	User	Non-user	User	Non-user
-----Percent-----						
100						
Before	61	37	24	43	15	26
After	42	70	20	43	7	25
101-200						
Before	53	54	25	43	21	36
After	50	57	25	38	24	37
201-300						
Before	70	71	37	67	31	42
After	66	74	26	47	22	24
301-400						
Before	67	92	48	59	40	60
After	72	64	40	54	30	50
401-600						
Before	65	100	29	75	35	50
After	74	100	33	75	19	43
All Groups						
Before	61	69	31	56	29	39
After	58	68	27	49	21	30

* Willingness to buy measured by total of those feeling price is "just right" and those feeling "could be priced higher".

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TABLE 4 STRONG AND WEAK POINTS REGARDING COMMERCIAL
THRIPOSHA GIVEN BY RESPONDENTS AFTER READING
BROCHURE (BEFORE ACTUALLY USING).

Comments	Percent of Households		
	Users	Non-users	Both
<u>Strong Points</u>			
Nutritious/full of vitamins	38	29	39
Good for Children	24	21	26
Colorful/attractive	22	19	24
Hygienic packaging	18	11	17
Other comments	6	5	6
Total*	92	64	91
<u>Weak Points</u>			
Would be better in tins	3	3	3
Other comments	10	3	8
Total	11	5	10

* Total may exceed 100 percent due to multiple responses

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TABLE 5 PREPARATIONS MADE BY RESPONDENTS

Preparation	Percent of Households making each		
	Users	Non-users	Both
	-----percent-----		
Aggala	68	47	61
Rotti	52	59	55
Kirihodi	37	38	37
Drinks	30	32	31
Pittu	27	28	27
Porridge/congee	27	22	25
Stringhoppers	20	27	22
Hoppers	3	8	4
Thalapa	5	4	5
Curry	4	6	5
Aluwa/Kavun	3	3	3
Halapa	2	2	2

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TABLE 6.

DEGREE OF RESPONDENTS LIKE OR DISLIKE FOR THRIPOSHA PREPARED IN DIFFERENT WAYS
USERS, NON-USERS AND BOTH

Way Prepared	Past Thriposha Users	Number of Households using	R A T I N G			L E V E L	
			Liked a lot	Liked a little	Neither	Disliked a little	Disliked a lot
			-----Percent-----				
Porridge/Cungee	Users	135	69	16	9	4	3
	Non-users	54	61	17	15	2	6
	Both	189	67	16	11	3	4
Kiri hodi	Users	188	57	26	6	6	4
	Non-users	93	55	20	8	14	3
	Both	281	57	24	6	9	4
Aggala	Users	343	81	12	4	2	1
	Non-users	116	71	15	8	3	3
	Both	459	78	13	5	3	2
Pittu	Users	135	73	19	4	3	2
	Non-users	68	62	25	7	4	1
	Both	203	69	21	5	3	2
Roti	Users	268	63	20	6	7	3
	Non-users	147	55	20	10	7	5
	Both	415	60	20	8	7	7
Stringhoppers	Users	100	71	21	5	-	3
	Non-users	66	64	27	5	3	2
	Both	166	68	24	5	1	2
Hoppers	Users	14	78	14	-	7	-
	Non-users	19	84	11	-	5	-
	Both	33	82	12	-	6	-
Drinks	Users	151	59	19	9	7	7
	Non-users	78	54	13	9	10	14
	Both	229	57	17	9	8	9

TABLE 7

PERCENT OF RESPONDENTS GIVING SELECTED REASONS FOR LIKE OR DISLIKE
OF THRIPOSIA BY WAY PREPARED

Reason given for Like/Dislike	METHOD OF PREPARATION							
	Porridge/ Cunjee	Kirihodi	Aggala	Pittu	Rotti	String- hoppers	Hoppers	Drinks
	-----Percent-----							
Taste	64	64	71	65	64	57	79	51
Children like/dislike	20	12	15	8	8	8	--	21
Consistency or texture	4	10	--	1	--	10	--	--
Nutritious	--	--	3	4	--	5	--	7
No. of Respondents	189	281	459	203	415	166	33	229

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TABLE 8 RESPONDENTS EVALUATIONS OF THRIPOSHA AS USED IN SELECTED PREPARATIONS; BY PAST EXPERIENCE
WITH THRIPOSHA (USERS vs NON-USERS)

Rating by use	C R I T E R I O N											
	<u>Texture before</u>		<u>Texture after</u>		<u>Taste</u>		<u>Colour</u>		<u>Appearance</u>		<u>Aroma.</u>	
	User	Non	User	Non	User	Non	User	Non	User	Non	User	Non
<u>Porridge/Cungee</u>												
Very Good	30	15	24	17	29	19	17	11	21	11	19	13
Good	56	65	67	61	50	56	73	81	67	78	56	63
So-So	7	9	5	13	13	11	7	6	10	9	13	13
Poor	3	4	2	6	4	6	1	--	--	2	6	2
Very Poor	--	--	1	2	2	7	--	2	1	--	1	7
Can't Say	3	8	--	2	2	2	1	--	1	--	6	2
<u>Kirihodi</u>												
Very Good	16	15	20	18	22	24	14	12	13	11	12	13
Good	67	63	62	62	54	44	69	65	66	76	68	57
So-So	9	16	12	13	12	17	13	18	16	9	12	18
Poor	4	3	5	4	9	13	3	3	4	4	4	4
Very Poor	--	--	1	--	2	2	1	--	--	--	1	5
Can't Say	4	2	--	2	1	--	1	2	--	--	3	2

TABLE 8 RESPONDENTS EVALUATIONS OF THEIPOSHHA AS USED IN SELECTED PREPARATIONS; BY PAST EXPERIENCE WITH THEIPOSHHA (USERS vs NON-USERS)

Rating by use	C R I T E R I O N											
	<u>Texture before</u>		<u>Texture after</u>		<u>Taste</u>		<u>Colour</u>		<u>Appearance</u>		<u>Aroma</u>	
	User	Non	User	Non	User	Non	User	Non	User	Non	User	Non
<u>Aggala</u>												
Very Good	26	18	29	29	46	35	26	23	25	22	25	22
Good	62	68	61	56	44	49	65	61	66	66	57	65
So So	8	10	5	7	7	7	6	13	6	9	10	6
Poor	2	3	3	7	3	6	2	2	2	3	4	3
Very Poor	--	1	--	1	1	2	--	1	--	1	1	2
Can't Say	2	--	1	--	--	1	1	--	--	--	3	3
<u>Rotti</u>												
Very Good	21	18	21	20	31	25	20	17	21	14	19	15
Good	61	63	59	62	46	50	66	62	64	67	58	59
So-So	11	11	10	10	13	10	10	18	10	14	15	16
Poor	5	5	6	5	9	12	2	1	3	3	5	7
Very Poor	--	1	2	1	1	4	--	1	1	1	1	2
Can't Say	1	1	1	2	--	--	--	1	1	1	1	1

TABLE 8. RESPONDENTS EVALUATIONS OF THRIPOSHA AS USED IN SELECTED PREPARATIONS; BY PAST EXPERIENCE WITH THRIPOSHA (USERS vs NON-USERS)

Rating by use	C R I T E R I O N											
	<u>Texture before</u>		<u>Texture after</u>		<u>Taste</u>		<u>Colour</u>		<u>Appearance</u>		<u>Aroma</u>	
	User	Non	User	Non	User	Non	User	Non	User	Non	User	Non
<u>Pittu</u>												
Very Good	22	15	23	19	30	22	17	16	16	12	15	12
Good	64	74	62	61	55	63	73	74	74	76	65	62
So-So	7	4	10	13	6	4	6	9	6	9	13	12
Poor	3	1	3	1	7	9	3	--	3	1	6	7
Very Poor	--	1	1	1	1	1	--	1	--	1	1	6
Can't Say	4	4	2	4	2	--	2	--	1	--	1	1
<u>String Hoppers</u>												
Very Good	26	24	31	21	28	27	21	20	20	18	20	18
Good	58	61	52	59	62	58	65	68	67	73	64	61
So-So	5	11	8	9	7	12	8	11	9	6	10	12
Poor	7	3	6	9	2	3	4	1	4	3	3	5
Very Poor	1	--	1	--	1	--	--	--	--	--	--	2
Can't Say	3	2	2	2	--	--	2	--	--	--	3	3

TABLE 8. RESPONDENTS EVALUATIONS OF THRIPOSHA AS USED IN SELECTED PREPARATIONS; BY PAST EXPERIENCE WITH THRIPOSHA (USERS vs NON-USERS)

Rating by use	C R I T E R I O N											
	Texture before		Texture after		Taste		Colour		Appearance		Aroma	
	User	Non	User	Non	User	Non	User	Non	User	Non	User	Non
<u>Hoppers</u>												
Very Good	14	21	21	11	14	26	14	11	14	11	14	11
Good	79	58	64	58	71	68	71	74	64	79	71	68
So-So	7	16	--	11	7	--	14	11	14	5	7	16
Poor	--	--	--	21	7	5	--	5	--	5	7	--
Very Poor	--	--	7	--	--	--	--	--	7	--	--	--
Can't Say	--	5	7	--	--	--	--	--	--	--	--	5
<u>Drinks</u>												
Very Good	16	14	18	12	19	10	12	13	13	13	11	10
Good	64	67	49	53	48	49	67	52	62	52	54	44
So-So	8	10	13	15	10	17	13	22	15	22	16	23
Poor	7	4	15	4	12	12	5	6	5	8	11	10
Very Poor	1	3	3	5	6	12	2	4	3	4	3	8
Can't Say	4	3	3	1	5	1	1	3	3	1	5	5

SOURCE: Sri Lanka; Thripasha Concept/Product Test; January-February 1978 Results.

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TABLE 9 RESPONDENTS' COMPARISON OF THRIPOSHA WITH WHEAT
AND RICE FLOUR WHEN USED IN ROTI, PITTU AND
STRINGHOPPERS

Evaluation	Criterion							
	Texture before		Texture after		Colour		Taste	
	User	Non	User	Non	User	Non	User	Non
-----Percent-----								
<u>Comparison with Wheat Flour</u>								
Both same	15	22	18	24	12	13	11	13
Wheat preferred	22	22	19	22	17	18	15	18
Thriposha preferred	62	51	62	49	70	65	73	64
<u>Comparison with Rice Flour</u>								
Both same	23	19	30	15	14	14	14	9
Rice preferred	23	33	19	36	22	27	22	37
Thriposha preferred	37	33	34	35	47	44	47	40
Doesn't know	17	15	17	14	17	15	17	14

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TABLE 10 RESPONDENTS' OPINIONS ON SIZE OF PACKAGE

Opinion	Users	Non-users
Too little	24	16
Just right	74	83
Too Much	--	--

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TABLE 11. RESPONDENTS' OPINIONS REGARDING TYPE OF PACKAGE

Opinion	PERCENT OF RESPONDENTS *		
	Users	Non-users	Both
Good/packeted well	70	69	69
Airtight/hygenic	22	77	20
Colourful/attractive	10	8	9
Would be better if packed in tins	9	11	10
Other comments	9	6	8

* Total may exceed 100 due to multiple responses.

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INTERVIEWEE PROFILE

TABLE 12

DISTRIBUTION OF SAMPLE BY INCOME; USERS,
NON-USERS AND BOTH

Income Level (Rs/Mo)	Users *	Non-Users	Both
	-----Percent-----		
100	13	15	14
101-200	36	31	35
201-300	23	24	22
301-400	15	15	15
401-600	10	9	11
600 +	3	6	3
TOTAL	100	100	100

*Users are defined in all tabled as those households
who had used Thripasha at least once in the past
regardless of how long ago.

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INTERVIEWEE PROFILE

TABLE 13

PROFILE OF INTERVIEWEE CHARACTERISTICS BY HOUSEHOLD INCOME LEVEL

Income Level (Rs/Mo)	Interviewees who were "housewife"		Interviewees educated at the O'Level minimum		Interviewees below age of 40	
	User	Non	User	Non	User	Non
	Percent					
101-200	92	88	24	23	92	93
201-300	95	83	49	35	96	93
301-400	93	95	58	43	95	92
401-600	87	92	59	75	88	92
All Groups	89	85	39	33	90	84

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INTERVIEWEE PROFILE

TABLE 14 SIZE OF FAMILY AND AGE OF CHILDREN IN SAMPLE HOUSEHOLDS BY INCOME LEVEL
AND PAST USAGE OF THRIPOSHA

Income Level (Rs/Mo)	SIZE OF FAMILY				FAMILIES WITH CHILDREN					
	<u>3-6 Persons</u>		<u>Over 6 persons</u>		<u>Under 1-1/2 yrs</u>		<u>1-1/2-3 yrs</u>		<u>4-6 yrs</u>	
	User	Non	User	Non	User	Non	User	Non	User	Non
	-----Percent-----									
101-200	68	61	32	38	46	53	50	38	64	52
201-300	75	71	25	29	38	47	50	48	61	59
301-400	73	66	27	29	44	29	42	42	62	61
401-600	66	71	34	29	30	33	46	21	73	70
All Groups	70	68	30	31	42	42	47	38	63	58

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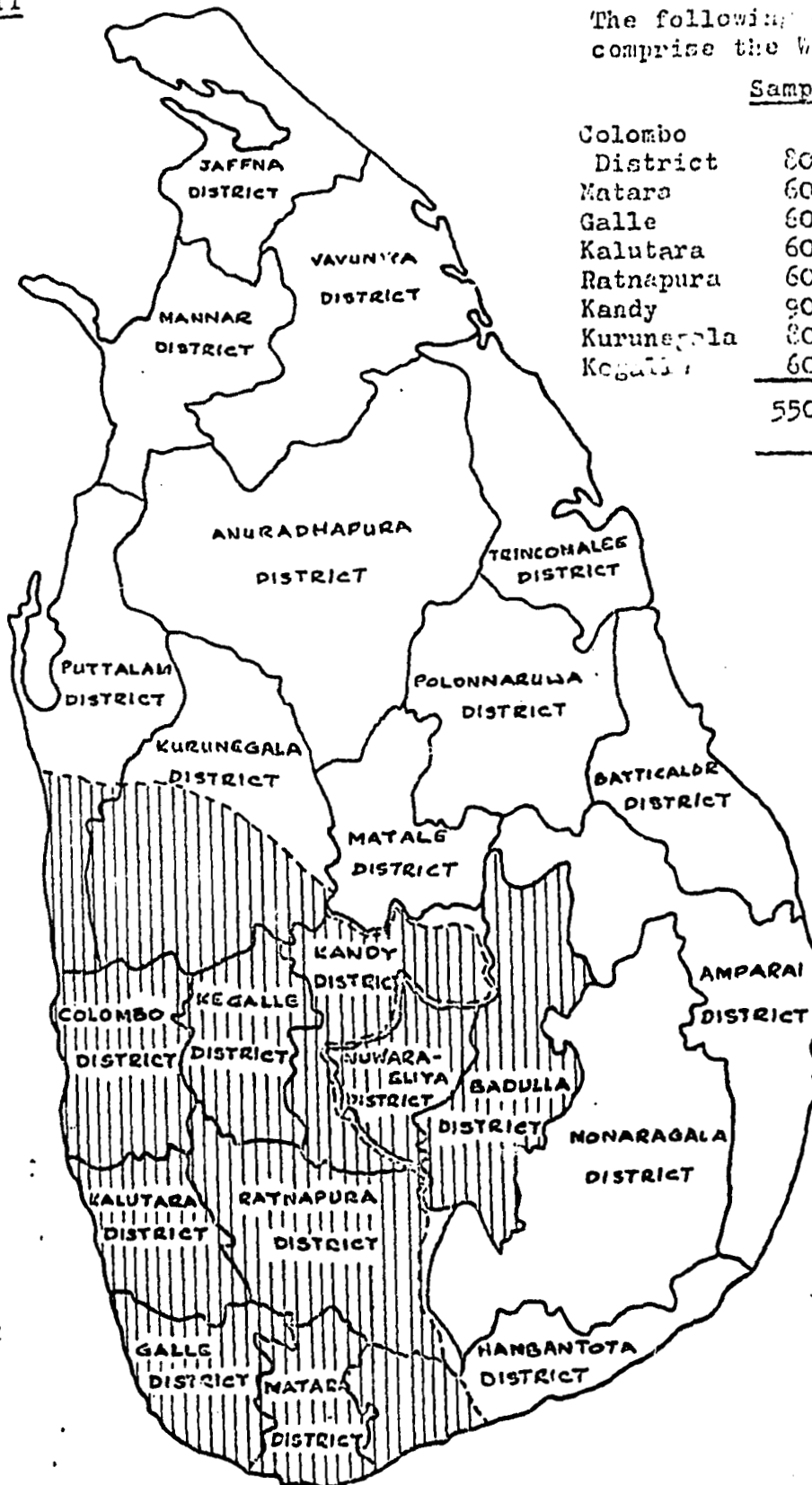
ANNEX II

WET ZONE SAMPLE - RURAL

The following districts comprise the Wet Zone Sample.

Sample Additional

Colombo District	80		
Matara	60	+	25
Galle	60	+	50
Kalutara	60		
Ratnapura	60		
Kandy	90	+	30
Kurunegala	80		
Kegalle	60		
	550	+	105



K E Y



Wet Zone

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CHECKLIST OF RESEARCH ITEMS NEEDING COMPLETION (PHASE I)

1. Summary tabulation and analysis of food consumption patterns for children and women (Question 1).
2. Summary tabulation and analysis of specific receipes used in preparing various foods using Thripasha (Question 17).
3. Comparison of sample demographics with population in research area; particularly income.
4. Should summarize information from Question 2 and 3; What packaged foods were mentioned most frequently, unaided and aided recall separately perhaps (knows of, heard/seen, used.)
5. Summarize Question 4; for those using during last month, what quantity? Show distribution.
6. After Question 4 some respondents were eliminated. How many? Also how many households were called upon total to get the final qualifying sample?
7. How many households accepted the product but did not use it? (Question 9). In other words what was the attrition rate, if any. Also Question 10, did any use less than the full packet?
8. Question 16. Summarize any useful information about the instructions, including summary of comment, if any.
9. Question 19. Does the "Doesn't know" group apply to both the wheat flour and the rice flour comparison? We have then listed in Table 9 under rice flour only. There must be a few "don't know" for the wheat flour comparison.
10. Summary tabulation and analysis of data regarding which family member used Thripasha in each food use (Question 11a, b & c).

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APPENDIX B - 3

**Thriposha Commercial Market Test:
A Progress Report, May 1981.**

Thriposha Commercial Market Test:
A Progress Report

John P. Nichols*

A review of the progress of the commercial test market for Thriposha was the purpose of a visit to Sri Lanka from May 18 to May 30, 1981. Included in this visit was a review of sales and distribution activities and an evaluation of consumer and trade reaction to the availability of Thriposha in commercial market channels.

During the first week results of the first wave of consumer surveys were reviewed, a visit was made to the Thriposha factory, marketing progress and problems were reviewed with CARE staff and a meeting was held to review sales data with the staff of Lever Brothers. In the second week visits were made to wholesalers and retailers in Kandy, Galle and Matara, three of the four test market areas. Improved estimates of sales volume were developed and analyzed. Meetings were held with Levers staff to review progress and outline plans for continued test market activity, sales reporting and consumer surveys. A final meeting was also held with USAID Director Sara Jane Littlefield to report on findings.

FIELD OBSERVATIONS

Meetings with four wholesalers and over 25 retailers in three test areas confirmed the fact that the test market was launched in a highly successful manner. Opinion was virtually unanimous that Thriposha is a commercial success. More specific observations and problems are discussed below.

*Professor, The Texas Agricultural Market Research and Development Center,
Department of Agricultural Economics, Texas A&M University

Distribution

Since Thriposha is not a Levers-produced product and is being handled as a test only, the ordering, distribution and invoicing procedures are not the same as for the rest of Levers products. This has resulted in several problems of maintaining a consistent flow of product and up-to-date records of sales volume.

Initial shipments were estimated for each nominated Lever's wholesaler (NLW). The NLW's wholesale distributors designated to handle all of Lever's products. There are approximately 30 sales territories in Sri Lanka with 4 to 5 NLW's in each. In the four test market areas there are 17 NLW's. Practically all distribution of Thriposha was done through the NLW's.

Replacement orders are made by calls from the Levers sales reps or the NLW to the marketing staff at Colombo. Orders for Thriposha are not placed on the standard order form. In part this is due to the fact that because of limited space and the bulkiness of the product no Thriposha is kept at Lever's Colombo warehouse. Pick-up of Thriposha is made from the factory at Ja-Ela. When NLW trucks come to Colombo to pick up Levers products it is not convenient to drive to Ja-Ela for a partial load of Thriposha. Shipments are therefore generally made by independently hired trucks coordinated through the marketing department at Levers. This has proved to be a cumbersome system and resulted in March and April, particularly in the Galle and Matara regions where the product was selling the fastest.

Despite these problems Thriposha has been widely available in the test market areas. The potential of nearly 2000 retail outlets in the test areas has been about 65 to 80 percent achieved on a consistent basis depending on the

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region. In most areas it was reported to be as readily available in rural areas as urban although this was not confirmed by specific observations during this visit.

Typical retail outlets maintained anywhere from 6 to 48 packets on the shelf. Some redistribution of stocks among wholesalers was done to prevent a situation of old product appearing on the shelf. This was not typically done at the retail level however.

Packaging/Product Quality

No major problems were observed or reported with the product packaging. It maintained its condition through the typical handling procedures with essentially no damage. Problems were observed with variability in the color from package to package due to a printing problem. This was not judged to be serious in those packages reaching the retail shelf as the worst were eliminated at the factory. The cardboard surface of the package can begin to look shopworn if it sits in an unprotected area of the store for a long period of time. Some of this was noticed in a few cases but again was not judged serious.

Product quality was reported to be satisfactory by retailers and customers. A few instances of weevil infestation were reported by retailers. This was usually the result of problems in retail storage. One lot of about 110 cases was returned to the factory from a NLW but only a few packets were found to be infested. In all cases retailers indicated that weevils were not an important problem.

SALES LEVEL

Over the seven month period, October 1980 through April 1981, approximately

7650 cases (48 one-pound packages each) were produced and shipped to NLW's. After accounting for ending inventories at the wholesale level it is estimated that 7272 cases were distributed to retail (Table 1). Since no information is available on inventories at retail, the discussion here refers primarily to volume of sales at the wholesale level.

Nearly 70 percent of the sales were in the two southern territories, Galle and Matara. Kandy accounted for about 22 percent and Matale 9 percent of the total sales. Data are presented in Table 1 separately for three periods (Oct.-Dec., Jan.-Feb., Mar.-Apr.). Over those periods there appears to be an increasing proportion of sales in the Galle and Matara areas and a declining share in Kandy and Matale. Sales over all also show a decline but much of this is probably due to "filling the pipeline" which magnifies wholesale level sales during the early months. The field interviews indicated that retail sales were continuing on a relatively consistent basis.

Sales volume differences among regions are due in part to the differing number of households and retail outlets in each area. These differences are accounted for in Table 2 using estimates of the number of households and retail outlets in the corresponding Levers sales territories. Over the seven month period wholesale sales averaged 821 packages per 1000 households with a range of 546 to 1000 across areas. This suggests more clearly that sales in Kandy and Matale are lagging relative to the southern areas.

When calculated relative to the number of potential retail outlets a similar pattern appears. Sales averaged 178 packets per potential outlet with Matale exhibiting a very low sales level and Galle and Matara well above the average. The denominator in this ratio is the number of potential outlets available according to Levers statistics for their sales territories. The ratio does not

Table 1. Wholesale sales of Thripsha by Region and time period.

Time Period ^{1/}	Region				Total
	Kandy	Matale	Galle	Matara	
	-----Cases ^{2/} -----				
<u>J.C. 10, 11, 12; 1980</u>					
Sept. 29-Dec. 31	927	391	1064	1048	3430
Regional Share (%)	(27.0)	(11.4)	(31.0)	(30.6)	(100)
<u>J.C. 1,2; 1981</u>					
Jan. 1-Mar. 6	478	180	951	914	2523
Regional Share (%)	(18.9)	(7.1)	(37.7)	(36.2)	(100)
<u>J.C. 3,4; 1981</u>					
Mar. 7-May 8	190	69	487	573	1319
Regional Share (%)	(14.4)	(5.2)	(36.9)	(43.5)	(100)
Total	1595	640	2502	2535	7272
Regional Share (%)	(21.9)	(8.8)	(34.4)	(34.9)	(100)

^{1/} Dates are approximate: ending inventories are taken on different days for different wholesalers. Therefore the actual sales periods covered are slightly different for each wholesaler. Journey cycle (J.C.) refers to the monthly cycle used by Levers sales reps in visiting wholesalers and retailers.

^{2/} There are 48 one-pound packages per case.

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Table 2. Wholesale sales of Thriplosa as related to number of household, retail outlets and average monthly sales of Levers products, by region, Sept. 29, 1980-May 8, 1981.

	Region				Total
	Kandy	Matale	Galle	Matara	
Wholesale Sales					
Volume (cases)	1,595	640	2,502	2,535	7,272
(packages)	76,560	30,720	120,096	121,680	349,056
Number of households	140,002	40,870	122,610	121,670	425,152
Packages/ 1000 hsholds	546	752	979	1,000	821
Number of potential retail outlets	400	560	460	540	1,960
Packages/ retail outlet	191	55	261	225	178
NLW Avg. mo. sales of Lever Products (1000 Rs)	1,128	786	763	674	3,351
Packages/ 1000 Rs. ^{1/}	68	39	157	167 ^{2/}	101 ^{2/}

^{1/} This represents total packages sold over seven months divided by monthly average sales volume for Lever products in each region.

^{2/} Excludes 180 cases sold direct in Matara (not through NLWs).

indicate directly the average sales for outlets actually carrying Thriposha.

The differences among regions which is apparent in the data could reflect a real difference in sales or may be the result of some other factors as yet unexplained. One possible explanation is a difference in the "leakage" rate in the four areas. It was reported that one NLW in Matara was selling Thriposha over a geographic area which was larger than the Lever's sales territory. The volume involved is not known but this practice was brought under control when Levers marketing staff explained the need to control distribution. Nonetheless it is possible that more leakage is occurring from the southern areas than from the two central regions. This is not likely however to account for the large differences appearing in the data.

Another possible explanation is that the sales efforts by NLW's in Kandy and Matale are not as strong. To account for the difference in relative size of NLW's, sales of Thriposha were calculated as a ratio to each NLW's average monthly sales of all Lever products in Rupees (Table 2). This should remove most of the effect of size of NLW. Results of this analysis are consistent with the pattern described above; NLW's in Galle and Matara sold more Thriposha relative to their average movement of Lever's products. This was found to be fairly consistent when examined for each NLW. Only in one case did an NLW in the Kandy/Matale area have a higher ratio than the lowest NLW in Galle/Matara.

This last analysis suggests that the difference in the two areas stems either from a real difference in the demand for Thriposha or a failure to distribute and merchandise it at least as well as the rest of Levers products. There seems to be no readily apparent reason to believe that a major failure in merchandising occurred. Promotion efforts were the same in both areas. However,

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we have asked for a review of this by Maurice Perera, Marketing Manager (Foods), and the Levers sales staff. It is possible that we have not placed the product in as high a percent of retail outlets in the Central regions. This should be explored and merchandising efforts increased. If the relative differences in sales continue despite increased merchandising efforts then we must look for other explanations or accept the hypothesis that demand is different among the areas.

Possible explanations for differences in demand include basic differences in culture and eating habits or differences in the availability of alternative products, including free distribution Thripasha. One could also consider the possibility of differences in household incomes among the areas. This does not seem to be the case, however, and if it did exist should also affect the sales of other Lever's products similarly. Income differences would not explain the differences among regions in the ratio of Thripasha to total Levers sales.

It was suggested that there is a much larger participation in the free program in the Kandy and Matale area. If this is true then it might provide at least a partial explanation for observed differences in commercial sales. Those households already receiving free Thripasha may be less inclined to purchase additional quantities. If this is true then it also lends support to the idea that many of the households purchasing Thripasha in the higher sales areas are the same ones who would receive it free if available in their area.

At this point it is wise to note that these results are all preliminary and based only on the first few months of data. Speculation regarding the underlying reasons for differences should wait to see if the differences are real. Also a specific analysis is needed of the participation rates and the volume of

free Thripasha in the test market areas.

Although retail sales are not measured directly, they could be estimated by adjusting for the average inventory on the retail shelf at the end of the period and subtracting that from wholesale sales. A reasonable estimate would be about three weeks supply which works out to about 750 cases. Therefore, retail level sales through the end of April would be approximately 6500 cases. This is equivalent to approximately 142 metric tons sold through the first seven months.

Extrapolating from this to the total market would be very tenuous at this stage. It is estimated that about 17 percent of the total Sri Lankan households are in the test market area. Using this as a rough guide one might project the annual sales to be about 1430 metric tons ($(142 \div 7 \times 12) \div .17 = 1432$). This could be optimistic considering that sales will often decline to a plateau after the initial new product introduction. On the other hand, once nationwide introduction is achieved, more efficient advertising media such as radio and newspapers could be used which could help to boost sales. Suffice it to say that at this point the estimates are all quite speculative.

SURVEY RESULTS

The first wave of the post-launch consumer survey was done in January 1981. The sample consisted of 1200 randomly selected urban and rural households in the four test market areas. Fifty-two percent of the households interviewed had incomes of Rs. 300 per month or below, 30 percent between Rs. 301 and Rs. 600 and 18 percent over Rs. 600. According to Levers research department, this distribution is reasonably consistent with earlier surveys and with the known income distribution of households in Sri Lanka. Incomes were higher for households in urban areas.

Widespread familiarity with Thripasha was found. Eighty-four percent of the respondents indicated that they had used Thripasha at some time (Table 3). Fifty-two percent indicated they had used it since October 1980. Of these, 62 percent had purchased Thripasha, the rest having apparently received it through a clinic or as a gift. Of those who purchased Thripasha it was found that 49 percent were first time purchasers while 9 percent indicated that they purchased Thripasha at least once per week. This (9 percent) is equivalent to approximately 3 percent of the total households interviewed.

With respect to regional differences, it was found that the Kandy/Matale region exhibited the highest percent of households using Thripasha at some time (89%), and the highest percent of households using Thripasha since October (56%). However, of those using since October, this area had the lowest percent of households which had purchased the product (58%) and, of these, the highest percent which had purchased it for the first time only. These findings are consistent with the test market results which indicated a lower sales level in the Kandy/Matale area. This is also consistent with the hypothesis that part of the difference in demand may be due to more widespread availability of free Thripasha in that region.

Other results of the first wave of surveys revealed a very high awareness and recall of price which is an indication that the price factor was important to them. With respect to product quality there was very little dissatisfaction expressed. The results were positive and comparable to evaluations in the 1978 household survey.

The most common method of preparation was aggala (89 percent of those using since Oct. 1). Porridge and roti were mentioned by 39 and 38 percent. A further

Table 3. Share of respondents indicating usage and purchase of Thriposha by region, first wave of post-launch survey, January 1981.

Item	Region			Total
	Kandy-Matale	Galle	Matara	
Number of Households	600	300	300	1200
Share using at some time (%)	89	81	75	84
Share using since Oct. 1 (%)	56	51	44	52
Share of users who purchased since Oct. 1 (%) ^{1/}	58	65	70	62
Share of purchasers buying for first time (%) ^{2/}	59	40	36	49
Share of purchasers buying at least one package/week (%) ^{2/}	7	10	11	9

^{1/} Percentage based on number of respondents using Thriposha shown in line above. Therefore the 62 percent represents 386 households (1200 x .52 x .62 = 386).

^{2/} Percentage based on number of respondents purchasing Thriposha since Oct. 1.

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discussion of results will be provided after second wave questionnaires are tabulated and comparisons made.

OTHER OBSERVATIONS AND DISCUSSION

Future marketing plans and options were discussed. Lever Brothers is willing to continue distribution on the same basis for a reasonable period of time. They are, however, currently very active in market development programs for their own products. These activities plus the loss of some staff in the past year may limit the support they can give to launching Thripsha in new sales regions.

A logical approach to be pursued is to expand sales gradually as production and other resources permit. This is, of course, dependent upon a final evaluation of the test market. The most appropriate time for such an evaluation seems to be late fall 1981 when all of the data will be available on sales and consumption patterns, including the third wave of interviews. The test market looks very promising at this stage and certainly the development of long-run plans should begin as soon as possible.

In addition to limitations in marketing and distribution resources, CARE faces some uncertainty with regard to raw materials. There is a possibility that ICSM supplies could be reduced in the next fiscal year. At the same time there is also the very real possibility that the government of Sri Lanka will not be able to support the purchase of local corn and soya to permit a shift to a 60/40 blend next year. These pressures on the free product may also present problems for the commercial product. Limited supplies of ICSM may have to be reserved for the free product requiring the purchase of greater quantities of local ingredients for commercial Thripsha. If this were to happen then costs

may escalate requiring a retail price adjustment sooner than desirable. It is certainly not clear how all of this will work out and it seems likely that current production levels for the commercial market could be maintained. However, over the longer term, to accommodate expansion of the market to eventual national scope, problems in obtaining assured supplies of raw materials will have to be resolved.

Another point of planning which was discussed was the third wave of consumer interviews. It was agreed that the first two waves were sufficient to establish general reaction to the product and usage patterns. Therefore the third wave will focus primarily on obtaining information on repeat purchase patterns. The sample will consist of "known purchasers" of Thripasha who were part of the sample in previous waves. This will permit the use of a smaller, more specific sample, expedite fieldwork and tabulation and yield a better estimate of repeat purchase behavior, thus providing an improved basis for projecting consumption and demand.

SUMMARY AND CONCLUSIONS

1. The market test after seven months appears to be a success from a commercial point of view.
2. Preliminary evidence suggests strongly that it is also successfully reaching households in the target group.
3. Some problems existed in distribution logistics which were discussed and appear to be resolvable.
4. Over the longer term market building will likely be necessary from the point of view of increasing usage rates or frequency among the target group.

5. No evidence was found of any significant problem with product quality, packaging or price.
6. Regular monthly reporting sales at the wholesale level consistent with the data reported herein will be provided by the marketing staff at Levers.
7. A review of sale data and sales and merchandising efforts in Kandy/Matale will be undertaken by Levers to provide additional information which might be of value in explaining regional sales differences.
8. Data from the tabulation of the second wave of interviews will be provided by late June 1981. This will be followed by a summary report by the Manager of Marketing Research describing and comparing the results of the first two surveys.
9. A further tabulation of the data will be done to analyze separately the responses of those households with incomes of Rs. 300 per month or below and with children five and under.
10. A thorough review of the commercial test market should be planned for late in 1981 consistent with the availability of complete test market sales and survey results.

Sri Lanka Trip Report, May 1981:

Addendum

John P. Nichols

After completing a report on the status of the Thripasha test market, additional information has become available. This information relates to the non-commercial distribution of Thripasha through the Feeding Program.

During the first six months of the test market 2,176,410 packets (750 grams each) were distributed by CARE to Health Centers and Estates in the four Districts most closely corresponding to the sales territories used in the test market. This represents approximately 741 metric tons or more than 5 times the volume of Thripasha sold in the test market (142 MT) during the seven month period (October 1980 - April 1981).

Distribution estimates through the Thripasha Feeding Program are presented in Table 4. In all regions except Kandy the majority went to Health Centers. In Kandy, which received 60 percent of the total for all four regions, nearly two-thirds (63 percent) went to Estate feeding programs.

While the boundaries of the Districts and Lever's sales territories do not coincide exactly, it is useful to examine the Thripasha Feeding Program data on a per household basis for general comparison purposes. If one assumes that the Health Center distribution reaches a market which most closely corresponds with the commercial test market then we find little difference across regions with an average of 2.4 packets per household being distributed over the six month period. Matara is the highest at 2.9 packets per household. If, however, we also add in the distribution to the

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Table 4. Total number of 750 gram packets distributed through Thripasha Feeding Program, non-commercial channel in test market area over six months. (Oct. 1980 - March 1981)

	District				Total
	Kandy	Matale	Galle	Matara	
Packets (000) Distributed to Health Centers	490.0	134.0	325.7	315.6	1265.4
Estates	821.7	46.8	23.5	19.0	911.0
Total (%)	1311.7 (60.3)	180.8 (8.3)	349.2 (16.0)	334.6 (15.4)	2176.4 (100.0)
No. of District Households (000)	215.4	58.4	136.2	108.0	518.1
Packets / hshld. Health Center	2.3	2.3	2.4	2.9	2.4
Total	6.1	3.1	2.6	3.1	4.2

Source: Data from CARE/Sri Lanka record and estimates of District Population.

Estates we find a large difference between Kandy and the other regions, with Kandy receiving 6.1 total packets per household compared to 2.6 to 3.1 for the other three regions.

Data are also available on the number of beneficiaries and the percent of potential beneficiaries reached by region (Table 5). Approximately 60 percent of the beneficiaries reached were in Kandy. CARE data indicates that a high share of the approved level of beneficiaries were reached in Kandy for both Health Centers and Estates. Other Districts show a somewhat lower share reached in one category or the other.

The most revealing comparison, however, is between beneficiaries and total District population. Twice as large a share of the population was reached through the Thriposha Feeding Program in Kandy (8 percent) as compared to Galle and Matara. Matale was also much lower than Kandy but higher than the other two districts.

The evidence from the Thriposha Feeding Program correlates quite well with the results of the test market. In areas where the free distribution program is the strongest, commercial sales were the weakest. In areas where the free Thriposha is not as widely available, commercial sales levels were higher. If this is true, then it may suggest that the commercial product is being purchased in quantity by households which in other circumstances might be receiving it free through the Thriposha Feeding Program.

Other interpretations may also be made from this preliminary data and analysis. Final results should be received and studied before any firm conclusions can be drawn.

Table 5. Average number of beneficiaries and share of approved beneficiary level ^{1/} reached through Thripasha Feeding Program over six month period (Oct. 1980 - March 1981), by District.

	District				Total
	Kandy	Matale	Galle	Matara	
Health Centers					
no. reached	40014	13183	26016	24184	103397
share of approved (%)	(90.5)	(84.0)	(87.5)	(93.0)	
Estates					
no. reached	63877	3651	1579	1515	70622
share of approved (%)	(91.2)	(91.5)	(73.5)	(74.5)	
Total number reached	103891	16834	27595	25699	174019
District population (000) ^{2/}	1292.3	350.3	817.4	648.3	3108.3
Beneficiaries reached relative to pop. (%)	8.0	4.8	3.4	4.0	5.6

^{1/} Approved beneficiary level estimate and number of beneficiaries data provided by CARE.

^{2/} District population estimates from Levers marketing staff (M. Perera report, May 20, 1981).

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APPENDIX B - 4

**A Review of the Commercial Marketing Program
for Thriposha, May 1982.**

A REVIEW OF THE COMMERCIAL MARKETING
PROGRAM FOR THRIPOSHA

MAY 1982

John P. Nichols*

The commercial test market for Thriposha was launched in October of 1980. The first six months' results were reviewed during a visit in May 1981. This is a report on activities undertaken during a visit to Sri Lanka from 13 May to 28 May 1982 and the status of the commercial marketing program at that time.

SUMMARY OF ACTIVITIES

The first several days were spent in meetings with CARE and Levers personnel discussing both their views of commercial marketing and the results of the follow-up consumer surveys completed in 1981. A summary of these survey results are presented in a report by the Market Research Department of Levers (Ceylon) Ltd. made available in early 1982 and previously circulated to interested persons. Meetings were also held with the Lanka Market Research Bureau to assess their capabilities and then to initiate proposals for selected research activities.

A meeting was also held with executives of Glaxo (Ceylon) Ltd. to assess their distribution capabilities and to discuss their proposal for undertaking additional commercial Thriposha sales. They had earlier approached CARE regarding this but it was decided not to pursue the idea until further analysis of current sales and usage patterns could be completed.

* Professor, The Texas Agricultural Market Research and Development Center, Department of Agricultural Economics, Texas A & M University.

An extensive tour of the Matale and Kandy areas was also undertaken. During this tour visits were made to five nominated Lever's wholesalers (NLW) including two Multipurpose Cooperative Societies (MPCS). Also visited were numerous retail outlets both in larger market centres as well as more remote rural villages. Sales representatives for Galle and Matara were also interviewed.

During the last week further meetings were held with CARE and Levers personnel to discuss problem areas and lay out plans for adjustments and strategies designed to resolve them. Also meetings were held with Lanka Market Research Bureau to discuss proposals for further market research activities. A meeting with the Minister of health was held to provide an overview of the commercial Thriposha program. A similar meeting was held with the Director of USAID/Sri Lanka.

A review of current sales levels and the status of the test market is discussed in the next section. This is followed by a review of current market research data and planned activities. The concluding section identifies important aspects of the marketing program which require further attention and planning activities associated with each.

TEST MARKET STATUS

Sales Data Overview

Data were obtained from which Thriposha sales at the wholesale level could be estimated. Because of a change in Levers record keeping procedures it was not possible to estimate monthly inventory changes at the wholesale level since last May. Sales data for the period October 1980-April 1981 are derived from figures given in Table I of last year's progress report.

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Sales for the period since then are based directly on NLW receipts of Thriposha for the month and therefore vary considerably due to fluctuations in inventory positions. When viewed on a quarterly basis these inventory fluctuations are not as significant and a better estimate of sales levels is obtained. These data do not include any estimate of returned goods.

The pattern of sales follows the traditional path of high initial levels when retail inventories are being established, promotion is heavy and consumers are trying the product (Table 1 and Figure 1). Sales then decline to a plateau which reflects longer term consumption with the given marketing effort. Sales over the last 4 quarters have averaged about 58 percent of the sales for the first two quarters and have been generally stable from quarter to quarter. This sales level plateau is similar in percentage terms in all areas except for Matale where the percentage decline was less. Quarterly variation is greater for individual sales territories.

As noted in earlier reports, the sales level in Kandy and Matale has averaged less than that for the Galle/Matara areas despite the greater population. This pattern has continued, though there appears to be an upward trend in Kandy from its lowest point in the second quarter of 1981. Over the last four quarters, sales in Galle and Matara have accounted for nearly two-thirds (66%) of the total with Kandy and Matale comprising 23 and 11 percent, respectively.

Neither population nor relative size of trade area can account for the regional differences observed in commercial Thriposha sales (Table 2). Sales per 1,000 households are very low in Kandy relative to other areas while average sales per retail outlet are lowest in Matale. When compared

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TABLE 1

ESTIMATED QUARTERLY WHOLESALE SALES OF THRIPOSHA BY REGION
October 1980 - March 1982¹

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YEAR END QUARTER	R E I G O N					TOTAL
	KANDY	MATALE	GALLE	MATARA		
		C	A	S	E S ₂	
1980 4	927	391		1,064	1,048	3,430
1981 1	563	214		1,194	1,200	3,171
1981 2	350	165		644	767	1,926
1981 3	380	235		600	665	1,880
1981 4	450	300		835	475	2,060
1982 1	575	180		540	560	1,855
TOTAL: Last 4 Quarters	1,755	880		2,619	2,467	7,721
Regional share: Last 4 Quarters (%)	(22.7)	(11.4)		(33.9)	(32.0)	(100.0)

¹ Estimate based on journey cycles of approximately one month each; sales for the first 2 quarters are deliveries adjusted for inventory changes at wholesale; last 4 quarters are not adjusted for wholesale level inventory changes.

² One case equals 48 one pound packages

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FIGURE 1. Estimated quarterly sales of Thripasha at wholesale level: Total and by region

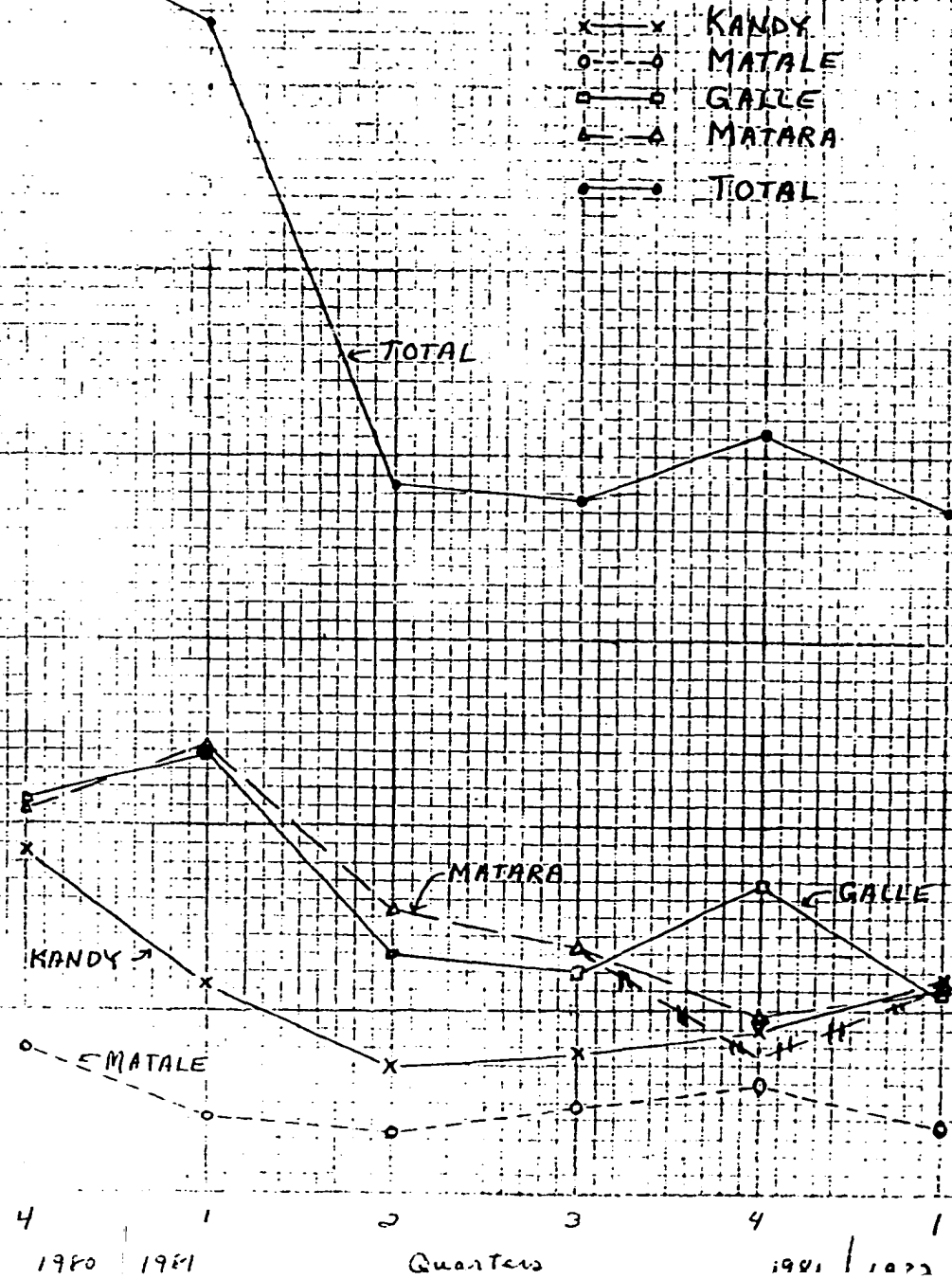
(165.) Cases

(142,000) 3000 -

(96,000) 2000 -

(48,000) 1000 -

500 -



with sales of all Lever products in each region the difference is quite obvious. Thriposha sales are a much smaller part of NLW sales in Kandy/Matale than in Galle/Matara which would not be expected unless some other factor were exerting a strong influence. Using an index based on average NLW sales of all Lever products as a measure of relative size of NLWs among regions, the sales figures were adjusted to show "real" sales. This analysis results in an even greater disparity than shown in the unadjusted figures. (Table 2).

One of the main influences thought to be affecting sales is the quantity of free Thriposha being distributed in each region (Table 3). The Kandy region in particular has many MCH centres and estates involved in the program. Approximately 4.3 million pounds were distributed in the area in 1981 which is about 20 percent of the island-wide total. Distribution is less in Matale but population there is also much smaller. Caution must be exercised in comparing free distribution figures with commercial sales because the size of the territory and therefore relevant population base do not match precisely. Lever's sales territories are not the same as the Superintendent of Health Services (SHS) areas used in aggregating free distribution data.

Distribution & Trade Reaction

Spot checks of the Kandy/Matale areas showed that Thriposha was widely available even in small rural areas. One Levers sales representative estimated that it was in 60 percent of the retail shops he called on. In the larger market areas it was found in many shops and in small villages it was usually observed in at least one or two shops. In Galle and Matara

TABLE 2

WHOLESALE SALES OF THRIPOSHA AS RELATED TO NUMBER OF HOUSEHOLDS,
RETAIL SHOPS AND SIZE OF NLW (AVERAGE SALES OF LEVERS PRODUCTS),
BY REGION, APRIL, 1981 - MARCH, 1982

=====

	R E I G O N				
	KANDY	MATALE	GALLE	MATARA	TOTAL
Wholesale Volume:					
Cases	1,755	880	2,619	2,467	7,721
Pounds	84,240	42,240	125,712	118,416	370,608
Number of House-					
holds:	140,002	40,870	122,610	121,670	425,152
lbs./1,000 House-					
holds:	602	1,034	1 025	973	872
Number of Retail					
shops visited by					
Levers	400	560	460	590	1,960
lbs./shop	211	75	224	219	189
NLW Average monthly					
sales of Lever					
Products (index) ¹	134.6	93.8	91.1	80.5	100.0
"Real" Sales					
(pounds ÷ index)	62,585	45,032	137,993	147,101	-

¹ Index based on relative NLW sales of all Levers products (in Rupees) by region, October 1980 - March 1981.

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TABLE 3

DISTRIBUTION OF FREE THRIPOSHA, TOTAL FOR HEALTH CENTERS AND
ESTATES, BY REGION AND MONTH, JANUARY 1981 - MARCH, 1982

YEAR/MONTH	R E G I O N				TOTAL
	KANDY ₁	MATALE	MATARA	GALLE	
-----000 Pounds -----					
1981 January	344.7	61.3	83.4	81.5	570.9
February	356.6	59.9	90.1	107.9	614.4
March	357.8	57.8	93.6	113.4	622.6
April	318.5	56.9	89.4	86.9	551.7
May	329.1	55.5	89.7	107.4	581.7
June	349.1	52.0	102.5	116.8	620.2
July	364.0	61.4	114.2	120.6	660.2
August	377.1	66.1	103.1	119.9	666.2
September	367.0	62.4	115.7	124.0	669.1
October	386.7	73.8	129.4	106.9	696.8
November	380.9	69.1	127.0	133.2	710.2
December	399.0	77.8	139.8	100.0	716.6
TOTAL	4330.6	753.9	1277.8	1318.4	7680.6
1982 January ₂	332.7	75.5	71.8	101.5	474.1
February ₂	333.3	78.8	107.7	108.6	518.9
March ₂	306.0	67.1	37.5	123.8	438.4

¹ Incorporate some tea estates which are in the Nuwara Eliya district. These data are reported separately only after January 1, 1982 but were combined for January - March 1982 to maintain consistent series.

² Preliminary data for recent months due to late submission of reports from some centers.

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where sales are higher it is likely that Thripasha is at least as readily available.

Sales in most retail shops were less than one case per month even in the larger busy market areas. In small rural shops where good distribution of free Thripasha exists sales were as low as 2-5 packets per month.

In the Kandy/Matale area sales declines were frequently attributed by retailers and wholesalers to an increase in free distribution of Thripasha through local MCH clinics or Estates. This was particularly true in more rural areas of these two districts. Retailers indicated that most sales were made to mothers who had children.

The distribution system was a source of concern to many of those interviewed. Orders originate with the Levers Sales representative. These are sent to Lever's where they are noted and forwarded to CARE. Delivery is now being handled by CARE with notification of delivery sent to Levers who then bill the NLW for the Thripasha. This system is entirely separate from Levers other products which are generally dispatched from a central warehouse in NLW supplied vehicles upon receipt of payment. Many NLWs receive only one shipment of Thripasha per month while some receive shipments less frequently depending on their volume. This has caused stocks to sit for two or more months at some NLW warehouse. Considerable damage has occurred in a few instances primarily due to weevils. In one NLW (an MPCS) stocks produced in October were still stored when visited in late May. Others had Thripasha produced in November.

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In the main market centres with the largest NLWs this was not found to be a problem. However, with slower sales in small rural areas and through MPCs, a more streamlined distribution method is desirable. In every case the NLW has a vehicle picking up goods at the Levers warehouse at least once per week. If space would be provided in Levers warehouse, stocks could be picked up more frequently but in smaller quantities as needed by the NLW. Billing problems for Levers would be eliminated. Transportation allowances would however be deducted from the NLW payment as originally envisioned. Since CARE is not doing the delivery this would require a re-examination of costs.

Packaging was in general good. There was some complaint regarding defective seals on the polyethylene bag but this was not widespread. Another problem with the packaging is that it is subject to weevil infestation where storage is inadequate. If distribution were streamlined this could certainly be reduced. However with inherently slow movement in rural retail shops it appears that there will continue to be some problems and product returns with current packaging materials.

Product returns to date have been due primarily to weevil infestation with some additional being pulled because it exceeded appropriate shelf-life. The returns have averaged about 0.75 percent over the last 12 months.

Price was reported to be no problem by most wholesalers and retailers. In view of the fact that most retail prices have increased, as well as wages and incomes, most felt that a price increase would not affect sales greatly. Retail margins were not mentioned as a problem except where they are split through a re-wholesaling operation. Some small retailers, particularly in rural areas, buy their supplies from other retailers and are

make only 15 to 20 rupee cents instead of the 55 which is the normal retail margin. This occurs in cases where the Lever's salesman does not sell directly to a small outlet and the NLW is located too far away for the retailer to be able to obtain it. Also NLWs don't usually provide credit to retailers which may be provided in a re-wholesaling operation. While this is not considered a major problem, it is important to be sure that Thriposha is available in these relatively small rural shops. Further decisions on price increases would permit the retail margin to expand somewhat.

MARKET RESEARCH ACTIVITIES

The consumer surveys done in January and April 1981 were tabulated by Levers Market Research Department and analyzed by Nihal Corea. His report completed earlier this year has been circulated. These results are not reviewed in detail herein but a brief summary is useful to understand the development of future plans.

All data were tabulated by region and by urbanization. In general it showed that a large share (47 percent) of all households had purchased Thriposha at least once in the first six months of the test market. This was up from 32 percent after three months. There was also a high awareness of Thriposha and the objective of getting people to try it appears to have been met.

The main problem revealed in the data was a lack of frequency or consistency in consumer buying patterns. Based on all households who had purchased at least once, only 9 percent were buying it at least once per week at the end of three months.

An additional 33 percent had bought Thriposha once or more per month. These percentages declined after six months to 4 and 20, respectively, although the base was larger in the second survey.

After three months 18 percent of commercial purchasers indicated they had bought one or more packets in the previous week. An additional 57 percent indicated they had bought one or more packets in the last month. These percentages declined after six months to 10 and 28, respectively. Again note, however, that the base is higher in the second survey. Both surveys confirmed earlier findings that Thriposha is a good product and widely acceptable in all aspects.

One problem with interpreting the data as it is now available is that comparable information is not available for the sub-set of the sample considered to be the target group. Cross-tabulations have not been done to determine if low-income households with small children have the same or different frequency of use pattern.

It seems clear however that Thriposha is not being purchased and used as frequently as is nutritionally desirable. The reasons for this are not clear from the data. Possible explanations include basic economic considerations, influence of an overlap with free distribution in some areas, a lack of awareness regarding the need for nutritional foods, lack of knowledge of nutritional value of Thriposha or a problem with the product itself. Since Thriposha was rated as good by most users it seems likely that the reasons for infrequent use are more deeply rooted. Consumer perceptions regarding food and nutrition, combined with declining real incomes over the last year probably explain much of the problem.

As a follow-up to this analysis two activities are proposed:

- 1) a further cross-tabulation and analysis of the second consumer survey and
- 2) a more in-depth study of the reasons for the high incidence of infrequent purchase and use. These are discussed in more detail below.

Cross Tabulations

It was decided that further valuable information could be extracted from the existing data. This will give a better estimate of usage patterns for the target population and will assist in developing the questionnaire for the in-depth study.

The attached proposal from Lanka Market Research Bureau(LMRB) provides detail on this activity. Since the Levers Market Research Department is unable to provide the time to do this more detailed tabulation it was agreed that it could be contracted out to an independent research firm. LMRB was established in Sri Lanka about a year ago and is staffed with an experienced manager from their office in India, Mr. Rajiv Inamadar. LMRB is part of Market Research Bureau, International, a sister corporation of J.Walter Thompson Advertising Co.

LMRB is responsible for providing the tables and a written analysis in 25 days. Work has already been initiated. The analysis should also include insights from Lever's initial tabulation which were not discussed in the earlier report and as relate to the reasons for infrequent use. Details are in Appendix II.

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In-depth Survey:

- A. Purpose: To determine reasons why less frequent consumers do not purchase and use Thriposha more regularly. The results should be directed toward developing a more focused advertising, promotion and consumer education program and to guide other future marketing decisions.
- B. Nature of Research: Approximately 200 households will be contacted and mothers interviewed on a face-to-face basis. Only households which qualify as low-income, with children and less than frequent use will be interviewed. Questions will be a combination of open-ended probing type as well as attitudinal questions using intensity scales. Details are in Appendix III.
- C. Schedule: This research is projected to require 85-95 days to completion of report. It will be initiated with questionnaire design upon completion of analysis of cross-tabulation. Final completion will likely be about October 1, 1982.
- D. Responsibilities: LMRB will initiate and carry out the research once contracted by CARE.
 CARE will provide oversight and review and coordinate questionnaire design approval with other consultants.
 Consultants: Lever Marketing Staff and Texas A & M (Nichols) will review the questionnaire for content and appropriateness to overall marketing objectives.

MARKETING STRATEGIES AND PLANNING

The following discussion covers several areas in which decisions will be made over the coming year. The purpose is to identify those areas and activities and outline the main considerations involved. Linkages among the various activities and the individuals or organizations involved are noted. Schedules are presented only to provide a general frame of reference. As the results of research and other activities in the early phases become known it is likely that alterations in schedules and plans for later activities will occur. Also outside influences will play a role in shaping the nature of these activities. Seven separate items are discussed:

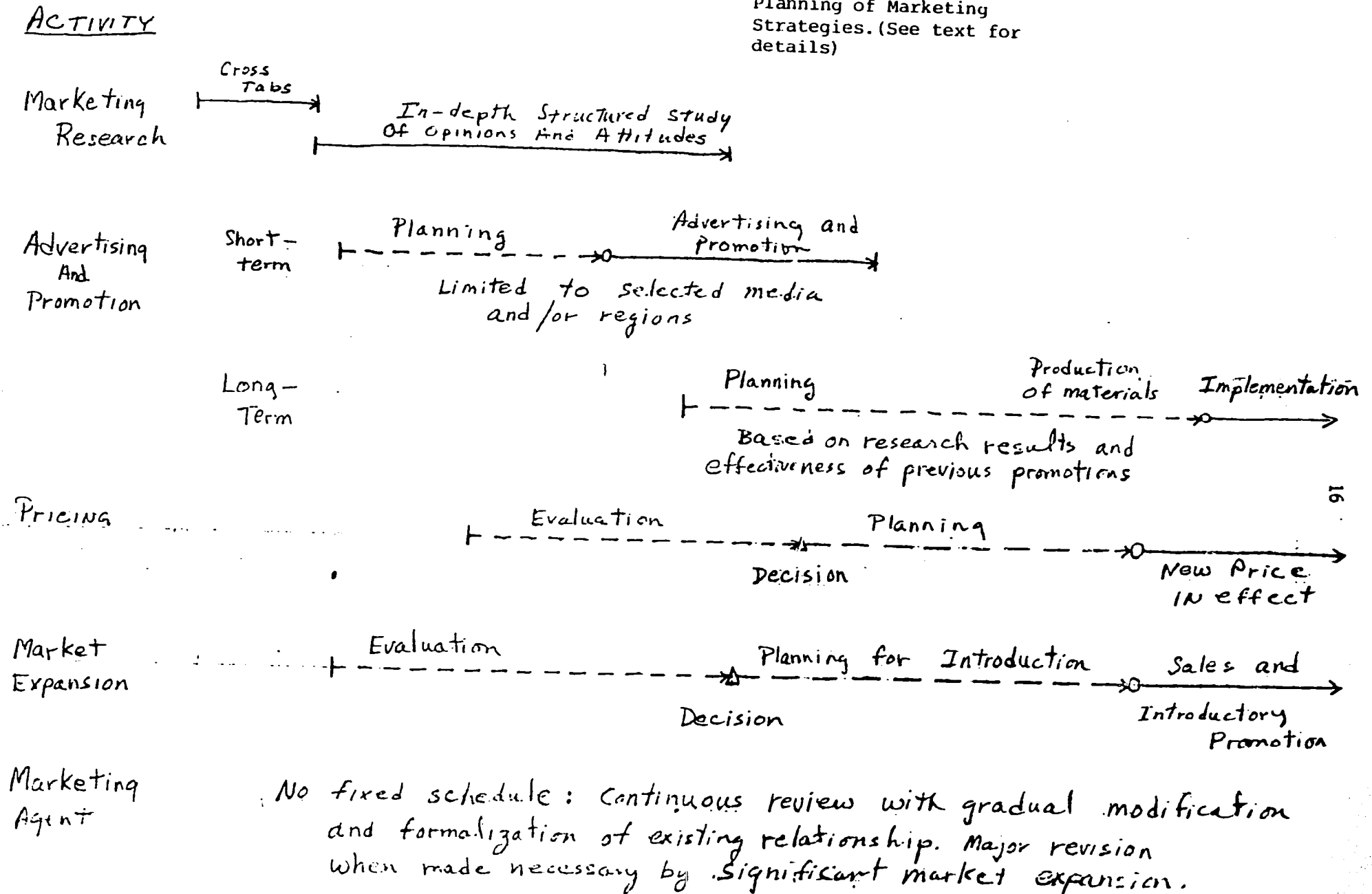
- 1) distribution,
- 2) advertising and promotion,
- 3) pricing,
- 4) expansion of sales territory,
- 5) packaging,
- 6) marketing agent and
- 7) evaluation of changes in formulation.

An overview of the relationship among the major activities is given in Figure 2.

Distribution:

As observed in contacts with wholesalers and retailers some problems exist in inventory management and logistics. CARE and Levers should meet to evaluate alternative means of resolving these problems. Whatever solution is agreed upon should be aimed toward increasing efficiency of movement of the product, reduce returns and losses reduce time in filling orders. This discussion should lead to a conclusion in the next few weeks.

FIGURE 2: Overview of Schedule for Planning of Marketing Strategies. (See text for details)



There should be increased monitoring by Levers field staff of NLW stocks. CARE should initiate a procedure of periodically

- 1) checking directly with Levers sales representatives and
- 2) of inspecting sales and marketing conditions in the test market areas.

Advertising and Promotion:

No activities have been carried out in this area since the introductory period. The general market plan hinges on identifying causes of infrequent use and then directing advertising, promotion, publicity and consumer education toward overcoming those problems. This must wait until the results of the research are known. However, some short-term advertising and merchandising could be carried out with a limited budget.

Short-Term: It is suggested that a modest budget (Rs. 50,000-75,000) be set aside for an advertising campaign to insure that public awareness of commercial Thripasha remains high. It would also be an opportunity to see if regional radio, newspaper inserts or other local media would influence sales.

This activity could be planned in the summer and executed in the early fall without the detailed information from the in-depth research. An advertising agency could be contracted to provide some creative assistance and production of materials as needed. Levers marketing staff should be involved at least as consultants.

Prior to initiating the advertising it could be useful to have Levers sales representatives begin to monitor off-take in a small sample

of retail shops (6-10 per region). This would provide a "before and after" estimate of the influence, if any, of the advertising on sales. Don't be surprized, however, if the influence of the advertising is difficult to detect.

Long-Term: The most significant advertising and promotion efforts should be timed to coincide with availability of research results. It should be a program that includes a component of continuing activity beyond an initial heavier advertising period. Such a program might well be geared in part to a broader nutrition education effort, but it must also have clear commercial credibility. It should also be linked to any decision to increase price so that it might support support sales at a time when the price increase is exerting a negative influence.

Planning for this activity should coincide with the later stages of the research efforts with a target of launching the new campaign early in 1983. Information from the short-term advertising effort would also be useful in planning. Following off-take of the same retail shops should be continued during this period.

During this stage it will be very important to coordinate with and have the full cooperation of the marketing agent. Obviously sales and distribution have to be coordinated with advertising and promotion. An advertising agency should be employed to do the creative work in developing the concepts and themes to be used. CARE will once again be the central coordinating force in this activity unless a permanent marketing agent has been contracted. In that case the agent would be carrying out the main coordinating role with the advice and consent of CARE. LMRB may also be included for the purpose of advising in

applying research results to the design of the promotion effort.

Once in place, such a program should include plans for a continuing advertising component using existing materials and themes. Modest changes could be made in frequency and intensity of effort but new investment in producing materials would not be necessary for at least a year or two except for replenishing point of sale material. The package and leaflet should be evaluated as part of the advertising and promotion effort.

Pricing

With the current price, the trading margin has been reduced to zero given recent estimates of cost of production. The value of ICSM in the product is quite high and since this does not represent a direct cost it allows for some latitude in pricing. It is likely that a price increase will be required in the near future. Costs of processing and packaging continue to escalate. If a marketing agent is formally selected this would require some additional margin to pay for these services.

The impact of increasing the retail price to Rs. 6.50 and Rs. 7.00 is illustrated in Table 4. With a manufacturing cost of Rs. 4.93 it would take nearly Rs. 7.00 at retail to "break-even". As production shifts to more indigenous raw materials the cost of goods sold is expected to be reduced since ICSM is now much more expensive than domestic maize and soybeans.

The cost situation should be closely monitored. A price change of one to two rupees could probably be introduced without great disruption

TABLE 4

THE EFFECT OF ALTERNATIVE RETAIL PRICE ON TRADING
MARGIN AT ASSUMED LEVELS OF MARGINS & COSTS AS SHOWN

Item	Alternative Prices		
	----- Rupees -----		
Retail price	5.50	6.50	7.00
Retail margin (10%)	<u>.55</u>	<u>.65</u>	<u>.70</u>
Wholesale price	4.75	5.85	6.30
Wholesale margin (4%)	<u>.22</u>	<u>.26</u>	<u>.28</u>
Price to wholesaler	4.73	5.59	6.02
Marketing Agent fee for sales & marketing (4%)	<u>.22</u>	<u>.26</u>	<u>.28</u>
	4.51	5.33	5.74
Business Turnover Tax (2% of N.S.V.)	<u>.09</u>	<u>.11</u>	<u>.11</u>
Net sales value	4.42	5.22	5.63
Advertising (6% of N.S.V.)	0.27	0.31	0.34
Returns (1% of N.S.V.)	0.46	0.05	0.06
Transport differential (Rs.3/case)	<u>0.06</u>	<u>0.06</u>	<u>0.06</u>
Sub-total	<u>0.37</u>	<u>0.42</u>	<u>0.46</u>
Balance	4.05	4.80	5.17
Cost of goods sold (recent est. of mfg. cost)	<u>4.93</u>	<u>4.93</u>	<u>4.93</u>
Trading margin	(0.88)	(0.13)	0.24

JN:P
28/5/82

of the market. Food prices in Sri Lanka have increased by 20 percent in the last year according to official statistics. Wages and incomes have increased by something less than that amount. If the increase could be held below two rupees it would be in line with the increase in the cost of other goods over the two years since introduction.

If an increase is deemed necessary it could be made effective at about the time of the new promotion program at the beginning of 1983. If cost of raw materials are anticipated to decline then a one rupee increase might be introduced with the idea that additional increases could be put off for at least a year.

Expansion of Sales Territory:

Thripasha has shown that it can be a commercial success. It also seems to be widely tried even in lower income households. The main impediment to expanding sales into new areas appears to be production capacity. If there is the possibility of producing some additional product within next year's budget, then it would be entirely appropriate to expand sales into at least one new territory. The risk would not be great if supplies could be produced.

Another significant factor in this decision is the cooperation of Levers as sales agent. It would be best if the launch in this new territory were coordinated with existing sales efforts and accomplished through the same distribution system. If this can be achieved then there isn't any reason why some expansion could not be initiated at about the time (or prior to) the launch of the revised promotion program in early 1983. Caution should be exercised to insure that competing

2

demands did not overtax available supplies. This could easily be avoided with careful production scheduling to increase inventories somewhat in advance of the launch. The introduction in the new sales territory should be accomplished by advertising and point-of-sale material but the effort in door-to-door or propaganda vans could be reduced from the previous launch.

CARE would have to initiate this activity in conjunction with the marketing agent and advertising agency. It wouldn't be necessary to do follow up consumer surveys unless some very unusual problem was made evident in sales.

Packaging:

Although no major problems were found with the packaging, a review of alternatives which provide better security from infestation could be undertaken. This analysis, of course, would consider cost of materials, equipment changes, effects on marketing and sales, and potential for reducing damage from weevils.

In concert with the redesign of the longer-term advertising program the consumer pack design should be considered. Possibilities include changing information content or presentation on the package. Improving appearance by using color in the picture of mother and baby is another example.

CARE would be responsible for doing the general review. Package redesign would be done in conjunction with development of advertising concepts and materials. Changing package could coincide with the introduction of the advertising and promotion in early 1983.

Marketing Agent:

A review of possible arrangements with a marketing agent could be conducted over the next year. Even under the current arrangement some clarification of responsibilities during the continuation of the test market is in order.

As the time approaches where a significant increase in sales territory is anticipated then a more formal review of the existing arrangement is appropriate for both parties. This will probably take the form of a solicitation by CARE for proposals from several potential marketing agents. There are not many that can offer the distribution services desired. An evaluation of these will lead to negotiation of terms such that the agent has the incentive to maintain an aggressive marketing program while CARE and the Ministry of Health maintain some control over retail price level and general content of advertising.

It is not clear when this should occur but it depends on the interests of both CARE and Levers. When the results of the in-depth survey are available there should be a somewhat better basis for evaluating the potential of the product. However, until a more vigorous marketing effort is fashioned out of that information and implemented, the real potential will not be known. And the results of the market building effort may take several years to be revealed.

Evaluation of Formulation Changes:

As the blend of ingredients in Thripasha change it will be necessary to monitor the effect on consumer acceptability of the product. This can be done through the use of a consumer taste panel which could be set up by a marketing research firm. The size would

have to be very great but it is important to know in advance if a significant perceptable change has been introduced.

If consumers can detect the difference then efforts can be made to modify the formulation in some way to make the change as acceptable as possible. Also if consumer reaction can be anticipated, advertising and promotion may be used to mitigate the problem. This research exercise can be modest in scope and done at some point several months prior to the expected date of implementing the change.

CONCLUSIONS

In general the data and review of marketing and distribution in the test market areas indicate that Thriposha is a commercial success. Further work needs to be done to solidify this success and insure that it reaches its fullest potential as an appropriate nutrition intervention approach. More specific conclusions follow.

1. The objective of establishing Thriposha as a commercially viable product has been achieved. Addition work needs to be focused on promotion of the product and an upward adjustment in price appears to be necessary.
2. Thriposha has achieved widespread distribution on a continuing basis in test market areas, including smaller shops in rural areas. A very high proportion of households purchased Thriposha at least once indicating widespread awareness of its availability and success in stimulating consumers to try the product.

3. There appears to be a significant inverse relationship between commercial sales levels and the availability of free Thripsha. This suggests that significant quantities of commercial Thripsha are being sold to the same households who receive it free when available from clinics, or similar households in areas not served adequately by free distribution.
4. The frequency and quantity purchased per household has failed to achieve the target on the average for all households that purchase Thripsha. The data for target households (low-income, with children) are now being tabulated. The reasons for infrequent purchase patterns are not evident from the currently tabulated data. Further in-depth research is planned.
5. A significant promotion, advertising and consumer education program should be initiated as soon as further studies of causes of infrequent use patterns are completed. In the interim some form of advertising should be used periodically to maintain the high level of consumer awareness. This should be coordinated with packaging and price changes.
6. Some adjustments in distribution logistics and inventory management at wholesale level are needed. This could include more direct integration into Levers existing physical distribution system and better monitoring of stocks.
7. Packaging was found to be generally adequate. However, efforts should be made to make the package more secure.

weevil infestation, particularly if inventory management, noted above, does not improve.

3. Commercial marketing of Thriposha should be expanded to additional areas as soon as resources permit. The best opportunities are those areas where free distribution is light relative to the population. This would serve both the nutritional and commercial objectives of the project. Any market expansion should be accompanied by appropriate advertising and promotion.

JPN/sg

APPENDIX I

List of Persons contacted

=====

LEVER BROTHERS (CEYLON) LIMITED:

Mr. T. Maxwell,	Chairman
Mr. Tony Fordham,	Marketing Director
Mr. Nihal Corea,	Marketing Manager
Mr. Maurice Perera,	Marketing Manager
Mr. R.Kariyawasam,	Sales Supervisor, Kandy
Mr. Witharana,	Sales Representative, Kandy
Mr. Kureira,	Sales Representative, Matale
	Sales Representative, Matara
	Sales Representative, Galle

LANKA MARKET RESEARCH BUREAU

Mr. Rajiv Inamadar,	Manager

CARE-SRI LANKA:

Mr. Frederick T. Davis	Country Director
Mr. Earl J. Goodyear	Project Director, Thripasha Program
Dr.B.V.de Mel	Project Supervisor, Thripasha Program
Mr. M.Zuhyle	Asst.Project Director, Thripasha Program

GLAXO (CEYLON) LIMITED:

Mr. J.R.Corera,	Company Secretary
Mr. E.R.Dawson,	Marketing Planning Director

MINISTRY OF HEALTH:

Dr. Ranjit Attapattu,	Minister
Mr. Tissa Devendra,	Secretary to the Ministry of Colombo Hospitals & Family Health.

WHOLESALE DISTRIBUTORS:

Mr. Nonis de Silva	Matale
Mr. Sri Mahadeva	Teldeniya
Mr. Jinasena	Hinni Appuhamy, Kandy

LMRB

Lanka Market Research Bureau Ltd
31/5 Horton Place
Colombo 7 Sri Lanka
Telephone 594026
Telegram Searchburo

Affiliated to
MRB International Ltd
an international market
research group operating
throughout Europe North America
The Caribbean Africa The Middle
South East Asia India Japan

21st May, 1982.

Dr. John P. Nichols,
C/o CARE, Sri Lanka,
27, Alfred Place,
Colombo 3.

Dear Dr. Nichols,

As discussed, we shall undertake an analysis of approximately 600 questionnaires from the Thripasha Test Market Assessment Survey of 1981 which will be handed over to us by Lever Brothers.

These questionnaires relate to those respondents who had purchased Thripasha and had not received it free of charge.

The purpose of this exercise is to test a few hypotheses which could help to explain the low frequency of purchase of Thripasha.

Attached is a list of the hypotheses that could be tested and the questions from the questionnaire that we intend to cross-analyze. A copy of the questionnaire is also attached. We shall also write a brief report on the conclusions from this exercise and submit it to you along with the tables.

The total time required for this stage would be 25 days from the date of receipt of the questionnaires from Lever Brothers. The total cost will be Rs.10,500/-. As per our normal practice, 50% of this amount is payable in advance while the balance 50% is payable on submission of the final report.

With kind regards,

Yours sincerely,



RAJIV INAMDAR, MANAGER.

LMRB

Lanka Market Research Bureau Ltd
31/5 Horton Place
Colombo 7 Sri Lanka
Telephone 596026
Telegram Searchburo

A-II-2

Affiliated to :
MRB International Ltd
an international market
research group operating
throughout Europe North America
The Caribbean Africa The Middle E
South East Asia India Japan

26th May, 1982.

Mr. Earl J. Goodyear,
MAP, Sri Lanka,
17, Alfred Place,
Colombo 4.

Dear Mr. Goodyear,

I enclose a revised list of the hypotheses that we shall be testing
from approximately 600 questionnaires from the Thripasha assessment
survey of April '81, based on our discussions yesterday.

I also enclose our estimate number EST/015/82 dated 26.05.82 for
Rs. 1,500/-. Please sign and return one copy of the estimate to us
for our records.

Also enclosed is our bill no 0061 dated 26.05.82 for Rs. 5250/- being
50% of the cost of the project, payable in advance.

With kind regards,

Yours sincerely,



RAJIV INAMDAR, MANAGER.

Best Available Document

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LMRB

A-II-3

REVISED LIST OF HYPOTHESIS

LMRB/P/11/79

RE-ANALYSIS OF THRIPOSHA TEST MARKET ASSESSMENTSURVEY DATA - APRIL 1981Hypothesis to be testedThrough cross analysis of : On condition that :

1) The interaction of household income and age of children influences the quantity and frequency of purchase of Thripasha

Household income and composition data and 6 and 7

2) The groupings will be as follows:

Household income x Age of children

a) Below

Rs. 500 p.m. x No children below 6 yrs

x at least one child below 6 yrs

x at least one child between 6 mths - 1¹ yrs

b) Between

Rs. 501-600 p.m. x - do -

c) Above

Rs. 601 p.m. x - do -

3) Households who have used other cereal foods buy Thripasha less frequently and in smaller quantities.

2 and 3 and 6 and 7

% saying 10% to 20%

4) The preparations made with Thripasha influence its quantity and frequency of purchase

10 and 7
10 and 6

5) Those who have not read the leaflet in the pack buy Thripasha less frequently and in smaller quantities

10 and 7
10 and 6

% saying 10% to 20%

6) The frequency of receipt of Thripasha from the clinic influences the quantity and frequency of commercial purchase

25 and 7
25 and 6

% response 20% to 30%

LMRB

A-II-4

Hypothesis to be tested

- 6) There is correlation between receipt of foods stamps and household income

Through cross analysis of On Condition that :

Food stamp ownership is household income data

Food stamp ownership is greater than 20%

TERIPOSHA

A proposal for a
Usage and Attitude Study
among Irregular Users.

MAY 1982

Prepared for CARE, SRI LANKA
by LANKA MARKET RESEARCH BUREAU LIMITED.

LMRB/RYI/0031

1.0 BACKGROUND

'Thriposha a cereal based nutritional supplementary food is being test-marketed in the Kandy, Matale, Galle and Matara districts. In addition to being sold in 454 g packets at Rs.5.50 per packet, it is distributed free of charge through Medical Health Centres.

Two test market assessment surveys have been conducted through Lever Brothers (Ceylon) Ltd, in January 1980 and April 1981. These surveys showed that while satisfactory levels of awareness and trial of Thriposha were achieved, the repeat purchase rates were below desirable levels.

CARE, Sri Lanka now wishes to undertake a survey to examine reasons for the low repeat purchase rate of Thriposha, as well as to collect other data relevant to the development of a marketing strategy for the brand.

As a first step, LMRB will conduct a special analysis of approximately 600 questionnaires from the April 1981 survey to test certain hypotheses that could explain the low frequency of purchase of Thriposha and to help structure the research questionnaire.

2.0 RESEARCH OBJECTIVES

It is proposed to obtain the following data relating both to the purchase and usage of as well as attitudes towards Thripasha, that would be relevant in identifying reasons for its low frequency of purchase. It is also suggested that reactions to the current packaging of Thripasha. be obtained.

2.1 Purchase and Usage data

- a) The frequency of purchase of Thripasha
- b) The quantity purchased in an average month
- c) Members of the household who consume Thripasha.
- d) The forms in which Thripasha is consumed by various members of the household.

2.2 Attitudinal data

Given below are examples of a few attitudinal factors which could explain the low frequency of purchase of Thripasha. The research will seek to investigate the extent to which these factors are, in fact, responsible. The list below is illustrative rather than exhaustive, and the client would be requested to suggest additional factors for investigation in a survey.

- a) A lack of awareness of the need for supplementary nutrition.
- b) A high degree of satisfaction with the level of nutrition obtained from consumers regular diets.
- c) Inappropriateness of the form, taste, colour and end-use possibilities compared with other perceived substitutes for Thripasha.
- d) A feeling that the low cost of the product indicates that it is a poor quality product.
- c) A feeling that Thripasha is uneconomical to use.

3.0 RESEARCH METHOD**3.1 The respondent**

The study will be conducted through a face-to-face interview with housewives in household which satisfy the following criteria :

- a) The household is a recipient of 'food stamps'
- b) There is at least one child below 6 years old residing in the household.
- c) The household buys, on an average, one packet of Thriposha per month or less often ie it is an occasional or irregular buyer of Thriposha.

3.2 Technique

Broadly, two alternative techniques could be employed for the survey. ie

- a) A 'qualitative' depth interview or
- b) A 'quantitative' structured interview

The qualitative technique would require a smaller sample size and would involve a more free flowing unstructured interview. However no 'quantification' of the data obtained would be possible. The quantitative technique would involve larger sample sizes spread across a greater number of areas and would permit the testing of pre-determined hypotheses through quantitative techniques.

A description of both options is given below along with the time and cost involved in each case.

3.2.1. The Qualitative Depth Interview**3.2.1.1. Sample Size/ Coverage**

It is proposed that a total of 60 depth interviews be conducted in urban and rural areas in the Kandy/Matale and Galle/Matara districts, broken down as follows :

	<u>Kandy/ Matale</u>	<u>Galle/Matara</u>	<u>Total</u>
Urban area	15 (1 town)	15 (1 town)	30
Rural areas	15 (2 towns/villages)	15 (2 towns/ villages)	30
Total	30	30	60

LMRB

An Urban area would be defined as a town with a population of over 20,000 while rural areas would be defined as town/villages with a population of below 10,000. The specific areas to be covered will be decided in consultation with the client.

3.2.1.2. Selection of households

Within each town or village a number of 'starting addresses' will be selected at random to ensure geographical dispersion of the interviews. A specific number of interviews will be conducted around each starting address (not exceed five) following a systematic random sampling method called the 'Right Hand Rule' by which interviews are only conducted in households falling to the right of the street with a specified interval between successful interviews.

3.2.1.3. Time

The time schedule will be as follows :

	<u>Days</u>
Design of questionnaire	7
Client Approval of questionnaire	7
Field briefing/ pre test of questionnaire	4
Field work	10
Analysis/Tabulation	15
Report writing	10
Report production	7
Total	<u>60</u>

3.2.2. The Quantitative Structured Interview

3.2.2.1 Sample Size/ Coverage

It is proposed that a total of 200 structured interviews be conducted in each of the four test-market districts broken down as follows :

	<u>Kandy</u>	<u>Matale</u>	<u>Galle</u>	<u>Matara</u>	<u>Total</u>
Urban areas	25(1 town)	25(1 town)	25(1 town)	25(1 town)	100
Rural areas	25 (2 villages)	25 (2 villages)	25 (2 villages)	25 (2 villages)	100
Total	50	50	50	50	200

The definition of urban and rural areas would be as indicated in Section 3.2.1.1. Specific areas to be covered will be decided in consultation with the client.

LMRB**3.2.2.2 Selection of household**

The method for selection of households will be as indicated in Section 3.2.1.2

3.2.2.3 Time

The time schedule will be as follows :

	<u>Days</u>
Design of questionnaire	7
Client approval of questionnaire	7
Field briefing/ Pre-test of questionnaire	7
Field work	20
Analysis/ Tabulation	15
Report writing	15
Report production	10
Total	<u>81</u>

4.0 COSTS

The total costs of each of the two Options discussed above are indicated below

The Qualitative Depth Interview (60 Interviews) - Rs.36,000/-

The Quantitative Structured Interview (200 interviews) Rs.54,000/-

5.0 OTHER TERMS AND CONDITIONS

As per our normal practice, 50% of the total cost of a project is payable in advance, while balance is payable on submission of the final report. The time schedules shown above refer to dates after the receipt of advance payment. A note on the other terms under which LMRB undertakes projects is annexed.

APPENDIX B - 5

**A Review of the Commercial Marketing Program
for Thriposha, November 1983.**

A Review of The Commercial Marketing Program for Thriposha

November 1983

John P. Nichols *

This report covers activities and observations made during a trip to Colombo and test market areas in the south of Sri Lanka from November 8 through November 16, 1983. The primary purpose was to observe the current status of the commercial marketing of Thriposha and assist CARE in planning for future marketing activities. This visit is the fifth in a series of consultations on this project including visits to Sri Lanka in October 1977, November 1978, May 1981 and May 1982.

Summary of Activities

Meetings were held with CARE officials, Lanka Marketing Research Bureau (LMRB) and HTL (Thompson's) advertising during the first two days. This was followed by an extensive tour of sales territories in southern Sri Lanka including newly added ones in Ambalangoda and Tangalle. Lever's sales representatives, wholesalers and retailers were visited in all major areas.

During the second week meetings were held with Lever's management and several government agencies. Additional discussions were also held with CARE to review marketing plans and activities and second meetings were scheduled with HTL and LMRB. Representatives of UNICEF and the Food and Nutrition Policy and Planning Division (FNPPD) of the Ministry of Health were also interviewed regarding development plans for a proposed low-cost weaning food product called "Bilinduposha".

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In addition the marketing manager of Lanka Milk Food (CWE) Inc. was interviewed regarding the marketing of Raja Soya, a soy based substitute for coconut milk. Their newly organized marketing and sales staff was also reviewed for future reference.

Observations and Discussion

Wholesale and Retail Trade

By all measures Thriposha continues to be a commercial success. Wholesale distributors and retailers reported good customer satisfaction and gradually increasing sales levels. Returns are low and it appears that the product is being better managed on the shelf and in warehouses. Lever's sales staff appears to have done a good job in managing the stocks.

Two new territories were started in September but no advertising efforts accompanied the introduction. While sales seem to be developing well it is not clear that everyone is aware that Thriposha is now available. There was some indication that wholesalers weren't able to get Thriposha from Lever's warehouse when they wanted it. Subsequent discussion with Lever's indicated no knowledge but they will check it out. It is not a major problem and may only be a temporary result of rising sales. In general the shift in logistics to Lever's warehouse, which was suggested previously, has resulted in considerably improved distribution efficiency.

Sales from Lever's warehouse averaged 270 cases per week over the past 10 weeks. At wholesale and retail it was indicated that the price increase from 5.50 to 6.50 in late spring 1983 did not decrease sales at all. In fact, sales, even in established areas, have increased since last spring despite the lack of any advertising support.

There continues to be some sales to areas outside the test market area (leakage). This is not a matter of major concern and is estimated at no more than 10 to 15 percent of the total. There is a small, but continuing, incidence of weevil infestation. Returns continue to be low, perhaps less than one-half percent according to trade estimates. During September and October 1983 the formulation was temporarily changed from 60 percent ICSM to 100 percent ICSM because of a disruption in obtaining supplies of indigenous commodities. There was no evidence from the trade that this change had been noticed.

Sales Levels

Sales have increased both through expanded territories as well as within existing sales areas. Comparative sales figures are given in Table 1, attached. Using recent levels as a basis, it appears that annual sales are running at approximately 14,000 cases without any significant advertising. Population in the sales territories is estimated to be 4.1 million or about 27 percent of the total for Sri Lanka (15 million). With further market growth through advertising, total sales could easily reach 60,000 cases (1300 MT) per year once island-wide distribution is initiated. For a mature product, the goal should probably be set even higher.

Production and Plant Expansion

Expansion of extruder capacity at the Thripasha plant has been planned for some time. In recent months the government of Sri Lanka (GOSL) has been reviewing the expansion plans with particular reference to long-term implications for demand on financial resources for the free product as more indigenous commodities are utilized. It seems likely at this point that the report of the GOSL review committee will recommend that plant expansion

proceed and that this will be made official by the end of 1983.

With current formulation, the existing plant has capacity to produce enough Thripasha to cover planned market expansion in the near future. To accommodate both the scheduled shift away from ICSM and Island-wide distribution of commercial Thripasha, the expansion is deemed necessary by CARE and others involved in planning efforts. It is anticipated that additional sales territories will be phased in over the next year but that the major population center of Colombo will not be added until new production capacity is ready.

Free distribution of Thripasha reached a level of 650,000 recipients just prior to a temporary discontinuation in September and October which was due to a shortfall in government funding and difficulties in arranging transfer of funds in government accounts. Production had started again on November 15 and there was no disruption of commercial supplies. There is some discussion of scaling free distribution back somewhat to stay within a more limited budget next year. If this happens then additional plant capacity would become available for production of commercial Thripasha.

Price

In 1977 when marketing plans for commercial Thripasha were initiated, a retail price of Rs. 3.50 was anticipated. Due to escalating costs it was introduced in the test market in October 1980 at Rs. 5.50 which was designed to cover all costs of production and a small sum for contingencies.

When the project was reviewed in May 1982 it was recommended that an increase in price was needed. At that time production costs were estimated to be about Rs. 4.93 ex-factory which translated to A break-even retail price of nearly Rs. 7.00. A review of market conditions at that time suggested

that the price could be increased by up to Rs. 2.00 per pound without causing a noticeable decline in sales or market penetration.

Since that time the retail price was increased by one rupee per pound to Rs. 6.50 but costs have escalated even faster. In November 1983 CARE estimates indicate an ex-factory cost of about Rs. 6.10 per pound. With anticipated increases in the business turnover tax (BTT) this translates into a retail price of nearly Rs. 9.50 Several alternative price-cost scenarios are presented in Table 2.

These estimates are only approximations. A closer evaluation and a more frequent monitoring of costs is in order. If such data could be put into a computerized format, it would be very easy to periodically examine the impact of changing ingredient prices, BTT or other conditions.

The clear conclusion, however, is that a significant price adjustment is in order. Imported products such as Cerelac, Farex and Farlene are now selling for 40 to 50 rupees per package in sizes ranging from 200 to 400 grams (all packaged in tins). Rice and flour prices have also been escalating. In discussion with Lever's marketing personnel it was observed that prices for their own products have been adjusted three times in the past year. They indicate that consumers have become acclimated to regular price adjustments.

The price adjustments for Thripsha, made necessary by increasing costs, should be initiated soon. A two-phase increase might be planned; a one rupee increase as soon as possible and two rupees more by mid-1984. It should be coordinated with the promotion program so that the effects of promotion might be felt before the second price increase. In the longer term, prices of related or substitute products should be recorded regularly and efforts should be made to keep Thripsha in line with them as well as in line with cost changes.

Promotion and Advertising

A revised promotion and advertising program was planned for early 1983. It was to have been based in part on results of survey research done by LMRB in 1982. For various reasons this advertising program has not been completed or launched, although planning has been underway.

Discussions held with HTL (Thompson's) Advertising and Lever's revealed that February 1984 was a reachable target for launching the new promotion program. It is to consist of redesigned point-of-sale materials (posters and mobiles) and regional radio advertisements over a one year period. A tentative budget has been set and funds are to be drawn from revenues accumulated from commercial sales. This budget is approximately equivalent to 0.50 rupees per packet based on projected sales levels over the next year (less than 10 percent of current ex-factory cost).

This plan has been endorsed by the committee formed earlier to guide decisions on the Thripasha programs. HTL personnel were not aware of some of the broader social objectives of the total Thripasha program. It is important that these be fully understood prior to finalizing advertising materials so that appropriate considerations are given where necessary.

It is very important to the long-term success that this activity proceed as scheduled. Problems noted last year regarding the need to get more repeat purchasing and to attract new consumers have not yet been addressed. In new sales territories there has been no promotion of any kind. If we are to have good market penetration among target population groups, then they must be made aware of its availability and encouraged to purchase it regularly and use it properly.

Long-term Distribution Plans

Lever's has expressed satisfaction with current marketing arrangements. They will continue to handle distribution and add territories until a major decision point regarding island-wide distribution is reached. At that point a re-evaluation is appropriate and new, long-term commitments will be required. It was suggested to Lever's that they review their own interest in Thripsha some time over the next year with the view toward making a proposal stating the terms under which they would be interested in the product on a permanent basis.

General discussions were held with a new company, Lanka Milk Foods (CWE) Ltd. which is 60 percent owned by the government's Cooperative Wholesale Establishment (C.W.F.) Lanka Milk Foods has just started business and has established a significant marketing and sales distribution system. The primary product is Lakspray, a full cream spray dried powdered milk product which has 70 percent of the market in Sri Lanka. This firm could provide an alternative to Lever's as the marketing agent. While other firms might also be considered, these appear to be the best candidates at the moment since they have good marketing and sales capacity but don't have a competitive product at this time.

Marketing Research and Evaluation

In 1982 it was felt that stronger promotion efforts were needed to expand frequency of use and broaden the market. This effort will be launched in February 1984 as currently planned. In addition it is certain that significant price increases will be required in the near future. The status of market penetration and related effects should be examined after these adjustments have occurred.

Following the introduction of the advertising and promotion program and the major revision in prices anticipated over the next six to nine months, it is proposed that survey research be undertaken. This research would be designed to measure market penetration, determine the profile of users, examine purchase and usage patterns and evaluate the effect of advertising campaign.

A preliminary meeting to discuss general ideas was held with LMRB. CARE's interests are at least two-fold: 1) to measure impact of the marketing program, (esp. advertising), so that it can be managed more effectively and 2) to determine who is using Thriposha and how much so that the longer term impact and value of the program can be estimated. USDA and USAID would be primarily interested in the second objective although the marketing management issue is recognized as valid and useful for CARE and others involved in the direct day-to-day management of commercial Thriposha.

A tentative planning schedule was agreed to. In March 1984 CARE will provide a brief to LMRB outlining its research issues, current status of sales and marketing efforts and solicit a research proposal. LMRB will respond with a proposal and budget in April or May. Once agreement is reached, then development of the survey instrument and refinement of procedures will occur over the summer. The survey would be scheduled to be in the field in September/October 1984 with a report by December 1984.

This schedule is dependent upon several activities, but primarily on the scheduling of promotion and advertising efforts. It may be adjusted such that the survey will be in the field at a time when the full impact of advertising and major price adjustments have been felt. The budget for this effort should not exceed double (in rupees) the previous (1982) LMRB survey for CARE. Given

shifts in exchange rates, the dollar cost should not be too much greater than the previous study.

It is suggested that the survey be designed to cover all population segments in the market areas so that results will reveal usage of commercial Thriposha among all groups. An effort may also be made to draw the sample in areas where radio advertising does not reach so that valid comparisons can be made to check on the effect of the advertising. Also in designing the questionnaire and evaluating the results, efforts should be made to allow for comparisons with earlier LMRB and Lever's conducted surveys.

Additionally, the need for a fairly complete documentation of the commercial Thriposha program was discussed. Such a report would draw on all existing materials to provide a complete summary of the development from concept through each stage of product development and market testing. This report could serve as a resource document for CARE in maintaining continuity in program management and would be useful in briefing various ministry personnel and others in Sri Lanka who are involved in various decisions relating to commercial Thriposha. It also would serve as a case study which could be utilized in other countries where there is an interest in similar products. The report would not duplicate the detail found in other research reports prepared at various stages but it would draw on these and other sources specifically to show the development of the ideas, objectives, the logic involved in planning, results of actions, redirection of efforts and various evaluations of success. A complete chronological history would be presented.

Bilinduposha

A product named Bilinduposha is currently being developed jointly by several groups in Sri Lanka. Several attempts were made to obtain definitive information on this new rice and soya weaning food. However, key people were not available. It was learned however that development is at very early stages and there does not appear to have been a feasibility study at this time.

The formulation was developed in part by the Soybean Foods Research Center at Gannoruwa. UNICEF had some early involvement in encouraging the development of the formulation because it was based on important indigenous commodities (esp. rice). However, UNICEF indicates it is no longer involved because the formulation is developed.

The Ministry of Plan Implementation, through the FNPPD, has also encouraged the development but Dr. Amarasekera, the Director, was not able to provide any details. He indicated it was at a very early stage of development and the first reports on the so-called "test-market" would be available by early in 1984. He did not know the details of the test market or the size and price of the product. CARE is following up with additional contacts he directed us to. At this point there is not enough information available to form any conclusions regarding the project. CARE will advise us of details when they become available.

Conclusions and Recommendations

1. The major conclusion is that commercial Thripsha is a marketing success. Sales are increasing with little or no advertising or promotion effort.
2. Distribution problems found previously have, for the most part, been resolved. Lever's sales staff and wholesale distributors are doing a good job.
3. A significant price increase is needed due to rapidly escalating costs. A three rupee per pound increase at retail is recommended. This should be accomplished in two stages over the next six months and coordinated with advertising and promotion as indicated below.
4. An extended advertising and promotion effort is needed as recommended in previous reviews. Planning is well underway such that it could be launched in February 1984. The second phase of the price increase should be scheduled to follow the launch of the advertising campaign by three or four months.
5. Expansion of sales territories should continue generally as planned. Capacity exists to supply these new markets as long as major population centers of Colombo and Kurenegalla are avoided. Extensive use of point-of-sale material and other publicity should accompany introductions into new areas.
6. A system of frequent monitoring of market and cost conditions should be instituted by CARE. This should include sales data and regular records of prices of related products, both imported weaning foods and domestic

staple foods. It should also include a regular review of current ex-factory costs and cost projections. Such reviews should be made on a quarterly basis and should lead to decisions regarding pricing as well as advertising or other marketing activities. This should be a planned and regularly scheduled activity such that price and other marketing factors do not get out of line with costs or related market conditions.

7. Currently all revenues from the sale of Thripasha are placed in a separate fund. From this fund costs of production were to have been paid. It is not clear from this review that these funds are actually being drawn upon to pay the proportional share of production costs. As soon as a reasonable level of operating capital is achieved in this fund, it should be charged regularly for the appropriate share of costs. A business-like approach needs to be taken to assure that commercial Thripasha becomes fully self-financing.
8. Planning for long-term control and management of commercial Thripasha should commence during the next year. This should be phased in with the plant expansion and negotiations should reach an active stage approximately six months prior to completion of the installation. Preliminary proposals could be sought from prospective marketing firms in order to provide a basis for discussions. CARE, GOSL and USAID should seek evaluation and recommendations from a qualified independent consultant.
9. Follow-up marketing research is needed to determine market penetration and effectiveness of advertising following the planned promotion program and

impending price adjustments. This will provide marketing guidance to CARE as well as provide further information on the potential effectiveness of this product in reaching the target population. This should be a joint effort of CARE and USDA/USAID.

10. For purposes of enhancing continuity in program management a thorough documentation of the commercial Thripsha program is needed. This would also be useful as a case-study for distribution to interested agencies or countries elsewhere in the world. There are many research documents, consulting reports, sales records and correspondence files which could be drawn upon. It is recommended that an individual be employed to review these materials, including on-site interviews, and prepare the "case-study." This should be a joint effort of CARE and USDA/USAID and should be carried out sometime between June 1984 and June 1985.

Individuals and Firms Contacted

November 1983

1. Lanka Market Research Bureau (LMRB)

Mr. Rajive Inamadar, Manager

2. HTL (Thompson's) Advertising

Mr. S.M. Nair, Manager

Mr. Kusal Varusawitharana, Account Executive

3. Forbes & Walker (Distribution Co.)

Mr. Upali Madawala - in charge of Marketing, Rajasoya

4. Lever's

Mr. A. J. (Tony) Fordham, Marketing Director

Nominated Lever's Wholesalers (NLW's)

Ambalangoda; P.K. DeSilva
Galle; K.G.F. and T.D. Mandanayake
Habaraduwa; M.P.C.S.
Willigama; Soorya Stores
Matara; S.K. Peter Appu
Tangalle; Thurshantha Stores
Beliotta; Bandula and Co.

5. UNICEF

Mrs. Sarojini Abraham, Program Coordinator and Acting Representative
Mrs. Hind Masri, Nutritionist

6. Ministry of Teaching Hospitals and Women's Affairs

Dr. Samarasinghe, Secretary

7. Lanka Milk Food, LTD (Cooperative Wholesale Establishment)

Mr. V. Lakshman M. DeSilva, Marketing Manager

8. Ministry of Health

Mr. Panambalana, Secretary

9. Ministry of Plan Implementation

Dr. Raja Amarasekera, Director of Food and Nutrition Policy and
Planning Division (FNPPD)

10. CARE/Sri Lanka

Miss Judith Collins, Assistant Director
Mr. M. Zuhyle
Dr. B. DeMel

11. USAID/Sri Lanka

Mr. W. Schoux, Program Director
Mr. Bob Chamberlain

Table 1

Commercial Thriposha Deliveries
by Month and Sales Territory, 1983

Month	Sales Territories						Total
	Matale	Tangalle	Kandy	Galle	Matara	Ambalangoda	
	Cartons						
January	115		175	410	330		1030
February	145		225	370	315		1055
March	75		130	390	290		885
April	100		155	205	225		685
May	75		285	145	125		630
June	115		250	335	180		880
July	125		265	145	240		775
August	65	40	250	273	225	125	978
September	105	95	200	330	225	195	1153
October	185	105	250	395	225	135	1295

1] One carton contains 48 one-pound retail packages

Source : Obtained from CARE/Sri Lanka

Table 2

Alternative Cost/Price Scenarios for Commercial Thripsha (for discussion only Nov. 1983)

	<u>Est. Current Production Cost</u>			<u>Increased Production Cost</u>		
	Current	<u>Projected</u>				
		<u>Rupees/lb.</u>				
Retail to Consumer	6.50	7.50	9.50	10.50	9.50	10.50
Retail Margin & BTT (12%)	.78	.90	1.14	1.26	1.14	1.26
NLW Price to Retailer	5.72	6.60	8.36	9.24	8.36	9.24
NLW Margin & BTT (6.5%)	.37	.43	.54	.60	.54	.60
Lever's to NLW	5.35	6.17	7.82	8.64	7.82	8.64
BTT Payable by Lever's on behalf of CARE (4%)	.21	.25	.31	.35	.31	.35
Net Return from Lever's to CARE	5.14	5.92	7.51	8.29	7.51	8.29
Lever's Fee (10% of Lever's to NLW)	.54	.62	.78	.86	.78	.86
Ex-factory Price	4.70	5.30	6.73	7.43	6.73	7.43
Trading Margin (Profit or loss)	(1.40)	(.80)	.63	1.33	(.27)	.43
Est. Total Prod. and Advertising Cost	6.10	6.10	6.10	6.10	7.00	7.00
Advertising Cost	.66	.66	.66	.66	.50	.50
Production Cost	5.44	5.44	5.44	5.44	6.50	6.50

Source: Calculations based on CARE estimates

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APPENDIX C - 1

**Guyana Pharmaceutical Corporation
Trip Report (Cerex), August 1978.**

GUYANA PHARMACEUTICAL CORPORATION
TRIP REPORT

August 27, 1978 - September 2, 1978

John P. Nichols

A one week trip was made to Georgetown, Guyana. The purpose of the trip was to review marketing plans of the Guyana Pharmaceutical Corporation (GPC) for a cereal based weaning food currently being developed by that company. Major activities undertaken during the five working days in country included a review of local food marketing systems and data availability, review and refinement of marketing plans and the outlining of a general research plan for in-home product acceptance testing. These activities are discussed in more detail below, and a list of persons interviewed or contacted is also provided. A copy of the research outline is attached as an appendix and a copy of the final marketing plan would be useful in understanding this report and should be attached when made available by GPC.

Activity Report

Monday, August 28. Met with Rod Crowley and Dwight Steen to review recent activities of USAID relative to this project and receive a general orientation to the program. Met with Crowley and management staff of GPC to review nutrition objectives of the Guyana government and the company, target population, product development status and marketing plans. Observed that product development was progressing and some evaluation at the laboratory stage had been carried out. Also

consumer evaluation of prototype products had been conducted with several groups of mothers and babies at government sponsored clinics (MCH centers). A limited number of open ended interviews had been conducted with mothers in their homes and at the MCH centers. This was to provide some idea of current usage of weaning foods. Some data ^{is} also available on weaning food use from the Food and Nutrition Survey completed in 1971. It was noted that these information sources provide a very limited basis for market planning.

The status of the marketing plan for the product was unsettled at best. It was understood that decisions were needed in certain areas and that alternatives existed, but no organized statement of these had been committed to paper. Questions unresolved were package types and promotion plans. Some tentative plans existed with regard to price and distribution systems and work was underway on product formulation as noted above, and selecting a brand name.

A further review was held with the market analyst and product development specialist to obtain additional data on product concept and various constraints under which they were operating.

Tuesday, August 29. Met with GPC market analyst to review details of research activities to date. Developed a conceptual approach to describing the interrelationship among the various development and research activities underway or envisioned. Discussed the technical limitations to applying standard consumer research procedures in this country.

Observed a demonstration of the preparation and various quality characteristics of alternative formulations of the product.

Met also with representative of Caribe Advertising Agency to review standard advertising and promotion practices used in Guyana. Discussed potential role of Caribe in researching the alternative brand names for the product.

Wednesday, August 30. Met further with GPC market analyst to develop alternative research approaches for analyzing both marketing strategies and the ultimate impact of the product.

Met with GPC sales manager to review sales and distribution system currently in use by the company. Also obtained description of distribution system typically in use in Guyana.

Met with entire management staff of GPC to review activities of past three days and set objectives for rest of the week. Plans were adopted to have a marketing plan drafted by GPC market analyst for review and discussion on Friday.

Thursday, August 31. Toured food wholesaling and retailing establishments in the greater Georgetown area to assess the general operation of the marketing system, availability of processed and packaged food products, types of packaging and other aspects of importance to the success of the proposed weaning food.

Reviewed development of marketing plan with GPC market analyst and started draft of general outline of procedures for consumer testing of the product through placement in a representative sample of households.

Met with Nutrition Advisory Committee to the project to review the project plans in view of the interests of medical and nutrition groups in Guyana government (Ministry of Health and Economic Planning and Development). Observed that there was a strong interest in these agencies in having the project completed successfully and compatibly with MCH center programs.

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Friday, September 1. Finished draft of suggested research procedures for consumer acceptance study. Discussed alternative ways of conducting "mini market test" given the GPC commitment to starting this November 1. Reviewed completed draft of marketing plans.

Met with Crowley and GPC management staff to discuss each major point in the marketing plan. Decisions were reached on most points with specific plans adopted for arriving at a decision where not reached at that time. The major points are as follows:

1. Package: The polyethylene bag was adopted for use both through commercial channels and through the MCH centers. The alternative of a cardboard box was specifically rejected. Merchandising enhancement will be provided by shelf dispensers and protection in shipment by use of heavy corrugated cardboard cases. The same package label is to be used for both channels.
2. Price: This was set at G \$0.80/pound (G \$0.40/half pound package). It will be an advertised price and set up as a retail price controlled product. This price gives about the same price per retail packet as the major competing products. Also, if used as directed, would give major nutritional improvement for the same weekly expenditures on weaning food which households are estimated to be making. Since this represented an increase over the previously discussed price, this change was made subject to further review with government officials. This higher price was thought to provide some flexibility in

reducing the subsidy, absorbing increased costs of shipping cases and other inputs and allow for a reduction in price should this be necessary as a competitive strategy.

3. Promotion: This will be based on a broad nutritional/health theme but will include convenience and price in the appeal. It will avoid a narrow approach of selling nutrition. GPC wants to emphasize this as a food product and wants to broaden the company's image from the traditional pharmaceutical orientation. The brand name selection will be based on the Caribe Ad Agency report and recommendation.
4. Distribution: GPC's existing sales and distribution staff will handle this in commercial channels. Emphasis will be given to training sales staff and providing incentives to the distribution system to get the product moving. Distribution to MCH centers would likely be done on GPC vehicles but subject to scheduling through the government agencies which operate these centers. Inland distribution to MCH centers would be handled by the government.

Meeting was held with USAID/Guyana Mission Director and staff to review status of marketing components of this nutrition intervention project. Marketing plans and research activities were reviewed,

General Observations

1. GPC management is extremely confident that the product will achieve good distribution and meet total sales objectives. This appears to be reasonable given the short supply of most packaged food products, the fact that the limited evidence available indicates widespread purchase and use of weaning foods, and the poor quality and appearance of competing products on the retail store shelves.
2. It is not clear, however, whether the poorest households will buy and use the product as it is intended. No data on income distribution among households is available. It is expected that weaning food use varies depending on education, culture and other household factors. Little or no data now exists on this which makes it impossible to predict adoption and usage patterns with any degree of confidence. GPC management feels that income is distributed evenly enough so that nearly all households have income enough to purchase adequate amounts at the planned market price. They feel that the key then is promotion, merchandising and nutrition education. This, of course, must be confirmed through follow-up research.
3. Research should be undertaken now to provide a base of information on weaning food use and to provide an evaluation of the product as efficiently as possible. Any consumer research conducted will be limited by an environment in which no experienced interviewers are available and no expertise base exists in sampling and research management.

4. GPC management is committed to having at least a small test market of the product starting November 1. This probably won't provide much useful information beyond demonstrating that the product can achieve a given sales target. At the same time it probably will not cause any serious difficulties if managed properly. Success of the product as a nutrition intervention vehicle can only be evaluated after making the product widely available. Then follow-up research can be done to determine whether it is reaching the target population and is being used in a proper manner. This can't really be evaluated if distribution is limited to a few small retail outlets.
5. In my opinion there is every reason to believe that this program will be a success. If present personnel are kept involved and if equipment and raw materials become available as planned, I feel the marketing of the product can be managed so that this new product will reach the population and have the nutritional impact intended.

Persons Contacted and/or Interviewed

1. Dr. Leslie Chin, Technical Director and Acting Managing Director, GPC
2. Vickram Oditt, Food Technologist, GPC
3. Eve Blanchard - Richards, Marketing Analyst, GPC
4. Vernon Lee, General Sales Manager, GPC
5. Bernard Ramsey, Managing Director, Caribe Advertising Services
6. Dr. Hari, Ministry of Health, Government of Guyana

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7. Carol Davis, Economic Development and Planning, Government of Guyana
8. Dwight Steen, Agriculture and Rural Development Officer, USAID/Guyana
9. Edna B. Borady, Director, USAID Mission, Guyana

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OUTLINE OF QUESTIONNAIRE FOR CONSUMER SURVEY
AND EVALUATION OF IN-HOME PLACEMENT
OF WEANING FOOD SAMPLES

I INTRODUCTION

To be administered to a sample of approximately 300 households representative of all households with children between the ages of four months and ² years. Sample to be drawn on an area sampling basis with a minimum of 20 clusters (15 households each). This means that starting points for each cluster will be specifically designated and will be ^{selected} ~~separated~~ by some random method from a map of the area. Care may be exercised to avoid known non-residential areas and at the same time assuring that all major ethnic and income groups are included

Questionnaire is administered in two phases (visits to household)

Phase I : On the first visit several objectives will be met.

1. Be sure household qualifies (has children of right ages)
2. Obtain information on weaning food purchase, preparation and consumption
3. Introduce product concept and leave product for evaluation

Phase II: Main purpose is to obtain information on how sample was prepared and used and obtain evaluation of product in terms of tastes, texture, colour, general quality and other factors deemed important. Also to evaluate product packaging and other.

II QUESTIONING AREAS

- PHASE I:
1. Household characteristics; income, size, education.
 2. Current products used as weaning foods: Quantity, frequency, by brands or types, etc.

For prepared products - Where purchased (type of retail outlet), How do they store the product, type of packaging. For prepared products ask if have had problems with packages, if so what are the problems.

3. How prepared, do they follow instructions.

4. Factors considered important in purchase; rank alternatives shown; price, convenience in preparation, nutrition, taste, lumpiness, colour, (rotate in reading to respondent).
5. Introduce product concept with leaflet which discusses nature and use of the product including its strengths and instructions for preparation and serving. Present sample packet.
6. Ask if mother would be interested in trying such a product and perhaps get measure of interest; very interest; interested; indifferent; not interested, wouldn't try at all.
7. If any interest shown ask about price. Could split sample and ask half about interest at .50 and the other half about interest at \$1.00.
8. Ask if mother would co-operate in evaluating the product. If yes, set appointment (2 or 3 days later) to return and leave packet with instruction for preparation.

PHASE II:

1. Return to household. Determine if product was used, how served, how many servings, if mixed with anything else.
2. Obtain evaluation of product in terms of taste, texture, colour, overall quality. This might be done on a scale from very good to very poor, for each factor, when product is rated toward poor end of scale should ask respondents to give a one or two word description of what was wrong.
3. Repeat questions of interest in buying product at the same price as mentioned earlier. Perhaps could then also insert a question of whether they would change interest in the product if the price were (indicate other price alternative)
4. Ask questions about packaging preference, size, and type for this kind of product.

3/...

III ADDITIONAL CONSIDERATIONS:

1. The questionnaire should be pre-tested in 10-15 households of varying ethnic groups, income and religious make up.
2. Interviewers should be well trained, then monitored carefully particularly after the first day's interviews. Periodic validation or checking on interviewers should be planned to the extent possible.
3. A questionnaire similar to this could be completed in one interview with households identified as purchasers through the market test. The emphasis should be on the evaluation aspects with questions added regarding packaging, price and point of sale promotion material. The question dealing with traditional weaning food storage, preparation and feeding could be reduced although it would be necessary to obtain a ³ good understanding of how the test product was used after purchase.

APPENDIX C - 2

Guyana Trip Report, September 1979.

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GUYANA TRIP REPORT

John P. Nichols

A period of five days was spent in Guyana from September 24, 1979, through September 28. The purpose was to review the Cerex weaning food project of the Guyana Pharmaceutical Corporation (GPC). Only the marketing aspects are covered in this report as other members of the review team will report separately on their activities. Three areas were focused on during the review: 1) consumer acceptance research and mini-market test, 2) marketing plans and 3) follow-up market research and monitoring.

Consumer Acceptance and Mini-Market Test

The results of market research were reviewed. Additionally several visits were made to wholesalers and retailers who handled Cerex during the test market. The research revealed that most aspects of the product were satisfactory to consumers. The follow-up with the distribution trade confirmed results gathered through consumer surveys. A few minor changes were noted including the need for a stronger shipping package (baler bag). Of importance to developing promotion and nutrition education programs was the finding that about 75 percent of those interviewed had fed Cerex with a bottle at least part of the time. Information on pricing suggested the possibility of marketing Cerex at a slightly higher price thus reducing the amount of subsidy required. In general the evidence indicates a strong acceptance of Cerex and a very high probability of success in the market with no major changes.

Development of Marketing Plans

During the week GPC directed some attention to outlining their marketing plans for the product when production facilities are completed.

Marketing Management

The major problem facing GPC is a shortage of middle management personnel. Currently the marketing manager position is unfilled. This is also true for all brand manager (or product manager) positions as well as for sales manager. For any consumer products company this is a serious problem, but for a firm which is trying to establish an entirely new line of food products it is a potential disaster.

GPC management recognizes the problem and has been attempting to fill the positions. It was indicated that one person at the product manager or marketing manager level would be hired within two weeks and one-half of his time would be devoted to Cerex and the further development and implementation of related marketing activities.

Product Formulation

No significant changes are contemplated in the basic character of the product. When the plant is completed the output of this continuous processing system will be checked against the product produced for the test market to provide assurance that all basic characteristics are the same.

Packaging

Packaging for the product was found to be acceptable so no changes were planned. There is some evidence that a larger retail package is desired by a segment of the market. After successfully establishing Cerex in the eight ounce package it was suggested that a larger retail unit be introduced (one pound or perhaps 500 g.).

Pricing

In light of research results and the retail price of competing or substitute products, review of the retail price was undertaken. The result of this was a decision to price Cerex at 50 Guyanese cents per eight ounce packet at retail. It was judged that this would have essentially no impact in terms of restricting consumer purchases but would provide for a slightly smaller subsidy and reduce the magnitude of increase which would be necessary as costs increased. Also it would provide a little room for competition in price should prices be greatly reduced for substitute products.

Distribution System

GPC is setting up a separate sales staff in its newly organized foods division. At the moment only one sales supervisor is employed. GPC management indicated that a sales staff of about five persons would be in place by the time Cerex was launched. Also available to assist in sales and merchandising activities would be two assistants currently working in the marketing department. This would provide manpower enough to visit all major retail food stores once per week and other food shops every two weeks. Personnel from the Pharmaceutical sales staff would also be utilized during the first three months to assist in follow-up merchandising and sales at the retail level. GPC indicated that it would be selling Cerex through both private and government owned wholesalers and retailers.

In addition, distribution of Cerex to MCH centers will be handled by GPC. A limited quantity will be produced starting in November, 1979, for distribution through MCH centers to be used for treatment of children diagnosed as having the most serious cases of malnutrition. The product will be made using the existing system until the new plant is started.

Promotion

Development of the promotion program has just begun. The launch program will consist of the use of radio and newspaper advertising, cinema ads and some form of outdoor advertising. Also included will be a publicity campaign through newspaper articles and radio programs. A program of contacting medical professionals with information and educational materials

will also be carried out. This may be supported with the introduction of a specialty advertising effort (Tee-shirts, premiums, etc.) which will be essentially self-liquidating.

The basic content of these promotion programs will focus on the following ideas:

1. Low-cost product
2. Nutritious and healthful
3. Convenience in preparation
4. The value of milk in the product
5. Emphasis on complementary with breast feeding, not substitute for
6. Spoon feed, not bottle feed Cerex
7. Sanitation in preparation
8. Cerex is a baby weaning food; not for general use in household.

It was agreed that the appropriate advertising agencies would be briefed on the product by GPC prior to the middle of October. Preliminary materials would be developed and presented by mid-November so that final artwork could be done prior to Christmas and production of materials in January - February, 1980. A launch date of March 15 was envisioned depending on the status of plant installation.

Follow-up Monitoring and Evaluation

The need for an assessment of market penetration and use of the product in the household was discussed. A measure of the degree to which Cerex is purchased and used in target population households is important both to USAID and to GPC. It will also be necessary to identify the usage patterns of the product in the household: how prepared, how served, which member of the household uses, etc. A three part information collection system was discussed which would consist of 1) monitoring sales, 2) interviewing personnel at wholesale and retail level and 3) a survey of consumers. A brief outline which may be used as a general guideline is attached.

It was recognized that in-country expertise in designing and carry out the necessary consumer survey may be limited. GPC and USAID need to direct attention to this problem and attempt to formulate plans well in advance of the launch date so that the assessment can be properly planned and executed.

CEREX MARKET INTRODUCTION:
AN OUTLINE OF MONITORING AND
ASSESSMENT ACTIVITIES

The purpose of the Cerex project is to provide a nutritious baby weaning food at a price affordable by low income households. It is thought that the incidence of malnutrition is highest among infants between the age of four months and two years in low income households. Therefore, to judge the success of the product it is necessary to measure the degree to which this target population is reached. Beyond this it is also important to gather marketing information which may be of use to GPC in evaluating its objectives and for the purpose of making product or marketing changes should it be found that the target market is not being reached.

Three basic sources of marketing information are available if properly exploited: 1) sales data, 2) consumer surveys, and 3) interviews with trade personnel. Each is discussed in turn below. The purpose of this discussion is to provide general ideas and approaches rather than precise operational details.

Sales Data

Proper collection and analysis of sales data is a very important component of overall marketing management. Trends in sales can be revealed as well as variations in sales related to size or type of retail store or ethnic or income characteristics of neighborhood in which stores are located. Several ways of collecting and aggregating sales data may be used.

1. Report total unit and dollar sales of Cerex by
 - a. Time period: weeks if possible for aggregate sales, perhaps less frequently for regional or area sales.
 - b. Region or sales territory: in some cases this will provide insight into relationships with ethnic or income characteristics of various areas of the country.
 - c. Sales reports should be given both on a unit time basis for the period (sales per week, day, etc.) as well as maintaining a running total of sales by area.
2. To obtain more information, a sample of stores could be identified in which sales are monitored. This way information on sales per store per unit time could be observed over a long period of time. Also variation in relation to size or type of store could be measured. Additionally stores could be selected to represent basic income or ethnic differences which are hypothesized to be associated with different levels of Cerex purchase and use. Several stores in each category would need to be selected to obtain a reasonably representative sample.

3. Delivery records of wholesalers and salesmen provide the basic source of information. In sampling individual stores, individual store records would have to be maintained and reported in some manner, either by the salesman, store owner or an individual whose duty was to gather this information on a regularly scheduled basis.

Consumer Survey

This effort will be necessary to establish the usership pattern for Cerex. A sample will have to be selected, and a survey conducted to identify the incidence of purchase and use, the income and other characteristics of using households and the individuals in the household who consume Cerex.

Sampling Households

Two different approaches may be used. One is to survey persons who purchase the product while they are still in the store. The other approach is to actually conduct the survey in the home identified through a random sampling and screening procedure.

In the first approach an interviewer is stationed in the store to interview shoppers as they leave after having been observed to purchase Cerex. The questionnaire is completed at that point. The advantage is that it is less expensive than door-to-door interviewing and a larger number of purchasers can be identified quicker. The disadvantage is that usually less questions can be asked and people may be reluctant to provide some information in the store environment. Also it will not be possible to identify purchasing households as a percentage of total households or as a percentage of households which meet the criteria of being in the target population.

~~The most~~ ^{A more} precise method of obtaining the desired sample is to establish an area probability sample and interview a predetermined number of households at each location according to an established procedure. In this way a random sample of all households can be selected, the number of total households interviewed is known, the number of households with qualifying children and the number of those households using Cerex is also known so that market penetration can be calculated and projected. An area probability sample refers to a random method of selecting locations from a map using a numbered grid system. This method, while providing a more complete set of information, requires much more interviewing to be completed. If one expects 40 percent of all households to have a qualifying child (four months to two years) and only 20 percent of these to have purchased Cerex then one would need to initially visit 2500 households in order to find 200 which actually used Cerex ($2500 \times 40\% \times 20\% = 200$). These are only hypothetical numbers but serve to illustrate the point.

To establish the size of the final sample some consideration must be given to the degree of accuracy desired and to a precise definition of the target market, particularly in terms of some income measure. Also, what level of penetration into the target market is considered success?

Survey Questionnaire

Having identified Cerex-using households, the questionnaire should contain questions addressing several basic areas of interest. First, household demographics (income, education, ethnic characteristics, number and age distribution of members, etc.) are necessary to relate user households with intended target market. Also needed is information regarding which member(s) of the household consume the product, quantities and frequency. A third useful set of information relates to methods of storage, preparation and serving so that the impact of promotion and nutrition education messages can be assessed. A fourth area which can be included relates to the acceptability of the product and its package.

Timing of Survey

A one-time survey could be conducted several months after Cerex is introduced and after the market seems to have established itself. Alternatively, the interviews can be conducted in phases. The phasing of interviews permits some earlier monitoring of results and the measurement of any trends which may occur over time with respect to market penetration. Households identified as users in the first phase could be kept in the sample and re-interviewed each time to follow up on repeat purchasing patterns.

It is important that the interviewing be continued until, or conducted at such time that, the market has stabilized. This would likely be several months after product introduction. With few alternative products available and little competition this will likely happen quicker than it would in a more dynamic market. The monitoring of sales levels should provide some clue regarding this matter.

Interviews with Trade Personnel

Wholesalers and retailers have an opportunity to observe the performance of the product in the marketplace. They hear comments of consumers as well as form opinions themselves regarding the product. Using a relatively informal procedure these opinions and assessments should be periodically obtained and reviewed.

The regular contact of the sales staff provides a good opportunity to obtain this information. Sales personnel could be asked to fill out a weekly report summarizing their observations. Additionally, this information could be periodically supplemented through a series of quick calls or contacts by someone in the marketing department.

Proper evaluation and attention to this source of information will often provide an early signal regarding product performance. More detailed attention can be given to specific problems as they are revealed. When used in conjunction with more quantitative types of information (sales and consumer surveys) a more complete picture of the success or failure of the product can be developed.

APPENDIX C - 3

GPC/Cerex Project Trip Report, September 1980.

GPC/CEREX PROJECT

Trip Report

Sept. 3 - Sept. 11, 1980
John P. Nichols

The purpose of this trip was to review the status of Cerex marketing and develop specific plans and materials for conducting the consumer survey. The following specific activities were undertaken:

1. Review Cerex marketing and distribution
2. Examine sales records
3. Examine problems with baler bags
4. Planning and developing consumer survey
 - a. Questionnaire
 - b. Sample design
 - c. Fieldwork
 - d. Tabulation and analysis
5. Discuss plans for evaluation of clinic distribution

Each of these activities are discussed in detail below. Attachments for reference include 1) first draft questionnaire, 2) statement on sampling procedures, 3) schedule of activities and responsibilities relating to consumer survey and 4) table of daily production of the Cerex plant. The first two days in country were devoted to initiating questionnaire and sampling development and setting up test of baler bags. After these, sales records were examined and a tour was made of East Coast distribution centers and retail outlets from New Amsterdam to Coriverton. Developing plans for fieldwork, pretesting questionnaire and evaluating sales records occupied most of the last few days in the country.

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1. Review of Cerex Marketing and Distribution

Distribution and Sales

Since production at the Cerex plant has never achieved a consistent level, distribution has been sporadic at best. A large supply was available in June when the product was launched but many outlets quickly ran out and did not receive additional supplies until late August, particularly in outlying areas. More supplies were available in Georgetown but even here it was not available on a continuing basis. When observed on September 9th the area east of the Berbice River was just receiving new supplies after having been out since July. A few government outlets were found to have supplies from their first shipment in June. No quality problems were observed among the packages examined which had been in warehouses and stores for three or more months. Limited evidence indicates that sales in smaller shops might range from 20 to 200 packs per week. Larger supermarkets might average 150 to 250 packs per day. These estimates are based on very limited observations under highly variable conditions and should not be viewed as a basis for projecting ultimate sales levels.

There was significant consternation expressed by nearly everyone in the trade regarding the inability of GPC to provide a continuing supply. While GPC's credibility may have suffered another blow it probably is not fatal to Cerex. There is a strong demand and it is likely that market acceptance can be re-established once production problems are solved.

Product Quality

There was essentially no evidence of any problem with product quality. Most retailers, wholesalers and others indicated that no consumer complaints had been received except regarding the lack of availability.

Persons Using Cerex

From many sources there are indications that Cerex is being used by persons other than preschool children. In many cases it was indicated that that younger school age children had Cerex as a snack or with lunch. Some indicated adults were eating Cerex. There was no indication of Cerex being fed to animals.

How Used (bowl vs. bottle)

There is a mixed reaction to this. It is readily apparent that Cerex is being diluted and fed through a bottle with nipple. Others cut off the nipple so that a relatively thick porridge can be fed with a bottle. Many apparently are using a bowl and spoon. This information is almost entirely hearsay thus provides nothing more than a general indication.

Cerex Packet (8 oz. pouch)

A small amount of leaking packets were mentioned by the trade. Some of this was a sealing problem while some was the result of puncture damage or tears. Reports indicated that well less than one-half of one percent of the packets had these problems. Some rat problems were mentioned but many of the stores had successfully used the wooden protective display boxes. Consumers were apparently satisfied with the package.

Baler Bags

Many reports were received regarding torn or broken baler bags. One warehouse manager reported a recent shipment which had about 20 damaged bags out of a shipment of 200. This was a little higher than average but

there is a clear indication of a problem. The most important problem was tearing of the bags in handling. Bags were torn either at the glued end or across the middle. This was observed to result from the manner of handling where the loosely packed bags are grabbed at each end. Often the handler has only a handful of paper sack and is not holding under the product. When this happens it is easy to grab part of the glued flap and a tear occurs. This problem is increased under the frequently used procedure of throwing the bags along the line of handlers.

Some bags also had flaws in stitching. The stitches are too close to the end in some cases. In others the loose thread is pulled; and it comes unstitched. The plant has run out of the brown paper reinforcing tape but this does not appear to be the main causal factor. Quality control has now asked that the stitching be inspected before shipment. No significant problem was found in the field in the bags getting wet although this had been suggested by some GPC personnel.

We attempted to stitch the bags shut so that the Cerex would be packed tighter. About six inches was cut off the bags before sewing. However, this created more stress on the bag when drop-tested, and it burst. More information on testing of bags is presented in a later section.

Promotion and Merchandising

Most of this effort has been discontinued since supplies were not available. The merchandising efforts were apparently quite successful. They should be reinstituted along with some modest promotion as soon as full distribution is achieved. The informational value of the merchandising was apparently well received.

The use of display boxes was a good idea but most retailers resented having to pay for them, and there is a large supply (more than half) still in the warehouse. Some consideration should be given to subsidizing the sale of the smaller display boxes. The larger ones are not of a design acceptable to many retailers. The Cerex shirts were not very successful. They were fairly expensive and unlike people in the U.S., Guyanese don't want to pay to wear someone else's advertising.

Price

There was almost universal agreement that the price was good. No complaints from consumers were reported. Some indicated that the price was low enough to encourage widespread and rapid adoption. Most also indicated that it encouraged use by many persons not in the original target group. In summary, the problem with the price may be not that it is too high, but that it is low relative to most other comparable foods. When asked about the effects of a price increase on purchases, trade personnel had a mixed reaction. A few felt the price should go up and would not reduce sales greatly. Others expressed a concern that too high a price would definitely reduce use by poorer people. All agreed that the price must remain as it is for a long enough period to establish the product. This should then be followed by a period of gradual increase and adjustment.

2. Examination of Sales Records

Data summarizing sales of Cerex originate in the billing records of the GPC Sales Department. Because of a delay between billing and the actual delivery of Cerex some distortion enters into this sales estimate. In addition because of a shortage of supplies, occasionally Cerex was not

delivered even though it had been billed. This happened during late June and July, and a considerable amount of "Cerex due" was carried on the books until it was realized that the production short fall would not soon be overcome. At that point credits were issued to cancel the billing. It has been indicated that most of these credits have now been issued. Thus July and August net sales figures are somewhat below what actually was delivered because of the credits issued during those months against June billings. Under normal circumstances the distortion resulting from credits should not be significant as credits would run at a low consistent rate.

Beverley Harper is developing a table which will describe weekly sales by region. As soon as the credits are accounted for it should provide a sales figure which can be reconciled against the production totals. Sales by regions will only be a rough approximation since some of the billings are to large sub-distributors who subsequently re-ship to other regions. This is particularly true of Georgetown (Region 7) but also applies to New Amsterdam (Region 9) and a few others to a lesser extent. Some adjustment factors based on sub-distributors records need to be applied to develop improved estimates of sales by regions. Beverley Harper will work out a system with the Sales Department to obtain a regular report on billings (sales) by region.

3. Test of Baler Bags

Samples of two different baler bags were brought with me to Guyana (woven poly bag and Valeron). Wet strength bags were not received at time of departure. I will forward these by mail to Jean Dookhoo, GPC Quality Control.

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Both sample bags were drop tested with no damage occurring either at 60 pouches (30 pounds) or 80 pouches (40 pounds). These baler bags were subsequently entered into the distribution system to observe under actual use. Ms. Dookhoo will provide a report on this phase by letter. Other comments on baler bags are provided field observations above.

4. Planning and Development of Consumer Survey

The full range of activities involved in planning and executing the survey were discussed. GPC personnel involved were Beverley Harper and Frederick Duncan. Dr. Linda Lion (USAID) and Dr. Harry (Ministry of Health) were also involved in some aspects of the discussion. Beverley Harper of the Marketing Department has been the key contact in terms of carrying out the survey. She has contacted and requested the services of Freddie Duncan of the new GPC planning unit. He is a professional statistician with experience in several government agencies including the Ministry of Health. While he has not managed consumer surveys before he is familiar with many of the requirements particularly those which have implications for the statistical reliability of the results.

It is anticipated that Beverley and Frederick will develop a team approach to planning and executing the survey. An early meeting of GPC personnel, perhaps with USAID participation, should be held to clarify the working relationships and responsibilities. A good blend of marketing and practical statistics is needed to make the project work. Attached to this report is an outline of activities and responsibilities as it is envisioned presently. This can be a basis for some further discussion and clarification of tasks and working relationships.

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Questionnaire

Using questions provided by Beverley Harper and other information a draft questionnaire was completed (see attached). This is now being tested by personnel of the Marketing Department of GPC and reviewed by other interested persons. As expected a number of improvements have already been suggested and revisions will be carried out over the next few weeks. Subsequent to that another round of review and pretesting will be carried out. Additional discussion is provided in the attached "Schedule of Activities and Responsibilities".

Sample Design

Work was initiated by Freddie Duncan to gather the information necessary for determining the range of sample size which would be required to fulfill the objectives of the study. These objectives were discussed and estimates developed based on several assumptions. More detail on this is provided in the attached discussion of sampling considerations drafted by Freddie Duncan. A more complete report on sampling is to be made available by Mr. Duncan within the next month. Also additional comments are provided in the "Schedule of Activities and Responsibilities."

Field work

The requirements for planning and executing the field work phase were discussed. Again details are available in the attached "Schedule". Also a chart is provided in Figure 1 of that attachment which indicates the relative timing of the various activities.

The main points to be resolved here include identification of a viable pool of interviewers and, contingent upon this, the decision regarding how many interviewers to employ and how quickly to complete the field work.

Additionally the level of pay necessary to obtain quality interviewers needs further attention.

Tabulation and Analysis

As indicated in the attached "Schedule" current plans are to conduct these activities (including final coding) at Texas A&M where computer facilities are more accessible. An estimate of the cost of carrying this out needs to be developed. This is dependent in part on the number of completed interviews. An estimate will be developed for USAID/Guyana consideration.

As an alternative, local tabulation could be considered although I did not have time to evaluate this capability. One avenue to explore is the method of tabulation being used on the breast feeding survey. This may give some insight.

A two-stage analysis is anticipated. Since time will likely be short for decision making the basic results will be analyzed first, particularly those dealing with usage by various sub-population groups. Tables and complete analysis can be provided later. Further comments are in the attached "schedule".

5. Evaluation of Clinic Distribution

In view of the current production limitations it was decided that the MCH clinics should be emphasized as a means of distribution to assure that at least the most critical target group could be served. Plans are developing to initiate this distribution. Ministry of Health estimates of required quantities (by clinic) are being prepared. GPC has not yet received the vehicles requested for this program.

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Once in place and operating an evaluation of the program is planned. Only a brief time was spent discussing this activity during this trip. In general it was suggested that the review include at least two parts: 1) an evaluation of the management and operational aspects of the program and 2) a survey of clinic participants.

The review of operations should be undertaken by someone with experience in institutional or subsidized feeding programs. Its purpose would be to assess the program in terms of distributional efficiency, adherence to sound inventory and accounting practices, appropriateness of procedures for identifying recipient children and other related operational considerations.

The second part of the evaluation should be a user survey conducted among recipient households. This would be based on a random sample of clinics and households. The objective would be to 1) identify the characteristics of recipients and their families and 2) to identify usage levels for Cerex in the home and related consumption patterns.

As with the evaluation of commercial distribution, this effort would be most useful if not undertaken until the program has been underway for a period of time. Given the typical frequency of clinic visits it may take five to six months for distribution and consumption patterns to stabilize enough. More specific plans for this evaluation should be prepared once the distribution of Cerex through the clinics is established.

Schedule No.

Date

Address
.....
.....

Interviewer

CEREX CONSUMER QUESTIONNAIRE
COMMERCIAL MARKET

Hello, my name is I represent The Home
Home Products Bureau of Quality Foods. We are doing a survey to assist
in the development of better food products for the people of Guyana.

1. Do you have any children under 5 years of age in this household?

..... Yes (Go to Q. 2)

..... No (Go to Q. 3)

2. I would like to speak with the person who purchases, prepares and
serves the children's food.

..... Mother

..... Grandmother

..... Other (specify)

If not available, determine best time for a call back to interview
that person.

Date

Time

3. Are you aware of a food product called Cerex?

..... Yes (Go to Q. 5)

..... No (Go to Q. 4)

..... Don't know (Go to Q. 4)

*Need to
introduce
32 palm oil
the ideal product
to indicate
more of*

4. (If not) Cerex is a cereal food for babies. Have you ever used it for anyone in your house?

..... Yes (Go to Q. 5)

..... No (Go to Q. 6b)

5. If yes, What do you know about this product? (Check those items mentioned)

..... cereal food

..... for babies or small children

Other comments

.....

6a. Have you ever purchased and used Cerex in this household?

..... Yes (Go to Q. 7)

..... No (Go to Q. 6b.)

b. Why haven't you purchased Cerex?

..... locally produced product.

..... no babies.

..... couldn't afford.

..... didn't like.

..... not available.

..... Other (specify) (go to Q. 3)

7. How recently have you used Cerex? ()

..... today)

..... within the last week) (Go to Q. 8)

..... within the last month)

..... more than one month ago (Go to Q. 35)

8. Do you now have Cerex in the house?

..... Yes

..... No

9. Where do you usually get the Cerex?

..... supermarket

..... neighborhood shop

..... market stall

..... clinic

..... other (specify)

10. How many packets of Cered have you purchased or received (for use in this household) in the last two weeks? packets

11. I would now like you to tell me who in your household eats Cerex, how frequently, and how it is taken.

(Interviewer use sheet on next page to record this information)

12. (a) How many packs of Cerex did you use in your household during the last week?

.....packs

(b) How many packs were used by children under 2 years old in the last week?

.....packs

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Question 11. Table

Question	Children						Adults			
	#1	#2	#3	#4	#5	#6	Mother	Father	GrandP.	Other
(a) For the children give age in years (indicate age in months if less than one year)										
(b) How frequently does this individual usually eat CEREX?										
(c) How is Cerex usually eaten by this individual? (Indicate No. of the response given)										
#1 - Porridge										
#2 - Drink										
#3 - Other (specify)										

If Child Under Two Years old uses Cerex, ask the following Questions.

(Otherwise go to Question #22)

The following questions refer to your youngest child who eats Cerex.

Baby's age now; years months.

13. Are you now breastfeeding your baby?

.....yes (go to #14)

.....No (go to 13.b)

(b) Did you ever breastfeed your baby?

.....Yes (go to 13.c)

.....No (go to 14)

(c) At what age did you discontinue breastfeeding this baby?

.....Years Months.

14. At what age did you start feeding the baby Cerex?

.....Years Months.

15. Please describe briefly the steps you use to make Cerex for the baby. (Check in first column those steps which are freely mentioned, then probe gently at first and then ask directly about those still negative).

	<u>unaided</u>	<u>aided</u>
Boil water	_____	_____
Cool Water	_____	_____
Measure Cerex	_____	_____
Add water	_____	_____
Heat/Stir	_____	_____
Simmer for 5 (Five) Minutes	_____	_____
Add other ingredients	_____	_____
Specify ingredients:	_____	

16. What amount of water and Cerex do you usually use in preparing porridge for the baby for one feeding?

.....Water
.....CEREX
.....Dont Know.

17.a. How was the Cerex fed to the baby?

..... Spoon & Bowl) - (go to Q. 18)
..... Feeding Cup)
..... Bottle with nipple) - (go to Q.17.B)
..... Both)
..... Other (Specify) (go to Q.18)

b. Did you do anything special to the nipple on the bottle to get the Cerex through?

.....Yes (go to Q.17.c)
.....No (go to Q.18)

c. What did you do to the nipple?

..... Enlarged by cutting end off
..... Other (Specify)

18. How many times a day do you gave the baby Cerex?

.....

19. Are you now using any other porridge in addition to Cerex?

..... Yes (go to Q.20)
..... No (go to Q.21)

20. (a) If Yes, why are you using this porridge in addition to Cerex?

.....
.....

(b) What kind of porridge are you using?

.....

(c) How many/often do you use this porridge?

..... Times per day
..... Times per week

21. If NO, what kind of porridge were you using before you started using Cerex?

.....

22. a. Are you satisfied with Cerex as a food for your child or baby?

..... Yes (go to Q.23)
..... No (go to Q.22.b)

b. If No, what did you dislike about Cerex? (Probe to get specific terms)

..... Taste or flavour
..... Appearance or colour
..... Texture
..... Aroma
0..... Other (specify)

c. Can you tell me what you did not like about the (taste etc)?

Probe for specific words.....
.....
.....

17.....

22.d. How does cerex compare with any other previous baby cereal you have used?

.....Better than
..... Same as
..... Poorer than

23. Where do you store open packets of Cerex between uses?

.....

24.a. What is your opinion of the Cerex package?

..... Like (go to Q.25)
..... Dislike (go to Q.24.b)
..... No opinion (go to Q.25)

b. What did you find wrong with the package?

.....

25. Would you prefer a larger packet of Cerex if it were available?

..... Yes
..... No
..... No opinion

26.a. Did you read the instructions on the package?

..... Yes (go to Q.26.b)
..... No (go to Q.27)

b. What do you remember most from the instructions?

.....
.....

27. How much did you pay for Cerex?
.....£ per pack or
..... received free from Clinic.

28. Do you think this price is? (Interviewer rotate order
.....TOO HIGH in which these are read
..... JUST RIGHT to respondents)
..... TOO LOW

29. a) If the price had to be raised to cover costs of producing Cerex would
you pay a higher price?
.....YES (GO TO Q. 29. B.)
..... NO

b) If yes, what price would you be willing to pay per pack? \$.....per pack

30. What do you like the best about Cerex?
.....
.....

31. What do you like the least about Cerex?
.....
.....

32. How did you first learn about Cerex?
.....RADIO
..... POSTER IN STORE
..... MERCHANDISE IN STORE
..... . POSTER OR OTHER INFORMATION AT CLINIC
..... FROM FRIENDS OR NEIGHBOURS
..... SAW IN SUPERMARKET
..... OTHER (SPECIFY).....

33. Can you complete the following phrases?

a) Along with the breast,.....

.....accurately completed

.....did not accurately complete

b) Cerex, the spoonfed cereal for

..... accurately completed

..... did not accurately complete

34. a) Have you used Cerex as a feed for dogs or other animals?

..... YES

..... NO

b) If yes, about how many packets per week do you use in this way?

.....

(If household no longer is using Cerex ask following questions, otherwise go to Q.37)

35. Why are you no longer using Cerex?

..... did not like (go to Q. 36)

..... not available

..... could not afford

..... children no longer needed

..... other (specify)

36. a) What was it you did not like about Cerex?

..... taste ir flavour

..... apperance or colour

..... texture

..... aroma

..... other (specify)

b) Can you tell me what you didn't like about the (taste, etc) ?

.....

.....

HOUSEHOLD CHARACTERISTICS

Now I would like to have you give us some brief information about your household. Please remember that this is confidential and will only be used to help in organising the data.

37. a) How many children under 5 in household?.....

b) How many children 5-18 in household?

c) How many adults in household?

TOTAL

38. Age of mother? under 21

..... 21 - 35

..... 35 - 50

..... 51 and over

39. Mother's education? has not completed primary school

..... completed primary school

..... completed secondary

..... further education (some college or University)

40. Is mother employed outside of home? YES

..... NO

41. a) Do you visit an MCH Centre with your children?

..... YES (go to Q. 41b)

..... NO (go to Q. 42)

b) How frequently?

..... once per month

..... once every two months

..... less frequently

42. Please tell us which of the following best describes your total monthly household take home income (show card)

..... over \$2500 per month

..... over \$200 per month

..... over \$1000 per month

..... \$200 per month or below

43. Occupation of father?

44. How much do you spend per week for food for this household?

\$..... pe r week (or \$..... per month)

45. Does house have inside or outside latrine?

..... inside

..... outside

46. What is the distance to nearest piped water?

..... inside house

..... outside house

..... within one block

..... further away

..... other (specify).....

47. Number of bedrooms in house?

48. Race Indian

..... Negro

..... Mixed

..... other (specify).....

SEPTEMBER 11, 1980.

CEREX EVALUATION SURVEY - DRAFT OF SAMPLE DESIGN

SAMPLE SIZE:

The sample will be stratified by factors and will be spread over four (4) stages. Little about the population, about the relative variability in different strata, and between and within clusters, is really known at the present time, and the computation of desired sample size is a very approximate one, because of the short space of time given for the preparation of this draft, much detail is of necessity omitted. The sample size would be in the vicinity of two thousand households (2000). If the following assumptions are made:

1. The form of analysis will be primarily concerned with answering the following questions:
 - a) What proportion of children under five (5) years of age use Cerex frequently.
 - b) Of those children under two (2) years of age what proportion of those who use Cerex frequently use it correctly.
 - c) For answers to (a) and (b) above compare the following sub groups - Indians and Negroes
Rural and Urban Households
Low Income and High Income Households.
2. That the significance level of the the test of comparisons in (c) above is 5% and that the power of the test is 90%.
3. That it is assumed that the ^{Negro?} Indian, Urban and High Income (Group I) households use Cerex more frequently than the other group (Group II) with which they will be compared (50% of Group I households are estimated to be frequent users to 40% of Group II).
4. That Group I households have a 'correct users' proportion of 30% compared with a 'correct users' percentage of 20% in Group II households.
5. That a Multistage stratified design will be used with the final stage selection procedure being either sample random or replicated systematic depending on the availability of information on households in the areas to be interviewed.
6. That the design effect of the above design will be on average 1.2 (from previous surveys among the same groups) and that the consequence of this effect will be to nearly double the sample size was to be taken.

Handwritten notes:
The main
concerned
roughly it
is a very rough
estimate
of the sample
size.

7. That every other household interviewed will, on average have a 'target child'.

More liberal assumptions relating to a difference in the proportions between Group I and Group II households, a reducing of the estimated consequences of the design effect lost considerations can all contribute towards a lowering of the estimated sample size (2000) households.

It must be stressed that the above calculations are very approximate, were done in far less time than is required to produce a more definite statement of sample size on procedures.

.....
FREDERICK D'NAN

CEREX COMMERCIAL MARKET CONSUMER SURVEY

Schedule of Activities and Responsibilities

A. General Schedule:

1. Interviewing will be initiated approximately two months after full distribution is achieved.
2. This level of distribution is defined as: a) continuous supplies of Cerex available in all major retail stores or supermarkets and b) continuous supplies available in most smaller shops (75%+) with out-of-stock situations occurring no more than one or two days per week in any store.
3. If this level cannot be achieved once maximum production level has been obtained then a judgment may be made that the maximum possible distribution has been achieved and thus the evaluation should proceed.
4. The purpose of the two month period is to allow some time for a repeat purchase pattern to develop.
5. Questionnaire development, design of sample and organization for field-work are the three major activities to be completed prior to initiation of surveying. Editing of questionnaires, coding, tabulating and analysis of data are the main tasks after surveying is completed (See Figure 1).

B. Specific Activities

1. Development of continuous production, sales and distribution:
 - a. Obviously until planned objectives in this area are met there is no point in evaluating market penetration. GPC management is responsible for the activities in this area.
 - b. Continuous monitoring of Cerex in retail shops by GPC sales coordinators and the marketing department provides the basic guide for judging success in this area.

- c. Distribution must then continue essentially uninterrupted through approximately a four month period to provide the best conditions for completing the survey.

2. Questionnaire:

- a. The development of a questionnaire is well underway. A draft has been pretested and is currently being revised.
- b. Beverley Harper will be responsible for completing the revisions, consulting with other interested parties (MOH, USAID, etc.), carrying out another pretest and making appropriate revisions. Close coordination must be maintained with Freddie Duncan so that the statistical implications of various questions and total questionnaire design will be considered. In addition his experience with other surveys in Guyana can be helpful.
- c. This activity including duplicating sufficient copies of the questionnaire should be completed one month before the survey is to start so that attention can be focused on organizing fieldwork.
- d. When questionnaire is complete a detailed instruction sheet is needed to tell interviewers how to conduct the interview. It should be keyed to the question number in questionnaire. These instructions should also include pertinent sampling instructions. It is a vital tool for both interviewer training and to guide in-the-field decisions by supervisors.

3. Sample Design:

- a. The basic work is completed on defining important considerations determining sample size. The status of sample size and general procedures is outlined in the report by Freddie Duncan of the GPC Planning Department.

- b. The next major task is to identify specific sampling procedures (which depend on availability of household lists for selected enumeration districts). After this the sample is to be drawn and a specific set of procedures drafted which describes the systematic routine to be used by interviewers. Freddie Duncan is responsible for this activity.
- c. Completion target is one month prior to the beginning of the survey.

4. Fieldwork:

- a. Beverley Harper is the person identified as responsible for coordinating this activity. However, Freddie Duncan should be involved in all aspects that relate to in-field sampling procedures. Both persons should be available full time from the beginning of the interviewer training through the completion of the majority of the survey. They could effectively operate as a team and directly supervise some of the field work.
- b. Supervisors should be identified and hired a week or so early to develop logistical plans for interviewer transport, lodging, etc. as necessary.
- c. Interviewers will be drawn from either University of Guyana students or GPC Marketing Department personnel. Others including some former employees with experience in contacting the public may be a source of interviewers. These should be identified early and brought in for training approximately two days prior to starting the survey.
- d. Training should consist of a period of formal presentations where the objectives are discussed, the questionnaire is reviewed in detail and sampling procedures are specifically described. A period of practice interviews may be held with interviewers using each other as

respondents. Following this the interviewers are sent out to pre-determined areas to complete 2-3 practice interviews. These are subsequently reviewed individually with supervisors (who have also been trained). A group session is then held to review the major problems encountered.

- e. Careful supervision with frequent checks are required the first day or two of interviewing. After this a continuous monitoring by the supervisor with systematic validation is appropriate.
- f. Field editing should be done on a continuing basis. This is best done at this time to catch errors, make corrections and assure that a complete set of responses are provided. This is much easier to do at this stage when interviewers are close at hand.
- g. Upon completion of the interviews the supervisors should be employed for a week or two extra to completely re-edit the questionnaires. Organize and code open-ended questionnaires, etc. so that final coding will be expedited. Statistician should be consulted regarding implications involved in editing decisions.

5. Coding and Tabulation:

- a. Under the current arrangement it is planned that this will be done at Texas A&M University. Shipping time not included, this phase can be pretty well completed in four weeks if the questionnaires have been fully edited previously. If not, considerable delays could result while unresolved problems in the questionnaires are handled through correspondence.
- b. Basic tabulations will be done according to an agreed upon logical scheme of tables to be designated in advance. Other tables can be easily produced on request as the data will be maintained in an easily accessible disc file until the analysis is completed.

1. Activity Chart and Responsibilities: Cerex Commercial Marketing Consumer Survey.

Activity

Time in Months

(Nov.1,1980?)

0

1

2

3

4

5

roduction,Sales
nd Distribution
GPC Management)

Distribution
Judged to be
Maximum or
Acceptable

Uninterrupted Distribution

uestionnaire
B. Harper)

Complete redrafting
and pretesting
Develop interviewer
instruction sheet

ample design
F. Duncan)

General
Procedures
Complete

Sample
Drawn

ield work
B. Harper assisted by
. Duncan and hired
eld supervisors)

General
Planning

Identify
Supervisors and
Source of
Interviewers

Hire
Supervisors
Schedule
Fieldwork

Hire
and
Train
Interviewers

Initiate

Surveying

Conduct Survey
(4 weeks -)
Edit in field

(2 months)

General Editing
Send to
U.S. for coding

oding, Tabulation
Nichols)

Receive,
Code and Tabulate
(6-8 weeks)

Analysis
of main results
(one month)

Draft of Com le
Analysis
(4 months)

6. Analysis:

- a. The initial tables will be provided to GPC and USAID with a discussion of the main findings within a month of the completion of tabulation.
- b. A draft report of the complete analysis of the consumer survey will be provided within four months after that time.
- c. Nichols will be responsible for carrying out the interpretation and analysis. Input from other interested persons is appropriate and would be welcomed.
- d. A visit to Guyana could be scheduled to coincide with the availability of the tabulated results and summary of the main findings.

CAREY 8028 Pacific

IL	REF	Daily In	OUT	Accum BALANCE Total	DATE	REF	Daily In	OUT	Accum BALANCE Total	DATE	REF	Daily In	OUT	Accum BALANCE Total
400		4620		4620	11-6-80		12090		134810	24-7		4050		287370
560		320		4940	12		10320		145130	25-7		1600		288910
"		2353		7293	13		12960		158090	30-7		6000		294910
"		7920		15213	14		13040		171130	31-7		4320		295490
"		1280	x	16490	15		2320		173450	6-8		6240		301530
"		4000		20490	16		2000		175450	18-8		8000		313530
"		4000		24490	17		4880		180330	19-8		80		313610
"		2880		27370	18		8000		188330	20-8		6400		320010
"		6715		34085	19		6000		194330	21-8		8000		332010
"		4185		38250	19		1040		195370	22-8		7340		340010
"		2800		41050	20		6240		201610	25-8		2680		343010
"		2480		43530	23		10720		212330	27-8		8240		351250
"		8320		51850	24		4320		216650	28-8		4080		355330
"		6400		58250	26		7680		224330	29-8		9680		364010
"		1200		59450	27		8000		232330	1-9		4000		368010
"		6240		65690	28		5440		237770	2		6000		374010
"		9880		75570	30		4720		242490	3		10000		384010
"		10080		85650	31		1280		243770	4		6000		390010
"		3680		89330	1-780		5620		249390	5		8000		398010
000	ⓐ	4080		93410	2-7		5280		254670	6		8000		406010
"		7840		101250	3-7		7520		262190	7		4000		410010
"		2720		103970	16-7		1840		264030	10		4000		414010
"		1600		105570	17-7		3040		267070					
"		5560		111130	21-7		6000		272970					
"		11600		122730	22-7		8320		281290					
"		4000		126730	23-7		2000		283290					

Through
May 31 89,
June 15,
July 15,
Aug. 17,
Sept. 1, 50,
Total 401.5

APPENDIX C - 4

**Review of Cerex Marketing and Consumer Acceptance
in Guyana, June - July 1982.**

Review of CEREX Marketing
and Consumer Acceptance in Guyana

Trip Report
June 14 - July 31, 1982
Jane C. Hopkins

The primary objective of this trip was to organize, evaluate and report the data from the 1981 CEREX consumer survey. In addition, the scope of work included a review of the CEREX commercial marketing program and suggestions for follow-up research.

Summary of Activities

The first week was spent in meetings with AID and GPC personnel discussing the current status of the CEREX project, difficulties encountered in meeting project goals given the current economic situation and questions/expectations concerning preliminary survey results. During the next four - five weeks activities focused around completion of the primary task, namely:

- 1) reviewing the survey methodology with the persons involved in sample design and interviewing,
- 2) working with GPC computer staff to complete additional cross tabulations of the data and correct programming errors,
- 3) aggregating and summarizing the data into meaningful tables, and
- 4) collating the tables and drafting a report.

Concurrently, GPC marketing infrastructure, recent changes in food marketing operations and possible modifications in the commercial distribution of CEREX during the present economic "crisis" were discussed. Available production shipment and regional sales data were collected and examined. Record keeping problems and possible solutions were analyzed. During the last week interviews were conducted at the wholesale and retail levels in order to ascertain reaction to CEREX, pinpoint marketing problems and get a handle on distribution patterns. The interviews were subjective and open-

ended in nature, covering market channel participants from Parika to Corriverton. The list of persons interviewed, type of business, location, and brief remarks is found in Appendix A. Other persons contacted during the seven week period include:

Dr. Leslie Chin - Technical Director, GPC
David Cohen - Director, USAID
Samuel Dowding - Health Officer, USAID
Gussie Daniels - Program Officer, USAID
Peter Chin - Nutritionist, GPC
Manzoor Nadir - Product Officer-Foods, GPC
Judy Rhodes - Supervisor, Wholesale Division, GPC
Rahamat Khan - Manager, Wholesale Division, GPC
Kurt Choo-Kang - Supervisor, Computer Department, GPC
Frederick Duncan - Statistician, CARICOM
Beverly Harper - Market Analyst, formerly with GPC

The results of the 1981 CEREX Consumer Evaluation Survey have been drafted in a separate lengthy document, therefore, only a summary is presented here. The majority of this report deals with observations on the commercial marketing of CEREX - product, price, promotion, distribution, and general recommendations. Included also is a brief update on MCH clinic distribution and, as mentioned, the conclusions from the CEREX Consumer Evaluation Survey report. The final section of the report addresses the issue of future market research.

Observations on Commercial Marketing

Product

The biggest complaint over CEREX as a commercial product was the lack of steady supplies. In the absence of imports, CEREX is one of the few cereal products available and therefore in such high demand that shortages occur. The only real complaint with the product itself was problems with seals on the plastic bags. GPC is aware of this problem.

The larger packet will not be made available until current distortions in the food distribution channels are corrected for fear that the packets will be broken down in small size packets and blackmarketed.

Price

The suggested retail price of CEREX has remained at 50¢ per 8 ounce packet since June 1980 (ignoring the 13% price hike across all products which occurred in July 1981 as a result of a Guyanese dollar devaluation). During this period, particularly the last six months, food prices have risen dramatically. The government has curtailed the importation of many food items - split peas, powdered milk and cereals to name a few - due to a severe shortage of foreign exchange. In March 1982 wheat imports came to a halt. According to Dr. Leslie Chin this resulted in a "calorie gap" equivalent to 3000 tons of wheat per month. Increased consumption of rice, a government controlled commodity, partially filled this gap. Demand for ground provisions, corn flour, corn meal, and other staples has also expanded. The increased pressures on indigenous foods has caused prices to skyrocket. The price of plantains and tubers, for example, have risen from 50¢ per pound in March to over \$2.00 per pound in July.

In the absence of wheat, shortages of other basic food items and resultant escalating food costs, GPC feels that an increasing proportion of CEREX is being siphoned off to the non target groups. This is termed the "leakage problem." CEREX is by far the cheapest quality product on the market - cheaper than either the instant corn meal (\$1.65/6 oz. packet) or the corn flour that GPC sells for adult usage. Several CEREX retailers indicated that consumers realized very early on that CEREX was not only "more filling" but lower priced than instant cornmeal, consequently CEREX was purchased for the entire family. Faced with soaring food prices and a shortage of cereals and flours, this situation is obviously becoming more prominent.

One means of combatting the leakage problem is to make the price of CEREX comparable to that of other cereal items sold by GPC. On July 19 GPC, with USAID approval, increased the retail price of CEREX to \$1.00 per half pound packet with a wholesale price of 87¢ and a distributor price of 79¢. The price increase is intended to prevent an acceleration of consumption by the non target group hopefully preventing a deterioration of the situation.

The field trip to interview various market channel participants was scheduled for the end of July which enabled the observation of reactions to the price increase. Retailers generally did not feel that the price increase would be effective in deterring non target consumption since the non target group has developed a "taste" for CEREX and will not readily switch to instant cornmeal. The major complaint was the lack of a subdistributor price. GPC recently started selling all food products exclusively through their wholesale division thus eliminating the subdistributor price to traditional distributors (GNTC, Guyana Stores, Coops ...). This policy carried over to CEREX resulting in some negative feelings by distributors. Under this set up the distributor is forced to retail CEREX rather than wholesale it since he is paying 87¢/packet rather than 79¢/packet. Any CEREX that is "rewholesaled" would be priced higher than the recommended wholesale price. Thus, this policy limits the distribution of CEREX and results in higher prices to consumers in the outlying areas. It is recommended that GPC continue to sell CEREX at the subdistributor price to "reputable" distributors. It might also be advisable to continue with a subdistributor price on those products which are substitutes for CEREX to the non target population (i.e., instant cornmeal). The suggested wholesale and retail prices should be clearly marked on the bill of sale and perhaps announcements containing the price breakdown with allowable mark-ups for

transportation costs should be circulated to all distributors and retail outlets. One retailer in the Georgetown area claimed that he was selling CEREX at the suggested retail price - \$1.05/packet!

Blackmarketing of CEREX continues to be a problem. Evidence of blackmarketing existed as early as July 1981 at the time of the consumer survey, however, given the current economic pressures the situation has no doubt worsened. Although small retail shops (and some coops) said they sold CEREX at the recommended price, 4 oz. packets of cornmeal were sold for \$1.25 and consumers indicated they were paying \$1.00 or more for a packet (before the official price increase). Several days after the price increase packets of CEREX were being sold by sidewalk vendors for \$2.00/packet in central Georgetown - just one block from the retail outlet where they were purchased for \$1.00/packet. This may be in part due to the fact that CEREX was produced at normal levels for only two of the past six months. In January and February an ingredients shortage reduced production to below half and a vitamin/mineral premix shortage stopped production altogether for the months of April and May. Production started again at the beginning of June and inventories were built until July 19 when CEREX was released at the new price. The lack of a stable supply of CEREX has probably exacerbated the hoarding - blackmarketing situation.

The price increase needs to be carefully monitored to insure that CEREX is still within reach of lower income families. Along the same line, establishments selling CEREX should be checked periodically to ascertain whether they are adhering to suggested prices. To accomplish both tasks a plan for regular field work and contact with the various market channel participants (retailer, wholesaler, consumer) would be useful.

It appears that the economic difficulties facing Guyana will not abate in the near future. GPC recognizes this fact and is aware that a more comprehensive, long term solution is required. They are now analyzing

new promotion and distribution strategies for CEREX in order to ensure that CEREX reaches the target population at the right price despite the current distortions in the food distribution system.

Promotion

Since the initial launch of CEREX, little has been done in the way of promotion. A revised marketing strategy which includes a new advertising campaign was drafted by Manzoor Nadir in July. Copies of the marketing strategy, the promotion plan and advertising budget can be found in Appendix B. The graphics for new posters is underway and the campaign was scheduled to start in August. An important role of the campaign is to inform consumers of the new suggested retail price and where CEREX can be purchased at these prices.

The effectiveness of traditional promotional techniques such as competitions, radio and cinema ads and posters in deterring non target consumption is questionable given current market conditions. Even though the CEREX "baby cereal" message is stressed in radio, cinema, newspaper and poster advertisements the extreme shortage of cereals and flours may still lead to increased consumption by the non target group. Arguments in newspaper articles relating the shortage of CEREX to increased non target consumption may appeal to the higher educated households, however, in the absence of reasonably priced staples, lower income households will probably still purchase CEREX for family consumption.

Perhaps the most useful part of the advertising campaign will be the MCH clinic workshops, posters and demonstrations. These messages concerning weaning food habits and CEREX preparation will go directly to the mothers of malnourished children. Continuation of other forms of advertising is necessary however, since 36% of the mothers do not attend clinic regularly (this percentage is thought to be even higher by GPC).

Distribution

The results of the CEREX evaluation survey indicate that distribution may have been inadequate in certain areas of the country. The table compiled by Manzoor Nadir on page 8 verifies these findings. Sales figures were adjusted (marked as ***) based on distribution patterns discerned during the Parika-Corriverton field trip. The total number of packets distributed to each region for the January-September 1981 period was then standardized using the number of households per region. This figure was divided by nine to get the average monthly distribution per household in each of the nine regions. Even after allowing for the redistributions from the New Amsterdam and Georgetown areas the sales are skewed.

The Corentyne and East Berbice region has a particularly low average - these areas also had a high percentage of non recognition according to the CEREX survey. This is an important region in terms of potential consumers. The Linden area and the mining areas also have low averages. This is particularly surprising in the case of Linden since there is easy access to Georgetown. The East Coast, East Bank and West Demerara river areas along with West Berbice have nearly the same number of households as Georgetown, however, the number of packets/household available in these areas is less than half that of Georgetown.

September 1981 is the last month when CEREX sales were broken down by region. The task is difficult since it involves sifting through the bill books, but the information obtained is important and useful to decision making. Separate bill books for the commercial sale of CEREX have been suggested. Although this may involve more work at the outset, it would greatly simplify the task of data collecting. The regional sales breakdown should be included in monthly CEREX commercial sales reports to USAID and GPC.

GPC is considering several options to deal with inadequate distribution and leakage problems. The current plan of attack is to limit sales of CEREX

REGIONAL DISTRIBUTION OF CEREX

PACKETS PER HOUSEHOLD

Region	Total packets of Cerex Jan-Sept./81	Total Number of Households	Packets per Household for period	Average Monthly Packets/Household
1- North West Region	15740	2884	5.5	0.6
2- Essequibo Coast, Jolands Pomeroon & West Demerara	205280 319596***	23784	8.6 13.4***	1.0 1.5***
3- East Coast Demerara East Bank Demerara West Berbice & Demerara River	101860 330493***	31266	3.3 10.6***	0.4 1.2***
4- Corentyne & East Berbice	12000 26544***	22669	0.5 1.2***	0.06 0.13***
5- Bartica, Mazaruni and Potaro	1520	3595	0.4	0.04
6- Rupununi	0	2466	0	0
7- Georgetown*	1143166 743058***	32992	34.6 22.5***	3.84 2.5***
8- Linden	23280	6365	3.7	0.4
9- New Amsterdam**	48480 33936***	3701	13.1 9.2***	1.5 1.0***

* About 65% of this remains within Georgetown
 15% goes to East Coast Demerara
 10% goes to West Bemerara and Essequibo
 5% goes to East Bank Demerara
 5% goes to other areas

** About 70% remains within New Amsterdam
 30% goes to East Berbice

*** These are estimated figures going to these areas.

to reputable distributors along with regional allocation based on population. The Ministry of Trade has an allocation list of reputable stores and population percentages which along with GPC records should provide the necessary information for implementing this plan. Reliable retailers would include the government subdistributors (GNTC, KSI, GSL Agency), all Georgetown supermarkets, supply centers, consumer cooperatives and GPC outlets. It is felt that these establishments are more likely to maintain the recommended price. The location of KSI, JP Santos and GNTC outlets is given in the appendix of the field trip report. Along with the five GPC outlets, the GSL outlets, and consumer cooperatives, a large part of the country would be covered. However, with this set up one runs the risk of limiting CEREX availability in some of the more remote areas.

Since the current food shortages are likely to continue, GPC is considering CEREX sales at the MCH clinics (along with the free distribution program). During visits to several clinics, nurses reported that many of the mothers with children who didn't qualify for the free distribution program asked if they could purchase CEREX at the clinic. The advantages of selling CEREX at the clinics are obvious: CEREX would be placed directly in the hands of the target group and clinic attendance might be enhanced. However, a number of questions would have to be answered before putting such a program into effect.

Originally it was thought that mothers should be allowed to purchase up to 20 packets per month in order to ensure that the target child would get the recommended 8 packets/month. But, this would be condoning the use of CEREX by the non target group, therefore CEREX purchases should be limited to 8 packets per target child per month with the option to buy packets of instant corn meal for the rest of the family. There is some question as to whether instant corn meal is being produced in sufficient quantities to carry out this scheme. If clinic sales become a supplement to the tradi-

tional commercial market the price of CEREX at the clinics should be the same as the retail price (\$1.00/packet) elsewhere and not cheaper (i.e., 50¢/packet). Given the current market distortions, if CEREX is sold cheaper at the clinics than elsewhere blackmarketing is encouraged.

Other questions which need to be addressed before the implementation of such a program are:

- 1) who would do the selling,
- 2) how would the money be handled (since the clinic system is not set up to handle money),
- 3) how could a system of checks be instituted (in terms of who CEREX is sold to, how much is sold, how often, and at what price), and
- 4) are the two CEREX vans sufficient to handle the increased shipments of CEREX needed?

The current distortions in the food distribution system make clinic sales a feasible alternative, one which should be examined closely.

General Recommendations

Commercial sales of CEREX and the impact of the price increase should be carefully monitored. Customers at GPC and other wholesale outlets need to be surveyed periodically to estimate geographic coverage. The known problem areas (i.e., East Berbice, Linden) should be monitored. The monthly volume of sales by region should be tabulated and reported to USAID and GPC. As these tasks involve additional legwork for the marketing department in terms of fieldwork and data tabulation, their staff should be augmented. The Product Officer-Foods should be provided with an assistant for the CEREX project.

MCH Clinic Distribution

CEREX distribution to the MCH clinics began in April. Monthly reports on destination, number of packets, cost to the GOG, and date delivered are

- 1 -

available on USAID and GPC files. Nutritional status summary sheets prepared by Peter Chinn (GPC) and Lorna McPherson (MOH) are found in Appendix C. GPC hopes to computerize the data taken from a random sampling of children and clinics in order to plot growth curves. This would enable an exact determination (in terms of weight gain) of the success of the free distribution program. Since records of attendance for the various clinics are outdated, GPC is still ironing out a monthly delivery schedule that will meet the demands of each clinic. The problems with government payment seem to have been worked out. GPC had hoped for only a 1 - 2 week delay in payment, however, the MOH payment for CEREX is treated as a capital expenditure, therefore the bill has to go to State Planning for approval. This has increased the turn around time in payment.

Conclusions from CEREX Consumer Survey

The results of the 1981 CEREX Consumer Evaluation Survey indicate that Phase I of the Guyana Weaning Food Project has been reasonably successful in meeting its objectives. CEREX has been widely distributed (and accepted) throughout Guyana (with the exception of a few areas which have been brought to the attention of GPC) among all segments of the population (different ethnic, education and income backgrounds). The pilot project expected to "reach" 24-30% of the 150,000 pre-school children. The term "reach" is open ended but by any definition the goal has been met: 79.1% of the children under 2 have used CEREX (61.6% of the children 2-5), 58.2% were still using CEREX months after the test market began (40.6% of the children 2-5), over 80% consume CEREX 2-3 times/day (65% of all children 2-5), over half consume 1/4 cup or more, and 27% consume "sufficient" quantities of CEREX (17% of all children 2-5).

Since "insufficient" consumption appears to be due mainly to dilution, a strong educational effort is needed, perhaps through the clinic system, to

- . -

encourage the use of increased quantities per serving. A large part of this effort should be directed at the Indian population which has a higher percentage of children who do not consume CEREX, who consume less than 1/4 cup/serving and who use a bottle. If a modification of the "bottle weaning pattern" is not feasible perhaps an intermediate step of getting mothers to cut the nipple should be encouraged in order to ensure that CEREX is being consumed in porridge form.

Future Marketing Research

The CEREX Consumer Evaluation Survey indicated fairly wide product acceptance. There do not appear to be any significant problems with the product itself which would require follow up marketing research. Given the current instability in the Guyanese economy and the resulting distortions in the food distribution system no further marketing research is recommended at this time. Some areas where marketing research would be useful in the future are discussed below. It should be noted that these are only suggestions and no dialogue with GPC or USAID has occurred concerning the ideas.

In view of the fact that the price of CEREX has recently doubled an assessment of consumption and sales levels could be undertaken after the market has stabilized. Consumer acceptance of larger, one-pound packets could also be tested once they become available. Another area in need of attention is the improvement of child weaning habits. Nutrition education needs to be better integrated into the promotion program. After efforts are made in this direction a consumer survey might be designed to test the effectiveness of these activities.

Appendix A

R E P O R T
O N
C E R E X F I E L D T R I P
(PARIKA TO CORRIVERTON)

DATE: JULY 22 & 23, 1982

CONDUCTED BY: JANE HOPKINS (USAID)
MANSOOR NADIR (GPC)

PREPARED BY: MANZOOR NADIR

PURPOSE

- To have a feel of Cerex Distribution in these regions.
- The problems experienced by both Wholesalers and Retailers.

<u>BUSINESS</u>	<u>ADDRESS</u>	<u>PERSON SPOKE TO</u>	<u>REMARKS</u>
1. Retail Shop	Lancaster Corentyne	Proprietor	Had sold Cerex - obtained supplies from New Amsterdam. Sold at suggested Retail Price however, she is presently selling about 4 oz of Cornmeal for \$1.25. Cerex is generally unavailable.
2. Retail Shop	Lancaster Corentyne	Proprietor	Same comments as above.
3. GNTC Outlet	Manchester Corentyne	Manager	Get his supplies from their Georgetown bulk bond. Average about 2 - 3 bags per week when available. Sold at the suggested Retail Price.
4. Retail Shop	# 51 Village Corentyne	Proprietor	Buys in New Amsterdam. Same comments as 1 & 2.
5. Retail Shop	# 69 Village Corentyne	Proprietor	Obtained Cerex from "Ganga" Corriverton. Presently unavailable. Said he sold for about 63¢ per packet.
6. East Berbice Regional Co-op Society Sub- distributor	Corriverton	Manager	Covered an area from Adventur to Orellia containing 23 co-op and several small shops. 70% of his distribution is by co-ops. Buys directly from GPC and has his own vehicles plus hired vehicles which pick up stocks weekly, or when available. GP presently sells to him at whole sale prices, thus he cannot retail wholesale and all his stocks has to be sold through his retail outlet. Limited supply from GPC.
7. H. GANGA Wholesaler/ Retailer	Corriverton	Proprietor	Obtains Cerex from M. Ali, Leonora, West Coast Demerara. M Ali buys from Twine Manufacturing who buys from GPC. This Cerex travels through 3 wholesalers, hence when it reaches the consumer it would be priced way above the suggested price. Has own vehicle and sometimes collect Cerex from Georgetown. He also goes out and sell in the small villages on the Corentyne

<u>BUSINESS</u>	<u>ADDRESS</u>	<u>PERSON SPOKE TO</u>	<u>REMARKS</u>
8. Guyana Wrefords Subdistributor/ Retailer, New Amsterdam	New Amsterdam	Cde. Trotman Manager	Felt he was used by GPC when they initially launched Cerex, because he sold then but cannot get now. GPC sending most of the Cerex to their Wholesale division in New Amsterdam. Had 850 sacks of Cerex between June 1980-Oct.1981. Has 119 Ministry of Trade listed shops, 30 regular shops which service riverside areas. Also mining towns. Sells not only New Amsterdam 30% of sales, but covers most of East Berbice. GPC doesn't sell foods to him at subdistributor prices anymore, hence whatever stocks he gets could only be retailed by New Amsterdam Retail Division. Has own transportation.
9. Guyana Wrefords Retail Division	New Amsterdam	C. Newsun Supervisor	Obtained stocks from his Wholesale outlet, would limit sales to consumers. Sold at the suggested retail price.
10. J P Santos Shole/Retail	New Amsterdam	J Harrison Manager	Has had only 2 lots of Cerex (Feb. 1981 and Aug. 1981). Has customer in many areas on East Berbice. Can only retail Cerex because he doesn't get a sub-distributor price.
11. GPC Wholesale	New Amsterdam	Kerran Manager	Has had about 500 sacks of Cerex this year 1982. Sells to whoever buys including market vendors.
12. Knowledge Sharing Institute (KSI) (Head Office)	Georgetown	Cde. Chung Gen. Manager	Has 21 outlets scattered throughout the country. In addition they wholesale in Georgetown, Leonore, Laguan and Wakenaam. All buying is done by Head Office. 60% of their goods are sold in Georgetown, the remainder distributed among the other units. Supplies are weekly dispersed. Transfer the goods at price paid for it and sells at the suggested price. 249 - retailer who they consider as reputable. See appendix for Location - no subdistributors price, cannot rewholesale.

<u>BUSINESS</u>	<u>ADDRESS</u>	<u>PERSON SPOKE TO</u>	<u>REMARKS</u>
13. GNTC Bulk Bond (Outlets)	Georgetown	L. Davis Manager	Has 19 outlets throughout Guyana. Central Buying and weekly distribution. No sell is done in Georgetown (except to staff). Sell at the suggested price. Instant Cornmeal ~~would~~ help reduce leakage of Cerex "others". See Appendix for Location.
14. Guyana Stores Agencies Division	Georgetown	V Niles Manager Drugs Division	Has many outlets and sells to anyone who wants to buy from Cerex has been unavailable to him. Cannot get at subdistributor price. Has the mandate to supply goods to all Guyana St. outlets through the Co-Op Com. however, these units do their own buying because Agency has get the goods. 60% Georgetown.
15. J P Santos Agency	Georgetown	C Young Manager; Provisions & Groceries	Basically the same as Guyana Stores Agencies. Cannot get Foods at the subdistributor price from GPC.
16. W & R Agency	Georgetown	Mr. Sing Wei Manager	Was involved in mapping out distribution of Cerex initially. Unavailable now. Cannot get goods at subdistributor price. Has a retail outlet. 80% of sales are Georgetown. Would sell to anyone.
17. C A Phillips	Georgetown	Mrs. Fisher	Has had Cerex only once to subdistribute. Has a Retail Outl which sells Cerex at the recommended price.
18. Subdistributor Retailer	Leonora, West Coast Dem.	Deo Mahadeo Proprietor	Was initially involved in Cerex from inception. Served shops along the entire West Demerara and East Essequibo. 70% of Cerex retailed at his shop. 10% on the West Bank and 20% along Coast. Served about 100 shops. Has the sole distributorship for cigarettes on West Demerara. a list of shops he considers reputable (for cigarettes).
19. Subdistributor Retailer	Zeeburg West Coast Dem.	Ishmael Mandell Manager	Similar operation as Deo Maha-

SUMMARY OF FINDINGS

1. The "no" subdistributor price on food items is limiting distribution. Cerex is also experiencing this problem.
2. Most of the government agencies with retail outlets and priority shops would sell at the suggested price.
3. If Cerex is sold to any and every subdistributors then hucksters and those profituency would buy most of it.
4. Most Wholesalers/Subdistributors experience problems in obtaining supplies from GPC.
5. Using the government outlets would ensure a greater geographical distribution, than had been achieved before by the old distribution system. However this is no insurance that the product will reach it's target groups.

APPENDIX

KSI LOCATIONS

- +1. Head Office, Robb Street, Georgetown
2. Guyhoc Park, Georgetown
3. Smythe Street (Variety Store), Georgetown
4. Campbellville, Georgetown
5. Alberttown, Georgetown
6. Kitty, Georgetown
7. Liliendaal, East Coast Demerara
8. L.B.I., East Coast Demerara
9. Novar, East Coast Demerara
10. Grove, East Bank Demerara
11. Vreed-en-Hoop, West Coast Demerara
- +12. Leonora, West Coast Demerara
13. Meter-Meer-Zorg, West Coast Demerara
14. Anna Catherine, West Coast Demerara
15. Parika, East Essequibo
16. Alliance, Essequibo Coast
17. Good Success, Wakenaam
- +18. Belle Plaine, Wakenaam
19. Zealandia, Wakenaam
- +20. Leguan, Leguan

+ Wholesaling & Retailing

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J P SANTOS OUTLETS

1. Cummings Street, Georgetown
2. Camp Street, Georgetown
3. Linden Branch, Linden
4. New Amsterdam Branch, New Amsterdam
5. Peter's Hall Supermarket, East Bank Demerara
6. Wakenaam Branch, Wakenaam
7. Charity, Pomeroon
8. Diamond, Pomeroon
9. Suddie, Essequibo Coast

9/25/

GNTC OUTLETS

1. Anna Regina, Essequibo Coast
2. Dartmouth, Essequibo Coast
3. Canjie, East Berbice
4. Rosehall, East Berbice
5. Albion, East Berbice
6. Manchester, East Berbice
7. Everton, East Berbice
8. Islington, East Berbice
9. Blairmont, West Berbice
10. Linden, Upper Demerara
11. Wismar, Upper Demerara
12. Rockstone, Upper Demerara
13. Bartica, Essequibo
14. Mahadia, Interior Settlements
15. Baranika, Interior Settlements
16. Kubana, Interior Settlements
17. Kato, Interior Settlements
18. Winepuru, Interior Settlements
19. Pourderyne, East Bank Demerara

Appendix B

Jane Hopkins

REVISED

MARKETING STRATEGY

FOR

CEREX

JUNE 1982

PREPARED BY: MANZOOR NADIR

DB8

PREFACE

The Cerex project was embarked upon as a joint venture between the Government of Guyana and the Government of the United States of America.

The product became commercially available in June 1980 with the aim of achieving specified objectives. Between that time and now the project has developed despite several constraint.

Presently we are at a point where the project has been affected by the economic conditions facing Guyana, in that the effectiveness is being evaluated. This is as a result of short term problems resulting from the countries environment.

Some attempt is made at arresting these problems and ensure that the objectives of the project are achieved.

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OBJECTIVES

The overall objectives of the Original Cerex Marketing Plan remains the same i.e,

COMPANY'S OBJECTIVES

To reduce the high level of malnutrition that exists in those children of re-school age.

MARKETING OBJECTIVES

- (a) To operate on a consumer oriented marketing policy which reflects the needs of consumers and ensure that the company's aims are achieved.
- (b) To capture that percentage of the market that is presently suffering from malnutrition.
- (c) To price the product at a level that can be afforded by the lowest socio-economic group.
- (d) To ensure effective distribution, both commercially and through the MCH Clinics.
- (e) To promote a low price/high quality image and to influence and effect behavioral changes in the Guyanese society that will ensure higher nutritional intake of the target group.

PROBLEM

This plan tackles a major problem which is affecting the success of the Cerex programme. This problem is:

- How to effectively market Cerex so as to ensure that

(a) it reaches the target group and

(b) the target groups' intake of Cerex is adequate to prevent malnutrition.

SITUATION ANALYSIS

ENVIRONMENTAL CLIMATE

Guyana has found herself in a serious economic crisis. As a result of the unavailability of foreign exchange, the Government has been unable to import many things, including wheat equivalent to 3000 tons per month of wheat flour. As such the people has had to consume whatever local foods that are available, including Cerex. The market prices for these items have sharply increased (see below).

<u>Food Item</u>	<u>Relative price per lb</u>		
	<u>May</u>	<u>June</u>	<u>Later</u>
Ground Provisions	\$1.00	\$2.00	\$2.00
Instant Cornmeal	1.85		
Rice	.49	.49	.49
Cerex	1.00	1.00	
Semo-Vita	3.35	4.48	\$5.00 black-market per 400 g packet
Breakfast Cereal	1.72		
Cornflour	1.25	1.86	1.86
Bread	1.43	*unavailable	*5.00 on black market
Biscuits	approx 4.00	*black market at \$2.00 per 4 oz packet	

Expecting no short-term relief in the Guyanese economy, it is expected that the market prices for food staples will continue to be exorbitant, unless an equivalent amount of food equivalent to 3000 tons per month of wheat flour is brought on the market at a relatively low price. Not expecting such, consumer prices will continue to skyrocket. This along with increasing unemployment paints a gloomy economic picture within which this plan has to operate.

FOOD DEMAND

As a result of the unavailability of wheat flour people will consume more rice, plantains and ground provisions, corn products (main manufacturer is GPC) even Cerex if it is available. The expected demand for these foods is shown below:

	May (Tons)	June (Tons)
Rice	800	1000
Rice flour	100	300
Cereals	400	400
Corn flour	1300	700
Plantain/Ground Provisions	400	600

* IN ADDITION TO PRESENT CONSUMPTION.

Cerex Demand

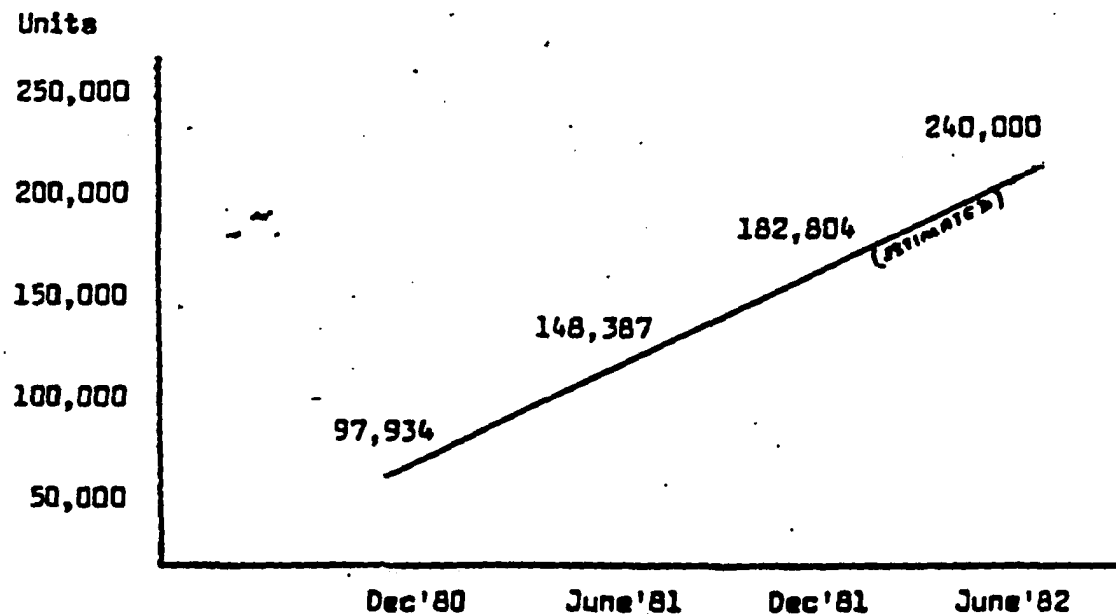


Fig 1

+ 6 Months averages of Cerex Sales
(Source - Sales Figures)

After the initial introduction of Cerex, sales progressed steadily upwards (Fig. 1), people found Cerex to be a good quality baby food at a bargain price. Along with the demand for Cerex as a baby food, people were finding "other" uses for Cerex and it was being diverted from the target group. At the time of the Cerex Consumer Evaluation Survey it was found that about 45% of the Cerex produced/sold was consumed by other outside of the target group. By March 1982 it was estimated that approximately 57% was being leaked away and if Cerex

by more be consumed by non-target groups. The present demand for Cerex is so great that whatever little is on the market, is being blackmarketed at up to \$2.00 per packet.

Given an adequate food supply on the present market and if prices should return at around 50¢ per lb of food staple, then the demand for Cerex as a baby food would be about 250,000 packets per month (i.e. at a price of 50¢ per packet).

Coincidentally when the average price of plantains/ground provisions, rice and flour were around 50¢ per lb and these foods were available, the price of Cerex was 50¢. As these prices moved to \$2.00 per lb and flour became unavailable, Cerex reached a blackmarket price of \$2.00 per packet.

COMPETITION

Cerex main competitors are/were plantain flour, Simo-Vita and to a lesser extent a small percentage of imported babyfood trafficked by the underground economy. As plantain prices soar the price of plantain flour has become outrageous and in fact it is hardly available. Simo-Vita is also suffering, because of the lack of wheat. These factors have placed the competition at a severe disadvantage and put Cerex way out in front.

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MARKETING STRATEGY

This marketing mix strategy has to accomplish two major tasks:

- (a) to solve the problem as outlined earlier (short term objectives).
- (b) To fulfill the marketing objectives of the original marketing plan for Cerex, a longer term objective.

In view of the situation the product faces, the following manipulation of the marketing mix is suggested in order to achieve the marketing objectives and solve the problem.

PRODUCT STRATEGY

The physical product would remain the same i.e. no changes to the formula of Cerex. The market has now accepted this product as is, and it is continuing satisfactorily along its life cycle and fast approaching its maturity stage.

The traditional 8 oz packet would still be sold, however a larger packet (500 g) would be made (Consumer Evaluation Survey indicated this is needed). This larger packet would be used as part of the promotional package to have Cerex viewed as a baby food.

For the more longer term objectives of the project formulation using local raw materials should now be developed and market research done. This would enhance the introduction of a new baby food and overall project objectives.

PRICING STRATEGY

Cerex has to be priced in such a way that it can be afforded by the lowest socio economic group; as childhood malnutrition is more prevalent in this segment of the population. Apart from rice (49¢/lb) the only foods available to consumer are plantain/ground provisions and cereal products. The price of Cerex has been coincidentally been the same as the price for ground provisions i.e. lowest cost food.

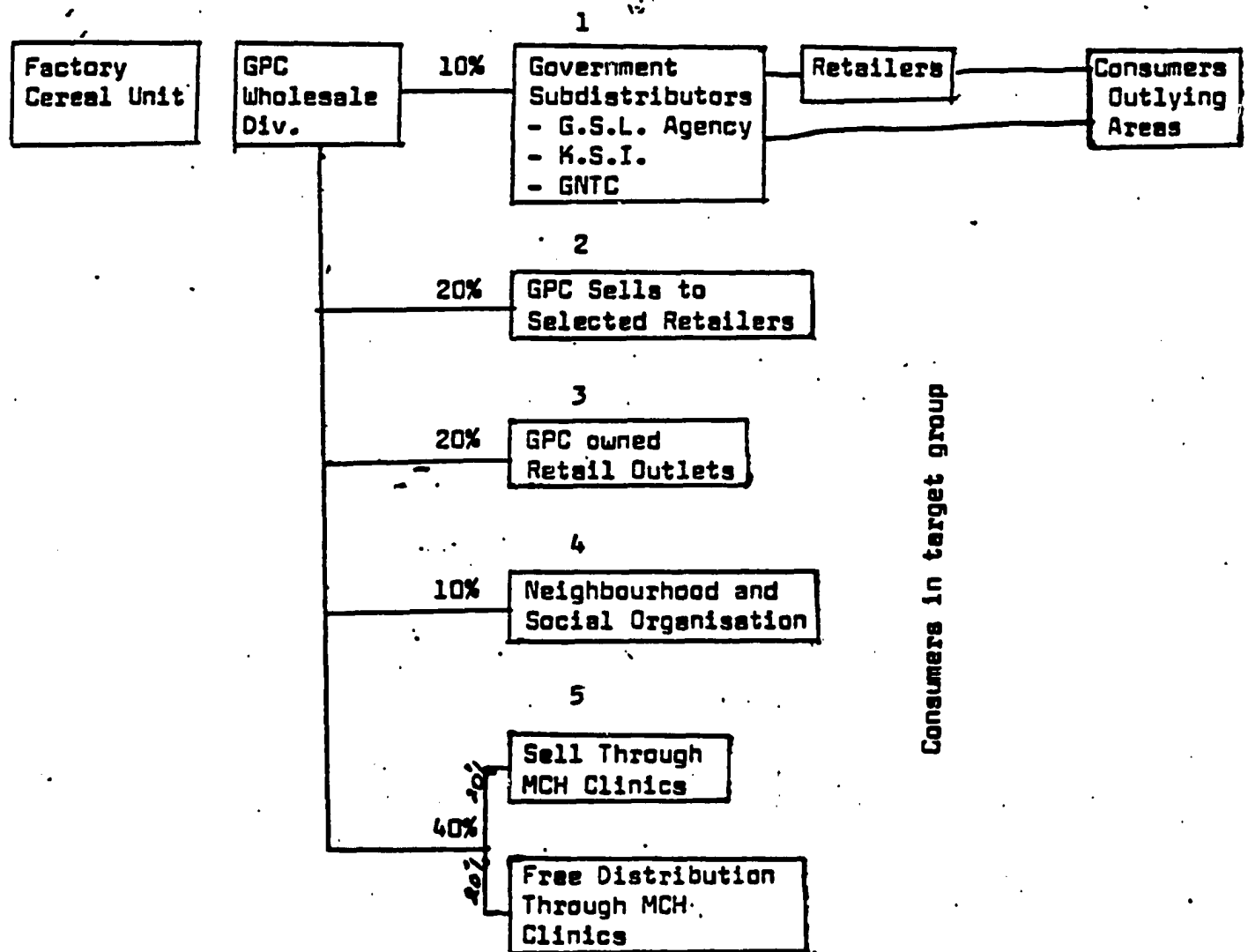
The 8 oz packet of Cerex should sell for \$1.00 to the Consumer, while the 500 g packet should sell for \$2.00 per packet. At these prices Cerex would still be the cheapest baby food and still be easily affordable by the lower income population segment. At these prices Cerex would be comparably priced to basic food staples.

Priced as such, it would encourage homemakers to buy and use Cerex for their babies and buy other foods (provisions, cereals, rice) priced comparably to Cerex, for other family members.

This price increase would be very effective in reducing the leakage of Cerex to non-target groups.

Traditionally the distribution channel reached approximately 1500 retailers, with over 1000 of them being served through sub-distributors. This network accounted for more than 80% of the sales, the remainder being handled through the MCH clinics.

With the present crisis where there is rampant blackmarketing and profiteering it is proposed that the following distribution channel be adopted:



CHANNEL MEMBER?

- (1) Most subdistributors are cut out and only government outlets are used. These outlets have access to the rural areas. G.P.C. would specify where they should sell.
- (2) G.P.C. would sell to selected retailers who are geographically dispersed, who has been legitimate customers in the past and who we know would not act contrary to our plans. These retailers would include Georgetown Supermarkets.
- (3) G.P.C. retail outlets would handle cerex. These outlets would ration the product and ensure some equity in the distribution. These outlets reach over 80% of the target market.
- (4) Neighbourhood organisations would be used to channel cerex directly to those households with children in the target group.
- (5) Selling cerex directly to mothers at the MCH Clinics. Logistics could be co-ordinated so that mothers can buy the product.
- (6) Free distribution of Cerex to mothers of malnourished children at the clinics.

There are several merits which would make this proposed network attractive.

- It channels the product directly to the target group. By channeling Cerex more directly to the target group, there is less likelihood of severe leakage.
- This system cuts out most of the subdistributors and several retailers. Should we maintain our original distribution channel, there would be no control over who channel members sell to. As such, there is greater probability that blackmarketing will occur. This system will channel more Cerex to the target group at the recommended price.

--- Chances of meeting our marketing objectives are greater with this distribution network.

PROMOTION STRATEGY:

The promotion objectives are as follows:

- Reduce leakage to non-target members, Cerex to be viewed as a "Baby Cereal" for children 0-2 years.
- Get mothers to spoon feed children.
- Breast feeding only from 0-4 months.
- Supplement the breast from 4 months to 24 months with Cerex.
- Get people to follow preparation instructions.
- Low price/High quality image.
- To communicate the suggested retail price.

ADVERTISING CLAIMS:

The following claims will be made to enhance these objectives:

- Cerex is good for baby's physical and mental development.
- Cerex is made like imported baby foods with imported vitamins and minerals (including iron) essential for baby.
- There is no need for added milk or sugar.
- Babies will like the taste.
- Cerex is more nutritious than plantain flour.

COMMUNICATION STRATEGY:

The communication strategy would be using a number of "vehicles" for carrying small messages of the promotion objectives. These messages will be repeated over and over again, aimed at bombarding the decider.

This campaign would be carried out over a two months period at the end of which a nationwide competition (6 weeks) will be launched to test people's recall of these messages and evaluate the impact of our promotion. Reminder messages will be implemented after the competition ends, leading perhaps to a Cerex Baby Competition towards Christmas.

THE MESSAGES:

The messages will reflect the promotion objectives.

MEDIA SELECTION:

The target group is scattered throughout the country and to reach them a diversified media mix will have to be adopted, the result of the Cerex Evaluation Survey will influence the weight placed on each media. Nevertheless, the media used will be among -

Radio: Airing commercials, sponsoring education programmes, and free publicity on talk shows. 83.4% of the deciders of what baby eats listen to the radio at sometime during the day.

Newspaper: Advertisement will be put in the newspaper, probably three times per week. Again free publicity will be given. 88.7% of the decider reads the papers at least once per week.

MCH Centers: 63.7% of the target population attends MCH clinics at least once per month. As effective promotion programme can be implemented including Seminars with nurses, who will pass the message on directly to the decider by word of mouth. Mothers will see nurses as experts and will be influenced by what the nurses tell them.

MCH Centers:

- Posters around the MCH Clinic.
- Educational handouts at the clinic.
- Advertisements in clinics to the children, letting them ask for their Cerex.

COMPETITION: A Cerex competition a couple of months after the promotion campaign's launch and possibly one for cerex babies for Christmas.

Posters: In addition to those in the clinics, posters will bear messages at the point of purchase of Cerex.

Special Promotions: The Cerex bowl and spoon and also a Cerex measure (dipper) can be made and distributed at a marginal cost to consumers.

Stickers & Giveaways: These can be used to keep the Cerex messages always with the decider and serve as a reminder for the promotion objectives.

Nursery Schools: Nursery school age children can be used to carry these messages into homes of the target group.

REVIEW AND EVALUATION:

Close monitoring of the market's reaction to the manipulated elements of the marketing mix will have to be carried out. There is need to know how is the distribution channel is working or how is the consumer reacting to the promotion element.

As feedback comes into the system, changes can be made to overcome problems and ensure the success of the plan.

CONCLUSION:

If adopted this plan will go a very far way in achieving the longer term marketing objectives of the Cerex project and it will also be successful in overcoming short term problems in the project e.g. reducing leakage to non-target group.

C E R E X

T H E A D V E R T I S I N G C A M P A I G N

OBJECTIVE

- (1) To provide 90% of the deciders in the target group homes with the necessary information which will assist them in adopting good weaning food habits and contribute to the better nutrition of children of 0 - 2 years.
- (2) To provide information on Cerex so as to contribute to decreasing the leakage outside of the target group.

PLAN

The plan will be divided into three phases (each with it's own purpose for the remainder of 1982.

The strategy is to provide information (Phase 1) getting decider to recall and be involved with this information (Phase 11) and finally to reinforce these messages (Phase 111).

As feedback comes in, changes will be made in planning the strategy for the next periods.

PHASE 1

The objective of this phase would be to provide deciders with information in order to accomplish the promotional objectives. This phase will last for nine weeks (August 2nd - September 2nd).

A concentrated radio and newspaper campaign will be launched. This will include paid commercial plus free publicity. Poster campaign, for in-store education especially in rural areas as well as a similar one for the MCH Clinics. A limited amount of cinema advertisements (Rural Concentration) will also be employed.

By the end of this period at least 90% of all deciders in the target group homes, would have been exposed to one or more of these messages.

PHASE 11

The object here is to get the decider really involved in the Cerex Promotion Campaign. Phase 1 would have been selectively received by the deciders. This phase would induce them to seek out what information they don't have. Once they have to search for information they would gain knowledge i.e. on good child nutrition. Sooner or later the knowledge gained would make them try it, hence acting on the knowledge they have.

The incentive for searching for information would be a Cerex Competition designed to make deciders recall the promotional messages, and also other facts about good nutrition for children in the target group. The competition would be a tangible reward for getting involved. It would offer many chances of winning. At a time when such 'giveaways' are a rarity, it will have tremendous impact.

PHASE 111

The objective here would be to maintain the interest created in phase 11, with the hope of inducing further action by those who have information but hasn't used it. Also it would reinforce the messages in Phase 1 while also reassuring new adopters of the messages that they are doing the best for their kid.

MONITORING

The competition would be used to monitor the progress of the marketing effort and the entire campaign will also be used as an 'ear' to public opinion.

CONCLUSION

Combined as above this plan sets out a coherent approach in attempting to influence behaviour pattern. It tries to follow a simplified model of a consumer adoption process (Awareness, Interest, Desire, Action and Reinforcement).

This system is favoured to one where there is only promotional messages, because it offers involvement.

It has a high probability of success given the present environment within which it has to operate.

The plan's built-in monitoring mechanism would allow for the collection and analysis of data which will be used in future plans.

-----oooooooooooooooo-----

A D V E R T I S I N G B U D G E T

PHASE 1 9 WEEKS (AUGUST 2nd - SEPTEMBER 27th)

1. NEWSPAPER ADVERTISEMENTS \$12,000.00

1 - (3 clm x 8") ad a weekday
1 - (4 clm x 9") advert sundays
 - cost for advert creation

2. RADIO ADVERTISEMENT \$ 8,000.00

2 - 30 seconds commercial on mondays, wednesdays and
fridays during the morning and evening links.
1 - 15 second commercial mondays, wednesdays and
fridays during the 4 - 6 period.
 - including cost for creation/recording

3. POSTERS \$10,000.00

4 - posters at 1000 each
 - cerex is a baby cereal
 - cerex to be bowl and spoon-fed
 - cerex and the breast
 - who is cerex for

These to be distributed to clinics/stores and in doc-
tors offices for expecting mothers.

4. MCH WORKSHOPS \$ 2,000.00

- a visit to most of the MCH nurses to re-emphasis the role of
cerex and project aims. They will spread messages by word of mouth
to mothers.

2/.....

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5. CINEMA ADVERTISEMENTS \$ 5,000.00

- use present cerex films to cover rural areas.

PHASE 1 TOTAL \$37,000.00

PHASE 11 6 WEEKS (OCTOBER 4th - NOVEMBER 8th)

1. NEWSPAPER ADVERTISEMENTS \$ 5,000.00

1 - (3 clmn x 6") advert on sundays and one week day

- rules of competition, entry coupon

- cerex message

2. RADIO \$ 4,000.00

- coverage mondays, wednesdays and fridays on morning and evening links, plus lunch and afternoon

- commercial in Phase 1 would be slipped in

- the air-time would be used for announcer read messages

- a commercial for the competition

3. COMPETITION \$ 5,000.00

Drawing at end of five weeks

1st prize \$1,000.00

2nd prize \$ 300.00

3rd prize \$ 100.00

4th & 5th ea \$100.00 \$ 200.00

weekly drawings ea \$100.00 \$ 500.00

Total Cash \$2,100.00

Every week five consolation prizes

12 packets cerex \$ 300.00

End of competition 10 such prizes \$ 120.00

Prizes Total \$2,520.00

COUPONS PROBABLY

PHASE 11 TOTAL

\$14,000.00

PHASE 111 6 WEEKS (NOVEMBER 15th - DECEMBER 20)

1. NEWSPAPER ADVERTISEMENTS \$ 5,000.00

- similar to phase 11

2. RADIO ADVERTISEMENT \$ 5,000.00

- repetition of ads in phase 1

- new ad for competition

- similar air time

3. A CHRISTMAS COMPETITION \$ 2,000.00

- a modest 'Cerex Baby' campaign

PHASE 111 TOTAL

\$12,000.00

PHASE 1 \$37,000.00

PHASE 11 \$14,000.00

PHASE 111 \$12,000.00

TOTAL COST \$63,000.00

4/.....

329

Expected sales of Cerex per month for next five months

\$197,500.00

Advertising as a percentage of sales

6.4%

-----oooooooooooooooo-----

Appendix C

Cerex Weaning Food Project
PATIENT NUTRITIONAL STATUS SUMMARY SHEET

(1-2)

Name of Region.....

(3-5)

Name of Clinic

(6-7)

(8-9)

[illegible]

PROGRAMME

, 1981

REGION:

[illegible]

FORM I

MINISTRY OF HEALTH
CEREX CLINIC DISTRIBUTION PROGRAM RECORD
OF INDIVIDUAL BENEFICIARIES

NAME OF CLINIC: _____

NAME OF BENEFICIARY: _____

REGION: _____

AGE AT TIME OF ENROLLMENT: _____

[illegible]

APPENDIX C - 5

**Consumer Acceptance of Fortified Weaning Foods:
The Case of Cerex in Guyana, 1983.**

**CONSUMER ACCEPTANCE OF FORTIFIED
WEANING FOODS: THE CASE OF CEREX
IN GUYANA**

**TEXAS AGRICULTURAL MARKET
RESEARCH & DEVELOPMENT CENTER**

in cooperation with the
Department of Agricultural Economics



CONSUMER ACCEPTANCE OF FORTIFIED
WEANING FOODS:
THE CASE OF CEREX IN GUYANA

Jane C. Hopkins
John P. Nichols
Leslie Chin

June 1983

The Texas Agricultural Market Research and
Development Center of Texas A&M University

in cooperation with

The Nutrition and Agribusiness Group
Office of International Cooperation and Development
USDA

and

The Guyana Pharmaceutical Corporation

for

The United States Agency for International Development, Guyana

Funds for Texas A&M's work on this project were provided by the
Office of Nutrition, Bureau for Science and Technology,
Agency for International Development, Washington, D.C.

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PREFACE

In 1976 the Market Research and Development Center at Texas A&M University undertook a cooperative program with the Nutrition and Agribusiness Group, Office of International Cooperation and Development of the United States Department of Agriculture. The purpose of this program is to assist in the design and evaluation of food marketing programs related to nutrition intervention projects in developing countries. More specifically the focus is on intervention efforts involving the commercial marketing of nutritionally improved food products aimed at particular at-risk target populations in these selected developing countries.

Several of the specific activities are related to cereal based low-cost infant weaning foods. This report provides the detailed results of a consumer survey conducted in Guyana as part of the evaluation of the project in that country. The results are an important component of the information needed in assessing how well the project achieved its objectives. The survey procedures and results should also be useful to program managers in other countries where similar projects are contemplated or underway.

Funds for Texas A&M's work on this project were provided by the Office of Nutrition, Bureau for Science and Technology, Agency for International Development, Washington, D.C.

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HIGHLIGHTS

- * CEREX is a fortified, cereal based weaning food developed in Guyana by the Guyana Pharmaceutical Corporation (GPC) in cooperation with the U.S. Agency for International Development (USAID). The product was commercially marketed in eight ounce polyethylene packets beginning in 1980.
- * A survey of consumers was conducted in July 1981. The questionnaire included sections on product awareness, acceptability, child feeding and weaning practices, purchasing practices, and selected socio-economic characteristics. This report documents the results of that survey.
- * The study population for the CEREX Evaluation Survey was defined as all households with children between four months and five years of age. A multistage stratified random sample of 737 households was selected with urbanization being the major distinction among strata.
- * The sample was 40.8% urban and 59.2% rural and the major ethnic groups, Negro and Indian, accounted for 91.9% of the households. The sample was found to be fairly representative of the residence patterns and ethnic composition of rural coastal and urban households when compared with the 1970 Guyana census.
- * The majority of the households had a monthly take-home pay of less than 500 Guyana dollars (G\$) and weekly food expenditures of less than G\$100. The lowest income group, with an approximate mean monthly income of G\$300, spent 81% of household income on food.
- * The individual who decides what the children under five years of age consume is most often a mother and housewife between the ages of 21 and 35 with no more than a secondary education. Promotional/educational campaigns should be directed towards this individual.
- * One third of the children under two years of age were being breast-fed at the time of the survey and 90% of the others had been breast-fed at one time. Rural children tend to be breastfed longer and given their first semi-solid/solid food later than urban children.

- * Over one quarter of the children under two were given CEREX as their first semi-solid/solid food. Plantain flour and crushed fruits and vegetables were other important weaning foods. Imports accounted for only 15.3% of the semi-solid/solid foods first given to children. CEREX seems to have filled a gap in weaning food availability -- it was introduced at a low price at a time when imports were being restricted.
- * Only 6.6% of the sample households did not recognize CEREX and 19% of the 737 households recognized it but never used it (mostly due to a preference for other products). Rural non-recognition and non-use was higher than that of urban areas probably due to inadequate distribution.
- * Although only a small percentage of the population did not recognize CEREX, one-third to half had incorrect perceptions of what CEREX is, who CEREX is for and what it is made from. This can be partially attributed to insufficient advertising and promotion.
- * The Negro population was, as a whole, better informed about CEREX than the Indian population possibly due to their history of pap/porridge consumption.
- * Nearly three-quarters of the sample households had tried CEREX. Of these, about 62% were still using CEREX at the time of the survey. CEREX consumption is higher among the Negro population than the Indian population however, the fact that over half of the Indian households who tried CEREX continued to use it indicates a reasonable degree of acceptance.
- * A slightly higher percentage of rural households were still using CEREX at the time of the survey than urban households and more rural households who stopped using CEREX did so after repeated CEREX use which reinforces the notion of distribution rather than acceptance problems in the rural areas.
- * The low and middle income categories and the lower educational levels were associated with a higher percentage of households still using CEREX.

- * The majority of households (86%) who used CEREX were satisfied with it as a food for their infants. Eighty percent thought CEREX was as good as or better than other baby cereals and 73% had no complaints with CEREX at all (the largest single complaint was the texture).
- * Usage among the target group was fairly high. Of the children under two 79.1% had used CEREX and 58.2% were still consuming it at the time of the survey. For the 2-5 year olds, 61.6% had tried CEREX and 40.6% were still using it. Usage was highest for the Negro children in urban and rural areas alike.
- * Although over 80% of the Indian and Negro children under two who were using CEREX consumed it 2-3 times/day, only 50% of the Indian children and 62% of the Negro children were getting 1/4 cup or more per serving. Over half the children (64% of the Indians, 53% of the Negroes) were consuming CEREX through a bottle and less than a third with a bowl and spoon.
- * "Sufficient quantities of CEREX (1/4 cup or more, 2 or 3 times per day regardless of the form in which it is consumed -- this corresponds to a minimum daily intake of 57 grams of CEREX providing approximately 220 calories) are consumed by 26.7% of the children under two and 29.6% consume "insufficient" quantities. The remainder are not consuming CEREX. The majority of insufficient consumption was due to dilution; the children were eating CEREX 2-3 times/day but were not getting the correct amount.
- * "Sufficient" consumption was defined with respect to children under two but does provide a guideline for the 2-5 year olds. With this qualification in mind, 17.2% of the 2-5 year olds consume sufficient quantities of CEREX.
- * With respect to the non-target group 30.8% of the children over five and 11.1% of the adults were using CEREX at the time of the survey. The majority of non-target users consume CEREX once a day or less in porridge form. GPC has estimated that as much as 54% of CEREX production could be going to the non-target group.

- * Although 84% of the households thought the price of CEREX was just right, only 42.8% of the households were paying the suggested retail price at the time of the survey. There is evidence that blackmarketing of CEREX was taking place as early as July 1981. If CEREX is to be used by low income families with malnourished children, steps must be taken to insure adequate supplies through reputable retailers so that CEREX is affordable to these households.

- * The current packaging of CEREX (half pound, plastic bag) was preferred by the majority of users. Although most households found the instructions easy to follow, survey questions concerning preparation indicate that they were not followed closely, particularly with respect to the CEREX/water ratio.

- * The results of the 1981 CEREX Consumer Evaluation Survey indicate that Phase I of the Guyana Weaning Food Project has been reasonably successful in meeting its objectives. CEREX has been widely distributed (and accepted) throughout Guyana among all segments of the population.

1.0 INTRODUCTION

CEREX, a nutritious, cereal based weaning food, was developed under the Guyana Weaning Food Project by Guyana Pharmaceutical Corporation (GPC) in cooperation with the United States Agency for International Development (USAID). Although some indigenous commodities are used in the production of CEREX (rice and sugar), the majority are imported under a PL480, Title II, grant (corn meal, soybean flour, soybean oil, milk powder, vitamins, and minerals). The basic raw ingredients are processed through a low-cost extrusion cooking system before blending with ICSM and a vitamin-mineral premix. The final product is packaged in 8-ounce polyethylene consumer packets. From November 1978 to May 1979 CEREX was test marketed with small consumer groups and in June 1980 the product was officially launched.

1.1 Weaning Food Project Description

The goal of the Guyana Weaning Food Project was to improve the nutritional status of Guyana's infants and preschool children (4 months to 2 years of age). A three year pilot project began on October 1, 1978. The purpose of the pilot project was 1) to establish the production capacity for a nutritious weaning food made from indigenous commodities, and 2) to test the feasibility of retail distribution of the product (Guyana, Project Paper, Weaning Food Development).

It was envisaged that the weaning food would be distributed to the target group primarily through commercial marketing channels and secondarily, through maternal child health (MCH) clinics. An evaluation of Phase I (ending December 31, 1982) would indicate if the distribution system had been "effective". If so, project activities could continue (Phase II) as an ongoing nutrition intervention program. Phase II, having a duration of three years, would expand distribution to its maximum potential and phase out Title II ingredients in favor of local ingredients.

JEP

1.2 Phase I Evaluation

According to the Weaning Food Project Paper, the distribution system would be "effective" if the product had been widely distributed throughout Guyana among all segments of the population via retail outlets and MCH clinics. The project expected to reach at least 40-50% of the 150,000 pre-school children. It was further expected that 60% of these (24-30% of all pre-school children) would be reached during the three year pilot project.

The CEREX Consumer Evaluation Survey Questionnaire, conducted in July 1981, was designed to evaluate the success of Phase I by addressing the following questions:

- 1) What proportion of children under five years of age use CEREX frequently?
- 2) Of those children who use CEREX frequently, what proportion use it correctly?
- 3) What, if any, socio-economic, racial, cultural, religious or age factors influence the purchase or non purchase of CEREX and the way in which CEREX is used?

The purpose of this report is to document the findings and conclusions of that survey. Section 2 of the report reviews the survey methodology including questionnaire design, sample design, field work, coding and editing of data and tabulations. The findings of the CEREX Consumer Evaluation Survey are presented in Section 3, along with a discussion of the implications of these findings. An evaluation of Phase I, based on answers to the above questions, is found in Section 4, Summary and Conclusions.

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2.0 SURVEY METHODOLOGY

2.1 Questionnaire

A draft questionnaire was completed in September 1980 by Dr. John Nichols (Texas A&M University) in collaboration with Beverly Harper (GPC). This questionnaire was tested by personnel in the Marketing Department of GPC and reviewed by other interested persons. A number of improvements were suggested and revisions made. Beverly Harper was responsible for completing revisions, consulting with interested parties and carrying out the pretest.

After many revisions the questionnaire stood in near final form six months later. A number of interested parties, the United States Agency for International Development, the Guyana Pharmaceutical Corporation, the Guyana Ministry of Health (MOH), and the Pan American Health Organization (PAHO), were involved in the revision process. Testing followed each major revision of the questionnaire. The tests were done mostly at clinics and in areas near GPC headquarters at La Penitence. Problem questions were identified and changed.

The final pretest took place as a part of the training program for hired survey interviewers. Each person interviewed four or five households for a total of between 60 and 80. Although the pretest was conducted within reasonable distance of Georgetown (Essequibo and Berbice regions were not included) a diverse sample of urban/rural, ethnic and income backgrounds were covered. Minor adjustments in the questionnaire were made following this pretest.

A copy of the 1981 CEREX Consumer Evaluation Survey Questionnaire is found in Appendix A. The questionnaire is divided into six sections, excluding the introductory page. The introductory information establishes and describes the family member who decides, who purchases and who prepares what the children four months to five years of age consume. Parts I, IV, V and VI, Product Awareness and Knowledge, Product Acceptability, Child Feeding and Weaning Practices, Demographic and Socio-Economic Information, are all answered by the "decider". Part II, Purchasing Pattern and Source, is answered by the "purchaser" leaving Part III, Product Use, for the "preparer".

P

Some questions were answered by all 737 households while only subsets of the sample population responded to others. For example, only households with children two years and under answered question 36, only households who had used CEREX responded to question 24 and only households still using CEREX answered question 20. A schematic representation of the questionnaire indicating the number of expected responses to each of the questions is found in Appendix A (Figure A-1). Expected and actual responses diverged at times but usually not by large amounts. These divergences were due to several factors: unwillingness on the part of the respondent to answer certain questions, interruptions terminating the interview in midstream, and illegible responses. No difficulties were encountered by the supervisor or in the field work due to problems with questionnaire design.

2.2 Sample Design

The study population for the CEREX Consumer Evaluation Survey was defined as all households with children between four months and five years of age. Due to time and resource constraints remote areas accessible only by air or boat were not included in the sample. Since the bulk of the population lives along the coastline and along the banks of the Demerara River this did not impose a serious limitation on the sample. One-occupant households were also deleted in order to maximize the probability of selecting households with children between four months and five years of age.

For the purposes of the 1970 Population Census Guyana was divided into enumeration districts of about 100 households each. These enumeration districts, updated using the as yet unpublished 1980 Population Census, were used as the first stage sampling units for the CEREX survey.

A multistage stratified random sample was decided upon, with the major distinction being between urban and rural strata. Within each major stratum, substrata were formed based on location. These substrata are the same (except for remote areas) as those used in the 1970 Population Census. Table 1 from the 1975 Guyana Fertility Survey

illustrates the procedure used in selection of enumeration districts. Enumeration districts (ED) were selected at random with the number based on the proportion of households in the substrata. Within each ED the households to be included in the sample were selected by an appropriate random procedure.

Table 1. Selection of Enumeration Districts¹.

Stratum	Population Census 1970	Estimated number of households 1975	Proportion households	Number of enumeration districts	Number of selected enumeration districts	Expected sample size (number of households)
Urban						
Georgetown	63,767	12,768	0.089	155	18	445
Suburbs of Georgetown	102,477	23,554	0.165	170	32	825
New Amsterdam	17,779	3,926	0.027	40	6	135
Upper Demerara (Lindes)	23,956	5,293	0.037	50	8	185
Total	207,979	45,541	0.318	415	64	1,590
Rural						
Remote Areas	12,560	2,775	0.019	22	4	95
West Berbice	33,633	7,207	0.050	62	10	250
East Bank Demerara	16,599	8,104	0.057	65	12	285
Essequibo	52,271	11,538	0.081	106	16	405
West Demerara	77,808	17,182	0.120	149	24	600
East Coast Demerara	98,107	22,806	0.160	206	32	800
East Berbice	126,281	27,821	0.195	207	38	975
Total	436,259	97,433	0.682	817	136	3,410
Total Guyana	644,238	142,974	1.000	1232	200	5,000

1/ From the 1975 Guyana Fertility Survey Country Report - Volume 1.

Freddie Duncan, formerly of the GPC Planning Department and now with CARICOM was responsible for: 1) determining the sample size required to fulfill the survey objectives, 2) selecting an appropriate sample design, 3) identifying the sampling procedures, and 4) drafting a specific set of instructions for a systematic sampling routine to be used by interviewers. A statistical report, documenting the sampling procedures was submitted by Mr. Duncan at the end of the survey. This report as well as the interviewers' instructions for sampling are found in Appendix B. Although brief, the report does offer insight into the sampling procedures, particularly when combined with the interviewer's instructions. The rural and urban substrata summary including total households visited; number of "no children", "no response" and "no house" situations; number of questionnaires completed; and number of questionnaires desired is also in Appendix B (Table B-1). The location of rural and urban sample regions along with the number of households interviewed in each is shown on the map in Figure 1.

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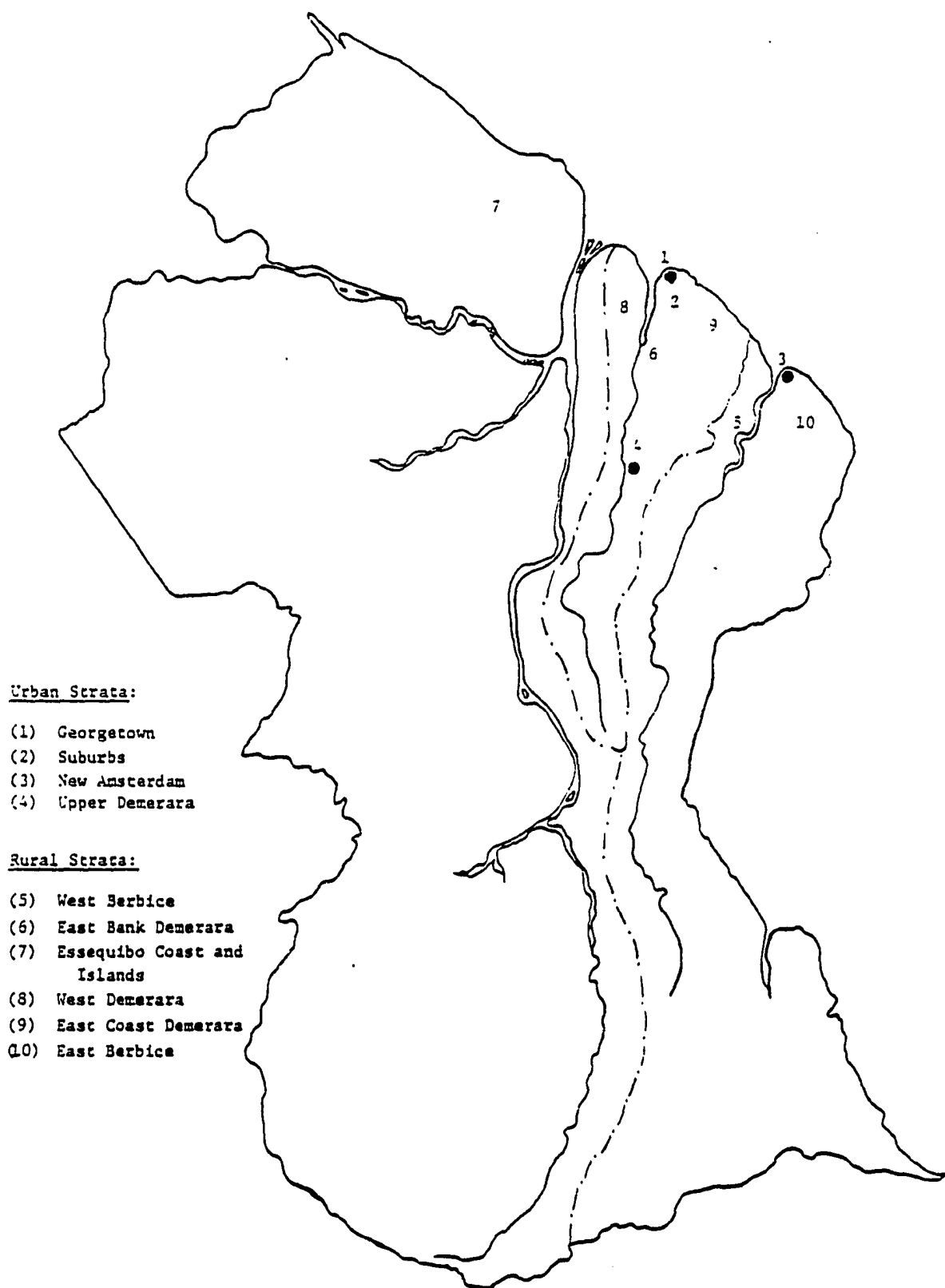


Figure 1. CEREX Survey Regions.

The sampling procedure used in the CEREX survey is commonly employed in studies of this nature; the 1971 Food and Nutrition Survey and the 1975 Guyana Fertility Survey are examples. The sample selection procedure was statistically valid and should have resulted in an unbiased and random sample of households within the selected strata. Whether in fact this occurred is dependent on how closely the statistician's instructions were followed during the fieldwork. This topic is addressed in the next section.

2.3 Field Work

Two weeks prior to the beginning of field work sixteen interviewers (mainly University of Guyana students) were hired to conduct the CEREX survey. The four supervisors for the survey came from within GPC and started their preparation 3-4 weeks before field work began. Detailed sets of instructions were distributed to all interviewers (Appendix C). Objectives were discussed, the questionnaire reviewed and the sampling procedure described carefully. It was essential that the interviewers know and understand all parts of the questionnaire. Numerous practice interviews were conducted, anticipating all possible situations or responses one might encounter. This preparation culminated in the questionnaire pretest. By the end of the training period several persons had been dismissed while others were not ready for field work and spent an additional week in training.

Teams of 3-4 interviewers and one supervisor covered an area; interviewers were never sent out unsupervised. In this way field editing could be carried out and questions checked for errors on location. When problems with a particular household or issues that needed clarification arose the supervisor was available to handle them. Problems were resolved on the spot rather than after the fact.

Each interviewer was required to complete and initial a form indicating households where interviews were attempted, those with no responses, and those that completed questionnaires. With this information the supervisor ran spot checks by picking a household at random and verifying that it was actually interviewed.

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Most of the problems in the field were related to locating the households selected for interviewing. The local post offices, police stations and village elders assisted in this task. Sometimes the person named was nonexistent or went by a name other than that reported in the official census. In a number of cases the household had moved away. The lists of "A" and "B" households (see Appendix B; "Interviewer Instruction Sheet for Sampling") were sufficient, however, to permit completion of the required number of interviews.

Persons contacted who were involved in the field work indicated that the statistician's instructions were followed as nearly as possible. When problems did arise the field work supervisor consulted with the statistician and they worked out a solution together. Due to the thorough training of interviewers and the close supervision of the fieldwork there is little reason to suspect that the sample would be biased. The entire interviewing process took approximately two months.

2.4 Coding and Editing

Coding and editing of the data was done by the four supervisors with additional help from several of the interviewers. Guidelines were set and agreed upon to minimize or eliminate any subjectivity in the coding. Due to time constraints the data was not edited after being punched into the computer. It was later evident, from discrepancies in the results, that computer editing was necessary. This task was completed by November 1981. All programs using the unedited data were discarded.

2.5 Tabulations and Analysis

All one-way and cross tabulations were completed by July 1982. In cross checking the results from different sections of the survey a number of computer programming errors were found and corrected. A list of all frequency and cross tabulations completed by the GPC computer staff and on file in their department is found in Appendix D. It is recommended that this list be continually updated in order to simplify future access to particular programs.

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Data for the four urban regions was summed to get an overall urban trend. The same was done for the six rural regions. GPC employees then checked the trends in the individual urban and rural regions to see how closely they corresponded to the overall urban and rural trends. All individual regions having particularly low or high responses were noted and later discussed. The figures in this report are all in percentage terms. The base used for these percentages varies from question to question but is always stated either in a footnote or in the text. At times the percentages refer only to a subset of the population whereas in other sections of the report percentages of the total population are used. The selection depends on which percentage is relevant to the individual question.

3.0 SURVEY RESULTS

The results of the 1981 CEREX Consumer Evaluation Survey are divided into six major sections: 1) Characteristics of the Sample, 2) Child Feeding and Weaning Practices, 3) Product Awareness and Sources of Information, 4) Purchasing Pattern and Source, 5) Product Acceptability, and 6) Product Use. In general these categories follow the headings used in the questionnaire with slightly different ordering. Only those tables relevant to the discussion are presented in the body of the paper. Additional figures can be found in Appendix D along with a list of all frequency distributions and cross tabulations on GPC computer files - not all of which were summarized for this report.

3.1 Characteristics of the Sample

3.1.1 Household Location, Ethnicity and Composition

The sample consisted of 737 households each with at least one child between four months and five years of age. It represents fairly accurately the residence patterns and ethnic groups of the rural coastal and urban households as depicted in the 1970 Population Census. The sample did have a higher percentage of urban households (40.8%) than either the 1970 Population Census or the 1971 National Food and Nutrition Survey (about 34.0%). Two factors account for this difference. In the ten year period considerable rural-urban migration has probably taken place. Secondly, there has been some redistricting in the past ten years causing areas once considered rural to now be included within urban boundaries. It is also possible that the administrative constraints on the sample, which eliminated rural coastal communities that were accessible only by boat, may have resulted in slight skewness. The urban households interviewed were from Georgetown, suburbs of Georgetown, New Amsterdam, and Upper Demerara (major settlements of the mining areas). Rural households from West Berbice, East Bank Demerara, Essequibo, West Demerara, East Coast Demerara and East Berbice made up the remaining 59.2% of the sample households.

As Table 2 shows, 52.5% of the households were classified as Indian, 39.4% as Negro and 8.1% as Mixed, Portuguese, Chinese, Amerindian and other combined. In examining the urban versus rural characteristics of households and the differences in question responses, one should bear in mind that the Indians make up the bulk of the rural population and, as a group, are 90% rural (1971 Food and Nutrition Survey). The figures from this survey indicate that the Indian population is only 79% rural as a group. It must be emphasized, however, that the CEREX survey was based on a subset of Guyanese households - those with children between four months and five years of age. Migratory patterns may have had an effect on this figure also.

Table 2. Distribution of Sample Households by Ethnicity and Location.

Ethnicity	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
Indian	28.0	69.4	52.5
Negro	58.7	26.2	39.4
Mixed	9.3	3.9	6.1
Portuguese	1.0	0	0.4
Chinese	0.7	0	0.3
Amerindian	2.0	0.2	1.0
Other	0.3	0.2	0.3
Total	100.0	99.9	100.0

1/ N = 735: 300 urban, 435 rural.

On the average there were six persons per household with the rural areas having slightly higher numbers. The 1971 Food and Nutrition Survey suggests that this is due to ethnicity rather than urbanization with Indians having larger households on the average. The typical sample household is composed of 1-2 children less than

3.52

five years of age, 1-2 children between five and sixteen years of age and 3 persons (probably a father, mother and grandparent) over sixteen years of age. Since the sample is restricted to those households with children 4 months to 5 years of age the household composition of the sample cannot be generalized for the entire population.

3.1.2 Household Income and Food Expenditures

The majority of sample households (65.2%) have a monthly take-home pay of less than 500 Guyana dollars (G\$) (Table 3). The percentage of rural households in this category (73.9%) is higher than the percentage of urban households (52.3%) with a monthly take-home pay of less than G\$500. The urban areas have a higher percentage of households falling into the upper income brackets than do the rural areas. For the G\$500-G\$1000/month range the percentages are 33.5% and 23.0% respectively and for the over G\$1000/month range the percentages are 14.2% and 3.1% respectively. Unfortunately these categories cannot be further subdivided since the household was simply asked which classification best described their situation. These income classes are too broadly defined to be of much practical use beyond this general description.

Weekly expenditures on food varied by income group and household location. Overall, 15.8% of the households spent 40 Guyana dollars or less on food per week, 65.0% spent between G\$41 and G\$100/week and 19.1% spent over G\$100/week on food. The urban areas had a slightly higher percentage of households in the lowest food expenditure bracket (17.3%) than the rural areas (14.9%). The percentage of urban households who spend over G\$100/week on food (27.2%) is double the percentage of rural households in the same food expenditure bracket. More rural households fell into the middle bracket (G\$41-G\$100/week) than urban households (71.6% versus 55.5%).

Although the income classes are too loosely defined to draw any definite conclusions, an attempt was made to estimate average weekly food expenditures by income group. The overall figures are presented in Table 4. The difficulty with relying on these figures is

Table 3. Distribution of Sample Households by Monthly Take-home Pay and Weekly Food Expenditures, July 1981.

Income/Expenditure Category in G\$	Location		Overall Sample
	Urban	Rural	
	- - - - - percent - - - - -		
Monthly Income ¹			
< 500	52.3	73.9	65.2
500-1000	33.5	23.0	27.2
> 1000	14.2	3.1	7.6
Total	100.0	100.0	100.0
Weekly Food Expenditures ²			
< 40	17.3	14.9	15.8
40-100	55.5	71.6	65.0
> 100	27.2	13.7	19.1
Total	100.0	100.0	100.0

1/ N = 699: 281 urban, 418 rural.

2/ N = 737: 301 urban, 436 rural.

evidenced in great dispersion of weekly food expenditures within a given income category.

Table 4. Average Weekly Food Expenditures by Income Category.

Monthly Income	Weekly Food Expenditures	
	Mean	Range
- - - - - Guyana dollars - - - - -		
< 500	60.71	15 - 130
500 - 1000	104.78	25 - 250
> 1000	171.45	50 - 500

Food expenditures as a percentage of income were calculated assuming the average income within each category to be G\$300, G\$600, and G\$1200. Under this assumption 80.9% of household income went towards food for the lowest income group, 69.8% of household income was spent on food by the middle income group and 57.2% for the highest income group. These figures are not so farfetched when compared to the figures derived in the 1971 Food and Nutrition Survey. The authors indicated that at the median, 69% of household income was spent on food while the upper income class (upper half of households) spent only 44% of household income on food and the lower income class (lower half of households) spent up to 87% of household income on food.

3.1.3 Household Buyer, Decider, Preparer

As mentioned in section 2.1, the questionnaire was divided into six parts. Questions concerning purchasing patterns and source were answered by the individual purchasing the children's food. Questions pertaining to product use were answered by the individual preparing the children's food. All other questions were answered by the individual deciding what the children under five years of age consume.

Since the majority of the questionnaire is answered by the household "decider" (in most instances this individual fulfills all three roles), only the characteristics of the household "decider" are presented here (Table 5). The mother is the decider of what the children under five consume in 84.5% of the households. It has been noted that although the mother may make the decisions, the grandmother is a very important influencing factor as an advisor in all matters concerning the children. Seventy percent of the "deciders" are between the ages of 21 and 35 and 85.7% of the "deciders" have not gone beyond secondary education. The majority of the "deciders" (78.4%) categorized themselves as housewives. The emphasis of any promotional/educational campaign must be directed toward the individuals in the population with these characteristics.

3.2 Child Feeding and Weaning Practices

Only those households with children 24 months of age and under were asked to complete this section of the questionnaire. The information provides a baseline scenario from which a nutritionist can measure the impact of educational programs aimed at modifying child feeding and weaning practices. Although not included in this report, but undoubtedly of interest to nutritionists, are the ethnic differences in feeding and weaning practices. This cross tabulation was requested and should be available from GPC computer files. The results of this part of the survey are reported under the following headings:

- 1) Breastfeeding Practices, 2) Baby Food Preferences and Use and
- 3) Clinic Attendance.

3.2.1 Breastfeeding Practices

Table 6 gives the age distribution for children 24 months and under in the sample population. One third of these children were being breastfed at the time of the survey (36.0% of the rural children $\leq$ 24 months and 24.4% of the urban children $\leq$ 24 months). Table 7 reports the percentage of children still being breastfed within each age class. Nearly 2/3 of the children under six months of age and

Table 5. Distribution of Sample Households by Selected Characteristics of the Individual Who Decides What the Children Under Five Years of Age Consume.

Characteristics of Household Decider	Overall Sample
	- percent ¹ -
Who is Decider	
Mother	84.5
Grandmother	10.2
Father	2.8
Other	2.4
Age of Decider	
0-20	10.5
21-35	69.6
36-50	15.2
> 50	4.7
Education of Decider	
Primary	55.4
Secondary	30.3
Higher	12.9
Occupation of Decider	
Housewife	78.4
Trained/Skilled	12.5
Unskilled	9.1

1/ N = 737: 301 urban, 436 rural.

Table 6. Distribution of Sample Children 24 Months of Age or Less by Age Category.

Age in Months	Overall Sample
	- percent ¹ -
0-6	18.7
7-12	30.9
13-18	26.9
19-24	23.4

1/ N = 401: 164 urban, 237 rural.

Table 7. Distribution of Sample Children Still Being Breastfed by Age Category and Location.

Age in Months	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
0-6	48.4	72.7	62.7
7-12	28.6	44.0	37.9
13-18	17.0	24.6	21.3
19-24	8.1	8.8	8.5

1/ For 0-6, N = 75: 31 urban, 44 rural
 For 7-12, N = 124: 49 urban, 75 rural
 For 13-18, N = 108: 47 urban, 61 rural
 For 19-24, N = 94: 37 urban, 57 rural

about 1/3 of those between seven and twelve months were being breastfed. Of those from thirteen to eighteen months of age less than 1/4 were receiving breast milk. The percentage figures are consistently higher for the rural areas.

Of the children who were not being breastfed at the time of the survey 90% had been breastfed at one time - this figure remains unchanged between rural and urban areas. Mothers were asked to report the age at which these children were taken off the breast. Table 8 gives the percentage figures for each age class. Eighty-four percent of the children stopped breastfeeding before they reached nine months. The urban areas had a higher percentage of children who stopped before four months while the rural areas had greater percentages stopping later - between five and twelve months. From the figures in Tables 7 and 8 the expected conclusion can be drawn - rural children tend to be breastfed for a longer period of time than their urban counterparts.

Table 8. Distribution of Sample Children No Longer Being Breastfed at the Time of the Survey by the Age at Which They Were Taken Off the Breast and by Location.

Age in Months	Location		Overall Sample
	Urban	Rural	
	----- percent ¹ -----		
0 - 4	62.0	56.1	58.8
5 - 8	23.1	26.5	25.0
9 - 12	9.3	12.9	11.3
> 12	5.6	4.5	5.0
Total	100.0	100.0	100.0

1/ N = 240: 108 urban, 132 rural.

265

3.2.2 Baby Food Preferences and Use

Due to restrictions on imports, a number of baby food items are not officially available in Guyana. The "deciders" were asked what items currently unavailable they would like to see on the market (Table 9). "Any combination" was the answer given with the highest frequency. The most popular individual items were imported processed baby foods such as Nestum, Cerelac and Farex (26.0%) and imported milk (20.4%). A greater percentage of rural household "deciders" (25.9%) wanted to see imported milk on the market than did the urban deciders (13.0%). If imported milk is more readily available in the urban areas this would explain the difference in urban/rural "demand" for the item. These products were viewed by the household "deciders" as being nutritious and better for the child than local foods. Many "deciders" also preferred them due to their positive impact on child development and because they were accustomed to using them.

Nearly two-thirds of the children received their first semi-solid/solid food before they were five months old. Another 22.4% were given their first semi-solid food between five and six months of age with only 12.8% of the children waiting until after six months before receiving some semi-solid/solid food. Coinciding with the finding that rural children stay on the breast longer than urban children is the later age with which they are first given a semi-solid/solid food. In the rural areas 58.7% of the children received their first semi-solid food before five months (versus 72.9% in urban areas), 26.8% between five and six months (16.4% in urban areas) and 14.5% after six months (10.7% in urban areas).

For 27.6% of the children CEREX was the first semi-solid food given (Table 10). Another 42.2% were equally divided between receiving plantain flour and crushed fruits and vegetables as their first semi-solid food. The number of children receiving CEREX as their first semi-solid food appears to be quite high considering that CEREX had only been on the market on a steady basis for about six months prior to the survey. However, the fact that CEREX was introduced

Table 9. Distribution of Sample Household Deciders by Preference for Selected Types of Currently Unavailable Imported Baby Foods.

Type of Baby Food	Location		Overall Sample
	Urban	Rural	
	----- percent ¹ -----		
Imported Cereals (Sago, Cornmeal, Barley)	5.7	6.6	6.2
Imported Processed Baby Cereals (Nestum, Cerelac, Farex)	28.5	24.1	26.0
Imported Processed Cereals (Quaker Oats, Cream of Wheat)	0	0.6	0.3
Imported Milk (Lactogen, SMA, Oster Milk, Carnation)	13.0	25.9	20.4
Imported Processed Baby Foods (Heinz, Rusts)	4.1	0	1.7
Any Combination	46.9	42.2	43.9
Other	1.4	0.6	1.4
Total	100.0	100.0	100.0

1/ N = 289: 123 urban, 166 rural.

Table 10. Distribution of Sample Households by Type of Semi-solid Food First Given to Children and Location.

Type of Semi-solid Food	Location		Overall Sample
	Urban	Rural	
	----- percent ¹ -----		
CEREX	28.1	27.3	27.6
Plaintain Flour	22.5	20.0	21.1
Crushed Fruits/Vegetables	26.3	17.3	21.1
Crushed Protein	4.4	12.3	8.9
Imported Cereals, Baby Foods, Milk	15.0	15.5	15.3
Other	3.8	7.7	6.1
Total	100.0	100.0	100.0

1/ N = 380: 160 urban, 220 rural.

at a low price at a time when imports were being decreased makes this figure more plausible. Forty-seven percent of the children using CEREX started consumption before five months and 31.6% started between five and eight months of age.

Baby food consumption patterns of CEREX users (prior to using CEREX and while using CEREX) and non-users are given in Table 11. Of the children using CEREX and for whom responses were given, over one-third were consuming imported items (mainly processed baby cereals and milk) before CEREX was available. Another 61.7% were consuming local foods, primarily plantain flour. Contrary to a priori expectations, import usage, before CEREX was available, was highest in the rural populations with 44.4% of the children consuming imported baby foods versus only 29.9% of the urban children consuming these foods. Most of this difference is due to the higher usage of imported milk in the rural areas. It is reasonable to assume that imports were more readily available during this period (1979-81). As mentioned, the higher percentage of rural households with a desire for imported milk (Table 10) may reflect acute availability problems in the rural areas. The higher "demand" for imported milk in the rural areas (Table 10) may also indicate that these areas were, at one time, more dependent on imported milk (Table 11). Two other possibilities come to mind. If imports were already restricted prior to CEREX availability then imported milk may have been more readily available in rural areas due to the influx of black market goods from Surinam directly into an area classified as rural. Another explanation could be that rural respondents may be more prone to "inflate" their actual practices thereby distorting the true percentages of import usage.

Once CEREX was given and the availability of imports further restricted, the use of imports dropped with only 13.3% of the children given imported items in addition to CEREX. The decrease in the use of imports as a supplement to CEREX was greatest in the rural areas where consumption was highest. A large majority (86.7%) consumed local foods in addition to CEREX. The use of local porridges

Table 11. Distribution of Sample Children 24 Months and Under by Cereals and Porridges Consumed Before CEREX, in Addition to CEREX and, for Non-users, What is Now Being Consumed.

Type of Cereal/Porridge	CEREX Users						Non-Users		
	Cereals Given Before CEREX ¹			Cereals Given in Addition to CEREX ²			Cereals Now Given ³		
	Location		Overall Sample	Location		Overall Sample	Location		Overall Sample
	Urban	Rural		Urban	Rural		Urban	Rural	
Imports:	----- percent -----								
Processed Baby Cereals (Nestum, Cerelac, Farex)	14.9	17.1	16.2	3.2	1.8	2.5	12.8	4.9	7.4
Milk (Lactogen, SMA, Oster Milk, Carnation)	10.3	19.7	15.7	0	5.5	3.0	5.1	24.4	18.2
Other (Quaker Oats/Cream of Wheat; Heinz/Rusts; Sago/Cornmeal/Barley) ⁴	4.6	7.7	6.4	9.7	6.4	7.9	17.9	7.3	10.7
Total for imports	29.9	44.4	38.2	12.9	13.6	13.3	35.9	32.9	33.9
Local:									
Plantain Flour	55.2	42.7	48.0	58.0	52.7	55.2	51.3	32.9	38.8
Local Porridge/Cereal	11.5	8.5	9.8	16.0	20.0	18.2	12.8	13.4	13.2
Other (Crushed Fruits, Vegetables, Protein)	3.4	4.3	3.9	12.9	13.6	13.3	0	20.7	14.0
Total for Local	70.1	55.5	61.7	86.9	86.3	86.7	64.1	67.0	66.0
Total for Imports and Local	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ N = 204: 87 urban, 117 rural

2/ N = 203: 93 urban, 110 rural

3/ N = 121: 39 urban, 82 rural

4/ For CEREX users "other" was mainly Quaker Oats/Cream of Wheat and Heinz/Rusts (processed cereals and baby foods) while for non-users the "other" category was mostly Sago/Cornmeal/Barley (cereals).

and crushed fruits and vegetables increased substantially along with an increase in the percentage of children consuming plantain flour.

Those children who do not use CEREX still rely heavily on imported baby foods, particularly imported milk. One-third of these children are consuming imported items and two-thirds local food. Imported processed baby cereals and other imported cereals are consumed by a higher percentage of urban children whereas imported milk is consumed by a higher percentage of rural children. With respect to local foods, plantain flour is used by a larger percentage of urban "non-users" whereas crushed fruits and vegetables are given to a larger percentage of rural "non-users". These differing consumption patterns are probably more a product of ethnic background than urbanization. An analysis of feeding practices on an ethnic basis would shed some light on this hypothesis.

3.2.3 Clinic Attendance

The results of this survey indicate that children under two in rural areas attend clinic slightly more frequently than do urban children of the same age group (Table 12). The overall percentage of sample children attending clinic once a month or more, 63.7%, is thought to be unrealistically high based on Ministry of Health estimates. The higher percentages probably reflect answers to what should be done and not what is actually done. It may also be due to poor time perception since once a month is the simplest answer if one really does not know or cannot judge the time lapse between visits.

3.3 Product Awareness and Sources of Information

Questions relating to perceptions of CEREX and media habits were answered by the subset of the sample population (688 households) who recognized CEREX. Only 6.6% of the total sample population did not recognize either the word "CEREX" or the packet of CEREX shown to them. The percentage of non-recognition in the rural areas (8.2%) was almost double that of the urban areas (4.3%). Three regions in particular - New Amsterdam, West Berbice and East Berbice had much higher percentages of non-recognition (17.6%, 14.8% and 15.7% respectively). GPC

Table 12. Distribution of Sample Children 24 Months and Under by the Frequency With Which They Attend Clinic.

Frequency	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
Never	11.0	13.5	12.4
Less than once/month	28.7	20.4	23.9
Once/month	56.1	62.6	59.9
Greater than once/month	4.3	3.5	3.8
Total	100.0	100.0	100.0

1/ N=394: 164 urban, 230 rural

management attributes this to inadequate distribution in these regions, all of which lie in the same area of the country (Figure 1). Regional sales figures for 1981 which report the volume of sales going directly to subdistributors and retailers in these regions tend to support GPC's contention; only 3.9% of CEREX sales went directly to these areas which, combined, account for 23% of the total population. Another factor contributing to the high percentage of non-recognition in these areas may be the contraband goods trade between Surinam and Berbice. Imported baby foods not available elsewhere in the country may be found in Berbice, decreasing the necessity for discovering new products.

3.3.1 Product Awareness

Although only a small percentage of the total sample did not recognize CEREX, one-third to half of those who did recognize the product had incorrect perceptions. The figures in Table 13 indicate the percentage of households with correct and incorrect responses or no response. Generally, the actual number of responses corresponds fairly closely with the expected number of responses. In this series of questions however, the incidence of "no response" is substantial and appears to increase with the difficulty of the question (who, what, ingredients). Perhaps, faced with a difficult question, many households chose not to hazard a guess. Interviewers were instructed not to antagonize the households and there were no prompted responses for these questions. Therefore "no response" is, in effect, a failure to establish the "correct" perception. As shown in Table 13 the percentage of deciders with correct responses increased with the ease of the question - "Who is CEREX For," considered to be the easiest question, was answered correctly by 63.8% of the "deciders".

Although what constituted a correct response was determined by the individual coder, the judgement was not entirely subjective. Decisions were based on predetermined guidelines listing key words. For example, under "What is CEREX" a correct response would be either cereal or porridge while any mention of milk or formula was automatically considered incorrect. Incorrect responses to this question

also may reflect the method of preparation (too much water) and how it is consumed (in a bottle).

The low level of correct perceptions to CEREX is in part attributable to insufficient advertising and promotion. GPC discontinued their promotional efforts after the initial launch of CEREX due to production difficulties. These problems were resolved but GPC never followed up with "Phase II" of the promotion plan. The final tally of correct responses given in Table 13 suggest a need for a new promotional/educational program.

Table 13. Distribution of Sample Household Deciders by Responses to Selected Questions Concerning Perceptions of CEREX.

Question	Overall Sample Responses		
	Correct	Incorrect	No Response
	- - - - - percent ¹ - - - - -		
What is CEREX	48.3	43.0	8.7
Who is CEREX For	63.8	35.3	0.9
What is CEREX Made From	38.8	30.0	31.3

1/ N = 688: 289 urban, 399 rural.

Differences in CEREX perceptions on the basis of ethnic background were tabulated and relayed to the appropriate market personnel. Although not all of the results are reported herein, it is interesting to note that the Negro population was, as a whole, better informed about CEREX. A possible explanation - the Negro population (according to various surveys) is predisposed toward cereal/porridge consumption and extensive "behavior modification" efforts were not necessary. In short, the advertising messages fell on already receptive ears.

When asked to report "... the first thing that comes to your mind when you hear the word CEREX," 38.8% of the household "deciders"

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responded with baby "cereal". This response was 15% higher in urban areas while the rural areas had a 10% higher response of baby "food". This may indicate a more frequent use of CEREX as a formula rather than a cereal/porridge in the rural areas. The section of the report on "Product Use" offers greater insight into this occurrence.

The CEREX slogans and keywords - "CEREX and the breast are best", "bowl and spoon", "for babies four months and over" - did not stick in the minds of those interviewed. Perhaps this was due to the lack of continued promotion or the attempt to implant more messages than could be absorbed.

3.3.2 Sources of Information

Over one-fourth of the household "deciders" first learned about CEREX by seeing it in a shop or store (Table 14). This was more common in rural (30.3%) than urban areas (20.5%). Radio was more effective in informing the urban population; 30.9% of the urban "deciders" first learned of CEREX on the radio versus only 17.0% of the rural "deciders". Word of mouth, product visibility and the recommendation of clinics were important means of informing the rural populace about CEREX although the radio also played a significant role. In urban areas radio and newspaper advertisements were more effective although product visibility also accounted for informing a substantial portion of the population. The more traditional advertising channels; radio, and newspaper ads and posters, may not have been as effective as expected due to the lack of continued promotion efforts.

The reading, listening and cinema habits of the household "deciders" who recognized CEREX were explored and should be of interest to GPC market analysts in designing promotional strategies. The results are given in Table 15. Although not included in this report, the media habits of household "deciders" by ethnicity, education and income have been tabulated and forwarded to marketing personnel.

Table 14. Distribution of Household Deciders Who Recognized CEREX by How They First Learned About CEREX and Location.

Information Source	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
Radio	30.9	17.0	22.8
Newspaper	15.6	13.3	14.3
Saw in Store	20.5	30.3	26.2
Friends/Neighbors	13.9	16.8	15.6
Clinic	8.3	16.3	13.0
Poster	4.2	2.0	2.9

1/ N = 687: 288 urban, 399 rural

Table 15. Distribution of Household Deciders by
Frequency of Cinema Attendance and
Newspaper Reading.

Frequency of Attendance/Reading	Overall Sample
	- percent -
Cinema ¹	
Never/Hardly ever	46.7
Less than once/month	14.6
Once per month	12.8
More than once/month	25.9
Newspaper ²	
Never/Hardly ever	11.3
Sundays only	19.6
A few times/week	13.1
Daily	56.4

1/ N = 687: 288 urban, 399 rural

2/ N = 689: 288 urban, 401 rural

Cinema attendance is higher in the urban areas than the rural areas - most probably a result of theater proximity. Fifty-four percent of the rural "deciders" never/hardly ever attend cinema. This figure drops to 36.1 % in the urban areas. Also, the percentage of household "deciders" who visit the cinema more than once a month is 14% higher in the urban areas than the rural areas.

The percentage of household "deciders" in rural areas who never/hardly ever read the newspaper (14.2%) is almost double that of urban areas. Sunday only readership is nearly three times higher in rural areas than urban areas while daily readers among the household "deciders" are 20% greater in the urban areas. Overall, a Sunday ad would reach roughly 3/4 of the household "deciders".

Morning is the most popular time of the day for listening to the radio; 28.6% of the "deciders" are tuned in at this time. Only 16.6% of the "deciders" never listen to the radio (21.1% in rural areas and 10.4% in urban areas). Twenty-two percent of the urban household "deciders" said they listened to the radio all day (only 16.8% of the rural "deciders" listen all day). A morning radio advertisement or talk show should reach nearly half the household "deciders".

3.4 Purchasing Pattern and Source

On the basis of purchasing patterns, the sample can be divided into two obvious groups: non-users and users. Non-users can be decomposed further into households who did not recognize CEREX (6.6% of the sample) and households who recognized CEREX but never used it (19% of the sample). The term "CEREX users" will be used throughout section 3.4 to refer to any household which has tried CEREX (4% of the sample). CEREX users include households which used CEREX only once, households which used CEREX more than once but stopped and households which were still using CEREX at the time of the survey. Table 16 gives the distribution of households among the major sub-groups by location, ethnic, education, and income variants. Since non-recognition was covered under "Product Awareness" the discussion

Table 16. Distribution of Sample Households by CEREX Usage, and by Selected Socio-economic Characteristics and Location.

Characteristics	Location										Overall Sample				
	Urban					Rural									
	CEREX Users ¹		Non-Users			CEREX Users ¹		Non-Users			CEREX Users ¹		Non-Users		
	Still Using	Stopped Using	Never Used	Didn't Recognize	Total ⁵	Still Using	Stopped Using	Never Used	Didn't Recognize	Total	Still Using	Stopped Using	Never Used	Didn't Recognize	Total ⁵
	----- percent ² -----														
All Households	50.8	31.9	12.3	4.3	99.3	42.6	25.5	23.6	8.3	100.0	45.9	28.1	19.0	6.6	99.6
Ethnicity ³															
Indian	38.1	35.7	20.2	4.8	98.8	34.4	28.1	26.8	10.6	100.0	35.2	29.8	25.4	9.3	99.7
Negro	61.4	27.8	6.8	4.0	100.0	63.2	19.3	14.9	2.6	100.0	62.1	24.5	10.0	3.4	100.0
Education ³															
Primary	55.0	32.1	6.4	4.6	98.1	42.3	24.5	24.2	9.1	100.0	45.7	26.5	19.4	7.9	99.5
Secondary	50.8	31.0	14.3	4.0	100.0	50.5	22.7	23.7	3.1	100.0	50.7	27.4	18.4	3.6	100.0
Higher	44.4	33.3	19.0	3.2	100.0	25.0	43.8	25.0	6.3	100.0	37.9	36.8	21.1	4.2	100.0
Income ⁴															
< 500	53.7	32.7	8.2	4.1	98.7	41.4	26.9	24.6	7.1	100.0	45.4	28.7	19.3	6.1	99.5
500-1000	57.4	23.4	13.8	5.3	100.0	46.9	26.0	17.7	9.4	100.0	52.1	24.7	15.8	7.4	100.0
> 1000	30.0	45.0	22.5	2.5	100.0	46.2	0	38.5	15.4	100.0	34.0	34.0	26.4	5.7	100.0

1/ CEREX Users are any households who have tried CEREX.

2/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-1.

3/ Ethnicity and Education are based on the ethnic grouping and educational level of the household "decider".

4/ Income indicates monthly take-home pay of the entire household in Guyana dollars.

5/ The total does not always sum to 100.0% due to cases of no response.

under "Non-users" proceeds with households who recognized but never used CEREX.

3.4.1 Non-users

The difference between urban and rural non-use is wide. Nearly one-fourth of the rural households who recognized CEREX had never used it while only one-eighth of the urban households had never purchased the product. If one adds to this those households who never used CEREX because they didn't even recognize the product, the difference between rural and urban non-use is even more pronounced. Several factors are involved in creating this difference. One is product availability. GPC management feels the distribution system may have been inadequate for certain rural areas causing a shortage of supplies and inadequate exposure to CEREX. The percentage of households who recognized but never used CEREX was particularly high in the rural areas of West Bank Demerara and East Berbice. The contraband trade with Surinam is a contributing factor to the high percentage of non-use in Berbice. With other products available, CEREX may be less attractive to the population.

A second factor contributing to the difference between urban and rural usage of CEREX is the ethnic background of the household. The Negro households had a much lower percentage of non-use than the Indian households in both rural and urban areas. However, the percentage of rural Negro households who never used CEREX was over double that of the urban Negro households. This indicates that the urban/rural differences cannot be explained by ethnicity alone; inadequate distribution may still be a problem. Cultural differences in child feeding and weaning practices could account for the higher percentage of Indian households who never used CEREX. According to the 1971 Food and Nutrition Survey the Negro population has a long history of pap/porridge usage which could explain the more rapid acceptance of CEREX among Negro households.

The percentage of households who never used CEREX increases slightly with higher education and income levels. It could

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be hypothesized that these households had the means of purchasing products not readily available to the lower income, less educated groups. The overall percentage should be used to indicate trends in usage by education and income groups. The urban/rural subdivisions often have so few households in each category, particularly the highest education and income classes, that they cannot be used to make inferences.

The most common reason given for never using CEREX was "preferred other products". The rural responses in this category were much higher (45.6%) than the urban responses (27.0%). Section 3.2 on Child Feeding and Weaning Practices indicated that the rural households consistently had stronger preferences for certain imported products such as milk. This is perhaps an ethnic difference where the Indian population is more inclined toward feeding formula through a bottle. The urban non-users had a higher percentage of responses for "did not like", "locally produced" and "not hygienic", although the magnitude of these responses was 8% or less. Surprisingly, the percentage of households who said they never used CEREX because it was not available was highest in the urban areas (8.1%). Approximately 14 percent of the households never used CEREX because their child was too old.

3.4.2 CEREX Users

In all, 74% of the sample households have used CEREX. The "user" figure is higher for the urban areas (82.7%) than the rural areas (68.1%) and for the Negro population as opposed to the Indian population (86.6% versus 65.0%). The majority of urban households purchased CEREX in the supermarket (Table 17). Other important outlets for the urban buyer include neighborhood shops and market stalls. As might be expected, a higher percentage of rural households purchase CEREX in neighborhood shops rather than supermarkets or market stalls.

Table 17. Distribution of Sample Households Who Tried CEREX by Where CEREX was Purchased and Location.

Where Purchased	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
Supermarket	58.0	29.3	42.4
Neighborhood Shop	18.8	59.6	41.0
Market Stall	16.4	6.7	11.2
Clinic	0.8	2.0	1.5
GPC Outlet	3.6	0.7	2.0
Other	2.4	1.7	2.0
Total	100.0	100.0	100.0

1/ N = 547: 250 urban, 297 rural

CEREX users have been divided into three categories in Table 18. About 15 percent of the users tried CEREX only once, 22.7% used CEREX more than once but stopped and 61.9% of the households who tried CEREX were still using it at the time of the survey. Table 16 also breaks the sample into households who stopped using CEREX and those still using it, however, the percentage figures reported in Table 16 are based on the entire sample (737 households) rather than the subset (548 households) who used CEREX. Although the calculations in Table 16 are justified and add some useful information (i.e. the percentage of "continual users" in the entire sample) they may mask underlying usage patterns. In addition, it is of little value to discuss the percentage of all sample households who stopped using CEREX when not all households used CEREX to begin with. The usefulness of Table 18 becomes clear when usage patterns by ethnicity and location are examined.

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Table 18. Distribution of CEREX Users by Usage Frequency and by Selected Socio-economic Characteristics and Location.¹

Characteristics	Location								Overall Sample			
	Urban				Rural				Used CEREX Only Once	Used More Than Once But Stopped	Still Using CEREX	Total ⁵
	Used CEREX Only Once	Used More Than Once But Stopped	Still Using CEREX	Total ⁵	Used CEREX Only Once	Used More Than Once But Stopped	Still Using CEREX	Total				
All Households	20.3	17.9	61.4	99.6	10.8	26.6	62.6	100.0	15.1	22.7	61.9	99.7
Ethnicity ³												
Indian	28.6	19.0	50.8	98.4	14.3	30.7	55.0	100.0	17.9	27.8	54.0	99.7
Negro	17.8	13.4	68.8	100.0	4.3	19.1	76.6	100.0	12.7	15.5	71.7	100.0
Education ³												
Primary	22.7	13.4	61.9	98.0	9.5	27.1	63.3	100.0	13.9	22.6	9	99.3
Secondary	17.5	20.4	62.1	100.0	9.9	21.2	69.0	100.0	14.4	20.7		100.0
Higher	20.4	22.4	57.1	100.0	22.7	40.9	36.4	100.0	21.1	28.2	50.7	100.0
Income ⁴												
< 500	21.7	15.5	61.2	98.4	12.8	26.5	60.7	100.0	16.2	22.4	60.9	99.5
500-1000	13.2	15.8	71.1	100.0	7.1	28.6	64.3	100.0	10.3	21.9	67.8	100.0
> 1000	33.3	26.7	40.0	100.0	0	0	100.0	100.0	27.8	22.2	50.0	100.0

^{1/} CEREX Users are any households who have tried CEREX.

^{2/} The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-1

^{3/} Ethnicity and Education are based on the ethnic grouping and educational level of the household "decider".

^{4/} Income indicates monthly take-home pay of the entire household in Guyana dollars.

^{5/} The total does not always sum to 100.0 % due to cases of no response.

Based on Table 16, 35.2% of the Indian households were still using CEREX versus 62.1% of the Negro households, a 27% difference. If only the households who have used CEREX are considered (Table 18), the results, of course, differ. Fifty-four percent of the Indian households who tried CEREX were still using it versus 71.7% of the Negro households - only a 17.7% difference. While still a wide gap in usage, it is not as large as Table 16 would suggest. The higher incidence of non-use and non-recognition among the Indian households is, in a sense, incorporated into the "still using" figure of Table 16 distorting a true representation of the proportion of households still using CEREX. Thus, a word of caution in the interpretation of Table 16 figures - those in Table 18 may be more relevant to a discussion on usage patterns. A higher percentage of Indian households used CEREX only once (17.9% versus 12.7%) and stopped using CEREX (27.9% versus 15.9%). It appears that acceptance is not as high among the Indian households as the Negro households, however, the fact that over half (54%) of the Indian households who tried CEREX continued to use it does indicate some success.

The rural/urban trends indicated by Table 16 can also be misleading. While the percentage of all rural households still using CEREX is about 8% lower than the urban households (Table 16), the percentage of rural households who tried CEREX and are still using it (Table 18) is slightly higher than for urban households. As suggested previously, the difference in the percentages of all rural/urban households still using CEREX is due largely to the higher percentage of non-recognition and non-use in the rural areas. This may be indicative of a distribution rather than an acceptance problem. Although the percentage of rural and urban households still using CEREX is almost the same (62.6% and 61.4% respectively), Table 18 reveals another interesting usage pattern worth noting. In the rural areas the percentage of households who used CEREX only once is 10% lower than the urban areas, whereas the percentage who used CEREX more than once but eventually stopped is 10% higher. A similar trend is evident for rural versus urban Indians and Negroes indicating that the pattern

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cannot be explained entirely by ethnic differences. It is reasonable to assume that the urban population may be more sophisticated in their tastes and preferences and influenced to a greater degree by the "low quality" image which often thwarts acceptance of locally produced goods, hence, the higher percentage of households who used CEREX only once in the urban areas. The higher percentage of rural households who used CEREX more than once but eventually stopped could be attributed to inadequate distribution. As with the rural/urban breakdown for all households, the rural versus urban percentages by ethnicity of households still using CEREX do not vary greatly but are somewhat higher in the rural areas for Indians and Negroes alike (by 4.2% and 7.6% respectively).

Several interesting patterns are apparent in CEREX usage by educational and income level. Again, the urban areas exhibit a higher percentage of households who used CEREX only once while the rural areas have higher percentages for "used more than once but stopped". This supports the hypothesis presented in the preceeding paragraph. Overall, the percentage of households still using CEREX with "deciders" of primary or secondary education is about the same (62.8% and 64.9%). However for households with a "decider" of higher education the percentage is lower, 50.7%. A similar trend is evident for the income categories. Overall, the low and middle income categories have a higher percentage of households still using CEREX (60.9% and 67.8% respectively) than does the upper income category (50%).

The majority of those who tried CEREX continued to use it (61.9%), however, 22.7% stopped using it and 15.1% used it only once. The reasons why over one third of those who tried CEREX did not continue usage should be of interest to GPC planners and marketing personnel. Although Table 19 aggregates the responses of all households who stopped using CEREX, the distribution of households who used CEREX only once differs somewhat from households who used it more than once but stopped. While overall, the most common reason was simply that the baby disliked CEREX, it was received with much greater frequency from those households who used CEREX only once (61.5% versus

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37.2%). Responses such as "not available" and "child too old" were given more often by households who used CEREX more than once but stopped (10.1% versus 1.9% and 15.5% versus 3.8% respectively).

Table 19. Distribution of Households Who Stopped Using CEREX by Reasons Given for Stopping and Location.

Reasons	Location		Overall Sample
	Urban	Rural	
	percent ¹		
Baby disliked	48.6	41.1	44.2
Child too old	5.4	16.8	12.2
Caused diarrhea	12.2	5.6	8.3
Bad taste or smell/Worm infested/Didn't mix well	12.3	4.7	7.9
Not available	5.4	9.3	7.7
Other	16.2	22.4	19.9
Total	100.0	100.0	100.0

1/ N = 181: 74 urban, 107 rural

3.5 Product Acceptability

3.5.1 Product

CEREX has been widely accepted in urban and rural areas alike. Eighty-six percent of the sample population who had used CEREX (544 households) were satisfied with it as a food for their children. In comparison with baby cereals and porridges previously used, CEREX also received high marks. Nearly eighty percent of those households who had used CEREX considered it to be as good as or better than others.

The majority of households, 72.6%, had no complaints about CEREX - this percentage was higher in rural areas (81.1%) than in urban areas (62.5%). The largest single complaint concerned the

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texture of CEREX - 17.5% of the urban households did not like the texture whereas only 6.8% of the rural households voiced the same complaint. GPC management feels this difference is due to urbanization. The reasoning is that the urban population has had greater exposure to a wide variety of imported baby food items and have developed certain "tastes" causing them to be more particular than the rural population. Ethnicity could also account for some of the differences in rural and urban opinions of CEREX. Cereals and porridges have long been a part of the largely urban, Negro population's diet (1971 Food and Nutrition Survey). Therefore, they may have different standards against which to judge CEREX than the Indian population.

3.5.2 Price

At the time of the survey only 42.8% of the households who had used CEREX were paying the suggested retail (Georgetown) price of G\$0.50/8 oz. packet (Table 20). The percentage of households paying the suggested retail price is much higher in the urban areas than in the rural areas. One would expect the price of CEREX to increase somewhat as the distance from Georgetown increases to allow for transportation costs. Sixty cents could be considered a reasonable cut-off price which should incorporate the costs incurred in transport to most rural areas. It is unlikely that those households paying 61-75¢ and over 75¢ are paying a differential due only to costs of transportation. A devaluation of the Guyana dollar, which took place just before the survey, caused retailers to increase prices on all items by about 18%. This might account for some of the higher prices. However, blackmarketing of CEREX was probably taking place as early as July 1981. Interviewers found evidence of this occurring both directly via pricing and indirectly via "conditional" sales of CEREX.

Table 20. Distribution of Households by Retail Prices Paid for CEREX as of July 1981 and Location.

Price/8 oz. in Guyana Dollars	Location		Overall Sample
	Urban	Rural	
	- - - - - percent ¹ - - - - -		
.50	64.9	22.6	42.8
.51 - .55	15.6	31.0	24.1
.56 - .60	9.1	16.4	13.1
.61 - .75	8.7	23.0	16.4
> .75	1.7	6.9	3.7
Total	100.0	100.0	100.0

1/ N = 548: 251 urban, 297 rural

Thirty percent of the rural population was paying a price greater than 60¢/packet and information gathered from informal conversations in some rural areas indicate that CEREX was selling for \$1.50-1.75/packet by late 1981 when shortages were beginning. If CEREX is to be used by low income families with malnourished children (many of whom are in rural areas) steps must be taken to insure adequate supplies through reputable retailers so that CEREX is affordable to these households.

About 84% of the households felt the price of CEREX was just right and 14.0% thought it was too high. Of the rural households, 21.2% thought the price of CEREX was too high. Only 6.1% of the urban households expressed this sentiment.

3.5.3 Packaging

Over half the households who used CEREX were satisfied with the type of packaging and the size of the packet. Nearly two-thirds (64.3%) preferred the plastic bag while 53.4% preferred half

pound packets. The tin followed the plastic bag in popularity; 27.6% of the households preferred CEREX in a tin even though an increase in price could be expected with this type of packaging. About 32% of the households wanted to see CEREX marketed in one pound packets. Several subdistributors expressed concern over the marketing of a one pound packet. Given the current economic conditions in Guyana it would be profitable to break the larger packet down into several packets for resale at blackmarket prices. Therefore, greater control over the product could be maintained by continuing with the smaller packets.

3.5.4 Storage, Instructions, Preparation

Of the households who used CEREX, 57.5% said they stored it in a tin and 15.7% in a safe/cupboard. For the urban households the percentages were 50.8% and 19.0% respectively whereas the figures for the rural households were 63.4% and 12.9% respectively. Other means of storage - refrigerator, plastic container, bottle - had percentages ranging from 3% to 10%. About 5% of both the urban and the rural households said that they used the whole packet upon opening.

A majority of households (69.7%) found the instructions easy to follow (75.7% urban and 64.6% rural). Nearly a third of the rural households (32.3%) said that they don't read the instructions versus less than a quarter (21.1%) of the urban households.

Although 70% of the households felt the instructions were easy to follow, only 7.4% mentioned the correct CEREX/water ratio when asked to list the steps used in preparation (Table 21). After prompting, the percentage using the correct mix increased, but only to 43%. The number of households who mentioned the use of boiled water in preparing CEREX was also low (54.9%) but increased to 72.7% with prompting. These figures suggest a need for more educational programs if CEREX is to be successful in decreasing malnutrition among Guyana's preschool children. The clinics would be an integral part of such a program.

Table 21. Distribution of Sample Households Who Have Used CEREX by Free versus Prompted Responses to the Steps Used in Preparation and by Location.¹

Steps in Preparation	Location					
	Urban		Rural		Overall	
	Free	Prompted	Free	Prompted	Free	Prompted
	----- percent ² -----					
Use Boiled Water	55.2	64.6	54.6	80.0	54.9	72.7
Correct CEREX/Water Mix	6.0	35.0	8.6	50.2	7.4	43.0
Add Other Ingredients ³	82.3	85.2	79.1	89.2	80.5	87.4

1/ "Free" responses indicate the percentage of households who mentioned the above steps when describing their method of preparation. Those households who did not mention one of these steps were then asked directly if, for example, they used boiled water ("prompted" responses).

2/ N = 544: 247 urban, 297 rural.

3/ "Other Ingredients" were mainly sugar and milk.

3.6 Product Use

3.6.1 Children Under Two

At the time of the CEREX Consumer Evaluation Survey, 79.1% of the sample children under two were reported to have used CEREX and 58.2% were using it "regularly" (Table 22). Regularly is defined as those households who were still using CEREX when the survey was taken. Generally, usage is slightly higher in the urban areas than the rural areas.

Quite a large difference exists between the usage patterns of Indians and Negroes. Overall, 71.4% of the Indian children under 2 had used CEREX versus 88.0% of the Negro children. Only 48.5% of the Indian children under 2 were still using CEREX at the time of the survey. This represents a 22.9% drop in usage - a much steeper drop than the 15.0% decline in usage for Negro children under 2 (73.0% of the Negro children were still using CEREX at the time of the survey). The pattern holds for urban and rural areas alike. This appears to indicate that a number of Indian households tried the product since it was something novel but did not continue consumption. CEREX did not have as substantial an impact in changing the consumption habits of the Indian children.

With respect to frequency of consumption, over half of the children under two in both the Indian and the Negro households are consuming CEREX 3 times per day and over 80% consume CEREX 2-3 times per day (Table 23). A large majority of both the Indian and Negro target population who have used CEREX are consuming it with sufficient frequency. The difficulties arise when one examines the method and amount of feeding. Overall, 64.0% of the Indian children consume CEREX from a bottle. Only about one third of the children under 2 are receiving CEREX via bowl and spoon. These percentages do not vary much from urban to rural areas. Fifty percent of the Indian children are getting 1/4 cup or more at each serving whereas 62.1% of the Negro children receive ample quantities at each serving.

Of all sample children under two, 41.8% are not consuming CEREX (this percentage includes those who never used CEREX and those

Table 22. Distribution of Sample Individuals Who Have Used CEREX and Who Are Still Using CEREX by Age Category, Ethnicity and Location.¹

Age/Ethnic Category	Location				Overall Sample	
	Urban		Rural			
	Have Used	Still Using	Have Used	Still Using	Have Used	Still Using
	----- percent ² -----					
Children Under 2	83.0	62.7	76.4	55.1	79.1	58.2
Indian	75.0	50.0	70.4	48.0	71.4	48.5
Negro	87.6	73.0	88.9	73.0	88.0	73.0
Children 2-5	69.4	50.8	53.8	34.2	61.6	40.6
Indian	66.7	38.7	46.2	22.5	50.1	25.6
Negro	68.8	58.2	68.3	57.2	68.6	57.8
Children Over 5 ³	45.4	40.1	31.4	24.0	37.3	30.8
Indian	34.3	31.5	20.6	13.0	23.3	16.6
Negro	46.6	43.1	48.0	40.6	47.2	42.1
Adults ³	17.1	13.5	13.0	9.4	14.7	11.1
Indian	12.9	9.4	9.4	5.1	10.2	6.1
Negro	23.7	20.1	23.4	20.7	23.6	20.3
Non Target Group ⁴	27.4	23.2	19.5	14.6	22.8	18.1
Indian	19.3	16.0	13.1	7.7	14.4	9.5
Negro	32.9	29.3	33.4	28.8	33.1	29.1

- 1/ The ethnic groupings are based on the ethnicity of the person who decides what the child consumes. Only the percentages for the two major ethnic groups are presented here.
- 2/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-2.
- 3/ See footnote 3, Table 23.
- 4/ Non Target group = children over 5 and adults.

Table 23. Distribution of Sample Children Under Two Years of Age Who Have Used CEREX by Frequency, Method and Amount of CEREX Consumption and by Ethnicity and Location.

	Children Under 2					
	Location					
	Urban		Rural		Overall Sample	
Usage Pattern	Indian	Negro	Indian	Negro	Indian	Negro
	----- percent ¹ -----					
Frequency of Feeding						
3 times/day	39.4	60.8	77.8	60.7	68.8	60.7
2 times/day	21.2	20.3	8.3	25.0	11.3	22.2
1 time/day	27.3	10.1	7.4	8.9	12.1	9.6
Total	87.9	91.2	93.5	94.6	92.2	92.5
Method of Feeding						
Bowl & Spoon	27.3	29.9	27.4	31.5	27.3	30.5
Feeding cup	8.3	7.8	7.5	27.8	7.9	16.0
Bottle	63.3	62.3	64.2	40.7	64.0	53.4
Total	98.9	100.0	99.1	100.0	99.2	99.9
Amount Per Feeding						
< 1/4 cup	42.4	39.0	52.3	36.4	50.0	37.9
1/4 cup	42.4	29.9	33.6	47.3	35.7	37.1
> 1/4 cup	15.2	31.2	14.0	16.4	14.3	25.0
Total	100.0	100.1	99.9	100.1	100.0	100.0

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-3.

who stopped using CEREX) and 56.3% are still using CEREX (Table 24). The percentage of Indian children who are not consuming CEREX (50.5%) is much higher than the percentage of Negro children (27.0%) not using CEREX. Again, these figures underscore the differences in consumption habits between the Indian and Negro populations.

Applying the definition given in footnote 1 of Table 24, children still using CEREX were divided into those who consume "sufficient" quantities and those who consume "insufficient" quantities of CEREX. Of all children under two, 26.7% consume "sufficient" quantities of CEREX while 29.6% consume it in "insufficient" quantities (Table 24). For both the Indian and the Negro populations, the percentage of children consuming "insufficient" quantities was higher in the urban areas. To pinpoint whether "insufficient" consumption was due to infrequent feedings or diluted feedings, Table 25 was developed. The majority of insufficient consumption (for both Indian and Negro children) was due to "dilution"; the children were eating CEREX 2-3 times a day but were not getting the correct amount of CEREX per serving.

Table 26 represents another way of looking at the same problem. In this table, only children under 2 who consume CEREX with the correct frequency (2-3 times/day) are considered. Of these children, 20.5% eat the correct amount of CEREX (1/4 cup or more) in porridge form from a bowl and spoon. At the other end of the spectrum are 25.8% of these children, who consume incorrect quantities (<1/4 cup) as a tea or drink through a bottle. Overall, only 34.4% of these children are eating CEREX in porridge form and 65.6% consume CEREX as a tea/drink.

The impact of education and income on CEREX consumption is somewhat indeterminate. However, it does appear that higher educational levels are associated with appropriate use (Table 27). That is, as the educational level of the "decider" increases the percentage of children under two who have used (and are still using) CEREX increases while adult consumption decreases. More highly educated "deciders" may have a greater awareness of the nutritional needs of children and be less likely to consume CEREX themselves. The trend

Table 24. Distribution of Children Five Years of Age and Under by Quantity of CEREX Consumed by Age Category and Ethnicity.

Age/Ethnic Category	Location								Overall Sample			
	Urban				Rural				Still Consuming CEREX			
	Still Consuming CEREX				Still Consuming CEREX				Still Consuming CEREX			
	Not Consuming CEREX	Sufficient ¹ Quantities	Insufficient ² Quantities	Total	Not Consuming CEREX	Sufficient ¹ Quantities	Insufficient ² Quantities	Total	Not Consuming CEREX	Sufficient ¹ Quantities	Insufficient ² Quantities	Total
	percent ³											
Children Under 2	37.3	25.5	35.3	98.1	44.9	27.6	25.8	98.3	41.8	26.7	29.6	98.1
Indian	50.0	18.2	31.8	100.0	50.7	23.0	24.3	98.0	50.5	21.9	26.0	98.4
Negro	27.0	34.8	34.8	96.6	27.0	38.1	27.0	92.1	27.0	36.2	32.9	96.1
Children 2-5	49.2	21.6	24.3	95.1	65.8	14.4	18.3	98.5	59.4	17.2	20.6	97.2
Indian	61.3	17.3	16.0	94.6	77.5	7.6	14.2	99.3	74.4	9.5	14.6	98.5
Negro	41.8	26.5	27.5	95.8	42.8	29.0	24.8	96.6	42.2	27.5	26.3	96.0

1/ "Sufficient" consumption is defined as 1/4 cup of CEREX or more, 2 or 3 times per day regardless of the form in which it is consumed. One quarter cup of CEREX, 2 times per day, is roughly equivalent to 57 grams of CEREX per day (220 calories).

2/ "Insufficient" consumption is defined as less than 1/4 cup of CEREX per serving no matter how many times a day it is consumed or less than 2 servings per day no matter what quantity is consumed.

3/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-2.

Table 25. Distribution of Children Under Two Years of Age Consuming "Insufficient" Quantities of CEREX by the Type of "Insufficient" Consumption and by Ethnicity.

Ethnicity	Type of "Insufficient" Consumption			Total
	< 1/4 cup		≥ 1/4 cup	
	2 or 3 times/day	≤ 1 time/day	≤ 1 time/day	
	----- percent ¹ -----			
Children Under 2	65.2	15.2	19.6	100.0
Indian	60.8	21.6	17.6	100.0
Negro	68.0	10.0	22.0	100.0

1/ N = 101: 51 Indian, 50 Negro

Table 26. Distribution of Children Under Two Years of Age Who Consume CEREX 2-3 Times/day by Form, Method and Amount of Consumption.

Feeding Method	Form of Consumption				Total
	Porridge		Tea/Drink		
	≥ 1/4 cup	< 1/4 cup	≥ 1/4 cup	< 1/4 cup	
	----- percent ¹ -----				
Bowl and Spoon	20.5	7.0	0	0	27.5
Feeding Cup	4.4	1.7	3.5	3.5	13.1
Bottle	0.4	0.4	32.8	25.8	59.4
Total	25.3	9.1	36.3	29.3	100.0

1/ N = 243

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Table 27. Distribution of Sample Individuals Who Have Used CEREX and Who are Still Using CEREX by Age Category, Education and Income.

Education/Income Category	Have Used CEREX					Still Using CEREX				
	Under 2	2-5	Over 5 ³	Adults ³	Non Target ⁴	Under 2	2-5	Over 5 ³	Adults ³	Non Target ⁴
	----- percent ¹ -----									
Overall	79.1	61.6	37.3	14.7	22.8	58.2	40.6	30.8	11.1	18.1
Education ²										
Primary	74.2	57.1	35.6	17.3	24.3	54.2	39.3	29.2	13.5	19.5
Secondary	81.3	68.2	43.1	16.5	25.2	63.4	48.1	37.1	12.4	20.5
Higher	88.0	53.6	29.0	12.6	17.8	62.0	31.0	23.7	9.5	13.9
Income ²										
< \$500	79.5	56.9	31.6	18.8	26.4	56.6	38.2	32.0	14.8	21.3
\$500-1000	76.1	71.7	35.5	15.4	22.1	63.6	50.3	29.0	11.4	17.3
> \$1000	73.3	49.1	25.8	7.1	12.8	50.0	37.7	21.5	4.3	9.5

- 1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-2.
- 2/ Education refers to the level of education of the person in the household who decides what the child consumes. Income refers to total monthly take-home pay for the entire household in Guyana dollars.
- 3/ Separate percentage figures for these two age classes were calculated under the assumption that the "over 5" and "adults" categories used in survey question 24 (CEREX consumption) correspond to the "5-16" and ">16" categories used in survey questions 38c and 38d (Household composition). These results may slightly overestimate product use by the "over 5" age class and slightly underestimate product use by the "adults". The percentages for the non target group - "over 5" and "adults" combined - are exact.
- 4/ Non target group = children over 5 and adults.

is unclear for the 2-5 and over 5 age categories where usage is highest under "deciders" with a secondary education.

Regardless of age, CEREX consumption is higher for households in the lowest income bracket than those in the highest bracket (Table 27). This trend seems reasonable. The low price of CEREX would certainly make it attractive to low income households and wealthier households might be expected to have greater access to imported baby cereals thereby decreasing their demand for CEREX.

The figures in Table 28 indicate that the percentage of children who are getting CEREX frequently enough (2-3 times per day) increases as the level of education decreases. The same is true for income - as income decreases, the percentage of children under 2 consuming CEREX 2-3 times per day increases. Consumption of CEREX with a bowl and spoon is greater (and bottle use, less) for those "deciders" with an education beyond secondary. Income does not appear to have much of an influence on method of feeding, however, the lower levels of income do have a higher percentage of children eating 1/4 cup or more per serving. Perhaps this is due to the reasonable price of CEREX and prohibitive prices of other items with similar nutritional value.

3.6.2 Children 2-5

Of the children in the secondary target group, 61.6% have consumed CEREX and 40.6% are still using it. Again, the drop between children 2-5 who have used and those still using is much greater for the Indian population (Table 22). Urban Indian consumption for children 2-5 is higher than rural Indian consumption, whereas urban and rural Negro consumption is about the same.

The percentage of children 2-5 reported to be consuming CEREX 2-3 times/day is less than the percentage of children under 2 who consume 2-3 times/day (Table 29). Over half of the Indian children 2-5 consume CEREX as a porridge but 42.9% still consume CEREX as a tea/drink. The Negro population has a higher percentage of children 2-5 who consume CEREX as a porridge (72.7%) and a lower

Table 28. Distribution of Children Under Two Years of Age Who Have Used CEREX by Frequency, Method and Amount of CEREX Consumption, and by Education and Income Levels.

	Children Under 2					
	Education			Income		
Usage Pattern	Primary	Secondary	Higher	< \$500	\$500-1000	> \$1000
	----- percent ¹ -----					
Frequency of Feeding						
3 times/day	68.8	61.5	54.5	66.5	67.2	40.9
2 times/day	15.6	17.4	20.5	16.0	10.4	36.4
1 time/day	8.5	13.8	15.9	11.3	10.4	22.7
Total	92.9	92.7	90.9	93.8	88.0	100.0
Method of Feeding						
Bowl & Spoon	28.1	26.4	39.5	29.3	26.2	50.0
Feeding cup	10.1	13.2	9.3	10.5	13.8	0
Bottle	61.2	60.4	51.2	60.2	58.5	50.0
Total	99.4	100.0	100.0	100.0	98.5	100.0
Amount Per Feeding						
< 1/4 cup	52.1	33.3	45.2	42.9	52.2	42.9
1/4 cup	32.1	46.3	23.8	38.7	28.4	28.6
> 1/4 cup	15.7	20.4	31.0	18.3	19.4	28.6
Total	99.9	100.0	100.0	99.9	100.0	100.1

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix P, Table D-3.

Table 29. Distribution of Children Ages 2-5 Who Have Used CEREX by Frequency, Method and Amount of CEREX Consumption and by Ethnicity and Location.

	Children 2-5					
	Location					
	Urban		Rural		Overall Sample	
Usage Pattern	Indian	Negro	Indian	Negro	Indian	Negro
	----- percent ¹ -----					
Frequency of Feeding						
3 times/day	30.0	31.8	41.2	39.2	38.4	34.9
2 times/ day	34.0	32.6	24.3	26.8	26.8	30.1
1 time/day	24.0	29.5	23.0	20.6	23.2	25.8
Total	88.0	93.9	88.5	86.6	88.4	90.8
Form						
Porridge	62.0	76.7	53.4	67.3	55.6	72.7
Tea/drink	36.0	22.5	45.3	32.7	42.9	26.9
Total	98.0	99.2	98.7	100.0	98.5	99.6
Amount Per Feeding						
< 1/4 cup	17.4	29.6	49.0	21.3	41.3	26.0
1/4 cup	60.9	32.0	35.0	48.9	41.3	39.3
> 1/4 cup	21.7	38.4	16.1	29.8	17.5	34.7
Total	100.0	100.0	100.1	100.0	100.1	100.0

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-3.

percentage (26.9%) who consume it as a tea/drink. The percentage of urban Indian children who consume CEREX in porridge form is higher than that for rural Indian children. Slightly higher percentages of the children 2-5 are getting 1/4 cup or more of CEREX than the children under 2. A higher percentage of rural Indian children are not getting 1/4 cup or more than rural Negro children (49.0% versus 21.3%) - perhaps a result of the tendency toward bottle feeding in rural Indian households. Table 30 gives the breakdown of how CEREX is consumed according to variations in the education level of the "decider" and total monthly take-home pay. No trends are obvious.

Nearly 60% of children 2-5 are not consuming CEREX (again this includes those who never consumed CEREX and those who stopped using it) and 37.8% are still using the product (Table 24). A larger percentage of Indian children 2-5 (74.4%) are not consuming CEREX than Negro children (42.2%). "Sufficient" consumption was defined with respect to children under two. Since nutritional requirements change with age this definition is not as applicable to the 2-5 year olds, however, it can serve as a guideline. With this qualification in mind, Table 24 indicates that only 17.2% of the children 2-5 consume "sufficient" quantities of CEREX. The figure is much lower for Indian children 2-5 (9.5%) than Negro children (27.5%). The ethnic differences are more pronounced in the rural areas.

3.6.3 Children Over 5

Of the children over 5, 37.3% were reported to have consumed CEREX and 30.8% are still using CEREX (Table 22). As with the two previous age groups, the percentage of children who have used CEREX is higher for the Negro population and the drop between "used" and "still using" is less pronounced. Use by urban children over 5 is greater than for rural children over 5. This appears to be due mostly to ethnicity rather than location.

The majority of children over 5 who have used CEREX consume it as a porridge; 71% of the Indian children and 85.2% of the Negro children (Table 31). Only 22.7% of the Indian children over 5

Table 30. Distribution of Children Ages 2-5 Who Have Used CEREX by Frequency, Method and Amount of CEREX Consumption, and by Education and Income Levels.

	Children 2-5					
	Education			Income		
Usage Pattern	Primary	Secondary	Higher	< \$500	\$500-1000	> \$1000
	----- percent ¹ -----					
Frequency of Feeding						
3 times/day	38.9	32.2	28.8	36.0	35.8	30.8
2 times/day	27.0	28.1	33.3	29.0	27.7	26.9
1 time/day	22.6	30.1	26.7	24.0	24.1	38.5
Total	88.5	90.4	88.8	89.0	87.6	96.2
Form						
Porridge	64.1	67.1	58.7	63.2	65.9	70.4
Tea/drink	35.4	32.2	37.0	35.7	34.1	25.9
Total	99.5	99.3	95.7	98.9	100.0	96.3
Amount of Feeding						
< 1/4 cup	34.4	34.3	38.6	34.3	37.1	36.0
1/4 cup	42.7	35.0	36.4	38.8	42.4	32.0
> 1/4 cup	22.9	30.8	25.0	26.9	20.5	32.0
Total	100.0	100.1	100.0	100.0	100.0	100.0

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-3.

Table 31. Distribution of Children Over Five Years of Age Who Have Used CEREX by Frequency and Form of CEREX Consumption, and by Ethnicity, Education and Income.

Usage Pattern	Children Over 5							
	Ethnicity		Education			Income		
	Indian	Negro	Primary	Secondary	Higher	< \$500	\$500-1000	> \$1000
	----- percent ¹ -----							
Frequency								
3 times/day	6.8	17.6	18.1	7.0	2.6	11.8	18.3	20.8
2 times/day	15.9	23.3	17.7	21.8	30.8	19.4	21.6	20.8
1 time/day	53.8	36.5	37.5	52.8	51.3	45.7	37.5	29.2
> 1 time/week	15.9	13.2	19.1	4.2	12.8	13.5	11.7	25.0
1 or less/week	7.6	9.5	7.6	14.1	2.6	9.7	10.8	4.2
Total	100.0	100.1	100.0	99.9	100.1	100.1	99.9	100.0
Form								
Porridge	71.0	85.2	77.1	89.1	79.5	79.9	84.2	90.0

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-3.

consume CEREX 2 or 3 times a day - the remainder (77.3%) consume it once/day or less. In contrast, 40.9% of the Negro children over 5 consume CEREX 2-3 times/day and 59.2% once/day or less. This indicates a wider use of CEREX as a general family cereal among the Negro population.

3.6.4 Adults

Of the adult population, 14.7% reported using CEREX and 11.1% are still using it. These percentages are higher in the urban areas due to higher usage among the adult Negro population (Table 22). The percentage of adult Negroes using CEREX (23.6%) is higher than that of adult Indians (10.2%). The trend is more pronounced in the rural areas.

Only 20.7% of the adult Indians who consume CEREX use it 2-3 times/day - 79.4% consume it once or less/day (Table 32). The percentage of adult users consuming CEREX 2-3 times/day is higher among the Negro population (35.8%). The majority of adults using CEREX consume it in porridge form - 76.3% of the Indian adult users and 82.9% of the Negro adult users.

3.6.5 Summary

A summary of CEREX consumption by age category indicates both promising and disturbing trends (Table 33). Eight percent of the sample individuals were children under two years of age and 58.2% of these children were consuming CEREX at the time of the survey. The secondary target group accounted for 16.8% of the sample individuals and 40.6% of this group was using CEREX. This suggests a reasonable degree of acceptance and use by the target population. However, only 18.8% of all CEREX users are under two years of age and 45.9% under five years of age. Assuming that adults consume the same amount of CEREX as children (they consume CEREX less frequently but in larger quantities per serving), then 21.2% of CEREX production is being consumed by adults; 54% by the non-target group. This represents a maximum amount of production going to the non-target group, since the

Table 32. Distribution of Adults Who Have Used CEREX by Frequency and Form of CEREX Consumption, and by Ethnicity, Education and Income.

Usage Pattern	Adults							
	Ethnicity		Education			Income		
	Indian	Negro	Primary	Secondary	Higher	< \$500	\$500-1000	> \$1000
	----- percent ¹ -----							
Frequency								
3 times/day	9.1	12.4	12.5	9.8	5.0	9.2	15.8	0
2 times/day	11.6	23.4	17.6	18.8	22.5	21.0	15.8	20.0
1 time/day	49.6	34.9	32.9	48.2	57.5	38.0	38.6	46.7
> 1 time/week	12.4	17.0	19.4	11.6	2.5	14.0	16.8	26.7
1 or less/week	17.4	12.4	17.6	11.6	12.5	17.9	12.9	6.7
Total	100.1	100.1	100.0	100.0	100.0	100.1	99.9	100.1
Form								
Porridge	76.3	82.9	78.9	88.1	74.4	82.4	80.8	78.6

1/ The total number of rural, urban and overall responses used to calculate these percentages are found in Appendix D, Table D-3.

Table 33. Distribution of Sample Individuals by Age, the Percentage of Individuals Within Each Age Group Still Using CEREX, and the Percentage Which Users Within an Age Group Are of All Users.

Age in Years	Distribution of Sample ¹	% of Age Group Still Using CEREX ¹	% of All Users Still Using CEREX ²
	- - - - - percent - - - - -		
< 2	8.1	58.2	18.8
2-5	16.8	40.6	27.1
5-16	26.8	30.8	32.8
> 16	48.1	11.1	21.2
Total	99.8	--	99.9

1/ The number of overall responses used to calculate these percentages are found in Appendix D, Table D-2 (row 1, columns 9-12).

2/ The number of overall responses used to calculate these percentages are found in Appendix D, Table D-3 (row 1, columns 5-8).

assumption that adults consume quantities of CEREX equal to that of the children is quite generous. Even so, an inordinate amount of CEREX production is being "siphoned off" by the non-target group; a problem which has been exacerbated by the worsening economic situation. GPC is well aware of the "leakage" and is taking steps to correct the problem.

4.0 SUMMARY & CONCLUSIONS

4.1 Summary

4.1.1 Survey Methodology

The study population for the July 1981 CEREX Evaluation Survey was defined as all households with children between four months and five years of age. A multistage random sample of 737 households was selected. The sample design is well documented and commonly employed in studies of this nature. Due to time and resource constraints remote areas accessible only by air or water were excluded. This did not impose a serious limitation on the sample since the large majority of the population (96%) lives along the coastline and along the banks of the Demerara River. The fieldwork was conducted according to statistician's sampling instructions with close supervision. There is little reason to suspect that any sample bias was introduced at this stage.

4.1.2 Major Results

From either a nutritionist's or a market analyst's standpoint the data from the CEREX survey provides valuable insight for future planning. However, only the results which are directly relevant to the continuation of the Guyana Weaning Food Project will be summarized here; namely product acceptability and usage by the target population.

Only 6.6% of the sample households did not recognize CEREX and 19% of the 737 households recognized the product but had never used it (mostly due to a preference for other products). The majority of households (86%) who used CEREX were satisfied with it as a food for their infants. Eighty percent thought CEREX was as good as or better than other baby cereals they had used and 73% had no complaints with CEREX at all (the largest single complaint was the texture). In terms of price, 84% of the households thought it was just right. The plastic bag and half-pound size packets were preferred by 64% and 53% of the households respectively. Urban areas showed higher levels of

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recognition and use as compared to rural areas. This pattern was consistent for both Indian and Negro populations indicating that the differences are perhaps due to inadequate distribution rather than ethnicity.

A large percentage of the target population (79.1% of the children under two and 61.6% of the children two to five) have tried CEREX. These results are encouraging. However, to evaluate project effectiveness or success, the more important figures are the percentages of the target population using CEREX frequently and correctly. Although 79.1% of the children under two had used CEREX, only 58.2% were still using CEREX at the time of the survey (40.6% of the children two to five). Of the children under two who had used CEREX over 80% were consuming it 2-3 times/day. However, only 50% of the Indian children and 62% of the Negro children were getting the correct quantity (1/4 cup or more/serving). Over half of the children (64% of Indians, 53% of Negroes) were consuming CEREX through a bottle and less than 1/3 with a bowl and spoon.

Although a large number of children under two are consuming CEREX from a bottle, cross tabulations (Table 23, p. 46) show that over half of those children are consuming 1/4 cup or more per serving. Two factors make this situation feasible - a number of mothers may be cutting off the end of the nipple and variations in CEREX batches make it possible to mix 1/4 cup of CEREX with the correct amount of water (or a little more) and have a mixture fluid enough to pass through a bottle nipple. Thus, "sufficient" consumption was defined totally on the basis of quantity and frequency, ignoring the method of consumption and includes those still consuming 1/4 cup or more per serving 2-3 times a day. On the basis of this definition 27% of the children under two (17% of the children 2-5) are consuming "sufficient" quantities of CEREX, 30% are consuming insufficient quantities (21% of the children 2-5) and 42% (59% of the children 2-5) are not using CEREX (either never used or stopped using). Insufficient consumption was due mainly to dilution (using less than 1/4 cup per serving) rather than the frequency with which CEREX was consumed.

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Couched in terms of the survey objectives: 1) 81.2% of the children under two who have used CEREX use it frequently (2-3 times/day); this represents 64.3% of the total population of children under two and 2) only 21% (Table 26) of those who use it frequently use it correctly (bowl and spoon, 1/4 cup or more/serving, porridge form) - 13% of the total population of children under two. This definition of correct - bowl and spoon, porridge form- is rather narrow and, as was discussed earlier, some children may be getting "sufficient" amounts of CEREX through a bottle with the nipple cut off or through a bottle with a more fluid batch of CEREX.

Although education and income appear to have some influence on CEREX consumption patterns, ethnicity seems to be the most important factor affecting usage. The percentage of children who have used CEREX and who are still using CEREX is greater among the Negro population; likewise the Indian population has a larger percentage of children who either never used CEREX or stopped using CEREX. This pattern was similar for rural and urban areas confirming an ethnic difference in usage. The CEREX campaign does not appear to have been very successful in changing existing weaning habits. Although many Indian households may have tried CEREX, usage in some was not continued since they have no real history of cereal/porridge consumption. A larger percentage of Indian children consume CEREX in a bottle and consume less than 1/4 cup per serving. Consequently, the percentage of Negro children under two receiving "sufficient" quantities of CEREX was about 14% higher than the Indian children. Consumption of CEREX by children under two appears to increase with the level of education and decrease with income.

4.2 Conclusions

The results of the 1981 CEREX Consumer Evaluation Survey indicate that Phase I of the Guyana Weaning Food Project has been reasonably successful in meeting its objectives. CEREX has been widely distributed (and accepted) throughout Guyana (with the exception of a few areas which have been brought to the attention of GPC) among all segments

of the population (different ethnic, education and income backgrounds). The pilot project expected to "reach" 24-30% of the 150,000 pre-school children. The term "reach" is open ended but by any definition the goal has been met: 79.1% of the children under two have used CEREX (61.6% of the children 2-5); 58.2% were still using CEREX 13 months after the product was launched (40.6% of the children 2-5); over 80% consumed CEREX 2-3 times/day (65% of the children 2-5); over half consumed 1/4 cup or more, and 27% consume "sufficient" quantities of CEREX (17% of the children 2-5).

Since "insufficient" consumption appears to be due mainly to dilution, a strong educational effort is needed, perhaps through the clinic system, to encourage the use of increased quantities per serving. A large part of this effort should be directed at the Indian population which has a higher percentage of children who do not consume CEREX, who consume less than 1/4 cup/serving and who use a bottle. If a modification of the "bottle weaning pattern" is not feasible, perhaps an intermediate step of getting mothers to cut the nipple should be encouraged in order to insure that CEREX is being consumed in porridge form.

APPENDIX A

GUYANA PHARMACEUTICAL CORPORATION LIMITED

1981 CEREX CONSUMER EVALUATION SURVEY QUESTIONNAIRE

(To be administered only to households with at least one (1) child between four months and five years of age)

INTERVIEWER : _____ SCHEDULE NO : _____
 DATE : _____ ADDRESS : _____
 TIME : _____

For the children under five years of age in the household, who decides what they eat, who buys their food, and who prepares/serves their food?

CALL-BACK TIMES: _____

I. QUESTION	DECIDER	BUYER	PREPARER
a. Which household member: 1 - Mother 2 - Grandmother 3 - Father Other (specify) _____ (CODE LATER)	☐ 1	☐ 8	☐ 15
b. Age (in years):	☐ 2 - 3	☐ 9 - 10	☐ 16 - 17
c. Ethnic Group: 1 - Indian 4 - Portuguese 2 - Negro 5 - Chinese 3 - Mixed 6 - Amerindian Other (specify) _____ (CODE LATER)	☐ 4	☐ 11	☐ 18
d. What is the name of the last school/institute/university you went to? (CODE LATER) 1 - Don't know/none 2 - Primary 3 - Secondary 4 - Higher than Secondary	☐ 5	☐ 12	☐ 19
e. Occupation (CODE LATER)	☐ 6 - 7	☐ 13 - 14	☐ 20 - 21

PART I - Product Awareness and Knowledge - to be answered by DECIDER
 PART II - Purchasing Pattern and Source - to be answered by PURCHASER
 PART III - Product Use - to be answered by PREPARER
 PART IV - Product Acceptability - to be answered by DECIDER
 PART V - Child Feeding/Weaning Practices - to be answered by DECIDER
 PART VI - Demographic and Socio-Economic Information - to be answered by DECIDER

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PART I - PRODUCT AWARENESS AND KNOWLEDGE

(THIS SECTION MUST BE ANSWERED BY THE DECIDER)

2. Do you recognize any of these names? (NAME THE FOLLOWING PRODUCTS)

a. Nestum	1 - Yes	2 - No	☐	22
b. Plantain Flour	1 - Yes	2 - No	☐	23
c. Cerex	1 - Yes	2 - No	☐	24

3. Do you recognize this packet? (SHOW A PACKET OF CEREX)

1 - Yes	2 - No	☐	25

(IF NO TO BOTH QUESTIONS 2.c. AND 3., GO DIRECTLY TO PART V, QUESTION 35)

4. What is Cerex? _____
(CODE LATER)

1 - Correct Response	2 - Incorrect Response	☐	26

5. Whom do you think Cerex is for? _____
(CODE LATER)

1 - Correct Response	2 - Incorrect Response	☐	27

6. What is Cerex made from? _____
(CODE LATER)

1 - Correct Perception	2 - Incorrect Perception	☐	28

7. How did you first learn about Cerex? _____
(CODE LATER)

1 - Radio	5 - Merchandiser in store/shop
2 - Newspaper	6 - Friends/neighbors/relatives
3 - Poster in store/shop	7 - Clinic
4 - Saw in store/shop	Other (specify) _____

8. What is the first thing that comes to your mind when you hear the word "Cerex"? _____

1 - Baby cereal	4 - Cerex and the breast are best
2 - For babies 4 months and over	5 - Packet
3 - To be eaten with bowl and spoon	Other (specify) _____

9. How often do you visit the cinema? _____

1 - Never/hardly ever	3 - Once a month	☐	31
2 - Less than once a month	4 - More than once a month		

10a. How often do you read a newspaper?

- 1 - Hardly ever/never 3 - A few times a week
2 - Sundays only 4 - Daily

☐ 32

b. Which newspaper? (specify) _____

11. What time of day do you like to listen to the radio the most?

- 1 - Morning 4 - Evening
2 - Lunchtime 5 - Night
3 - Afternoon 6 - All day
7 - Never/hardly ever

☐ 3312. Has anyone in the household ever used Cerex?

- 1 - Yes 2 - No

☐ 34

(IF YES TO QUESTION 12., GO DIRECTLY TO PART II, QUESTION 14.)

13a. What is the major reason why you have never used nor bought Cerex?

- 1 - Did not like 6 - Too cheap
2 - Locally produced product 7 - Preferred other products
3 - Poor packaging 8 - Poor appearance
4 - Not hygienic 9 - Not available
5 - Could not afford 10 - Made of waste products

☐ 35

Other (specify) _____
(CODE LATER)

13b. IF FREE RESPONSE GIVEN IN QUESTION 13.a. IS "1 - Did not like", THEN READ LIST OF ALTERNATIVES ABOVE (CHOICES 2 THROUGH 9) TO THE RESPONDENT AND CODE THE ONE WHICH HE/SHE CHOOSES AS THE MAJOR REASON.

☐ 36

(GO DIRECTLY TO PART V, QUESTION 35.)

PART II - PURCHASING PATTERN AND SOURCE

(THIS SECTION MUST BE ANSWERED BY THE PURCHASER)

14. Where do you usually get Cerex?

- 1 - Supermarket 4 - Clinic
2 - Neighborhood shop Other (specify) _____
3 - Market stall (CODE LATER)

☐ 37

15. Have you tried to buy/get Cerex more than one time?

- 1 - Yes 2 - No

☐ 38

(IF NO TO QUESTION 15., GO DIRECTLY TO QUESTION 19.)

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16. Was Cerex always available when you went back to get it?

1 - Yes

2 - No

☐ 39

(IF YES TO QUESTION 16., GO DIRECTLY TO QUESTION 18.)

17. If Cerex was not always available, did you ask the seller/clinic to get it for you?

1 - Yes

2 - No

☐ 40

18. Are you still buying/using Cerex?

1 - Yes

2 - No

☐ 41

(IF YES TO QUESTION 18., GO DIRECTLY TO QUESTION 20.)

19. What is the major reason why you are no longer using Cerex?

1 - Not available

5 - Baby disliked

2 - Bad taste

6 - Caused diarrhea

3 - Bad smell

7 - Didn't mix well

4 - Worm infested

Other (specify) _____

(CODE LATER)

☐ 42

(FOR THOSE NO LONGER USING CEREX, GO DIRECTLY TO PART III, QUESTION 24.)

20. How many packets of Cerex do you use in your household per fortnight, i.e. every two weeks? (INDICATE NUMBER OF PACKETS)

☐ ☐ 43-44

21. Did you have any trouble getting Cerex within the last month?

1 - Yes

2 - No

☐ 45

22. Are you now buying/using less Cerex than you did when you first started to buy/use Cerex?

1 - Yes

2 - No

☐ 46

(IF NO TO QUESTION 22., GO DIRECTLY TO PART III, QUESTION 24.)

23. Why are you buying/using less Cerex now than you were when you first started to buy/use Cerex?

1 - Unavailable

3 - Do not like the product anymore

2 - Child has grown and is using other food

Other (specify) _____

(CODE LATER)

☐ 47

PART III - PRODUCT USE

(THIS SECTION MUST BE ANSWERED BY THE PREPARER)

(To be administered to all respondents who have used or are using Cerex. Questions, however, should be phrased accordingly, i.e. in past or present tense.)

24. **FILL IN TABLE ON NEXT PAGE.**

1 year = 12 months 4 yrs. = 48 months
 2 yrs. = 24 months 5 yrs. = 60 months
 3 yrs. = 36 months

QUESTION 24: CEREX CONSUMPTION - CONSUMERS AND THE FREQUENCY AND FORM IN WHICH THEY CONSUME CEREX

QUESTIONS	CHILDREN UNDER 5 YEARS OLD (NOT YET 60 MONTHS)					CHILDREN OVER 5 YEARS OLD (60 MONTHS AND OVER)					ADULTS				ANNU.
	48-49	54-55	60-61	66-67	72-73	78	81	84	87	90	Mother 93	Father 96	Grand-P 99	Other 102	
a. <u>Who in this household eats or has eaten Cerex?</u> For children under five years of age, indicate age in months; for all others who eat Cerex, place the number 1 in the appropriate column.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b. <u>How often does each person eat Cerex?</u> 1 - Three or more times a day 2 - Twice a day 3 - Once a day 4 - More than once a week 5 - Once a week or less	☐ 50	☐ 56	☐ 62	☐ 68	☐ 74	☐ 79	☐ 82	☐ 85	☐ 88	☐ 91	☐ 94	☐ 97	☐ 100	☐ 103	
c. <u>In what form is Cerex eaten?</u> 1 - Porridge 2 - Tea/drink Other (specify) _____ ** (CODE LATER)	☐ 51	☐ 57	☐ 63	☐ 69	☐ 75	☐ 80	☐ 83	☐ 86	☐ 89	☐ 92	☐ 95	☐ 98	☐ 101	☐ 104	
d. <u>For children under two years of age, how is Cerex fed to the child?</u> 1 - Bowl and spoon 2 - Feeding cup 3 - Bottle with nipple Other (specify) _____ ** (CODE LATER)	☐ 52	☐ 58	☐ 64	☐ 70	☐ 76										
e. <u>How much Cerex do you use at each feeding for the child?</u> 1 - Less than 1/4 cup 2 - 1/4 cup 3 - More than 1/4 cup	☐ 53	☐ 59	☐ 65	☐ 71	☐ 77										

25. Please briefly describe the steps you use to make Cerex for the CHILDREN

FREE RESPONSE: _____
 _____ (CODE LATER)

PROMPTED RESPONSE: _____
 _____ (CODE LATER)

a. FREE RESPONSE: (CODE LATER)

i. Uses boiled water

1 - Yes 2 - Did not mention

☐ 106

ii. Uses correct amount of Cerex for amount of water used

1 - Yes 2 - Did not mention

☐ 107

iii. Adds other ingredients

1 - Yes 2 - Did not mention

☐ 108

b. PROMPTED RESPONSE: (CODE LATER)

i. Uses boiled water

1 - Yes 2 - No

☐ 109

ii. Uses correct amount of Cerex for amount of water used

1 - Yes 2 - No

☐ 110

iii. Adds other ingredients

1 - Yes 2 - No

☐ 111

26. Where do you usually store open packets of Cerex between use?

1 - Safe/cupboard

3 - Tin

☐ 112

2 - Refrigerator

Other (specify) _____

 (CODE LATER)

27. Have you found the instructions on the packet easy to follow?

1 - Yes

2 - No

3 - Don't read them

☐ 113

PART IV - PRODUCT ACCEPTABILITY

(THIS SECTION MUST BE ANSWERED BY THE DECIDER)

28. Are you satisfied with Cerex as a food for your child?

1 - Yes

2 - No

☐ 114

29. Do you think Cerex is:

1 - Better than

2 - As good as

3 - Poorer than

☐ 115

other baby cereals/porridges you have previously used?

(IF RESPONDENT NEVER USED ANY BABY CEREAL/PORRIDGE OTHER THAN CEREX,
 PUT 1 IN THE BOX.)

30. What, if anything, did you dislike the most about Cerex?

1 - Taste/flavor

5 - Packaging

☐ 116

2 - Odor/smell

6 - Price

3 - Texture

7 - Nothing

4 - Color

Other (specify) _____

(CODE LATER)

31. How much do you usually pay for one packet of Cerex?

☐ ☐ ☐ 117 -
119

32. Do you think the price of Cerex is:

1 - Too low

2 - Too high

3 - Just right

☐ 120

33. If you had a choice, what type of packaging would you prefer, bearing in mind that any other packaging will cost more?

1 - Plastic bag (same as)

4 - Foil

☐ -121

2 - Tin

5 - Glass Jar

3 - Box

Other (specify) _____

(CODE LATER)

34. If you had a choice, what size packet would you prefer, bearing in mind that the price will go up in relation to the size of the packet?

☐ 122

1 - One-half-pound (same as)

4 - Three pounds

2 - One pound

5 - Four pounds

3 - Two pounds

6 - Five pounds

PART V - CHILD FEEDING/WEANING PRACTICES

(IF HOUSEHOLD HAS NO CHILD TWO YEARS OLD OR YOUNGER, GO DIRECTLY TO PART VI, QUESTION 37.)

(THIS SECTION MUST BE ANSWERED BY THE DECIDER)

35a. What baby foods not now available on the market would you like to see sold in Guyana?

☐ 1

(CODE LATER)

Why these foods in particular? _____

☐ 2

(CODE LATER)

36. **FILL IN TABLE ON NEXT PAGE**

449.

QUESTION 36. FOR ALL CHILDREN UNDER TWO (2) YEARS OF AGE

QUESTIONS	CHILDREN			
a. Age of child (months)	5 - 6	18 - 19	33 - 34	48 - 49
b. Is child being breastfed now? 1 - Yes 2 - No (IF YES, GO DIRECTLY TO e.)	5	20	35	50
c. Was child ever breastfed? 1 - Yes 2 - No (IF NO, GO DIRECTLY TO e.)	6	21	36	51
d. At what age was the child taken off the breast? (Indicate age in months)	7 - 8	22 - 23	37 - 38	52 - 53
e. At what age was the child given semi-solid/solid foods? (Indicate age in months)	9 - 10	24 - 25	39 - 40	54 - 55
f. What was the first semi-solid/solid given to the child? 1 - Plantain flour 2 - Nestum 3 - Cornmeal 4 - Cerex Other (specify) _____ (CODE LATER)	11	26	41	56
g. How often does the child attend Clinic? 1 - Never 2 - More than once a month 3 - Once a month 4 - Less than once a month	12	27	42	57

FOR THOSE RESPONDENTS WHO NEVER USED CEREX, GO DIRECTLY TO k.

h. At what age was the child first given Cerex? (Indicate age in months)	13 - 14	23 - 24	43 - 44	53 - 54
i. Before Cerex, what cereals/porridges was the child given? (specify) _____ (CODE LATER)	15	30	45	60

QUESTION 36. (continued)

QUESTIONS	CHILDREN			
j. In addition to Cerex, what cereals/porridges is the child being given? (specify) _____ (CODE LATER)	☐ 16	☐ 31	☐ 46	☐ 61

GO DIRECTLY TO PART VI, QUESTION 37.

k. What cereals/porridges is the child now being given? (specify) _____ (CODE LATER)	☐ 17	☐ 32	☐ 47	☐ 62

PART VI - DEMOGRAPHIC AND SOCIO-ECONOMIC INFORMATION

(THIS SECTION SHOULD BE ANSWERED BY THE DECIDER)

37. Household location: 1 - Urban 2 - Rural

☐ 63

38. Household composition:

a. Total Number of persons living in household:

☐ ☐ 64 - 65

b. Number of children under five (5) years:

☐ ☐ 66 - 67

c. Number of persons between five and sixteen (5 - 16) years:

☐ ☐ 68 - 69

d. Number of persons over sixteen (16) years:

☐ ☐ 70 - 71

39. If you added up the monthly take-home pay for all household members, which of the following would best describe the total monthly take-home pay for the entire household?

☐ 72

1 - Over \$1,000 per month 3 - Less than \$500 per month

2 - Between \$500 and \$1,000 per month

(IF RESPONSE GIVEN IS AMOUNT WEEKLY OR FORTNIGHTLY, INDICATE AMOUNT: PER WEEK/PER FORTNIGHT /CROSS OUT ONE/ AND CODE LATER.)

40. How much money is usually spent for the entire household on food each week? (INDICATE AMOUNT IN DOLLARS)

☐ ☐ ☐ 73 - 75

41. Do the occupants of the household own/have:
(CODE LATER) - Check appropriate response

☐ 76

a - A telephone Yes ☐ No ☐

b - A stereo Yes ☐ No ☐

c - A car Yes ☐ No ☐

d - A refrigerator Yes ☐ No ☐

e - The house in which they live Yes ☐ No ☐

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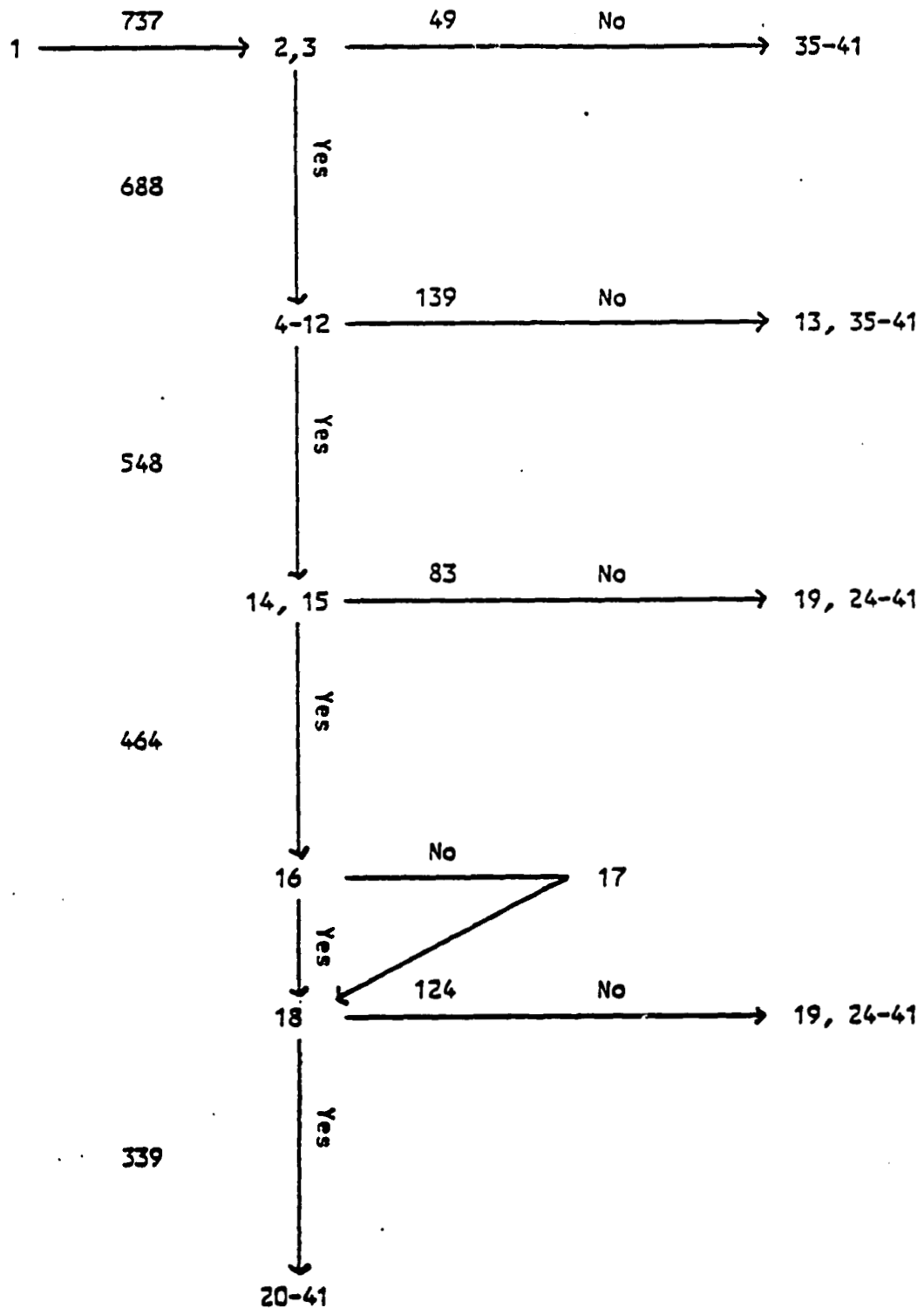


Figure A-1. Flow Diagram of the CEREX Consumer Acceptance Survey Questionnaire Indicating the Number of Expected Responses to Each Question.

APPENDIX B

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CEREX SURVEY
STATISTICAL REPORT

SAMPLING

1.0 Planning

The sample was designed to cover two (2) sub-groups of the civilian population:

- (i) Children five (5) years old and under.
- (ii) Children over five (5) years old and adults.

However within the first group the questionnaire was designed to obtain additional information from children two years and under.

The sample covered the whole country except for the more remote interior areas and settlements which could only be reached by air or water. Fortunately these areas account for only a small percentage of the total population and comprise a distinct sub-group which can be studied separately and apart from the rest of the country.

2.0 Sample Design

A multi-stage stratified random sample was drawn, the major distinction being between urban and rural strata. Within each major stratum, sub-strata were formed based on location.

2.1 The Urban Strata consisted of:

- (i) Georgetown
 - (ii) Suburbs of Georgetown
 - (iii) New Amsterdam
 - (iv) Upper Demerara
- 424

2.2 The Rural Strata consisted of:

- (i) West Berbice
- (ii) East Bank Demerara
- (iii) Essequibo Coast and Islands
- (iv) West Demerara
- (v) East Coast Demerara
- (vi) East Berbice

3.0 Sample Selection

3.1 Frame

A list of enumeration districts within each strata and a list of households within each enumeration district was obtained from the Statistical Bureau of the Ministry of Economic Development and Planning. The number of persons within each household together with their sex was also obtained. Unfortunately the age distribution of household members could not be obtained. In order to maximize the probability of selecting households with children under 5 years old those households which had only one occupant were deleted from the frame.

3.2 Sampling Stages

- (i) Selection of Enumeration Districts (EDs) within each sub-strata.
- (ii) Selection of Households within each enumeration district (ED).

3.3 Sample Size

The total estimated sample size required was 888 households. Estimated (expected) non-response was taken to be 10 percent. This resulted in an overall sample size of approximately 1000 households. However since only one in every two households was expected to have a child under 5 years old the

effective sample size would be 444 households. This sample size was determined for a significance level of five (5) percent and a power of test of 90% both stated for the comparison of any difference as great as 15%.

The sample size within each strata was proportionate to the number of households within each strata (see Table 1).

The sample size was calculated by first computing the equivalent size of a simple random sample and then adjusting this size by using a design effect of 1x2. This was the size of the design effect for a similar design in a national survey which involved roughly the same population and which involved the study of factors which were fairly similar to the ones under study in the CEREX Survey (the 1975 Guyana National Fertility Survey).

CEREX SURVEY

Table 1. Selection of Enumeration Districts and Households.

STRATUM	No. of Households in 1970	Proportion of Households in 1970	No. of ED's in 1980	No. of selected ED's	Expected sample size (No. of Households)	Responses	
						Actual	%
<u>Urban</u>							
Georgetown	14,048	0.1164	180	30	169	124	.73
Suburbs of G/Town	18,944	0.1569	301	50	160	118	.74
New Amsterdam	3,701	0.0307	51	8	31	25	.81
Upper Demerara (Linden)	6,365	0.0528	157	26	47	34	.72
SUBTOTAL	43,108	0.3568	689	114	407	301	.74
<u>Rural</u>							
West Berbice	5,637	0.0466	106	18	48	44	.92
East Bank Demerara	6,604	0.0547	95	16	50	36	.72
Essequibo	9,941	0.0823	273	45	75	54	.72
West Demerara	13,843	0.1146	285	47	100	49	.49
East Coast Demerara	19,025	0.1574	387	64	146	113	.77
East Berbice	22,669	0.1876	497	83	179	140	.78
SUBTOTAL	77,719	0.6432	1643	273	598	436	.73
GRAND TOTAL	120,827	1.0000	2332	387	986	737	.73

GUYANA PHARMACEUTICAL CORPORATION LIMITED

MARKETING DIVISION

BABY WEANING FOOD EVALUATION SURVEY

INTERVIEWER INSTRUCTION SHEET FOR SAMPLING

1. Obtaining your quota of Interviews

11. Ensure that you are in the correct Enumeration District
12. Ensure that you are in the correct street.
13. Locate the address specified.
14. Ask for the name indicated next to the (A) household.
15. Several possibilities exist after this.

POSSIBILITY 1

You locate the correct household. There is a child under five (5) years old in the household and you are granted the interview.

POSSIBILITY 2

You locate the correct household, but there is no child under five (5) years in the household i.e. the (A) household.

In this case you should locate the address of the first (B) household listed and try to obtain an interview. If this household has a child under five (5) and you are granted the interview, you would have accomplished the task of conducting one (1) interview.

If the first (B) household located does not contain a child under five (5) years old, you must then locate the second (B) household listed and go in that order.

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POSSIBILITY 3

The (A) Household cannot be located. In such a case you should make a note of this and go to the next (A) household indicated. Your Supervisor will then instruct you concerning the procedures to be adopted if one or more (A) household cannot be located.

POSSIBILITY 4

You locate the correct household (A) or (B), there is a child under five (5), but an interview is not granted.

This is what is termed a non-response. You cannot replace this household with any other household. You must go to the next (A) household, make a note of the non-response and notify your Supervisor of the non-response.

POSSIBILITY 5

After all the households listed, (A) and (B) are contacted, you still have not obtained the required amount of interviews.

In such a case you should follow the instructions of your Supervisor.

16. (B) households can only be used to replace (A) households which do not have children under five (5) years old.
17. (B) households cannot be used to replace (A) households which cannot be located or households which do not grant you an interview for one reason or another. (ask Supervisor)
18. You must select (B) households in the order in which they are listed. This means that you cannot select a (B) household simply because of convenience. For example if you select households simply because they are near to where you are, the sample will be biased. The reason for this is that the selected households will tend to be distributed near to each other.
19. The other reason why you should select (B) households in the

- order listed, is that they were selected in that order.
20. The ideal situation is one in which all and only the (A) households on the streets are interviewed.
 21. The second best situation is one in which all except one (1) of the (A) households on the sheets are interviewed and the first (B) household is interviewed.
 22. The third best situation is one in which all except two (2) of the (A) households on the sheets are interviewed and the first two (2) (B) households are interviewed and so on.
 23. It is obvious by now that the maximum number of interviews which should be completed from any one (1) sheet is the number of (A) households listed on the sheet.
 24. However if for example the number of (A) households on the sheet is seven (7), the maximum number of interviews which should be completed is seven (7).
 25. However, if one (1) household refused an interview, that is, there was one (1) non-response, the maximum number of interviews which should be completed is six (6). If there are two (2) non-responses, the maximum number of interviews which should be completed is five (5), and so on.
 26. If in one particular case, three (3) interviews were completed, this may be comprised of 3 "A's" or 2 "A's" and 1 "B" or 1 "A" and 2 "B's" or 3 "B's".
 27. Every effort must be made to locate the correct household and to obtain an interview.
 28. On your questionnaire you must indicate next to the name and address of the household, whether it is a "A" or "B" household.
 29. When the required number of interviews in any one Enumeration District is completed you should check to ensure that the total number of completed questionnaires are not more than the total number of (A) households or the maximum number of interviews possible.
 30. After the completion of each Enumeration District you should return the completed Enumeration Districts to your Supervisor.

Table B-1. Rural and Urban Substrata Summary.

Rural Regions	Essequibo Region 2.1	West Demerara Region 2.2	East Bank Demerara Region 2.3	East Bank Demerara Region 2.4	West Berbice Region 2.5	East Berbice Region 2.6
No. of Questionnaires to Complete	75	100	50	146	48	179
Questionnaires Completed	55	49	36	113	44	140
Number of No Children	65	73	17	56	10	204
Number of No Responses	3	3	1	2	0	0
Not Available/No House	37	15	8	27	3	67
Total Households Visited	160	140	62	198	57	411
Urban Regions	Georgetown Region 1.1	Suburbs Region 1.2	Linden Region 1.3	New Amsterdam Region 1.4		
No. of Questionnaires to Complete	169	151	47	31		
Questionnaires Completed	124	118	36	25		
Number of No Children	171	122	51	30		
Number of No Response	8	2	1	0		
Not Available/No House	35	27	13	12		
Total Households Visited	341	269	101	67		

APPENDIX C

GUYANA PHARMACEUTICAL CORPORATION LIMITEDMARKETING DIVISIONINTERVIEW INSTRUCTIONS SHEETPRE INTERVIEW

Always fill in the initial information before commencing the interview.

Interviewer	- Your name
Date	- The day's date
Time	- The time you enter house
Schedule No.	- The number given to you by supervisor
Address	- The correct address of the respondent

Always ensure that the household has at least one (1) child between the age of four (4) months and five (5) years. If not, thank the person and go to the next specified household.

If either the decider, purchaser or preparer are not at home, interview the one who is and arrange a call back time to interview the other(s) and fill in the appropriate person, time and date at the top of the sheet.

Always introduce yourself to the respondent, in the following manner:

"Hello (Good Morning, Afternoon), My name is, and I represent the Consumer Relations Department of Quality Foods. We are doing a Survey to assist in the development of better food products for the people of Guyana."

Always display your interviewer Identification Card. If the respondent proves difficult - you could suggest that he or she might like to ring the Head Office number 58633 or 72629, to confirm the validity of the interviewer. Or arrange a more suitable and convenient time to call back.

No answer, or a non response is to be coded as - 0.

QUESTION 1

- (a) The decider - is the person who makes the decision of what the child eats and how much.

The purchaser - is the person who buys the food for the child.

The preparer - is the person who mixes, prepares and serves the food to the child.

Please ensure that the respondent understands what you mean by these three (3) persons.

Any other person than those suggested must be written down on the appropriate line. This will be coded later. The interviewer must not fill in the box if he/she has written down an "other" response.

- (b) Age - Fill in the boxes, one (1) number per box i.e. the respondent is 35 years.

3	5

If the respondent is less than 10 years i.e. 9 years fill in

0	9

- (c) Ensure that you put down the last educational establishment that the respondent attended, i.e. University of Guyana, Critchlow Technical College, St. Mary's R.C. School.

PART I

To be answered by THE DECIDER ONLY

Q-2 Rotate the products when calling out the names.

Q-4,5,6 These questions will be coded later by the editors. The Interviewer must only fill in the answer in the space

available. DO NOT mark the box.

- Q-7 The emphasis is on FIRST.
 Q-8 The emphasis is on MOST.
 Q-11 The emphasis is on the MOST.
 Q-13 We are trying to evaluate the main reason why respondents do not use/like Cerex.

If no free answer is given, probe gently for an answer.
 I do not like, I don't know, are not a reason.

PART II

To be answered by THE PURCHASER

- Q-20 If more than one (1) number, it should be coded in separate boxes, i.e. 12 packets

1	2

 - if less than ten (10) packets it should be coded hence, 6 packets

0	6

- Q-21 Difficulty, should be interpreted as if the source that the respondent normally buys/gets their Cerex from, did not have any available.

- Q-22 If respondent answers "the same amount" this should be interpreted as NO.

PART III

To be answered by THE PREPARER.

- Q-24 TABLE.

Fill in Row (a) (across) first completely so that it is ensured you have put down all the members of the household who use Cerex. Then take each person in turn and fill in the columns (down).

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Q-24c If there is an "Other" specify in the box. Although there is very little space try to write small and as neatly as

If the respondent says that the person eats Cerex in porridge form - cross check with next question, 24d, if the respondent answers Bottle - the Cerex cannot be in porridge form. In this case the interviewer must ask the respondent if she has answered 24c correctly.

Q-24e Use the cup provided for, and show the respondent so that she can visually indicate how much Cerex is used.

Q-25 Please fill in the steps in the lines allotted - this question will be coded later.

Use the following phrases to prompt.

"Did you do anything to the water?"

"How much Cerex to how much water?"

"Did you add anything to the Cerex apart from water?"

PART IV

To be answered by THE DECIDER.

Q-31 Fill in the numeral per box, i.e. 50 cents.

0	5	0

\$1.00 =

1	0	0

Q-33,34 If the respondent says the same, fill in plastic bag and one-half pound respectively.

PART V

To be answered by THE DECIDER.

- Q-35 Try to get the respondent to be specific in his/her answers. "Why these foods in particular" - not just because they are better, but the reasons why they are better.
- Q-36 TABLE - To be filled in by all respondents who have a child under two (2) years of age - whether they use Cerex or not. One (1) column for each child under two (2) years of age.

At the end of (g) all those respondents who have never used Cerex will now go to Part VI, Q-37. Those children who used to use/or are still using Cerex will answer (h) and (i).

If the respondent answered 4 to Q-(f). Check that Q-(h) and Q-(e) are the same. These answers are supposed to be identical if Cerex was the answer to Q-(f). If they are not, repeat the questions to the respondent.

- Q-(j) Should only be answered by those respondents still using Cerex.

PART VI

To be answered by THE DECIDER.

- Q-37 The interviewer can fill this in automatically. The supervisor will tell you if you are in an urban or rural area.

- 457

Q-38

The numbers should be placed in separate boxes, i.e. 12

1	2

- if less than 10 place an 0 in front of

figure, i.e.

0	9

.

The total of children and adults (b,c,d) should add up to the same as total number of persons (a), if this does tally, repeat the question to the respondent.

Emphasize to the respondent that an approximate figure is all that is necessary and that the information is highly confidential and would not be released to any other person or establishment - it is important that we have the total amount of money coming into the house from all sources of income. If the respondent only knows weekly amount, put the amount in place provided and this will be coded later. This is a difficult question so be as polite and tactful as possible.

Q-40

If this amount exceeds the total monthly income please ask the respondent to check that they have added all the income. Be as polite as possible.

When you have completed the questionnaire, check and see if you have not missed any question that relates to the respondent(s) and then thank the respondent(s) politely for their co-operation and leave. Lengthy chats afterwards mean that less work will be accomplished.

INSTRUCTION SHEET

Question 1:

Introduction

Recommended list of Quality Foods products - and associated products from the same group:

Q-F Products

Cornmeal

Cerex

Table Sauce

Carambola

Associated Products

Limacol

Whizz

Buckleys

Try not to antagonize respondent - if they really want to know who is carrying out the survey and the explanation of Quality Foods does not satisfy them you will have to mention the Guyana Pharmaceutical Corporation but in conjunction with USAID. (United States Agency for International Development).

Write call back times on the top of the questionnaire at the beginning of the interview.

If more than one decider, buyer or preparer, try to interview both, if not possible interview one and put in notes that there is another person deciding/buying/preparing and say who (what relationship).

If respondent does not want to give exact age - ask for an approximate age - if he/she still does not want to give an age - guess.

If the respondent says that they do nothing - check to see if she is a housewife (sometimes people do not appreciate that housewife is an occupation).

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Write down the name of school then ask respondent if the school is secondary/primary. Do not forget to ask if they have attended University or any institution for a higher level of education.

PART I, Q2: Rotate the product names.

If the Decider is not at home, ask the Buyer/Preparer the following question:

Does anyone in this household use Cerex?

If YES, then ask the questions pertaining to the Buyer/Preparer.

If NO, then arrange a call-back time to see the Decider.

PART II Q24 (Table):

Do not forget that you are asking who eats or has eaten Cerex in this household FIRST before you fill in the table. This table does not apply to those households who have never used Cerex.

Write the names of the child at the top of the table, to help you with filling in the columns.

Question 24-e

Please show the measuring cup given to you.

Question 25

Do not forget the prompted responses.

Question 36

Do not forget that Q36 (table) is only for households with children under 2 regardless of whether they eat Cerex or not.

IMPORTANT POINTS TO REMEMBER AT ALL TIMES

ONLY PROMPT ON Q 2, 25, 29, 39

Only prompt with Q 13 and 19 if the respondent says she does not like or she does not know.

Try not to show your personal reactions to any answers given to you by respondents.

REMEMBER TO MAKE NOTES OF ANY ADDITIONAL INFORMATION GIVEN BY RESPONDENTS.

Remember to give correct amounts for specified time periods e.g. \$70 per week is \$280 per month.

Try not to anticipate peoples' responses. Instead ask questions as they are written. Any variations should be noted to be checked by supervisor for accuracy. Try to learn the questionnaire so as to avoid flicking back. Remember to ask if there is a child under 2 before beginning PART V. If difficulties are experienced on income questions, give ranges. Check on figures - make sure they are neat and legible. It is very important to recheck the questionnaire after you have completed the interview to make sure all relevant sections have been filled.

Identification badges should always be worn in visible sight.

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INTERVIEWING CAUTIONS

Always do each of the following: THE DO'S

1. Always follow instructions carefully.
2. Always study the questionnaire until you are familiar with all the questions.
3. Always use the brief introductory approach written into the questionnaire.
4. Always be completely neutral, informal and conscientious.
5. Always read questions just as they are written.
6. Always ask all of the questions.
7. Always ask questions in the order they appear.
8. Always record comments accurately.
9. Always interview only the correct person.
10. Always check each questionnaire to make sure you have completed every item.
11. Always inform the Director of any problems in the field as soon as possible.

THE DON'TS

1. Never interview more than one (1) person per house.
 2. Never interview friends.
 3. Never interview by telephone.
 4. Never take a friend or anyone else along whilst interviewing.
 5. Never allow any other member of family or friend of respondent, to answer any questions - Seek privacy to interview respondent on their own.
 6. Never let anyone else do the interviewing for you.
 7. Never reveal details of your job or of interview to others.
 8. Never correct errors on someone else's advice.
 9. Never falsify interviews.
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APPENDIX D

Table D-1. Distribution of All Sample Households and Households Who Have Tried CEREX by Ethnicity, Education, Income and Location.

Classification	Sample Households					
	Total Number ¹			Number Who Tried CEREX ²		
	Location		Overall Sample	Location		Overall Sample
	Urban	Rural		Urban	Rural	
All Households	301	436	737	251	297	548
Ethnicity						
Indian	84	302	386	63	189	252
Negro	176	114	290	157	94	251
Education						
Primary	109	298	407	97	199	296
Secondary	126	97	223	103	71	174
Higher	63	32	95	49	22	71
Income						
< 500	147	309	456	129	211	340
500-1000	94	96	190	76	70	146
> 1000	40	13	53	30	6	36

1/ Numbers used to calculate percentages in Table 16.

2/ Numbers used to calculate percentages in Table 18.

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Table D-2. Distribution of All Sample Individuals by Age, Ethnicity, Education, Income and Location¹.

	Location											
	Urban				Rural				Overall Sample			
	Under 2	2-5	5-16	Over 16	Under 2	2-5	5-16	Over 16	Under 2	2-5	5-16	Over 16
All Individuals	153	301	524	916	225	480	724	1320	378	781	1248	2236
Ethnicity												
Indian	44	75	108	255	152	316	446	897	196	391	554	1152
Negro	89	189	367	548	63	145	256	372	152	334	623	920
Education												
Primary	45	128	224	351	145	345	541	884	190	473	765	1235
Secondary	74	117	194	379	60	97	138	299	134	214	332	678
Higher	34	54	99	179	16	30	32	106	50	84	131	205
Income												
< 500	79	152	241	381	165	345	507	836	244	497	748	1217
500-1000	42	93	181	325	46	98	157	349	88	191	338	674
> 1000	20	36	67	143	10	17	26	68	30	53	93	211

1/ Numbers used to calculate the percentages in Tables 22, 24, 27, and 33.

Table D-3. Distribution of Sample Individuals Who Have Used CEREX by Age, Ethnicity, Education, Income and Location.

	Location				Overall Sample			
	Urban		Rural					
	Under 2 ¹	2-5 ¹	Under 2 ¹	2-5 ¹	Under 2 ¹	2-5 ¹	5-16 ²	Over 16 ²
All Individuals	127	209	172	258	299	467	465	329
Ethnicity								
Indian	33	50	108	148	141	198	132	121
Negro	79	132	56	97	135	229	296	218
Education								
Primary	43	97	103	174	146	271	277	216
Secondary	57	83	51	65	108	148	142	118
Higher	26	27	15	19	41	46	39	40
Income								
< 500	70	107	124	176	194	283	289	104
500-1000	30	71	37	66	67	137	120	229
> 1000	16	19	6	7	22	26	24	15

1/ Numbers used to calculate percentages in Tables 23, 28, 29, 30, and 33.

2/ Numbers used to calculate percentages in Tables 31, 32, and 33.

List of all frequency tables and cross tabulations on file at GPC from the July 1981 CEREX Consumer Evaluation Survey.

<u>Computer File Number</u>	<u>Question Number</u>	<u>Computer File Number</u>	<u>Question Number</u>
CX51AD	1A	CX535A	35A
CRX51B	1B	CX36TB	36A-G
CRX51C	1C	CRX536D	36D
CRX51D	1D	CRX536E	36E
CRX51E	1E	CRX28A	36F
CRX54	4	CX536G	36G
CRX55	5	CRX28B	36H
CRX56	6	CRX28C	36I
CRX58	8	CRX28D	36J
CX510A	10A	CRX28E	36K
CRX511	11	CRX37	37
CRX21A	12	CRX13A	38A-B
CRX24A	13	CRX11A	38B
CRX22A	15	CRX13C	38C
CRX62	16	CRX13D	38D
CRX23A	18	CRX39	39
CRX25A	19	CERX40	40
CRX26A	23	CRX41	41
CREX12	24B	CRX12Y	20/24B
CRX27A	25	CRX12B	20/24B
CRX526	26	CX702U	20/24B
CRX527	27	CX701U	20/24B
CRX528	28	CX698U	20/24B
CRX529	29	CRX68	20/24B
CRX530	30	CRX697U	20/24B
CRX53	31	CX705U	24B/C/D/E
CRX532	32	CX703U	24B/C/D/E
CRX533	33	CX714U	24B,C/1C, *
CX534	34		1D, 39

<u>Computer File Number</u>	<u>Question Number</u>	<u>Computer File Number</u>	<u>Question Number</u>
CX712U	24B,C/1C, * 1D, 39	CRX34B	1B/18
CX711U	24B,C,D,E/ * 1C, 1D, 39	CRX34C	1C/18
CX710U	24B,C,D,E/ * 1C, 1D, 39	CRX34D	1D/18
CX707U	24B,C,D,E/ * 1C, 1D, 39	CRX34E	39/18
CX706U	24B/C/D/E *	CRX34F	41/18
A6364	24B,C/1C, 1D, 39	CRX35A	36B/24B
A6364U	24B,C/1C, 1D, 39 *	CRX35C	36D/24B
CX696U	24B/C/D/E	CRX35D	36E/24B
CX694A	24B/C/D/E	CRX36A	39/41
CX694U	24B/C/D/E *	CRX36B	39/40
CX692A	24B/C/D/E	CRX36C	41/40
CX692U	24B/C/D/E *	CRX41A	7/8
CX692A	24B,C,D,E	CRX41B	7/9
CX692U	24B,C,D,E *	CRX41C	7/10A
C6364	24B,C,D,E/ 1C, 1D, 39	CRX41D	7/11
C6364U	24B,C,D,E/ * 1C, 1D, 39	CRX42A	7/4,5,6
CRX12X	24B/D/E	CRX43A	9/4,5,6
CRX11B	24A/B	CRX44A	10A/4,5,6
CRX12A	24B/D/E	CRX44B	10B/4,5,6
CX11BA	24A/B/18	CRX45A	4/11
CX11BB	24A/B/18 *	CRX45B	5/11
CRX33A	12/1A	CRX45C	6/11
CRX33B	12/1B	C6567U	4,5,6,7,8,9, *
CRX33C	12/1C		10A,11/1C,1D, 39
CRX33D	12/1D	CX6567	4,5,6,7,8,9, 10A,11/1C,1D, 39
CRX33E	12/39	CX708U	12,15,18/1C, *
CRX33F	12/41		1D, 39
CRX34A	1A/18	CX691A	36A/1C, 1D, 39
		CRX61	19/15,18
		CX695U	35A/35B
		CRX46A	35B/7

<u>Computer File Number</u>	<u>Question Number</u>
CRX46B	35B/9
CRX46C	35B/10A
CRX47A	19/27
CRX47B	30/27
CRX48A	19/25
CRX48B	30/25
CRX5C3	36A/36B
CRX66	39/40
CRX5C2	31/37
CRX5C1	14/37
CRX610	38/18
CRX69	38/12
CX693A	38B/1C, 1D, 39
CX693B	38C, D/1C, 1D, 39
CX709U	38D/1C, 1D, *
	39

* Urban/Rural Summary Sheets

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APPENDIX D - 1

**Commercial Weaning Food in Tanzania: Status Report
on National Milling Company Marketing Plans, July 1979.**

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Commercial Weaning Food in Tanzania:

Status Report on National Milling

Company Marketing Plans

July 13, 1979

Prepared for the National
Milling Corporation, Tanzania

and

USAID

by

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Texas Agricultural Market Research
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OICD, USDA

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Dr. John Nichols

13 July 1979

Commercial Weaning Food in Tanzania:

Status Report on Marketing Plans

Introduction

Two weeks were spent in Tanzania from July 1 through July 13. The purpose of the trip was to review efforts by the National Milling Corporation (NMC) to develop and market a commercial weaning food. Assistance was to be provided in identifying marketing problems and alternative solutions. This report outlines the activities undertaken, general status of the market and the marketing plan at the time of departure (July 13, 1979). Incorporated in this are recommendations based on information gathered regarding certain aspects of the marketing plan as well as suggestions where further work is needed or currently underway.

The first week was spent focusing on gathering information regarding the typical marketing system for packaged consumer food products. A list of all persons contacted is attached to the report. Special emphasis was placed on distribution systems, advertising and sales efforts, prices and margins, packaging and the types of weaning foods available in the market. During the second week further information was gathered and discussions were held which focused on the nature of the current institutional product "Lisha", its acceptance and possible other formulations. Also promotion, pricing and follow-up consumer monitoring were examined.

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The Market Setting

Various types of cereal-based weaning foods are apparently widely used in Tanzania. Most of these are prepared at home from various forms of maize (flour or sembe), millet or other cereals as locally available. Imports provide the only source of commercially available packaged weaning foods but this is in very limited quantities (Table 1). About 250 tons have been imported in each of the last two years but it appears that this will be cut severely in 1979 to much less than one-half this amount because of a shortage of foreign exchange. Milk foods are imported in larger quantities but this too will be drastically reduced in 1979. In general these products are consumed in urban centers by the higher income groups. Frequent shortages are reported and supplies are much less than the market demand even at the high prices of imports.

In addition to the 250 tons of cereal-based weaning foods on the commercial market there are weaning foods distributed through the institutional programs. Seven to eight thousand tons per year of PL 480 blended foods are distributed by Catholic Relief Services. The Ministry of Health (MOH) which previously distributed the same foods, is now limited to NMC's Lisha product of which less than 1,000 tons was produced and distributed to MCH Centers during the past year. At the time of this report it was found that the MOH had stopped this distribution also apparently awaiting a re-examination of the program. The MOH is currently distributing no weaning foods to its MCH Centers.

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A brief survey of local supermarkets and dukas revealed prices for commercial products as indicated in Table 2. Prices per kilogram range from 30 to 50 T.Shs depending on the brand and size. The price for maize sembe, which often is used in making infant cereal at home, is approximately 2 T.Shs per kilo. By comparison wheat flour retails for approximately 4 T.Sh per kilo. All prices of basic commodities and many packaged foods, including all baby foods, are controlled by the Government. Controls are placed on factory, wholesale and retail levels including the margins for wholesalers and retailers.

Cash incomes are very low for most households in Tanzania. A household expenditure survey has recently been completed by the Ministry of Finance but the results are not yet available. When they are, data will be available on expenditures by households and income level, for many categories including cereal-based weaning foods. The data gathered in a survey of 40,000 households in 1976 indicate that nearly 65 percent have an annual cash income of less than 2,000 T.Sh and over three-quarters are less than 4,000 T.Shs per year (Table 3). While wages, salaries and other cash incomes in the private sector have increased some in the past two years Government workers have received little increase. Even with a factor for this increase it is clear that the cash available in most households is ~~insufficient~~ to purchase very many packaged consumer goods.

The distribution system has been nationalized down through the wholesale level. All imported weaning foods are handled by the General Foods Company (GEFCO) with foreign exchange being allocated by the Central Bank. These foods

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are mostly distributed through government owned Regional Trading Companies (RTC's) which are the major wholesalers in Tanzania. From there sub-wholesalers and retailers buy the product for sale to consumers. Retailers are primarily privately owned, though there are also many consumer cooperatives of various types. A few national firms maintain private wholesale systems. Cigarette, tea and coffee and bottled beverages are examples. Tanzania Tea Blenders (TTB), owned 40 percent by Brook Bond Tea, is an example of such a firm. An extensive sales and distribution network is maintained which will be discussed in more detail in the marketing plan which follows. NMC distributes its products through its branch offices operating in many of the regions. From these branches the product moves to the RTC's for further distribution. NMC maintains no sales staff in the field.

Marketing Program for Commercial Weaning Food

Successful marketing of a consumer food product is never a sure thing. But the chance of success can be increased greatly through the organized development of a plan for marketing the product focusing attention on each of the major decisions the firm must make. In this section the major components of the marketing plan for NMC's proposed commercial cereal-based weaning food are outlined. Some aspects of this plan are discussed with greater specificity than others because in several areas further work is necessary before final decisions can be made. This work will be noted where appropriate. The discussion includes consideration of product characteristics, brand name, packaging, distribution, promotion and pricing.

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Product Characteristics

The product currently being produced by NMC is an extruder cooked 70/25/5 blend of corn and soybeans and skim milk powder and vitamins and minerals added. This product is referred to as "Lisha" and has been made for distribution through the MOH to MCH centers. It provides the basis for the proposed commercial weaning food. At this time product development specialists have just begun work to determine if any modifications are necessary to produce a product with the greatest consumer acceptance. Until this work is completed the final formulation and processing condition for the product can not be identified. It is anticipated that it will be very similar to the current product but with improvements to reduce the tendency toward lumping and processing methods that will assure a uniform, consistent product over time as is necessary for commercial success.

The product must have good quality characteristics, be storable, be of acceptable texture and permit easy preparation consistent with traditional methods used in Tanzanian homes. This product development work should be continued until some confidence is gained that the product meets these requirements. Simple laboratory tests are appropriate as a first evaluation. When satisfied at that level a larger quantity should be produced and made available to households for some evaluation. If possible 50 to 100 households should be used in a small consumer acceptance test. Households with children one-half to two years of age would be given a package with preparation instructions. A follow-up contact would be made several days later with a simple questionnaire to evaluate the mothers reaction. Resources would be required even for this limited test but it would provide an

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opportunity, prior to investing in test marketing, for NMC to observe how acceptable the product is in actual home use and make changes if appropriate.

It has been noted by the food technologists that preparation of this product is somewhat different from other porridge products. This small in-home test may also be used to test the clarity of preparation instructions which will be ultimately used on the commercial package. This test may be conducted in several randomly selected neighborhoods around Dar es Salaam by NMC employees perhaps supported by the Marketing Officer of TFNC.

Brand Name

Initial plans were made to use the name Lisha in commercial marketing as well as for the free distribution product. Several considerations are important in deciding if this plan should be adopted. First, if product development results in a product which is distinctly different from the original Lisha formulation then a different brand name should be selected. It is not clear, given the fact that the MOH has discontinued distribution, whether the image of the product is very good in areas where it was distributed. If free recipients have some significant reservations regarding Lisha then it certainly would not be advisable to use the name in commercial marketing. The extent to which this exists should be investigated by contacting MCH centers and meeting with mothers who have used the product produced at different times.

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Another concern with the name Lisha is whether it conveys any positive marketing connotation. It is understood to mean "feed" or "to feed" in swahili. There is no relationship to infants, health, nutrition, strength or the cereal ingredients in the product. Also no relationship is established with the "high quality" image presented by existing imported weaning foods. On the positive side, it is a short easy to remember name which given a great deal of advertising effort and a long stable existence in the market could become an established mark of a good weaning food. In the short-run however it doesn't appear to provide any built-in advantages.

A search through "brainstorming" and systematic screening might reveal a better name. This should include all persons within and outside of NMC who have an interest in the product. Final selection should consider its potential in conveying the desired product image to the public through the commercial market. A combination might be built using the word "Nguvu" (Strength) which NMC now used on its flour and sembe packages. Also if it is found that the name Lisha is acceptable to consumers it might be worked in as a subtitle such as "XXXXX from the makers of Lisha."

In summary, the brand name should be re-evaluated because of its importance in helping to build the product image. At the same time over emphasis need not be given to this point to the detriment of other concerns. The name will probably not be a major impediment to commercial marketing unless it is found that consumers of the free product hold a negative image for whatever reason.

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Package

The package provides both product protection and a vehicle for helping to establish the desired image of the product. In both cases a high quality sophisticated package would likely be desired. However, the reality of relative costs and local availability limit the range of possibilities.

It has been decided that tin containers similar to Cerelac and Farex are too expensive to be consistent with the objective of producing a reasonably low-cost product affordable by a larger proportion of the population. A simple polyethylene bag of reasonable strength has been suggested as a consumer pack. This has the advantage of lower cost but presents a much lower product image and may be more subject to damage and product losses in shipment. As a compromise it appears reasonable to suggest a cardboard carton with the polyethylene bag inside as the basic container concept. Some of the imported products are packaged in cardboard (Farlene and Pabulum) and it appears possible that good quality graphic design and printing could be used to enhance the shelf appearance. The poly bag alone will likely not compare favorably with other packaged consumer products in retail food shops. The decision on this will also depend on final costing of the alternatives but it appears likely that the cardboard box approach will be adopted.

Initial plans were to market the weaning food in a one kilo size. After reviewing the market situation this appears to be too large a package for several reasons. Competitive imported products are sold in sizes ranging from 227 to 500 grams (Table 2). The price per retail unit is nearly as important as the price per kilogram in influencing the consumer's decision to

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purchase. Side-by-side a one kilogram package of NMC's product will be priced much closer to a 500 gram imported product than would be the case if the NMC product were also in the 500 gram package. It is known that consumers look more at price per package than they do price per unit weight. In other words, if a smaller package were used it could be sold at a lower price per package thus making the cost advantage to the consumer more evident.

It is recognized that total packaging costs per kilogram of product will be higher with smaller package sizes but in this market setting this trade-off is necessary. A smaller package would require less cash outlay by the household at the time of purchase.

From a storage point of view in the home, a smaller package may also preserve the quality better. If 50 to 100 grams per day is fed to the child then a one kilogram package would be open in the home up to 20 days before it was finished. This gives more opportunity for spoilage or deterioration. A smaller package would be used quicker thus not providing this opportunity.

As a point of reference, the Thriposha product in Sri Lanka will be marketed in a one pound (454g) package while the Cerex package in Guyana will be 8 ounces (227g). It seems clear that a smaller package should be used in the initial marketing of NMC's product. The lower price per package will assist in encouraging mothers to try the new product. The evidence from the marketplace suggests a one pound or 500 grams package would be appropriate at the largest. If demand warrants, a one kilogram package could be introduced at a later stage as a product line extension.

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Distribution and Pricing

A strong distribution system is essential to the successful marketing of the weaning food. It is important that the product be made available in essentially all food shops and that adequate information be available so that consumers are aware of how to use the product. A strong sales effort can help achieve this goal. Three possibilities exist for distributing the weaning food; 1) NMC could develop its own sales force, 2) it could be distributed through the government wholesalers (RTC's) or 3) an independent firm with existing sales capabilities could be contracted to handle distribution.

The first alternative is not considered because NMC has no existing sales staff in the field and to establish one for this product would be prohibitively expensive. Using the RTC's is a possibility which might be appropriate except that many concerns have been expressed regarding their limited sales and merchandising capabilities. GEFCO has also been suggested as an agent in distributing to the RTC's but this doesn't appear to provide enough sales push for the product.

The third alternative is suggested as the appropriate method for organizing distribution. In all interview with both private firms and government agencies or parastatals there was general agreement that Tanzania Tea Blenders (TTB) has the best distribution and sales system in Tanzania. TTB has expressed an interest in marketing NMC's canning division products to the extent of making a formal proposal. On this basis discussions were held

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with TTB regarding their interest in a similar arrangement for the weaning food. The following is a very brief outline which suggests how this might work. Further discussion and negotiation is required to work out the details.

TTB would agree to handle all distribution, pay for transport from their central warehouse and possibly plan and execute the advertising program for a fee. The magnitude of this would be subject to negotiation but would likely range from 12 to 15 percent of the ex-factory price plus sales tax. Shown below is a hypothetical example showing the various marketing costs which must be considered. The ex-factory cost is only a hypothetical example to provide a starting point for the illustration.

a. Hypothetical ex-factory price for one case of 20 packages of 500g. each (10 kilo at 10 T.Sh./kilo)	100 T.Sh.
b. Sales Tax (15%)	<u>15</u>
Subtotal	115
c. Distribution fee (transport, wholesaling and advertising by TTB)	
(15% of 115)	<u>17.25</u>
Subtotal (wholesale price)	132.25

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d. Retail margin (could range

from 7 to 10%) (10% of 132.25) 13.22

Total Retail price per case 145.47

e. Retail Price per 500g. packet

(145.47 ÷ 20) 7.27 T.Shs

Several points should be noted. The sales tax is included although it might be possible to obtain an exemption for baby food. This avenue needs to be pursued. Secondly the advertising costs could be negotiated so that they are shared by both parties. This would give each some feeling of commitment to the program. As NMC's consumer marketing capability increases it may wish to undertake more of this activity. TTB has more experience in this area at present and this expertise should be utilized.

The retail margin may even be lower for some products than the range shown in item (d). With a new product it is advisable to start out with a higher margin as shown to provide an incentive for the retailer. It should also be noted that the prices and margins may be subject to review by the price commission.

TTB can provide controlled distribution during early stages of marketing to allow for market testing. Sales information can also be obtained quickly and regularly to monitor movement level.

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The development of estimated ex-factory price must await final formulation and decisions on packaging. These should be budgeted out as soon as possible to permit a realistic assessment of final retail price. Then as final adjustments are made in product development and packaging the budget can be modified from time to time.

Promotion

The promotion program will include paid media advertising, point-of-sale materials and selected publicity activities. During the initial stages of market introduction in one test market area the paid media advertising will have to be limited because newspaper and radio cover a much wider market. Point-of-sale material, some publicity regarding the product availability in the market and work with clinics and day care centers will provide the major promotional support. After introduction when product is more widely available, more mass media advertising can be utilized.

The basic theme of the promotion has not been discussed extensively. It would of course have to be consistent with the over all concept of a low-cost, (not cheap!) cereal-based, nutritionally superior weaning food. The promotion should probably not emphasize the technical aspects of nutritional benefit but rather an image of health, growth and strength. Also an image of quality and cleanliness of product must be maintained. The cereal nature of the product as opposed to a milk-food should be included. It is also

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important to illustrate correct preparation and feeding practices in some way in the promotion and on the package. Colors and graphic designs should be of very high quality, appropriate for a cereal food (perhaps related to imports) and consistent with the cultural setting. The promotional theme should be built into the packaging as well as advertising materials. The package in the store and at home is one of the most visible forms of advertising.

Coordinated efforts should be initiated by NMC at an early stage. If TTB is to be involved in marketing and distribution then resources should be employed. Others such as TFNC should also be involved to the extent they wish to participate. It is hoped that the Marketing Officer of TFNC can play a very active role in assisting NMC in all aspects of developing the marketing program.

Summary of the Marketing Plan

The discussion presented above may be summarized in a few specific comments.

1. Product characteristics: Continue product development work and consumer acceptance evaluation until confident that a quality product can be produced consistently.
2. Brand Name: Reevaluate the use of the name Lisha for commercial marketing. Conduct a search for alternatives conveying a clearer image of the product concept.

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3. Packaging: The best alternative appears to be a cardboard carton with poly bag inside. The largest size which should be considered initially is 500g.
4. Distribution: Negotiate an arrangement with Tanzania Tea blenders to handle distribution and provide major assistance in other aspects of consumer marketing.
5. Pricing: Final price estimates must await clearer indication of formulation and selection of packaging. It is important to provide product in a size which can be priced well below standard packages of imported weaning foods.
6. Promotion: Early attention is need to developing product concept and supporting promotion material.

Follow-up Research and Monitoring

There is little or no capability in Tanzania for easily organizing any formalized market research. Nonetheless some relatively unsophisticated activities can be undertaken to provide guidance to decision-making by NMC and other interested groups. Three efforts are suggested here: 1) consumer evaluation of final product before marketing, 2) monitoring sales during test market and 3) a follow-up survey of consumers if resources permit.

Consumer evaluation

As product development progresses the alternative product characteristics will be reduced. As a final evaluation of the product it is suggested that some consumer acceptance evaluation be made using groups such as day-care centers

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and MCH clinics as well as some in-home placement. This was described above in the section dealing with product characteristics. The better job done screening and evaluating at this stage the better chance of success in test marketing. Some resources should be devoted to such evaluation

Monitoring of Sales Results

A normal and inexpensive measure for evaluating the product is to obtain and study the sales records during the test market. TTB has suggested phased marketing which would allow for such an evaluation. Sales records should be obtained on an area basis within the test market so that variations in sales levels may be correlated with characteristics of consumer^s in each area. If possible sales on a few individual stores might be monitored which may help in projecting sales when the market area is expanded.

Followup Consumer Survey

To fully assess the impact of the new weaning food it is necessary to determine who is purchasing the product and how it is being used in the home. Some of this may be inferred from the pattern of sales and knowledge of the variations in the population throughout the market area. To the extent that resources can be made available it would be useful to conduct a survey after several months of test marketing to determine the nature of typical users of the product. This could be set up in many different ways but ideally a random survey of households with children from 6 months to two years in randomly selected neighborhoods could provide a good assessment. Alternatively interviews could be conducted with purchasers at food shops in randomly selected locations.

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In addition to identifying the characteristics of consumers it would provide an opportunity to obtain directly the reactions of consumers. This type of research is not easily organized or conducted in Tanzania since none has been done since nationalization. It could be possible to conduct some limited evaluations however if ^{re}supervisions were available through the use of University students. Resources for hiring people and providing transport would also be required. Further thought should be given to this since there is interest in the questions which could be answered through such a survey. TFNC may have an interest in this and could possibly play a role in this phase of the program.

Recommendations for Action

It is evident that a market exists for a cereal based weaning food in Tanzania. Limited foreign exchange will further reduce imports in the near future. This market does not include the lower half to two-thirds of the population since they have severely restricted cash incomes. Several activities are recommended here which should be completed if now underway or initiated if not now being done. These activities should be integrated with those suggested by the technical and management consultants now evaluating the product and the production system. They are presented generally in sequential order.

1. Complete product development and carry out limited consumer evaluation as soon as possible.
2. Designate clearly the responsibilities of various NMC departments in market planning. This should be coordinated by marketing or sales but with clear and frequent communication with production.

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3. Initiate formal negotiations with TTB regarding distribution of the product.
4. Upon completion of this agreement initiate thorough review of product concept and develop general promotion themes.
5. Review brand name and conduct search for alternatives.
Select brand name.
6. Finalize packaging plans including development of graphic designs based on product concept and promotion theme.
7. Develop estimates of production capabilities including limitations imposed by raw material availability, the capacity of the plant or availability of other requirements such as packaging. Match this expected output with size of market area anticipated for test market. Develop final price estimates.
8. Plan for test marketing
9. Execute test market.

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July 13, 1979

Table 1: Commercial Weaning Food Imports: Cereal-based and
milk foods, quantity and value, 1973-1979

<u>Year</u>	<u>Cereal-based 1/</u>		<u>Milk Foods 2/</u>	
	<u>Kilos</u>	<u>T.Shs.</u>	<u>Kilos</u>	<u>T.Shs.</u>
1973	62,460	463,456	824,472	10,826,477
1974	131,100	987,537	901,680	10,170,380
1975	80,880	1,222,481	1,080,264	12,140,072
1976	188,668	3,607,298	1,271,388	15,385,122
1977	257,784	3,491,548	1,880,738	21,238,521
1978	241,891	5,460,416	1,378,697	38,519,956

Source: GEFCO, Board of Internal Trade

1/ Products include: Cerelac, Farex, Farleys, Farlene, Pablum

2/ Products include: Lactogen, Nan, Oster Milk, SMA and S-26, Similac

July 13, 1979

Table 2: Representative Prices for imported cereal-based weaning foods and milk foods in Dar es Salaam, July 1979

Product	Manufacturer	Type of package	Size	Price per Package	Price per Kilo
<u>Cereal Foods</u>					
Cerelac	Nestles	Tin	400g.	12/45-13/45	31/12-33/62
Farex	Glaxo	Tin	250g.	11/50	46/=
Farlene	Glaxo	Cardboard	225g.	9/55-11/95	42/45-53/11
Pablum	Mead/Johson	Cardboard	454g.	14/45-17/=	31/83-37/44
<u>Milk Foods</u>					
Nan	Nestles	Tin	450g.	18/65	41/44
Lactogen	Nestles	"	450g.	15/65	34/78
Similac	Abbott	"	500g.	20/10	40/20
Enfamil	Mead/Johnson	"	454g.	24/05	52/97

Source: Survey of selected supermarkets and dukas

July 13, 1979

Table 3: Estimated Distribution of Annual Cash Income per household,
Tanzania 1975/76.

Cash Income <u>1/</u> group (T.Sh/y)	Percent of households	Cummulative percentage
0-999	42.5	42.5
1000-1999	21.8	64.3
2000-3999	13.8	78.1
4000-5999	10.1	88.2
6000-7999	3.8	92.0
8000-9999	2.0	94.0
10,000-24,999	4.2	98.2
25,000 +	0.8	99.0
Unknown	0.9	99.9

Source: Listing of Households for the 1975/76 Household

Expenditure Survey, Bureau of Statistics, Ministry of
Finance and Planning.

1/ \$1 U.S. = 8.2 T.Shs.

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July 13, 1979

TANZANIA

NMC Weaning Food Project

List of Contacts and Persons Interviewed

1. USAID - Mr. Jake Harshbarger, Project Manager
Mr. Michael Fuchs-Carsch, Agricultural Economist
2. National Milling Corporation (NMC)
Mr. Nyakunga ; Director of Production and storage
Mr. Mwanache : Chief Procurement and Sales Manager
Mr. John Msenga: Sales Manager
Mr. Kepakepa: Acting Plant Manager
Mrs. Jana: Plant Supervisor
Mr. Kado: Chemist
3. Tanzania Tea Blenders (partly owned by Brook Bond Tea)
Mr. George Nyongo: Marketing Manager
4. Tanzania Cigarette Co.
Mr. Mwambalaso: Distribution Manager
5. Food Specialties Tanzania Ltd. (Nestles)
Mr. Erwin Wermelinger: Director
6. General Foods Company Ltd. (GEFCO)
Mr. A. J. Mwale: Marketing Manager

July 13, 1979

6. Tanganyika Advertising Corp. Lt. (TAC)
 Mr. E. Kiwale: General Manager
 Mr. Noel Mushi: Account Executive
7. Market Development Bureau, FAO/UNDP, Ministry of Agriculture
 Mr. Mdadila: Marketing Officer
8. Central Bureau of Statistics, Ministry of Finance and Planning
 Mr. Mkai
9. Tanzania Food and Nutrition Center
 Mr. H. M. Lukoo
 Mr. Kingamkono; Marketing Officer
10. Tanzania Industrial Studies and Consulting Organization (TISCO)
 Mr. V. S. Sharma: Food Technologist
11. Ministry of Health
 Mr. Chagu: Distribution Officer for MCH Centers
12. Board of Internal Trade
 Mr. Abebe; Director of Trading
 Mr. Marchant; Manager of Marketing Research
14. Palray Plastics
 Mr. Satwant Singh Palray; Production Manager
15. Kibo Papers
 Mr. J. B. Shirima; Marketing Manager

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APPENDIX E - 1

**Feasibility of Production and Marketing of Indigenous Nutritious Foods
by the Private Sector in Sudan, Chapter 7.0 Marketing,
March - April 1988.**

TRIP REPORT
SUDAN

FEASIBILITY OF PRODUCTION AND MARKETING OF
INDIGENOUS NUTRITIOUS FOODS BY THE
PRIVATE SECTOR IN SUDAN^{1/}

BY

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March 15 - April 3, 1988

^{1/} USDA/OICD Technical Assistance to the Food Research Centre was funded and coordinated by USAID/Khartoum in cooperation with the Office of Nutrition, USAID, Washington, D.C. through a Resource Support Service Agreement.

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7.0 MARKETING

The product(s) of the proposed weaning food plant are expected to be able to compete in the commercial market thus providing significant private sector incentive and involvement. The purposes of this section are to (1) provide a brief assessment of current market conditions for packaged consumer food products in Sudan, (2) develop a preliminary statement of the essential elements of a marketing plan for the proposed weaning food, and (3) identify and describe further consumer and marketing research needed to refine and guide both product and market development efforts.

7.1 General Economic Conditions

Since 1982-1983, the economy in the Sudan has seen substantial deterioration with only modest recovery in the last two years (Ministry of Finance and Economic Planning, 1988). Agriculture represents 35 percent of the gross domestic product (GDP) and was hard hit by drought in the period 1983- 1985. As this sector recovered, the rest of the economy has followed. In 1986-1987, the total GDP recovered to 6.2 billion Sudanese Pounds (1981-1982 prices) which is almost equal to the level at the beginning of the 1980's.

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The manufacturing sector represents seven percent of GDP. Its condition is marked by little or no growth and significant underutilization of capacity. These conditions stem from both world-wide economic conditions and a lack of foreign exchange in Sudan upon which most manufacturing processes depend for part of their operating needs.

A severe scarcity is seen in many markets for manufactured consumer goods including processed food products. This has led to implementation of price controls which have proven difficult to monitor and enforce. A very active black market exists for many products including both domestic and imported goods. Manufacturers have limited output due to lack of imported materials and a failure to realize profits under price control schemes. While there is current discussion about eliminating some price controls, there is still uncertainty regarding necessities and staple food products. This uncertainty feeds the psychology of scarcity and will likely take a long time to overcome.

7.2 Current Conditions in the Market

The general condition of scarcity in manufactured consumer goods has created very chaotic market conditions. Data on normal markets are limited at best, but when black markets flourish there are no official statistics upon which judgements can be made. The description of relevant dimensions of the market presented here are derived from

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interviews during the visit of the advisory team and consists primarily of anecdotal evidence. A general description can be developed however, which provides a basis for subsequent discussion of marketing strategies and research needs.

7.2.1 Consumption of Related Products

The only category of products similar to the proposed weaning food are imported products such as Cerelac and Milupa. These are cereal based infant foods produced in Europe or elsewhere and imported into many developing countries around the world. Interviews with the private sector and government agencies indicate that no baby food produced in Sudan has ever appeared in the market. Also there is evidence to suggest that the concept of a special weaning food is not established outside the high income households which have purchased imported products in the past. The term "Nasha" applies more broadly to a food which is prepared at home and can be used for a number of purposes, but not particularly for weaning children.

Estimates made from statistics provided to Elnagi for Engineering and Consultancy by the Ministry of Commerce, Cooperative and Supply Food Service Division, indicates that approximately 160MT of baby food were imported in 1986-1987. An additional 300MT of powdered milk for babies was imported.

Interviews with both private sector and government officials confirmed that these figures are probably significantly understated due to problems in record-keeping and unreported imports. It is possible that the market for imported cereal-based weaning foods has been much greater than 150MT, perhaps as much as 300 to 400MT per year.

Fifteen different firms reported imports, two of which imported cereal-based weaning foods. Package sizes ranged from 250g to 454g.

7.2.2 Prices of Related Products

Price structure is difficult to evaluate in a market characterized by scarcity. Many distortions occur due to speculative behavior of traders, consumers and manufacturers. It is an understandable phenomena but not one that is easy to quantify.

The "Elnagi Report", provided to the consulting team, lists prices of baby food found in the local market (Table 7.1). These prices were collected in 1987 prior to the last devaluation. Recent reports indicate that the current (March 1988) price for Milupa is LS 22 to 30 per package which is 1.5 to 2.5 times the earlier reported price of LS 12.28. If other imported weaning foods have increased as much, then they continue to maintain their position as very expensive products available only to a small number of very high income households.

Biscuit prices provide another measure of packaged goods often fed to children. Prices reported ranged from LS 8.0 for Karam Buscuit (18 pack) to as high as LS 280 for "Wafer Biscuit", 12 pack imported from Egypt. No weights were provided in the report, but on a per package basis, these prices indicate that consumers of biscuits are prepared to spend at least LS 8.0 for a package which would provide multiple servings. Small, one serving, packages of biscuits are commonly available for LS 1.0 to LS 2.0.

The price of staple food products in the local market provides another reference point. Dura (sorghum) is basic to the Sudanese diet. Its price varies widely from a low at harvest time to its high later in the year. Variation is also substantial from year to year. At the time of the field interviews (March 1988), dura flour was selling for LS 2.0 - 3.0 per kg in local markets and wheat flour was priced at similar levels when available.

7.2.3 Distribution Systems

Most imported baby food products were established in Sudan through distribution and sale to pharmacies. Many importing firms employed direct distribution with a sales staff organized to contact all pharmacies in the country and to aggressively merchandise their products. In recent years, as scarcity has increased, the need for aggressive sales activity has declined.

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Sufficient product often does not exist to warrant the cost of a direct distribution system. Agents are identified and normal distribution channels are then utilized to make the product available without regard to how widely it is distributed in the market. Often the distribution problem is one of allocating scarce supply rather than expanding sales.

Distribution of packaged consumer products to food shops also utilizes traditional wholesale channels and direct distribution systems; the latter are relatively underutilized in the current condition of product scarcity. Under normal conditions, wholesale mark-ups would be expected to be about 5 percent and retail approximately 15 percent. These margins widen considerably when the product flow reduces so current margins are impossible to estimate with any confidence, but are clearly much higher than the quoted levels.

7.2.4 Promotion and Advertising

The infrastructure to support promotion and advertising exists in Sudan. At least three local advertising agencies provide services of media brokerage, concept design, graphic design and production. These services are relatively underutilized in recent years, though some consumer product companies continue to advertise in order to maintain brand awareness despite limited product availability. No connections to multinational advertising agencies are apparent.

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Radio appears to be the leading media in terms of reaching a large audience. One interview suggested that there are at least 3 million radios in Sudan with widespread listening in cities, towns and many villages throughout the country. Television has been in Sudan for twenty years with current reach to perhaps 1.5 million viewers. Newspaper circulation is limited by relatively low literacy rates. Some billboards are used and for some purposes, in-store posters are utilized to reinforce advertising messages. Media rates were reported to be very inexpensive.

The primary qualification on promotion efforts is the limited current use. Many people feel that advertising and merchandising are not important in the current condition of scarcity. However, if new product concepts are being introduced, this dimension of market planning will be very important. There appears to be adequate advertising and design resources available to assist the private sector in developing a campaign.

7.3 Market Planning and Potential

The assessment of the size of the potential market is necessary for project planning. Also required is a statement of the marketing plan for the proposed weaning food product. At this stage, there are uncertainties introduced in terms of both future of government economic policy and the lack of a private sector entity at this early stage of

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development. An adequate marketing plan can only be developed by the private sector firm which ultimately undertakes the project. It must be consistent with the operating procedures and business objectives of that private sector entity. The discussion which follows is intended to be suggestive of the need for a marketing plan and some preliminary ideas about its primary elements.

7.3.1 Product and Packaging

After assessing external market and competitive conditions and internal firm capabilities, one of the primary dimensions of a marketing plan is the product concept and specific product characteristics including packaging. For the proposed weaning food, much of this is discussed elsewhere. From interviews and discussions to date, a consensus seems to exist regarding several product dimensions.

- a. The composition of the product is described elsewhere in this report. Using the extrusion technology, the product seems to be acceptable but needs some further refinements and consumer testing.
 - b. The product should be positioned as an infant weaning food.
 - c. Receipts and instructions should be provided on the package to ensure proper use and serving as a weaning food.
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- d. The package weight should be 500 grams.
- e. The packaging materials should be a cardboard box exterior with a sealed polyethylene bag inside. Attractive high quality printing and graphic design should be used on the package. Bulk distribution and sale to consumers was examined but is not recommended because of potential loss of control over quality and the importance of establishing and maintaining a high quality product image.
- f. A name for the product should be selected which carries a connotation of fortified, nutritional and high quality cereal-based weaning food for children. The name Nasha should not be used. Testing of the name or alternatives can be carried out informally by an advertising agency or more formally through subsequent consumer acceptance tests discussed in a following section.
- g. The name selected for the commercial market should be reserved for use in that market and not associated with alternative products produced for government food relief programs.

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7.3.2 Pricing

Pricing is dependent upon a complex interaction between value in the marketplace and cost of production and distribution. Evidence from the cost of production presented earlier combined with administration and selling costs, profits, distribution margins and possible taxes suggests a retail price of LS 4.5 to LS 5.5 might be appropriate.

From what is known about products which are direct competitors, a price of about LS 5.0 is very reasonable. Imported weaning foods after the recent devaluation are selling for three to five times this amount, when they are available. With imports limited by foreign exchange, there really are no effective direct competitors.

The ratio of weaning food price to staple foods should also be examined periodically. At LS 5 per 500 grams the weaning food is three or five times the price of dura or flour products. If this ratio gets much larger, sales may be limited due to the lack of perceived value by consumers.

Pricing strategy over time is also important. The initial price should be established at a level that can be maintained over a reasonable period of time. However, it should be low enough to capture as large a share of the market as possible. Introductory pricing schemes to agents and retailers may be used to get initial distribution built up.

7.3.3 Promotion and Advertising.

The primary key to the success of the proposed weaning food is to build the concept of a weaning food in consumer's minds. There are many positive, healthful, nutrition oriented messages that can be conveyed regarding the product. A strong introductory promotion campaign using all avenues of communication is necessary since the concept is not now widely established. In addition, it is important to develop and maintain brand name awareness.

The message should be part of an integrated effort which ties together packaging, visual and print media, radio and various public relations efforts. Coordination with nutrition education programs should be actively sought. Careful attention to conveying clear positive nutrition information in advertising and on the package will be productive in gaining cooperation of health professionals. They should be involved, to the extent possible, in planning and developing messages which relate to nutrition and health concerns.

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Interviews suggest that advertising professionals are available with many of the skills needed to effectively develop and coordinate such a program. Costing of the product includes a charge for selling costs which should be sufficient to initiate and maintain a strong promotional effort.

7.3.4 Distribution

A primary objective is to obtain widespread availability and use of the proposed weaning food. The best method to do this is through a direct distribution system with strong management and control of a sales force. The exact nature of this system will depend on the private sector firm which is involved. Some large firms have their own systems which could be adapted. Others might use a designated distributor which has its own sales force. In any case, to achieve control over the product in distribution, a well-trained and managed sales force is necessary.

Distribution should be targeted at both pharmacies and grocery stores. Limiting sales to pharmacies is not recommended because it drastically reduces availability to consumers. If sufficient product is produced, it should be possible to achieve this objective.

Launching of the product requires sufficient advance production to assure widespread, continuous availability when consumer interest is high. An intensive introductory advertising campaign is wasted if large numbers of out-of-stocks occur at retail. This problem is potentially worse in the Sudanese market where a scarcity psychology already exists.

7.3.5 Estimates of Market Size

Approximations of market size may be developed from several perspectives. First, information on population characteristics, consumption patterns, food needs and income can be used to generate a range of possibilities which could be reached contingent upon the type and quality of marketing and sales efforts. Alternatively, an aggregate approach may be used by estimating the likely flow through retail outlets based on experience with similar types of products and knowledge of the number of retail outlets which can be reached. Variations in these methods can also be tried as data permits in order to cross-check and obtain some validity.

Recommendations suggest a 50g to 100g per day serving of the proposed weaning food. Assuming the 50g level, approximately 1.5kg per child per month would be needed. If one assumes that children ages 0-4 years of age represent 20 percent of the population and an average family size of 6-7, then the average household would have at least one weaning age child (six month to four years). To meet

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the recommended feeding rate would then require 18kg/household/yr. In Northern Sudan, the population is estimated to be about 15 million people which translates to approximately 2.2 million households (6.8 persons per household). These figures suggest a requirement in the neighborhood of 40,000MT per year (2.2 million households x 18 kg per household = 39,600MT).

This is obviously an excessively high number because only a small percentage of households would be likely to purchase the product and few of those would feed at the recommended rate. Some interviews suggested that ten percent of the market could be penetrated with a 500 gram package selling in the range of LS 4 to LS 5. Assuming a usage rate of one-half recommended level in the adopting households, then the market could reach 1,980MT per year (2.2 million households x 10% x 9kg/household/yr = 1,980MT). This would be equivalent to 1.5 packages of 500g purchased each month. At a cost of LS 5 per package, this is really quite a modest outlay of LS 7.5 per month, or LS 90 per year, to expect from even lower income households.

The uncertainty lies in whether a generally new concept of a Sudanese produced weaning food can be conveyed to the general population. There were sharply different opinions expressed on this subject though few doubted the nutritional value or need. Certainly a strong consumer education and advertising program would be needed to introduce and develop the concept beyond high income,

Using an alternative approach, one can estimate sales per retail outlet for such a product and attempt to "back into" an estimate. Some of those interviewed have suggested that there may be more than 5000 retail shops where the proposed weaning food could be sold. This includes pharmacies, grocery stores, and some canteens. If distribution was effective and supported by a direct sales staff then perhaps the product could reach 75 percent of these outlets. Interviews with retailers suggest that, if available on a regular basis, so no hoarding or runs-on-stocks occurred, average sales would be at least 20 packages a week, and certainly more in larger stores. Assuming the product was displayed in 3750 outlets and sales averaged 20 packages (500g each) per week, then total annual sales requirements could be 1950MT per year ($3750 \text{ stores} \times 20 \text{ packages} \times 52 \text{ weeks} = 3.9 \text{ million packages} \times .5\text{kg} = 1950\text{MT}$).

Given these retail sales assumptions, the estimate is approximately the same as that derived from the consumption requirements method. The reader should assess the assumptions involved in both approaches and make adjustments as desired. Based on the data available in the current market, the estimate seems quite reasonable. It does not require an unusually large expenditure of household resources to achieve this level of sales. However, this represents at least a five-fold increase over estimates of the current market for imported weaning foods as discussed earlier. Another observation is the data cited in the

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Elnagi report (p.3) that on the average, 300g of grain/person/day were available in Northern Sudan. An assumption of ten percent of the households purchasing approximately 25 grams per day to feed to children doesn't seem to be unreasonable.

Since the product has yet to be introduced and the market developed, a conservative estimate should be adopted. Therefore, it is estimated that sales could reasonably be expected to achieve the level of 1000 to 1500 MT per year with a potential to expand to double that amount if sales efforts are continued, pricing remains consistent, and no new competing products introduced.

7.4 Consumer and Market Research

Marketing research is an important tool in support of product development and active marketing management. Activities take many forms from initial market assessment to studies of consumer attitudes and product usage, advertising concept testing, consumer acceptance, and retail store tests. In the Sudanese market these are not widely used and have not been needed, particularly in the current environment. Consumer products introduced in the past have been primarily adapted from successful concepts elsewhere. Some effort however is warranted when a previously untried concept is to be introduced. The proposed weaning food will occupy a new niche in the market if it successfully achieves its objectives. Further preliminary testing is warranted for this

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7.4.1 Overview of Marketing Research

Many standard procedures are utilized for conducting marketing research studies. These have been adapted for use in developing economies and have been successfully employed in many instances. The collection and analysis of both secondary and primary data is involved.

For a product such as weaning foods, several stages of research may be employed. Ideally a survey of households in the target market is an initial phase unless such data are already available from other recently completed surveys. This stage helps to identify market opportunities and problems and will cover many aspects of consumer attitudes, purchase, preparation and use of related products as well as descriptive statistics on the household.

Consumer acceptance tests will evolve from expert laboratory panels to small, centrally-administered acceptance tests and finally to complex in-home product placement tests. These are employed to narrow down product alternatives in relevant dimensions, to refine product acceptability and to test critical aspects of other marketing strategies such as packaging, advertising messages or pricing.

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Retail store tests may be done as a final stage in the process. They are used to provide a final check on marketing strategies and to give a basis for assessing potential success before final production commitments are made.

There are many advantages, limitations and variations in these methods. In some cases the answer is obvious without doing complex marketing research, in other cases the research will prove to be inconclusive. In any case, however, the discipline of addressing real world marketing management decisions in an organized research framework will assure that problems are anticipated and pitfalls avoided in an organized way. Further discussion of the application of marketing research to problems of fortified weaning foods is presented in Nichols (1982) and Hopkins, Nichols and Chin (1983).

7.4.2 Proposed Consumer Acceptance Testing

The results of preliminary consumer acceptance testing were presented in an earlier section (6.4). Activities to date essentially equate to a laboratory panel and some centralized consumer taste testing. Results indicate that the product is generally acceptable with some refinements needed.

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It is recommended that a more detailed consumer acceptance test be undertaken early in the process if this project is pursued. Since no detailed basis is available from other survey sources, it is recommended that a brief attitude and usage survey be administered to a statistically valid sample of households prior to providing a sample of the product and a follow-up evaluation form. This would permit both a product evaluation in the realistic setting of at-home preparation and serving and the collection of data on typical weaning procedures, sources of foods, and consumer attitudes that can be useful in designing marketing strategies.

A careful sampling procedure should be developed to obtain valid results. All appropriate procedures in questionnaire design and field interviewing are also required. While no details have been discussed, a sample of 300 households in three income strata in the Khartoum area could be considered as a good starting point. Depending on the number of product attributes to be tested, the detail of data to be collected, and the level of statistical accuracy desired, the project could get larger and more complex.

It is recommended that a committee of appropriate research personnel, statisticians, and private sector marketing personnel be formed to develop and oversee this activity. The Food Research Center or a private sector marketing research firm could be contracted as the operating organization. Texas A&M University

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could provide technical review and reaction at critical points in developing and analyzing the results of the consumer study.

Agreement on objectives, developing sampling procedures, developing and agreeing to the content and structure of the questionnaire, and identifying field interviewing personnel and procedures are all time consuming activities. An early start is essential if this research activity is to have maximum impact on the development of the total project.

7.4.3 Market Tests

Depending on the outcome of the consumer acceptance tests, some type of retail market test might be desirable. This would require production, on a pilot scale, of sufficient quantity to sell in a limited number of retail outlets over a period of several weeks or months.

The need for this is not clear at the present time and the logistics have not been discussed. It is possible that the market test could wait until after the plant is built and operating. This assumes that a non-commercial market is identified sufficient to keep the plant operating while the commercial market concepts were being developed and tested.

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7.5 Summary

1. A significant commercial market potential exists. Its initial size may range from 1000MT to 1500MT per year once full production and distribution is achieved. Expansion beyond this level is possible but depends on many economic and marketing conditions.
2. No clear product concept for a centrally processed, locally-produced, weaning food exists in the Sudan. Development will require concerted marketing and consumer education efforts.
3. The recently tested weaning food provides many desirable consumer characteristics. However, further testing of the refined product is recommended with a consumer acceptance test and in-home placement of the product in a representative sample of households large enough to identify differences among major market segments.
4. An appropriate name for the product is needed and it is recommended that the name "Nasha" not be used because the current product concept has significantly different characteristics.

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5. It is recommended that the marketing plan for the product include the following considerations:
 - a. Position the product as a relatively low-cost nutritious cereal-based weaning food for infants and children from six months to 5 years.
 - b. An integrated advertising and promotion program is needed with linkage to package design and overall product concept development. Instructions for preparation and use need to be developed and incorporated into the packaging design and advertising messages.
 - c. Set the retail price at approximately LS 5.0 per 500g package.
 - d. Develop a package with a high quality appearance consisting of paperboard exterior and a polyethelene bag insert; graphic design and printing should be consistent with the best domestically available in Sudan.

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- e. Select distribution channels to insure a positive sales effort through extensive direct distribution.
- f. Further dimensions of the marketing plan should be developed by the private sector entity which is selected to carry out the project.

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APPENDIX F - 1

**Summary Report: Improved Nutrition through
Enriched Bread - El Salvador Case, 1977.**

SUMMARY REPORT

IMPROVED NUTRITION THROUGH ENRICHED BREAD - EL SALVADOR CASE*

CLIVE R. HARSTON, TEXAS A&M UNIVERSITY

I. Background

Improved nutrition has been properly placed as a high priority objective for developing countries. Protein deficiency is related to ill health, inadequate vitality and longevity. Improved protein in the traditional diets of low income people without increasing costs or changing tastes and preferences might be more feasible than new foods that would face consumer resistance. Bread, as a basic food item, is a likely product for enrichment. It is widely consumed and wheat flour can be replaced to some degree with higher protein soybean flour. Protein in bread can be doubled by adding 12% soybean flour, but the consumer's reaction to the enriched product needs to be observed before bakers can be assured of sales of the enriched product.

El Salvador shares the problem of inadequate nutrition and protein intake, in particular, with other Central and South American countries. A market test of consumer acceptance of an enriched product can be conducted with convenience and support in this country because of several special conditions. The bakers are organized to cooperatively distribute imported flour, and they have previously conducted baking schools to experiment with different levels of soybean flour in different bread products. Their reaction to these tests (sponsored by the U.S.D.A.) are favorable, and they are eager

*Based on the following reports submitted by Consultores En Mercadeo de C.A.:

- 1) Bread Buying and Consumption Habits of Consumers, Part I and Part II, September, 1976.
- 2) Study of a Market Text of Bread Enriched with Soybean Flour, October, 1976.

to produce the improved enriched products. The Government, in the early stages of the planning for inshipments of soybean flour, were favorable to the proposal that import taxes be waived for soybean flour because of its contribution to the improved nutrition objectives of the country. In addition to the interest of the Government and the bakers, the Catholic Church has sponsored, through CARITAS, nutritional improvement programs. Although baking tests combining soybean flour with wheat flour were favorable and the potential is great for various bread products, the fact still remains that in El Salvador and other Central American countries bread is not consumed as extensively as tortilla. However, sweet bread is consumed, quite generally, even though the quantity is not great. For this reason, a form of sweet bread -- cupcakes -- was selected as the test product.

This study was divided into two major phases. First, a general survey of bread consumption and buying customs was necessary to provide basic information about consumers, their buying habits, tastes, preferences, and attitudes. Second, a market test which introduced the fortified product in the market gave information that would permit estimates of acceptability and potential marketability of the test product and similar protein enriched bread products.

II. General Bread Consumption and Buying Customs

Research Method:

Consumers in three areas were surveyed by personal contact. A formal questionnaire was the basis for the interviews. About 1000 questionnaires were completed in the Metropolitan area of San Salvador and the suburbs which includes a population in excess of 600,000 people. The second geo-

graphic area of study included two large cities with a combined population of 172,000. About 200 questionnaires were completed from this area, and an additional 200 in small cities including four communities averaging 12,000 people in each.

A stratified random sample was used to select the sampling areas in each community and a systematic selection of homes within the sample areas was used. Information on family incomes permitted a socio-economic classification in the Metropolitan area but not the other two areas. The informational unit was the wife in the home or another adult knowledgeable about bread buying and consumption patterns.

The interviews were conducted from July 22 to August 6, 1976, by a team of enumerators from San Salvador who were trained to do this type of work. An appropriate system was established to train, supervise, review, and post check to assure accuracy and completeness.

Consumer Characteristics:

In the largest city, 38% of the fathers are classified as employees which is three times the proportion in the hand labor category, but this ratio is two to one in the large cities but almost equal in the small cities. Unemployment was related to income and to size of city with the highest unemployment being in the low income groups and the smaller cities. The high income group had the largest share in services and none reported hand labor as their avocation.

About two-thirds of the mothers in the homes reported that they did not work out of the home. Those employed reported a variety of occupations, but the non-hand labor employee category included the largest share. Those in the small cities reported more as businesswomen than in the larger cities.

The oldest sons were universally unemployed, with over 80% reporting no work. Those who were employed were mostly in the hand labor and employee categories.

Converting El Salvadorean Colones to dollars -- \$.40 = 1 Colone -- gives a comparative picture of the income levels of the respondents to the survey. The smaller the city, the lower the incomes -- 80% in the small cities, 72% in the large cities, and 46% in the metropolitan area had incomes of less than \$200.00 per month. Only 3.5% in the small cities, 4.4% in the large cities, and 24% in the metropolitan area had incomes of \$400.00 or more per month.

El Salvadorean people are reasonably permanent as to their place of residence, but changes of residence in the Capital city were much greater than in the other areas. About 36% of the respondents had moved into the metropolitan area within the last ten years while only one-half that share had moved into the other two areas. One-half of the families in the Capital had lived there for twenty years or more while three-fourths of the families in the other cities had been permanent for that long.

The Bread Market:

Bread in one form or another is widely consumed in El Salvador. Although the per capital consumption is low, from 92 to 97% of the people from different sized cities consume bread. The residents of small cities do not eat bread as much as those in the large cities. French bread is the most popular and a pan supported type bread the least. Sweet bread prepared in a loaf form is a popular product and cakes and cookies are widely eaten in the cities. The distribution system provides cakes and cookies to all the people in the cities, but it is inadequate for the rural areas which is one factor in explaining the low consumption in the more rural areas.

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The reaction of consumers to the possibility of enriching bread was most pronounced in the metropolitan area where they also had the opinion that they would buy more if the products stayed fresh longer, but the consumers in the small cities were not so positive. Less than one-fourth estimated increased purchases for these two reasons in contrast to from one-half to two-thirds in the big cities. French bread loses freshness quickly, and the bakers agreed with consumers that a larger quantity could be consumed if it were to remain fresh longer.

Buying Habits:

Bread is consumed everyday; and in El Salvador, it is purchased almost everyday. About 94% of the consumers who eat french bread reported that they bought french bread everyday, which undoubtedly was necessary, because of the rapid loss of quality. A higher protein bread has greater moisture containing properties and therefore stays fresh longer. Sweet bread is bought almost as often with from 84 to 92% of the consumers of this bread buying daily. Pan supported bread was bought least often and also was consumed the least.

The majority of homes that eat french bread consume it at breakfast. Sweet bread, cakes, and cookies are consumed at breakfast with less frequency and loaf bread the least frequent. It has been established that bread is purchased from stores that are no more than two hundred meters from the home, and this is related to the consumption habits.

The person who decides to buy bread is generally the wife of the home who is responsible for the majority of the food expenditures. Bread buying is related to the income level. In low income families, the wife and children do the buying, but in high income families the servants do the buying. Bread is purchased daily for that day's consumption with a small

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share being held for no more than two days.

Consumers are price conscious because they reported that an increase in price would cause reduction in purchases, but if the price increase were due to improved quality, by adding protein, there would be an 8 to 10% increase in sales compared with three to four times that percentage if the prices stayed the same. Consumers were generally aware of quality factors and would make an effort to improve their nutrition, but this would be quickly dropped for most of them if it meant increased expenditures.

Consumer Preferences:

Bread and tortilla are substitute products. Preference for one versus the other is related to level of incomes and life style which is associated with size of city in which consumers reside. The larger the city, the greater the preference for bread, ranging from 40% down to 22%; but up to 60% of the high income group preferred tortilla. It is logical to assume that an enrichment program designed to assist the low income families should seek for ways to increase the nutrition of the tortilla rather than bread. Tortillas are preferred in the low income rural areas because of lower cost, easier to prepare, lack of ovens to bake bread, unavailability of the bread, and traditional tortilla consumption habits.

Although many of the respondents did not have factual information about the nutritional value of bread and tortillas, most of them had opinions. In all study areas tortillas were considered to be more nutritious than bread, but in the metropolitan area tortillas had only a 5% difference while in the small cities tortillas were considered to be more nutritious than bread by twice as many consumers. Attitude toward nutrition was consistent with preference even by income groups. If bread were to be consumed to a greater extent, a decline in consumption in tortillas would result and

next macaroni. To a lesser extent, potatoes and rice substitute for bread.

Consumption Habits:

Consumption of french bread and loaf bread is associated with the custom of making sandwiches. In the Metropolitan area sandwich making was reported by 70% of the consumers, but this is not to say that they make sandwiches everyday, but only for special activities such as parties and end of the week. Only 20% in this area claimed to make sandwiches daily. The high income people make sandwiches daily, to a greater extent, than lower income people, but there was no relationship between income and the occasion for which sandwiches were made. With the exception of picnics, the consumers in the small cities didn't use sandwiches very much. Sandwiches for school childrens' lunches was an increasing use.

Bread consumption in restaurants depended primarily upon whether or not the people went to restaurants. In the high income areas of the biggest city only 4% said they did not go to restaurants and only 1% didn't buy bread if they did go, but in the small cities 58% didn't go to restaurants and 3 1/2% didn't buy bread if they did go.

Home Bread Baking:

The homes in the Metropolitan area use flour to bake bread in the home to a greater extent than in other areas. Homes in the upper income group do home baking more than low income homes, but home baking is not extensive in any area. The homes that bake, buy flour no more than three times per month, and the average flour purchase is only 1.8 pounds. Homes that do not bake bread in the home reported that the reason was that they did not have an oven in the home. In the high income group, the response most common was that they did not have time to bake bread, and even in the lower income families this reason was the second most common to be reported.

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Some reported that they did not know how to bake bread.

Response to Lower Bread Prices, and Enrichment:

If consumers were offered lower prices for all types of bread, they would buy more but would not change their preferences for type. First choice for increased purchases would be french bread and second sweet bread, and then cakes and cookies; the same relationship as for total purchases.

Consumers gave the opinion that sweet bread and cakes and cookies have the most vitamins, minerals and proteins. This was found in all study areas. Even though french bread was the most commonly eaten, it was considered to be the lowest in vitamins, minerals, and proteins by a large share of the respondents. Pan bread was also rated low in nutrition.

III. Consumer Acceptance Test in the Market for Enriched Cupcakes:

The second major part of the nutritional study in El Salvador was to measure consumer acceptance of a bread product that had been fortified with high protein soybean flour. The bread item selected was a cupcake product that is widely used by people in a variety of economic and social categories. The item is not a high volume or high cost item but one that is consumed frequently in small quantities. The product quality control was simplified by selecting only one consumer product and selecting only one cooperating bakery which provided the required quantity of a constant quality product throughout the test period.

Market Test Design:

A total of twenty four cooperating retail bread outlet stores were selected for the market test. Consumers buying the test product were interviewed three different times over a four week period. In addition to the interviews, a sample of the enriched product was provided and supplies were

placed on sale, side by side, with the traditional product. The item was adequately identified and informational pamphlets were provided. The price of the enriched product was not changed. Although the second and third interview follow ups were not deliberately restricted to previous interviewees, many of the same individuals were interviewed each week. A minimum of twenty five interviews per store for each of the three visits to the store were completed making a total of about 1800 personal interviews at the place of purchase. The bread store managers were interviewed at the end of the test period. They reported consumer behavior, impact on sales, and interest in the test product.

The enriched cupcake test product was delivered daily by the bakery and offered for sale everyday during the four week period. The free samples were only provided at the time interviewers were in the store for the first and second interviews. The informational pamphlets were available in a convenient place throughout the study period. These pamphlets were widely read by the consumers. By the last week of the study, from 69 to 82% of the interviewees had read the pamphlets. An average of one third of the interviewees bought the test product on the day of the interviews. By the end of the study period, from 48% to 65% of the interviewees had purchased the product.

Consumer Acceptance of Enriched Cupcake:

With no exception the consumers reported that they liked the enriched product, and almost all indicated that they intended to buy it instead of the traditional product. Most of the people reported that they did detect a difference between the enriched and traditional cupcakes but all claimed a preference for the enriched bread. Their reasons were that it was better

tasting, smoother, softer, and sweeter. The study verified that consumers did buy the test product throughout the test period and not just on the days when free samples were given and interviews conducted.

Although the majority of people interviewed purchased the test product, those who did not reported the reasons as follows: They did not know it was offered for sale; they did not normally buy cupcakes and therefore made other purchases, and they did not have enough money to buy. Undoubtedly, sales could be influenced by promotion and information.

Some of the same questions were asked in the market test interviews as were asked in the General Bread Consumption survey. The results are consistent in the two studies in regard to frequency of purchase, preferences for types of bread, concern for freshness, times of consumption, nearness of store to home and many other consumer characteristics.

Store Proprietor's Evaluations:

Although an accurate record of the volume of sales was not maintained by the store managers, they reported repeated requests for the enriched product and their intent to continue to offer it for sale as long as it is available. Some were under the impression that they had sold more of the product because of its improvement but most felt that sales had not changed. Consumers maintain their usual buying habits and changes come slowly. Those claiming to have sold more, reported that their customers were influenced by the information provided, free sample, and their preference for the enriched bread. Three-fourths of the proprietors noted that customers requested the enriched product as long as the signs and propaganda were in the store. Many unsolicited favorable comments about the test product were heard by the attendants. The store operators were generally of the opinion

that enriching bread would not change the volume of bread sales, but 37% of them believed that the improved product would result in increased sales. They believed that the taste improvement would contribute to increased sales and not just the fact that it was enriched. Those estimating no change in volume of sales believed that consumers buy in a traditional way and that changes in taste or quality would not be sufficient reason to cause buying habits to change.

Proprietors were generally of the opinion that enriched sweet bread was of superior quality and they listed improved taste and improved ingredients as the main reasons.

Almost all the store owners would continue to sell the enriched bread if it were available. They came to this opinion because of the many strong requests for the product from the customers. They felt that they could have sold more of the product during the study period if it had been available. They reported that they would recommend the product to their clients because of the favorable attitude toward it and because of its nutritive value.

Conclusion:

This study verifies the feasibility of improving the diets of bread eaters in El Salvador by changing the bread formula to include up to 12% soybean flour. In addition to nutritional improvements, other quality factors such as taste and freshness are enhanced. There is sufficient evidence that consumers would accept the enriched product in the market without hesitation. Reaction to a price variation was not measured in this study, but opinions indicated that sales might not be retained if prices were increased.

APPENDIX F - 2

**Consumer Market Factors Associated with New Product Development
Addressing Infant and Children Nutrition Problems
in Jamaica, October 1977.**

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2/14/78

CONSUMER MARKET FACTORS ASSOCIATED WITH NEW PRODUCT
DEVELOPMENT ADDRESSING INFANT AND CHILDREN NUTRITION PROBLEMS
IN JAMAICA

This report summarizes the results of a two-week consulting trip to Jamaica to assist the Jamaican government toward the development of new food products that can help resolve malnutrition problems among infants and young children to the ages of approximately 5 years. The consulting occurred during October 10 - 21, 1977. On the trip I was accompanied by Mr. Al Lachmann a food technologist with the International Development Staff of the U.S. Department of Agriculture, which operates in cooperation with US/AID assistance programs on international nutritional problems. The assignment was to evaluate marketing and consumer acceptance problems associated with the development of new food products that are needed. Those problems concerning laboratory R and D product production were addressed by Mr. Lachmann as that is his field of specialization.

I. Statement of Mission Objectives

From the viewpoint of the marketing consultive role, the nature of the assignment can be reduced to the following stated general objectives. (1) Determine the nature and size of the infant and child feeding problem in Jamaica. (2) Assess underlying economic problems in the country which are contributing toward the malnutrition situation. (3) Review the present food usage, food preparation methods and practices currently existing in Jamaica especially among the lower income sector of the population. (4) Obtain an overview of the present food programs which are being addressed to the infant and children's malnutrition problem. (5) Provide consultive assistance toward development of feasibility studies directed toward the involvement of new infant and children foods to address the current malnutrition deficiencies in relevant sectors of the population.

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II. Nature of the Malnutrition Problem

During the consultive time spent in Jamaica, a wide spectrum of individuals was interviewed that had knowledge of the general economic conditions and/or the extent and nature of the feeding problems for the infant and young children segment of the population. A list of the individuals consulted is attached to this report. Reference will not be made herein to individual points of view of particular persons since it is felt that these interviews were taken in some degree of confidence. Furthermore, the intent is to provide an indication of the variations and opinions and views in order to provide a better understanding of the existing situation. The position here is not to support pro or con positions with respect to specific approaches to the nutrition problem but to convey individual viewpoints of those knowledgeable food and nutrition or health care experts in Jamaica.

It was evident from the interviews that several basic circumstances existed. Furthermore, it was abundantly clear that the problems at the infant feeding level were different and separable from those at child's feeding level, the latter being considered as ages of 1 1/2 or 2 through 5 or 6 years of age. Consequently, it appeared advisable to address each of these separately. The approach required for the two problems does not have a common base. The implications of this discovery are clear. It will not be possible for the Jamaicans to develop a single food product to serve both infant and child feeding purposes. Quite on the contrary, a set of two or three foods for the infant feeding and a comparable set for child feeding should be evolved.

Early it became evident that the core of the problem of infant feeding lay in the fact that there is a preponderant tendency for mothers to feed their infants on a bottle feeding routine. Bottle feeding is not the problem but the manner in which it is implemented is the core of the difficulty. Low income families do not have the funds necessary to buy highly nutritious foods, milk included, which can be used for bottle feeding. Instead, they are inclined to make a corn meal porridge which is used as a dish not only for infants but also as a food for the entire family. The early roots of

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the preference for a corn meal porridge were not clearly evident. Nonetheless, it is a preferred product for Jamaicans rather than wheat products which are more prevalent in the United States, for example. An inherent preference for the yellow color of corn meal as well as the texture of corn meal has to be recognized and considered from the marketing standpoint. The porridge prepared has a rather thick consistency much as the common breakfast cereal in the United States. As noted, the corn meal has somewhat of a coarse consistency. As a result, it is almost impossible for it to be placed in a bottle and fed through the usual bottle nipple. As a means of overcoming the problem, it was reported that the practice is to cut the end of nipples thereby providing a wider opening through which the coarser corn meal porridge may flow. This in itself, however, is not entirely sufficient and leads to a further step which is the real basic cause of the malnutrition situation. The porridge is diluted considerably with the addition of water in order to make it thin enough to serve as a bottle feeding food. The natural consequence is that the infant, in using the bottle, becomes filled with water rather than the food substance it so badly needs. Malnutrition results.

Knowledge of the foregoing bottle feeding practices has led to a rather intensive effort on the part of those in either or both nutrition education and health education circles in Jamaica to support a campaign for longer breast feeding of infants. General reports were that breast feeding usually lasts not more than two to three and maybe four months. Recommendations of those supporting breast feeding are that it be continued even as long as a one year period in behalf of the health interest of the infant. Recognized, of course, is that fact that some women face difficulty in lactating for that period of time because they encounter physical breast problems in endeavoring to nurse their infants. Nonetheless, it is felt that for the large majority, it would be possible to extend breast feeding to a considerably longer period of time than is now generally practiced.

The view is also expressed that there are problems in supplementary feeding of infants. Effort is not made early enough to introduce supplementary feeding with table foods that are mashed into a puree or semi-puree form for the infant. Consequently, another facet or part of the education

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program now being carried out is to gain the cooperation of the mothers toward the use of supplementary feeding to a greater extent at an earlier period.

Clearly indicated by all was a tendency in low income families to provide the major food supply to the adult working male. A natural concern over the well-being of the adult male arises since he is the primary income earner for the family and must, therefore, have the food essential to carrying out his particular job responsibilities. Thus, in food shortage situations among low income households, the primary impact of food insufficiency falls upon the children and infants in the household, and even upon the mother as well. When the latter occurs, this also interferes with her ability to produce milk for the infant she is nursing.

Low income families' diets were indicated to oftentimes have the following pattern. Adults have coffee or tea, about two cups each for breakfast, and to this is added perhaps one fried egg, as many as three times a week. When a fried egg is not served, fried fish may be provided, usually some form of dried cod fish served with some form of bread or else boiled green bananas. In some countries these are called plantains. They must be cooked and are different from the bananas marketed in the United States. Possibly they are also boiling other types of bananas. Children, on the other hand, for breakfast received only hot tea, hot chocolate or milk as a drink together with some form of bread and the corn porridge. Milk used is generally a dry or condensed form of milk obtained in a plastic bag type of package. For breakfast children may likewise be fed the boiled sweet bananas. Eggs in Jamaica, unfortunately, are not low in price. Reportedly, they are about 9 cents each. Thus, with a dozen eggs costing over a dollar, it is understandable that their use among low income households is limited.

Lunch for infants consists of the continued use of the watered down corn meal porridge as the basic food. Younger children also may be fed some type of pudding or cake, or else bread and butter. For a drink they

often receive some form of a Kool-aide type beverage. While the latter, no doubt, delights the children, it is of minimal nutritional value and thereby contributes to their malnutrition problem.

III. Economic Causes of the Child Diet Problems

Economic dimensions underlying the malnutrition problems are clearly evident when one considers that only about \$25 per week per person is earned by many lower income families. From this \$25 about \$8 is spent to buy food to supply a family of up to 5 persons. That calculates to about \$1.60 per person per week. Of the family of five in many instances, two of the three children are below the age of six. At that age level proper nutrition is of particular importance to the child's future health and later adult productivity.

The percentage distribution of the employed labor force by income per week was available from the Department of Statistics in Jamaica. The model group in July 1976 lay between \$20 and \$30 per week. Figures for April and October in 1976 were provided for our review and are presented in the accompanying table.

Income per week	April 1976	October 1976
	percent of labor force	
No income	7.0	6.8
Under \$10	17.4	14.3
\$10-20	21.0	17.8
\$20-30	18.2	21.6
\$30-40	11.7	11.0
\$40-50	7.0	6.6
\$50-100	13.2	15.6
\$100 and over	4.5	6.3
Total	100.0	100.0

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Another facet of the family economic problem is the high degree of unemployment, especially among the younger age groups. Impact upon the younger age groups is not atypical when unemployment develops in most countries. Half of the unemployed were reported to be below the ages of 24. That is the age frequently when there are infant and very young children in the household. Unemployment figures for the months of April and October 1976 are presented in the following table.

Unemployed labor force by age group	April 1976	October 1976
	number	
14-19	49,520	62,200
20-24	42,700	50,900
25-34	38,400	45,400
35-44	23,400	25,600
45-54	13,000	17,700
55-64	7,500	7,700
65 and over	4,600	6,900
Total	179,100	216,400
Male	58,000	71,800
Female	121,100	144,600

A third factor contributes toward the malnutrition problem in Jamaica. About 60 percent of the population live in the urban areas with the balance in the farming communities of the country. With so large a proportion of the low income population in urban areas, little recourse is available to home-produced foods to supplement dietary needs.

Given the foregoing family economic situation, it is easily understandable that pressure probably exists upon the female adults in the household to obtain employment and add to family income. This further contributes to lessened infant feeding by the mother. Bottle feeding can be handled by other members of the family, friends, or hired help to care for the children while the mother works at outside employment.

IV. Present and Recent Food Programs

Several efforts are being made in Jamaica to attack the malnutrition problem. One stems from a project conducted by a team from Cornell University. A special demonstration project was conducted in one state of Jamaica where infant mortality rate was reported as the highest. Activity was centered in the community called Eldersie.

The program consisted of forming a group of people like a paramedic team to work with local area families. Ages and weights of children in the locale were plotted. A nutritional food supplement was introduced that consisted of a soybean powered milk. The program was carried out with the assistance of the regional health program in Jamaica. It was concluded from this pilot study that the child mortality rate had been reduced by 50 percent in the 0-4 year age group.

An expanded effort based on the above study was proposed and apparently accepted. It will be financed mostly by the World Bank which is contributing six and one-half million dollars for the program. The goal is to set up a planning evaluation unit for a larger scale effort. US/AID is also working with the Jamaican Ministry of Health on the project. The National Family Planning Agency will provide technical support under the guidance of consultants. Initiation is scheduled for January 1978 with Johns Hopkins University as the primary contractor.

Emphasis in the program will be upon breast feeding of infants and more use of weaning foods in the infant feeding schedule. Furthermore, an immunization program for children for particular diseases will also be carried out. It was reported that Barbara A. Garner of the Ministry of Health was one person familiar with this program.

Also, cooperating in the above effort will be CIDA, the Canadian Development Program, which is operating as a con-joint participant. The World Bank, in essence, is providing the physical facilities. The CIDA is providing funds for research and Jamaica is providing 2.5 million dollars for operational funds which are being obtained through US/AID.

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Two other major programs are designed to attack the food needs of infants and children. One is a feeding program through schools or pre-school facilities. Another sells certain basic foods to low income families at less than market prices through what are known as the AMC stores. An overview of both of these is pertinent. Jamaica operates a group of schools designated as basic schools. Attending are children of about 3 to 6 years of age. In addition a number of back-yard, day care centers exist, as a temporary arrangement, where one woman may take care of from 10 to 12 small children. Other than basic schools, there are also kindergarten schools which supplement the basic school operations.

Supplemental feeding of children is carried on through the aforementioned schools by a monetary government contribution to the schools. The allocation amounts to about 30 cents per child per week for a mid-morning snack in these half-day school programs. Foods used are not controlled by the governmental agencies but are left entirely to the discretion of the school involved. The significance of these pre-school programs is that it offers an excellent basis upon which to introduce improved nutritional foods for the young children's group. Apparently, most children in Jamaica attend these schools and, therefore, could be reached through this program.

AMC stores in Jamaica are located about the island, there being 17 such stores in all. These are supplemented, however, by mobile truck routes which carry foods to those in the rural areas. These trucks have routes over which they operate and visit individual communities from one to two times per week. AMC is the designation of the Agricultural Marketing Corporation governmental unit of Jamaica. It concentrates primarily upon marketing of indigenous foods products. This means essentially concentration upon locally produced fruits and vegetables. Whereas the normal mark-up at retail for these products is reported to be about 60 percent or \$1.60 for a \$1.00 cost basis, those distributed through the AMC stores and distribution truck routes are marked up only 28 percent or \$1.28 over a \$1.00 base.

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AMC operates 8 branches that are supply assembly points in the island. Foods are received or purchased from farmers and then marketed after distribution to the AMC stores or through the rural truck routes. Sales at regular prices are also made to retailers. Local foods subsidized include cabbage, carrots, bananas, yams, potatoes and fresh fish. Some examples of imported foods that are sold under controlled prices are mackerels, pig tails and corned beef. A division of responsibility exists in the Jamaican government with respect to assistance in the marketing of local foods versus imported foods. The local foods, as already noted, are assisted by the AMC. Imported foods are the primary responsibility of JNH, Jamaica Nutrition Holdings Inc. Both of these entities would be available to assist in the handling of any new food products developed for infants and children. JNH can assist in a provision of the foods through importation of the products or ingredients and possibly also arranging for the processing of ingredients into the product types desired or acceptable to the local population. The AMC stores are available for the distribution of the products, particularly to the low income areas in Jamaica.

As would be expected, the AMC stores are located in low income sectors of the Jamaican cities. One store was visited and was found to have an adequate supply of products on hand for purchase by residents of the nearby area. Refrigeration facilities are available in the stores for those products that have this requirement. The stores are of a minimal size in order to reduce operating expenses and also have an adequate but minimum amount of facilities, also for the purpose of holding operating costs to low levels.

V. Indigenous Food Supplies

Jamaica is a subtropical country and produces a wide variety of fruits and vegetables including a number of which are indigenous to this particular type of climate. Included among these are a number of root plants not typical in the U.S., including, of course, production of bananas. The reason for mentioning local foods is the desire by Jamaica to utilize local food products insofar as possible in the development of the new infant and child foods. For this particular reason some of the work at the Food Research Department, Jamaica Industrial Development Company, has been toward the formulation of foods that would include such things as banana flour as an ingredient. It is felt in Jamaica that reasonably good potential exists for soybean production. Yields of 1,500 pounds of clean grain per acre were achieved in one test which are slightly less than U.S. experiences. So far, only about 500 acres of soybeans are being grown. Fish is well liked and there appears to be a possibility of increasing domestic production by putting it on a commercial basis rather than relying entirely on off-shore fishing supplies. Local production of milk was said to accommodate only about one-tenth of the national usage. Attempts are being made to improve this situation. Perhaps the greatest handicap is the topography of Jamaica itself. No large coastal plain areas or inland valleys are present that are adaptable to production of feed grains. Consequently, animal feeding is more costly and very likely highly dependent upon imports.

Government administrators are prepared to foster production of those domestically produced foods most suitable for inclusion in new food products for infants and children. Action here is dependent upon acceptable food product formulations as a first step.

VI. Food Import Arrangements

Jamaica has previously been receiving agricultural products from the United States through Title II provisions. However, due to improvement

in the economic conditions in Jamaica, the per capita income is now over \$800 and this prevents a country from being eligible for other Title II purchases. Title II program is designed for very low per capita income nations.

Jamaica apparently is still eligible to purchase agricultural products from the United States as one source under its Title I program. It would be under these arrangements that the necessary corn meal ingredients could be obtained for input into new special nutritional foods. Actually, Jamaica now purchases corn and has its own corn meal processing plant, an excellent facility which was visited by Al Lachmann. The fact that Jamaica purchases corn under Title I, the fact that it has an excellent processing facility for corn, and finally the fact that corn is one of the preferred foods among the population are substantial reasons for considering the development of additional infant and children's foods based upon a corn product as the major ingredient.

Aside from Title I commodity purchases, Jamaica apparently continues to buy wheat, soybeans or wheat flour under the PL 480 Law Provisions of the United States agricultural programs. Importation of foods as previously noted is primarily the responsibility of the Jamaica Nutritional Holdings Company. As a consequence, JNH will be the key agency involved in the arrangements for new products based upon Title I import commodities.

VII. Divergent Views as to Child Feeding Systems

At least midway through the consulting period in Jamaica, it became evident that there was a considerable division of opinion as to the optimum approach to the infant and child feeding problem. Two schools of thought generally prevail. One is that breast feeding should be pushed to the utmost and an educational program should particularly stress this for the infant feeding situation. Not mentioned heretofore is the fact that the government of Jamaica has a number of health clinics located throughout the island. Their purpose is to essentially service the low income families regarding their health needs. Through this organization,

it is possible to provide instructions and advice to pregnant and lactating females regarding proper care procedures for their infants. One would assume that this program could have a reasonable amount of success and certainly should be pursued insofar as possible. Nonetheless, there are countervailing circumstances alluded to elsewhere in this report that mitigate against complete achievement of the infant feeding goals of this particular school of thought. Consequently, the problem remains of dealing with those who do not wish to fit into this type of a program recommendation. And, after all, it must be remembered that these are individual, personal choice decisions that may be influenced but nonetheless also have to be respected as well.

The second school of thought takes the position that bottle feeding of infants will prevail to a considerable degree regardless of what educational program or other efforts are undertaken. Given such a situation it becomes desirable to work toward the establishment of a more satisfactory bottle feeding food system for infants. Certainly, there is considerable division of opinion regarding infant feeding even in professional circles in the United States as well as elsewhere. Because of this, it would seem to be reasonable to try to attack the malnutrition problem through both approaches. This would not represent an effort to straddle the issue but rather simply to recognize that the two sets of preferences exist among the mothers involved.

VIII. Product Development Ingredient Guidelines

Recent studies of food patterns in Jamaica have indicated a deficiency both in calories and in proteins provided to infants and children. One of the estimates is a 27 percent shortage of carbohydrates and a 14 percent shortage of protein. In view of the fact that about 70 percent of the total households are low income families, the magnitude of the problem becomes self-evident.

Corn meal costs about 17 cents a pound to the Jamaican consumer. And, it is, therefore, a low cost, as well as liked, food upon which to consider developing new products. In order to increase both the number of calories as well as the balance in the food product one suggestion is that possibilities of soybean flour or oil addition should be considered. General consensus exists that a corn-soy blend product would be much preferred to a wheat-soy blend product. Also, we had evidence earlier that a corn and milk base product had not been very favorably received. JIDC has in mind one product concept where ingredients would be corn meal, white pea-bean meal, sugar, calcium phosphate, salt and ferrous sulphate. This product would call for using four level teaspoons added to a cup of boiled water. In this connection, the consensus is that mothers need to be taught to prepare specific foods for their infants. Therefore, the food product designed should be one characterized especially as an infant food not to be utilized by the rest of the household. Since the death rates among infants is primarily between 6 and 18 months of age, giving primary attention to special foods for infants is thought the best way to try to segregate the problem and attack it directly.

Views also expressed suggested that low income families do not always have available to them the various ingredients that should be added to a porridge type food. Preferably, the product should have self-contained ingredients like an instant food. In other words, if some portion of milk and sugar is needed, it should be built into the product so that all the mother has to do is add water for it to be ready to serve. Such an approach has even more credence when one considers that in some ways the cooking facilities that these families have in some instances can be rather limited.

IX. Essential Information for a Successful Program

In view of the fact that foods are needed for the infant as well as young children age group, it is our view that it would be necessary to design two separate products. Need for two products is based partly on

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psychological factors those being that the younger children will not wish to be identified with any infant foods and, therefore, a separate product is more desirable if it is to gain sufficient acceptance among the young children. The problem is to determine whether or not the high caloric and high protein snack food will be the better approach to achieve improved nutrition for the two to five year old children. The other approach would be to provide an additional food to be consumed during regular meal times. Difficulty may be encountered in the second method in that the efforts to distinguish the product as being specifically for children to avoid it being used by the adults as well could cause a lot of leakage of the product use into adult feeding. Irrespective of what particular views the experts in the field may hold, it is essential that a determination be made as to what the consumers themselves desire to use. Knowledge of that can only be obtained through the development of research that can provide the necessary answers. Having made that determination, considerable effort was, therefore, turned to the question of consulting with the representatives of JNH Inc. and AMC as to the type of consumer market research that should elicit the required answers for product development guidance.

X. Estimated Size of the Market

Prior to formulating any recommendations concerning consumer market research, however, it was advisable to make a preliminary estimate as to the size of the potential market for the infant and children's foods. Only if the market appeared to be large enough to make processing feasible would it be advisable to proceed with the detailed stages of market analysis. Therefore, attention was turned to the question of the potential size of the infant and child food market. General information was that there are about 180,000 children in the 0 to 3 year age group in Jamaica at the present time. Another 210,000 are in the 4 to 6 age category. The next question, of course, is the proportion of these children that are at various family income levels which have a bearing upon their need for

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Total Food Demand Estimate for Infant and Children's Food Supplement Product

Age of children & family income	Number of children	Product quantity		
		total	market share	
		tons	percent	tons
0-3 years				
very low income	50,000	2,000	50	1,000
low income	76,000	3,040	35	1,064
non poverty	54,000	2,160	15	324
subtotal	180,000	7,200		2,388
4-6 years				
very low income	58,000	3,686	50	1,843
low income	89,000	5,652	35	1,978
non poverty	63,000	4,000	15	600
subtotal	210,000	13,338		4,421
Total				7,809
tons per hour of plant production				3.75

donated food as compared to purchasing food at special low prices or the ability to buy food at regular retail prices. The above table indicates what was reported to us as the approximate number of children in the 0 to 3 and 4 to 6 age brackets that fall within these various income classifications. Two primary target markets exist--1) the very low income as well as 2) the low income household children. Product demand is estimated on the requirements of 100 grams per day for children 0 to 3 years old and 162 grams per day for those in the 4 to 6 year age group. This is equivalent to 3.5 ounces per day at the 0 to 3 year level and 5.6 ounces per day for the 4 to 6 year range. Using this consumption rate as a basis of calculations, it is estimated that the total demand at the 0 to 3 year level would be 7,200 tons and when combined with the 4 to 6 year level would amount to about 20,000 tons. Usage among the very low and low income households would total approximately 13,000 tons if there was universal usage of the product involved.

Irrespective of how good the final developed products may be, it is quite unlikely that they would have universal usage by all of those children involved and particularly on an every day basis. Preliminary judgment estimates of a share of the market that might possibly be expected were therefore prepared. A range was used but in the instance of the accompanying table, a reasonably conservative figure is presented. This calls for about a 50 percent market among the very low income households where the food in essence would be given free of charge to the participants. A 30 percent market share is estimated for the low income group who would be able to buy the product at less than full retail cost. There is some possibility that the product may be of interest to the non-poverty or commercial market households and for this reason a 15 percent estimate is used for that particular group. Though it is not the thrust of the program to develop products for the families that can afford to buy all of their food needs, it is conceivable that the prototype products could be developed under brand names and in packaging that would appeal to a commercial market. Any sales in that area would help to underwrite costs of the feeding program for the less privileged income group. Given the foregoing bases of market share estimates, there would be a total of approximately a 7,800 tons of the products used on an annual basis. When converted to a plant production equivalent on a 52 week year and a 40 hour week, this would amount to 3.75 tons per hour output of product by plant. This was considered to be a sufficient volume in order to justify the economics of production for the Jamaican market. Also, there is a possibility of considering marketing of the product to other Caribbean countries having the same type of nutritional needs for infants and young children. At this time, however, no effort is made to estimate the size of this additional market.

XI. Suggested Market Research Program

If the new food products are to be successful, they absolutely must fit into the eating habits and dietary patterns of the families concerned.

Consequently, it was concluded that the only sound basis upon which the Jamaican government might proceed would be to undertake sufficient consumer research to learn the factors that influenced consumer decisions with regard to a food product of the type being considered. Inasmuch as it is difficult to design a questionnaire for a market with which one is not extremely well familiar, the first step should be to undertake a number of group depth interviews which would look at the particular motivations and preferences of mothers who have infant and children responsibilities. On the basis of information so gained, it would be possible to design a general interview questionnaire for an islandwide measure of the relative importance of individual food product and feeding procedure preferences. A rather extensive list of questions in areas to be explored was prepared and supplied to the Jamaica Nutritional Holdings Company. A local market research firm is in the Kingston area, which apparently has the capabilities of carrying out the proposed research steps, and was to implement the pre-stage depth consumer interviews. A copy of the areas of consumer opinion and behavior suggested is attached.

In consultation with representatives from AMC and JNH it was concluded that it would probably be advisable to conduct preliminary depth interviews by the local commercial firm in order to test the productivity of the selected subject areas for depth interviews. Those were to be conducted at an out-patient clinic in various areas of Kingston in order to obtain reactions from both very low, low and middle income households.

No plan was developed for the consumer survey islandwide at this time. Consideration was given to the fact that there are a number of socio-economic classifications of areas within Jamaica all of which should be properly represented. Included among these are those areas that are highly agricultural, those that have low agricultural activity but are rural and those that are primarily industrial areas. Another classification which needs consideration is the differentiation between those households that are living in the mountain areas versus those that are on the coastal plains. The reason for this differentiation is that those in the

mountain areas have somewhat greater opportunity apparently to have home produced foods since the mountain areas are largely the smaller rural towns. A list of mountain and coastal towns was prepared to serve as a preliminary list which later could be used as a basis of making some sampling decisions. The towns considered are presented in an attached list.

XII. Product R&D and Market Research Interdependence

On the basis of the findings of the consumer research, more specific product concepts could be formulated and these put into the product development stage of the R&D laboratories. However, once the product prototypes are developed, they would need to go through a series of laboratory panel tests to check for quality, physical stability, and various other physiological factors as well as general taste appeal and eating acceptability. Following that stage, the product prototypes should have some consumer panel in-home tests at various locations in Jamaica to further determine the preferences among alternative versions of the products developed for both the infant and the young children's food market.

REFERENCE LIST OF PERSONS INTERVIEWED
JAMAICA NUTRITION STUDY

JAMAICA INDUSTRIAL DEVELOPMENT CORPORATION
Food Research and Development
Dr. J. M. Newell

JAMAICA GOVERNMENT
Department of Statistics
Vernon James

JAMAICA NUTRITIONAL HOLDINGS, INC.
Technical Director
Dr. Charles Panton

JAMAICA GOVERNMENT
Agricultural Marketing Corporation
Barry Stennett

SCIENTIFIC RESEARCH COUNCIL
Mrs. V. Sadie Campbell

MINISTRY OF HEALTH
Nutrition Division
Miss Pierce
Mrs. Grant

CARIBBEAN FOOD AND NUTRITION INSTITUTE
Mini Fox

JAMAICA INDUSTRIAL DEVELOPMENT CORPORATION
Cyrial Buchanan

JAMAICA NUTRITIONAL HOLDINGS
Director
Dr. Dexter Rose

NUTRITIONAL FAMILY PLANNING CENTER
Arjuna A. Cole

MINISTRY OF HEALTH
Nutrition Division
Miss Fox
Miss Spence

CARIBBEAN FOOD AND NUTRITION INSTITUTE
Dr. Guerney

MEALS FOR MILLIONS
Dr. Glenn Patterson

MINISTRY OF MARKETING & COMMERCE
Division of Consumer Affairs
Irena Cousins

U.S. EMBASSY *
Ron Curtis

USAID MISSION IN JAMAICA *
Dorene Williams

USAID MISSION IN JAMAICA *
Director
Mr. Donner Lyon

UNIVERSITY OF WEST INDIES
Tropical Metabolism Research
Dr. Jackson
Dr. Ashworth

NESTLE COMPANY
JAMAICA MILK PRODUCTS DIVISION
Mr. Gilmour
Mr. Louis Stevenson

JAMAICA PLANNING AGENCY
Ambrose Da Costa

* Keep informed of work developments.

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TOWNS

Mountain

Maggotty
Christiana
Seloah
Frankfield
Lluidas Vale
Ewarton
Lenstead
Bog Walk
Glengoffe
Cas

Coastal

Port Antonio
Hope Bay
Buff Bay
Annotto Bay
Port Maria
Orascabessa
Ocho Rios
St. Ann's Bay
Runaway Bay
Duncans
Falmouth
Sandy Bay
Lucea
Green Island
Negril
Little London
Savanna-La-Mar
Newmarket
Middle Quarters
Santa Cruz
Black River
Malvern
Bull Savannah
May Pen
Old Harbour
Port Morant
Bath
Brown's Town
Stewart Town

PLAN OF WORK FOR CONSUMER MARKET
ANALYSIS REGARDING FOOD PRODUCT
DEVELOPMENT FOR CHILDREN FROM
INFANCY THROUGH SIX
YEARS OF AGE

PHASE I

PRELIMINARY CONSUMER PRODUCT
CONCEPT INDEPTH INTERVIEWS

The purpose of this initial phase is to test the procedures that will be used in a follow-up series of indepth consumer surveys. It will provide an indication as to whether we are utilizing the proper topical areas in the interviews to evoke the necessary responses needed to provide a basis for the new product concept planning.

Purpose

Location

This preliminary interview stage is to be conducted at one of the out-patient clinics in the Kingston area where low income and medium income households can be included in the sessions. Participants in the interview should be women with infants under one year of age and some with infants under one year plus another child under six years of age. These should be drawn from the active roll of out-patients in order that contact can be made with the individuals and arrangements prepared for the time and place of the interview session.

Type of Participants

It probably would be desirable to stage interviews with two sets of participants. One would be strictly low income families representing the most modest of circumstances. These individuals being from similar

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economic background would have rapport with one another in the group session which should consist of about six to eight persons. An additional series of five individual interviews of low income status is required and these five persons will be individuals who did not participate in the group session.

The second group of interviews should be with a middle income type family who also will have general rapport because of their similar background. Again, six to eight persons should be included in the group interviews and an additional five or six persons interviewed in individual sessions.

Reporting of the Interview Sessions

All of the interview sessions should be recorded on cassette tape recorders. The respondents should be assured that this is simply a convenient method of obtaining a record of necessary ideas needed for the development of new infant and children foods. The respondent will be assured that their names will not be used in any manner and that, in fact, the tapes will be destroyed after the food product ideas are summarized from them.

Persons Responsible for Conducting Interviews

The interviews will be conducted by Productivity Services Ltd. under the direction of W. L. Wilson and Maurice Garrison. The interview sessions are also to be observed by Barry Stennett of the Agricultural Marketing Corporation.

Preparation of Transcript of Depth Interviews

Jamaica Nutrition Holdings Ltd. under the direction of Dr. Charles Panton will assume responsibility of transcribing the tapes of the interview sessions. The transcript record should be prepared in a minimum of four copies. This will provide one for each of the following: Productivity Services Ltd.; Barry Stennett of Agricultural Marketing Corporation; Dr. Branson of the Texas Agricultural Market Research and Development Center, Texas A&M University; and Al Lachman, Nutrition and Agribusiness Group, Economic Research Service, USDA.

This transcript should be prepared as soon as possible in order that the respective individuals may review it and make the determinations of the procedures for the series of depth interviews to be taken at six locations in Jamaica. After analysis of the transcript, final instructions will be prepared for the series of six interviews.

Time Frame

It is likely that a one-week period will be required in working with the out-patient clinic in selecting the participants for this preliminary test depth interview operation. Depending upon the schedule of the out-patient clinic, interviews can probably be conducted in either one or two days. A week should be allowed for transcribing of records and their duplication for the parties concerned. Within two or three weeks following that, the final plans for the islandwide series should be available for operational use.



Compensation of Interview Participants

In view of the inconvenience and possible expense of transportation of participants to come to the interview sessions, it is desirable to provide some token payment to them. This can be done either in the form of a cash payment of \$5 or up to \$10 if necessary to cover their transportation costs or they may be provided gift packages of food products which might be arranged through the Agricultural Marketing Corporation. It is important to provide a coverage of the participants' expenses but not to provide them with compensation above a reasonably minimal level. Too high a compensation can lead the participant to feel they are obligated to give either favorable answers or make up opinions regarding topics about which they really have little empathy. In other words, the compensation should leave the person in a cooperative, yet neutral, mental attitude.

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SUBJECT MATTER GUIDE
CONSUMER DEPTH INTERVIEWS
MOTHERS OF INFANTS AND CHILDREN
UP TO SIX YEARS OF AGE

General Objective

In these depth interviews the objective as usual is to introduce topics and have the participants discuss them fully to elicit opinions, attitudes and behavioral practices or habits relating to the topics. Topics insofar as possible are presented one at a time and in a completely neutral sense so that no implication of right or wrong is involved in behavioral opinions or practices. Neutrally stated probe questions are used to induce further discussion on specific points raised. The goal is a full comprehension of the infant and child feeding practices followed and the array of factors influencing these.

Desired Topic Areas

1. Attitudes toward breast feeding.

Include that of the mother and also see if any of the following are influencing that attitude.

- a. Husband or other family members.
- b. Children.
- c. Mother's parents or in-laws.
- d. Peer groups.
- e. Medical staff contacts.
- f. Exposure to media sources, magazines, radio, newspapers, books.

2. Procedure and frequency of breast feeding.

Frequency with which the mother is available for feeding the infant may be a restriction. We are looking for impediments to breast feeding.

- a. Is breast feeding on a scheduled or infant demand basis?

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- b. What cleanliness procedures, if any, are used?
- c. Breast milk adequacy of the mother and any other physical limitations.
- d. Diet adequacy for the mother while nursing the infant. Any change in her normal diet to accommodate the need.
- e. Does she prefer to breast feed if given adequate circumstances?

3. Causes for stopping breast feeding.

Search to determine if causes are physical, emotional or motivated by economic needs of mother to work. Also, did influences of other persons or information lead to a stopping of breast feeding. Was there some sense of infant rejection of the mother's milk.

4. Opinions and attitudes toward supplemental feeding.

Need to determine mother's position and how others have influenced it as to when to start and what to feed the infant.

- a. Kind of supplemental food used?
- b. How determine frequency and amount to feed?
- c. What degree of nutritional or food need knowledge, if any, does the mother have? Same for family members.

5. Bottle feeding and/or spoon feeding.

Obtain information as to circumstances influencing use of one or both of these.

- a. Personal attitudes and opinions.
 - b. Family, relative or peer group influences.
 - c. Do available foods to the family influence them?
 - d. Does mother work which limits time for the baby's care by her? If so, who else feeds the baby and frequency?
 - e. Is this supplemental or total feeding system we are involved with in these forms?
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6. What foods used and how selected and prepared.
 - a. Who influences product selection?
 - b. How does cost affect choice?
 - c. Is baby or child food a separate one from rest of family?
 - d. What is specific method of preparation of food used?
7. Describe best food other than breast milk for infant feeding, cost not considered.
 - a. Identify best food in the mother's view.
 - b. Obtain second best food.
 - c. Find out if there is a third choice.
8. Locations where infant food should be available.
9. Size and type of package the product should be in.
10. Time and considerations that influence start of table foods for the infant.
11. How many kinds of infant food are desired? Is one adequate or should there be more? What differences are needed between the products? Items related thereto are:
 - a. Flavor.
 - b. Texture.
 - c. Color.
 - d. Smell.
 - e. Way fed.
12. Does mother have to like the taste and other attributes of the infant food before she will accept it for the child?
13. Repeat same series of question 6 through 12 for the foods for children ages 2 through 6.
14. About how much can the mother spend per week for
 - a. Baby food?
 - b. Children's food?
15. Should the infant food or the child food be an instant food or one that needs to be prepared?
 - a. If instant, what form?
 - b. Desire for baby food form vs. child food form.

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16. Describe usual family diet involving foods generally used during a week's period for
 - a. Breakfast.
 - b. Lunch.
 - c. Dinner.
 - d. Snacks.
17. What does child get while at school?
18. What kind of foods would they like for children for
 - a. Breakfast?
 - b. Lunch?
 - c. Dinner?
19. What does the mother expect to feed the child when it gets to be
 - a. 2-4 years?
 - b. 4-6 years?
20. What kind of packaging is desired for child food?
21. How do you cook family foods? Kind of stove or heating system used?
22. Attitudes toward different food sources.
 - a. Plantains.
 - b. Bananas.
 - c. Casava.
 - d. Corn.
 - e. Rice.
 - f. Vegetables.
 - g. Peanuts.
 - h. Coconuts.

What foods don't like and reasons.

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APPENDIX F - 3

**An Evaluation of Wheat Flour as a Vehicle for Nutritional Fortification
in Haiti: The Extent of Distribution and Consumption, February 1980.**

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AN EVALUATION OF WHEAT FLOUR AS A VEHICLE FOR NUTRITIONAL
FORTIFICATION IN HAITI: THE EXTENT OF
DISTRIBUTION AND CONSUMPTION

February 19, 1980

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INTRODUCTION

The basic purpose of my two week stay in Haiti (January 28 - February 8, 1980) was to explore the feasibility of using wheat flour as a vehicle for nutritional fortification. A primary concern was to ascertain whether or not specific consumer target groups, i.e., nutritionally deprived children ages 6 months to 5 years of age and malnourished women of child-bearing age (15-45 years), consumed wheat flour in various forms.

Specific objectives were as follows:

- 1) Meet with USAID/Haiti and Government of Haiti personnel to review the status of the Nutrition Improvement Program and to assist in preparing written materials to be used in the development of a project paper for using wheat flour as a vehicle to carry additional vitamin A, iodine, and protein into the diet.
- 2) Identify and evaluate market research firms capable of conducting surveys and studies related to flour and bread, marketing and consumption, should it be deemed necessary to do so.
- 3) Advise and assist in developing consumer questionnaires, if necessary, to determine wheat flour and bread purchasing and consumption patterns for the general population, with emphasis on poor, malnourished children from 6 months through 5 years of age.
- 4) Provide guidance in planning necessary studies for the analysis of flours and bread production and marketing systems in general, and rural areas in particular.

- 5) Assist in designing any needed studies relating to current price structure of wheat flour and bread and how prices might be affected by the introduction of fortified products.

The remainder of this report consists of three major sections. The first provides an overview of my activities in Haiti from the standpoint of people contacted. The second presents detailed findings, and the third summarizes the findings and provides recommendations.

REPORT ON ACTIVITIES

During the two week period, January 28 through February 8, the individuals in Table 1 were personally interviewed to meet the objectives stated above.

Table 1.--Personal interviews conducted in Haiti, January 28-February 8, 1980.

Person, title	Primary area of expertise and/or information provided
Ms. Linda E. Morse Nutrition Advisor, USAID	Nutrition Improvement Program, Office of Health and Population, USAID/Haiti; Secondary data relating to food consumption.
Dr. William Fougere Bureau of Nutrition Department of Public Health and Population Republic of Haiti	Nutrition Improvement Program; wheat flour consumption patterns by various socioeconomic groups and locations of government subsidized community bakeries.
Dr. William G. Rhoads Assistant Director and Economic Advisor, Office of Programs, USAID/Haiti	P.L. 480 programs; outlook for wheat imports, distribution system for wheat flour products.

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Table 1.--Personal interviews conducted in Haiti, January 28-February 8, 1980--Continued.

Person, title	Primary area of expertise and/or information provided
Mr. John Becker, Agricultural Economist, Office of Rural Development, USAID/Haiti	Knowledge of the agricultural commodity distribution system, wheat flour distribution system.
Dr. Dick Greene, Program Economist Office of Programs, USAID/Haiti	General economic data, i.e., population projections.
Mr. Elias Tamarin, Community Development Officer, Office of Rural Development, USAID/Haiti	Knowledge of the wheat flour distribution system, particularly the community bakery project.
Mr. Ira Lowenthal, Consultant USAID/Haiti and Ph.D. candidate (Anthropology) Johns Hopkins University	Food distribution system, primarily in rural areas, and food purchasing and consumption patterns for various socioeconomic peasant classes.
Dr. Ted Ahlers, Economic Consultant FAO	Organization and supervision of field surveys, Interviewing procedures, cost estimates for field work.
Mr. Irwin Shors, Anthropology Consultant, USAID/Haiti	Supervision of field surveys, interviewing procedures.
Mr. Tibor Nagy, Chief Engineer, USAID/Haiti	Supervision of field surveys; Cost estimates for field work.
Mr. Pierre Phelps, Marketing Consultant, Inter-American Development Bank and LaMinoterie D'Haiti	Supervising and conducting consumer studies, new product testing.
Dr. Jim Grieve, Marketing Consultant, LaMinoterie D'Haiti	Development of marketing strategies for new products.
Mr. Raymond Bourdreau, General Manager LaMinoterie D'Haiti	All phases of wheat flour production and marketing; general views toward wheat flour fortification.

Table 1.--Personal interviews conducted in Haiti, January 28-February 8, 1980--Continued.

Person, title	Primary area of expertise and/or information provided
Mr. Auguste De Mueze, Accountant La Minoterie D'Haiti	Wheat flour marketing; production and distribution data for Haiti.
Mr. Ted Bownik, Milling Consultant, USAID, Washington	Wheat flour production, distribution systems.
Ms. Anne Cary, Commercial Officer, United States Embassy, Haiti	Secondary data related to wheat and bread; recommendations and appraisals of market research firms specializing in economic research.
Mr. Claude Entienne, Owner and General Manager, Boulangerie St. Marc (a major bakery) P.C. Etienne and Company, Port Au Prince	All phases of wheat flour distribution, bread production, distribution, and consumption.
Mr. Leslie Lormil, Statistician, Institut Haitien de Statistique	Consumer price data for bread.
Mr. Raymond L. Marius, Director Commercial Section, Regie du Tabac	Director of government agency responsible for all wheat flour sales to wholesalers, large bakeries. Provided information on data availability for wheat flour shipments to rural areas.
Mr. Georges Lewis, Ingenieur Agronome A.I. Gx Les Agences Agricoleset, Industrielles Port Au Prince	Organization and supervision of data collection, primarily agronomic-economic feasibility studies.

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GENERAL FINDINGS

Status of the Nutrition Improvement Program

The USAID Mission has a continuing interest in the Nutrition Improvement Program (NIP). Although the focus has been on improving nutrition through health related programs, fortification of selected food products remains a viable alternative. Funding for the NIP is scheduled to terminate December 31, 1980, but funds from another slowly developing project will probably be diverted for NIP use.

Linda Morse, Nutrition Advisor, Office of Health and Population, USAID/Haiti expressed little interest in using wheat flour as a fortification vehicle. Her interests lie in areas other than nutrient fortification, thus there is little likelihood of obtaining her full cooperation and enthusiasm for this project.

On the other hand, Dr. William Fougere, Head, Bureau of Nutrition, Department of Public Health and Population, Republic of Haiti, appeared to be enthusiastic about such a program. He discussed a project in which he assisted several years ago. The project was the establishment of community bakeries in approximately ten poverty stricken rural areas. The need for providing additional protein, vitamin A, and iodine was mentioned by Fougere, and he indicated a willingness to provide support for a nutritional fortification plan which would provide these nutrients to the malnourished.

The Marketing System for Wheat Flour Produced in Haiti

An effort was made to review the entire marketing system for wheat flour produced in Haiti to ascertain the feasibility of using wheat

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flour as a vehicle for nutrient fortification purposes. The system is briefly discussed below in a logical order, beginning with LaMinoterie D'Haiti, the only flour mill, and ending with the ultimate consumers of the flour as bread.

Only wheat flour produced in Haiti is considered here, because 1) imported flour is not distributed commercially and 2) the optimum time for fortification (from an economic standpoint) is during milling.

The Mill

LaMinoterie D'Haiti is the only wheat milling company in Haiti. It is a quasi-governmental endeavor in that it is owned by the Haitian government, but operated under a long term contract by Maple Leaf Mills of Canada. Wheat supplies have largely come from Canada in recent years, but some has been supplied by the U.S.

The capacity of the mill was expanded during 1979 to approximately 10,000-11,000 cwt. per day. Recent output has averaged about 6,000 cwt. daily. The mill currently produces four types of flour. During 1979, the mill sold the following quantities of flours:

<u>Type of flour</u>	<u>Cwt.</u>	<u>Percent</u>
White enriched	1,632,000	98.27
All purpose	1,214	0.07
Whole wheat	212	0.01
Semolina	<u>27,250</u>	<u>1.64</u>
Totals	1,660,676	100.00*

*Does not sum to 100 due to rounding.

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The mill did not operate for a five month period due to renovation; thus, flour imports were required for a substantial portion of their 1979 sales. The mill now has the capacity to produce all Haitian flour requirements.

Current wholesale flour and feed prices are as follows:

<u>Type of flour/feed</u>	<u>Price, F.O.B. mill</u> <u>U.S. Dollars per cwt.</u>
White enriched	19.900
All purpose	20.645
Semolina	18.050
Whole wheat	20.285
Mill feed (domestic sales)	2.550
Mill feed (exports)	5.000

Warehouse space at the mill is adequate for approximately 55,000 cwt. According to a mill spokesman, production of a fifth type of flour, i.e., a fortified product, would pose no serious logistical problems for the warehouse.

The Regie du Tabac

The Regie du Tabac is a Haitian government agency which administers all sales transactions for the mill. However, the "Regie" does not physically handle the flour. The Haitian Department of Commerce, through the "Regie", sets the wholesale prices reported above (except for export sales). The prices received by the mill, \$15.38 per cwt. for white enriched flour, are also determined by the Department of Commerce. Prices to wholesalers and to the mill have been very stable. Wholesale

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prices have not varied in "six or seven years", and prices to the mill have not changed in four years. No price increases appear imminent.

The Regie du Tabac imposes a minimum purchase of 100 bags (cwt.) for white enriched flour, all purpose flour, and semolina. No minimum purchase applies to whole wheat flour. If fortified wheat flour is produced by LaMinoterie, every effort should be made to persuade the Regie Du Tabac to set the minimum purchase requirement extremely low or eliminate it, as in the case of whole wheat flour. A minimum purchase requirement would tend to inhibit distribution.

The Regie du Tabac maintains a daily record of all flour sales. The records include the buyers' names and the type and quantity of the various flours purchased. The daily records are kept in the Regie's sales office until the end of each month, at which time they are forwarded to the Haitian Department of Commerce and ultimately to the Institut Hatien de Statistique. There are only 20-25 transactions daily. The director of the Regie du Tabac was familiar with geographic locations of all buyers, and was willing to allow access to the daily records if required by future studies.

Intermediate Handlers

Little or no quantitative information is currently known about intermediate handlers. Most flour is obtained from the mill by wholesalers that warehouse the product. The wholesalers then make flour available to bakeries or flour distributors that cannot afford, or whose volume does not justify the minimum purchase imposed by the Regie du Tabac. Rural warehouses or "depots" also buy directly from the mill.



Some flour is purchased from the mill by transporters, independent truckers, who do not warehouse the product but make deliveries directly to regular customers.

Few bakeries purchase directly from the mill because of the minimum purchase requirement or because of the expense of owning and operating suitable trucks.

The intermediate handlers could possibly be a bottleneck in the distribution system. Handlers with limited capital, warehouse space, or patience in handling an additional product could resist it. One baker reported having this problem with the whole wheat flour.

Bakeries

The consensus, among individuals interviewed having considerable living and working experience in Haiti, is that about 90 percent of all domestically produced wheat flour is used by bakeries for bread. Bakeries reportedly use a very small proportion for other baked goods such as cookies or pastries. Virtually all bread is baked by bakeries. Due to extreme poverty and the scarcity of fuel, most households do not have ovens in which bread can be baked.

There are many bakeries in Haiti, most of them quite small. There are an estimated 1,000 bakeries in the country, of which 100-200 are located in Port Au Prince. Other than very low capital requirements, there are few barriers to entry into the baking business, and the turnover rate is estimated to be high. According to one knowledgeable source, all that is required to enter the business is "a sack of flour and a pile of bricks".

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This type of baking industry may also resist introduction of a fortified flour unless there is an adequate incentive for them to accept it. Their small size and consequently limited flour requirements may pose difficult inventory and storage problems for many bakers. They may not be able to diversify their business to utilize two types of flours. The precarious economic existence of others may cause them to avoid any risks or uncertainties to their business resulting from a switch to a new type of flour.

The bakers constitute a vital link in the distribution system. Despite their importance, little is known about the baking industry.

Other Outlets for Wheat Flour

An estimated 10 percent of the wheat flour produced is sold through outlets other than bakeries. Flour is usually sold by retail food stores or shops, street peddlers, or by vendors at the many markets throughout the cities and countryside.

Some flour is sold to consumers in the form of prepared food products. Such products are sold at virtually all social functions, such as market gatherings and cockfights, and even at weddings and funerals. The predominant product is "marinade", a dough ball containing yeast, spices and perhaps little bits of meat or fish, which is deep fat fried on site.

Although these miscellaneous outlets account for relatively little of the total wheat flour movement, the use of a fortified flour should be explored for products such as "marinade", where usual baking properties of flour may be of minor importance.

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Consumers

The basic products available to consumers

Because of the predominance of white enriched flour, white breads and biscuits are the only products produced by most bakeries. The small quantity of whole wheat flour is utilized by several bakeries for bread in Port Au Prince and is consumed by the well-to-do (primarily non-Haitians) that prefer it for taste and/or health reasons.

Most bread products are not wrapped which eliminates a means of baker identification. Thus, each baker attempts to differentiate his product by "styling". This, in conjunction with the large number of bakeries, results in a tremendous proliferation of bread products. The many styles or types of products can be generally classified as "bread" or "biscuits". "Bread" is relatively light in weight and texture and is usually formed in loaves or rolls. "Biscuits" are usually more dense and are sold individually or in clusters or sheets. A single biscuit measures roughly 2.5 3.0 X 1.0 inches. A cluster or sheet usually consists of 24 biscuits. The "bread" is generally viewed to be a superior product. Most Haitians only consume bakery sliced bread on special occasions, while the well-to-do consume the sliced bread regularly.

Biscuits are viewed as more of a staple. According to anthropologists, they are consumed for breakfast by all family members, as snacks by children, as an ingredient in "bread soup" which is given as a weaning food, and sometimes as an ingredient in soups for adults. Ted Bownik, the USAID milling consultant, indicated that a concentrated wheat protein (CWP) enriched flour could be utilized in biscuits more readily than in the other types of breads.

Wheat flour is consumed at the household level in relatively small quantities. It is used to prepare a gruel which is used as a supplement to breast-fed infants and as a weaning food. Flour is also used to make dumplings which are incorporated into dishes containing meat, beans or rice. Because of their poor economic plight, the extremely poor may not be able to afford the meat, beans or rice. Thus, their consumption of flour as dumplings would be negligible. One anthropologist felt that bread consumption among peasants increased during times of economic hardship because they were less able to afford preferred items such as meat, rice and beans.

Consumption

During the past 20 years, a number of studies have documented the widespread use of wheat flour and bread in Haitian diets. Qualitative and quantitative data obtained on this trip tend to confirm earlier findings. Consumption levels are explored below on a national and regional basis, and finally, on the basis of the frequency of use for an important consumer target group, malnourished children.

National

National estimates of wheat flour consumption dating back to 1958 show considerable variability (Table 2). Undoubtedly, methodological errors result in much of the variation. Earlier estimates provide little evidence of long run trends.

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Table 2.--Estimates of per capita wheat flour consumption for Haiti, 1958-1979.

Source ^a	Year(s)	Per capita consumption
		----- Pounds -----
USDA	1958	26.5
USDA	1959-61	13.2
Sebrell, <u>et al.</u>	1958	20.0
Dominique	1965	4.4
Beghin, <u>et al.</u>	1970	13.2
New estimate, Degner ^b	1977-78	30.6
New estimate, Degner ^b	1979	34.1

^a Except for new estimates and Sebrell et al., all figures were reported in L'Alimentation Et La Nutrition En Haiti, by Ivan Beghin, William Fougere and Kendall King, Publications De L' I.E.D.E.S., Presses Universitaires De France, 1970. Sebrell's estimate appears in "Appraisal of Nutrition in Haiti", The Journal of Clinical Nutrition, Vol. 7, No. 5, pp. 1-48, Sept.-Oct. 1959.

^b New estimates include only white wheat flour produced by La Minoterie D'Haiti. White wheat flour constitutes over 98 percent of the mill's total production.

Wheat flour sales (white enriched only) obtained from La Minoterie D'Haiti for October 1977 through September 1977 reveal that national per capita consumption was almost 31 pounds in 1977-78 and slightly over 34 pounds for 1978-79 (Table 2).

These figures indicate that wheat flour consumption is at an all time high in Haiti. Price is probably a major contributing factor. Data provided by the Institut Haitien de Statistique show that the biscuit price index remained virtually unchanged at 315 from 1970 through 1979 (1948 = 100). On the other hand, the "All foods" portion of the Haitian Consumer Price Index increased from 134.2 in 1970 to 305.3 in 1979. The price collection procedures for bread appears to be fraught

with inaccuracies but nevertheless, bread is probably relatively less expensive now than it has been for some time.

The dire lack of consumption data over time precludes any meaningful price analysis on an aggregate basis. Furthermore, because of the absolute price control exercised by the Haitian government at the whole-sale level, one can only speculate on the probable consequences of increasing production costs (due to nutrient fortification) on wholesale prices or ultimately on consumer prices.

Regional

Regional shipment data were obtained from La Minoterie. The data probably underestimates shipments to rural regions because these figures reflect only purchases by individual flour distributors residing or operating within the respective regions. Substantial quantities of flour are thought to move to all regions through Port Au Prince based firms. This is especially the case for the Ouest, the area surrounding the urban Port Au Prince area.

Despite the indications that much flour is distributed to outlying areas from Port Au Prince, the data show relatively large per capita deliveries to the poverty stricken Nord and Nord-Ouest regions. Furthermore, shipments increased considerably from 1977-78 to 1978-79 (Tables 3 and 4).

Community

The Haiti Nutrition Status Survey conducted in 1978 provided additional information on the availability of wheat flour and bread in the communities

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Table 3.--Per capita deliveries of white wheat flour by region (Department)
October 1977 through September 1978, Haiti.

Region ^a	White wheat flour ^b	Population ^c	Per capita deliveries
	---- Cwt. -----	- 1,000 -	----- Pounds -----
Ouest	50,862	1,265.8	4.02
Nord	99,962	781.8	12.8
Nord-Ouest	55,154	233.6	23.6
Artibonite	83,202	845.9	9.8
Sud	130,136	970.4	13.4
Urban	1,058,258	722.5	146.5
Ouest/urban ^d	1,109,120	1,988.3	55.8
Total	1,477,574	4,824.5	30.6

^a Regions are the same as defined in the 1978 Haiti Nutrition Status Survey.

^b White wheat flour is the "Superieur" flour produced by La Minoterie d' Haiti which accounted for 98.16 percent of total flour sales in 1977-78. Source: La Minoterie.

^c Population estimates are based on World Bank Report No. 2152-HA, April 1979.

^d Figures for the Ouest and the urban classifications are combined for comparative purposes because Port Au Prince is a major distribution center for the Ouest. Reporting these regions separately distorts distribution figures.

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Table 4.--Per capita deliveries of white wheat flour by region
(Department), October 1978 through September 1979, Haiti.

Region ^a	White wheat flour ^b deliveries	Population ^c	Per capita deliveries	Percentage change from previous year
	----- Cwt. -----	- 1,000 -	- Pounds -	---- Percent ----
Ouest	43,320	1,278.7	3.4	-15.0
Nord	130,609	793.8	16.5	+28.9
Nord-Ouest	66,558	235.7	28.2	+19.5
Artibonite	94,316	857.2	11.0	+12.2
Sud	144,500	967.1	14.9	+11.2
Urban	1,193,601	763.3	156.4	+ 6.8
Ouest/urban ^d	1,236,921	2,042.0	60.6	+ 8.6
Total	1,672,904	4,900.5	34.1	+11.4

^a Regions are the same as defined in the 1978 Haiti Nutrition Status Survey.

^b White wheat flour is the "Superieur" flour produced by LaMinoterie d' Haiti which accounted for 98.27 percent of total flour sales in 1978-79.

^c Population estimates are based on World Bank Report No. 2152-HA, April 1979.

^d Figures for the Ouest and the Urban classifications are combined for comparative purposes because Port Au Prince is a major distribution center for the Ouest. Reporting these regions separately distorts distribution figures.

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sampled. The Dietary Report portion of the study has not been published, but the first draft (November 1979) reveals that wheat flour was readily available in 99 or 150 communities (66 percent). Furthermore, bread or biscuits were readily obtainable in 77 to 93 percent of the communities in the survey regions. Overall, bread or biscuits were readily available in 86 percent of the communities surveyed.

The analysis of wheat flour and bread availability reported in the first draft has several shortcomings, however, which could probably be easily remedied. For example, the availability of wheat flour and bread or biscuits is reported separately, but the degree of overlap (or lack thereof) is not reported. In evaluating flour as a fortification vehicle, it would be helpful to know 1) the proportion of communities where only wheat flour was available (but bread was not), 2) the proportion of communities where only bread was available, and 3) the proportion of communities where both were readily available. Furthermore, the relationship between the incidence of malnutrition in communities and the availability of either bread or wheat flour (or both) could be gleaned from data already obtained by the survey.

Consumption by the target groups

As mentioned earlier, an important objective of this effort was to determine whether or not the target group, i.e., malnourished children between the ages of 6 months and 5 years and women of childbearing age, were consumers of wheat flour and bread. Examination of the preliminary draft of the Dietary Report portion of the Haiti Nutrition Status Survey reveals that bread had been consumed within the 24 hours prior to the

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survey by 46.8 percent of all rural children and by 67 percent of the urban children. Wheat flour had been consumed by 16.9 percent of the rural and 29 percent of the urban children (Attachment 4).

Of particular importance is the finding that of the children exhibiting marked malnutrition symptoms, 45.9 percent had consumed bread during the previous 24 hours and 16.5 percent had consumed wheat flour (Attachment 5). Again, it would be helpful to determine the proportion of children that consumed either bread or wheat flour, or both. This would give a more accurate evaluation of wheat flour as a fortification vehicle.

Another factor to consider in interpreting these figures is that the report states "[the study was conducted] in a year of good agricultural production at the height of the season in which the largest variety of crops ripen". The report also states "The rural population provides itself with most of their foods to the extent that consumption patterns and levels change with the harvest season". Thus, it appears that the wheat flour and bread consumption data in the Dietary report may be at a seasonal low, and the incidence of consumption may be much higher at other times of the year when local production of food products is at low levels. Although the Dietary Report states that "Bread may be used for vitamin A supplementation but its relatively low level of consumption does not appear to make it an acceptable vehicle", the data do not tend to support this statement.

While these findings do not shed light on the flour and bread consumption habits of child bearing women per se, discussions with

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anthropologists and others indicate that these products are, in fact consumed by all family members in all socioeconomic classes.

Further Consumer Research. Provided the findings discussed above are not deemed adequate as a basis for determining whether or not wheat flour is an acceptable vehicle for nutritional fortification, additional consumer research, focusing on consumption habits, may be required. Such research would be difficult and expensive.

Approximately 85 to 90 percent of the Haitian population is illiterate, and thus, has little knowledge or perception of his food consumption in terms of weight, or monetary expenditures. Recall of consumption for any period of time longer than 24 hours would be subject to gross errors, due to faulty perception of time as well. A quantitative dietary study for individual family members would almost certainly require observation of the household for several days. Costs would probably be prohibitive. However, the following individuals and firms were contacted and evaluated for their ability to conduct such research. They are briefly discussed in order of decreasing preference:

Pierre Phelps.--Marketing Consultant, P.O. Box 624, Port Au Prince, Haiti. Mr. Phelps, a native Haitian, received a B.S. degree from Pierce School, Philadelphia, U.S.A. in business and marketing, and has earned additional graduate credit at St. Joseph College and Fairleigh-Dickinson College. He was employed by Warner-Lambert (pharmaceuticals) for 10 years in sales and new product marketing in Marrocco and Lebanon. Since returning to Haiti three years ago, he has been working as a marketing consultant for Shabisco, a major Haitian bakery. For the past year, he has also been a consultant for the Inter-American Development Bank (IDB) and La Minoterie D' Haiti.

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His work with IDB and La Minoterie has involved conducting market research for the new Akamil-like product to be produced by LaMinoterie. He has considerable experience in the baking industry and in organizing and conducting research in Haiti. He appears to be well qualified and competent. However, his estimates of field work costs were considerably above those given by others. In the event Mr. Phelps is selected for conducting research, the costs should be explored carefully and where possible, estimates obtained from others.

Jean Claude Lucas.--Administrator, American Foundation for Overseas Blind, also known as Helen Keller International, Port Au Prince, Haiti, Telephone 2-0650. Mr. Lucas, a native Haitian, was the coordinator for the 1978 Haiti Nutrition Status Survey. He seemed quite willing to accept the responsibilities associated with conducting such research, but he would not or could not elaborate on the organizational framework or remuneration necessary to acquire his services. Perhaps the Center for Disease Control (CDC) would disclose the arrangement which they had with Mr. Lucas. CDC could also provide further insight into his qualifications and abilities.

Georges Louis.--Les Agences Agricoles et Industrielles, B. P. 136, Port Au Prince, Haiti, Telephone 7-0570. Mr. Louis is a native Haitian and received the equivalent of a Master of Science degree in agronomy from the University of Gembloux in Belgium. He was with FAO in Africa from 1962-1965, and has been in Haiti since 1965. He has conducted several agricultural studies in Haiti. One examined the feasibility of developing school vegetable gardens; another evaluated the feasibility

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of obtaining tomato supplies for a tomato processing plant. He is currently ascertaining the feasibility of producing cassava flour for mixing with wheat flour.

Mr. Louis appears to have considerable agricultural experience from both the production and marketing aspects. However, his studies apparently have not involved the extensive use of enumerators or interviewers. This is why he is the third choice.

Irwin Shorr.--Consultant, 952 17th St. (Front Apt.), Santa Monica, California, 90403, telephone 213-828-5975. Mr. Shorr, an American, is presently a nutritionist consultant for USAID. He has an M.P.H. degree from UCLA: his area of specialization is anthropometry. He has 4 years of working experience with U.C.L.A.; foreign experience includes work in Liberia, the Cameroon, and Bangladesh. He has considerable field survey experience, but he has never organized and supervised a study. For this reason, I rank him the fourth choice.

"Multiplan", a consulting firm was also contacted. They said that they were not equipped to do field work of this type. Also, numerous attempts were made to contact Jacque Lauriac (telephone 7-0902). He is a consultant who is a former CARE administrator. However, Mr. Lauriac could not be reached.

SUMMARY AND RECOMMENDATIONS

1. In view of the wheat flour shipment data obtained from La Minoterie D'Naiti, information obtained from personal interviews, and the findings reported in the Dietary Report of the Haiti Nutrition Status Survey, 1978, it is reasonable to conclude that wheat flour and

bread are reaching a large proportion of the Haitian population, including the rural poor and malnourished children from 3 months to 5 years of age and women of child bearing age. Thus, it is recommended that no further consumption studies be conducted at present.

2. The first draft of the Dietary Report gives the availability of wheat flour and bread for 150 rural communities and the proportion of children consuming wheat flour and bread during the 24 hour period preceding the survey. Wheat flour and bread are treated as independent items, however. It is recommended that the data obtained by the survey be further analyzed to determine availability and consumption of 1) wheat flour only, 2) bread only and 3) wheat flour and bread combined. This would give a more realistic indication of the importance of domestically produced wheat flour in childrens' diets, regardless of the form in which it is consumed.

3. Preliminary indications from Ted Bownik, milling consultant, are that it would not be economically feasible for La Minoterie to produce concentrated wheat protein. Therefore, protein fortification of flour would be relatively expensive. On the other hand, fortification with vitamin A and iodine would be technologically feasible because the mill already utilizes an enrichment premix. The attitudes toward vitamin A and iodine enrichment by the Ministry of Health and management of LaMinoterie seemed positive, but concern was expressed over who would bear the cost. I recommend that vitamin A and iodine fortification be explored.

4. Because the Haitian government administers flour prices, it is difficult to anticipate how cost considerations (i.e., the cost of

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additional nutritional fortification) would be reflected in F.O.B. prices for flour. It would probably be safe to assume that the entire cost would be passed on to wholesalers and ultimately to the consumer if left to the Haitian government and LaMinoterie. Lack of reliable price and consumption data precludes traditional price analyses. Thus, with existing data, it would be virtually impossible to determine how increased F.O.B. prices for flour might affect consumption.

Figures obtained from LaMinoterie indicate that the Haitian government receives tax revenues of approximately \$4.37 per cwt. from flour. The mill receives approximately \$15.38 per cwt. for the flour that is produced, compared with about \$12.00 cwt. currently received by mills operating in the United States. Because of the relatively large margin apparently enjoyed by both The Haitian government and La Minoterie, I recommend that if possible, pressure be exerted on either or both through P.L. 480 programs or other means to absorb the cost of vitamin A and iodine fortification.

5. If the fortification of wheat flour with vitamin A and iodine affects the baking qualities or final products in any perceptible way, I recommend limited baking tests by Haitian bakers. Limited quantities of fortified flour could be imported or perhaps mixed by La Minoterie and then distributed by a market research firm to a random sample of bakeries registered by the "Contribution", a Haitian licensing and taxing authority. Evaluations of baked products made with the fortified flour could then be obtained from the bakers and their customers.

6. Should further studies of the distribution and consumption of wheat flour in Haiti be required, I recommend Mr. Pierre Phelps, Marketing

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Consultant, P.O. Box 624, Port Au Prince, for the task of conducting necessary field work.

7. Although wheat flour appears to be a feasible vehicle for nutritional fortification, other possibilities should be explored. One possibility is cooking oil. It is widely available and widely consumed, but little or none is produced in the country. If the distribution system for cooking oil is concentrated and readily identifiable, nutritional fortification may be feasible.

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Tabulation de la Forme 3 - Haiti

Aliment	Disponible dans la communaité										Total	
	Univers 1		Univers 2		Univers 3		Univers 4		Univers 5			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lait en Boite ou en Poudre	17	57	17	57	14	47	14	47	21*	72	83	56
Farine France	18	60	19	68	18	62	19	68	25*	86	99	66
Pain au Biscuit	23	77	27	90	24	80	27	90	27*	93	129	86
Cassave	26	87	28	93	28	93	29	97	27*	93	138	93
Mamba	23	97	22	73	25	83			17*	59	104	70
Huile, Manteque	29	83	25*	86	25	83	26	87	28*	96	129	86
Lot Fraisse	21	70	19	68	24	80	28	93	25*	90	118	79
Sucre	27	90	22	73	23	72	29	97	28*	96	129	86
Poisson Frais	11	37	12	40	11	37	17	57	22*	76	73	49
Poisson Secs	23	77	15	50	15	50	16	53	22*	76	91	61
Riz	24	80	27	90	26	87	25	83	25*	86	124	85

Attachment 1

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Attachment 2

Percent of Rural Communities that Produce a Food,
Percent in Which it is Available at the Time of the Survey,
and Percent of Children in the Universe that consume the Food

Food	Communities		Children Consume
	Produce	Available	
Tubers	100	97	60.2
Cereal	100	86	63.3
Pulses	97	70	62.7
Vegetables	97	90	19.6
Vit.A Vegetables	100	93	15.5
Fruits	100	98	10.6
eggs	92	88	1.5
Fresh Milk	89	84	29.2
Meat or Fish	82	78	43.8
Canned or Powdered milk	--	56	5.4
Bread	---	86	46.8
Wheat Flour	---	66	16.9
Oils and Fats	---	93	91.7
Sugar	---	86	67.3

Data for Figure 2
Dietary Report, Haiti Nutrition Status
Survey 1978

Nov. 1979

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Percent of Communities by Region in which Certain Industrialized
and semi-industrialized Products with commercial Distribution were
Available at the Time of the Survey

Food	North- West 001	North 002	Arti- bonite 003	West 004	South 005	Total Rural
Sugar	90	73	77	97	96	86
Commercial oils & fats	83	86	83	87	96	86
Homemade fats	70	63	80	93	90	79
Flour	60	63	60	63	86	66
Bread	77	90	80	90	92	86
Cassave	87	93	93	97	93	93
Mamba	77	73	83	57	59	70
Canned or Powdered Milk	57	57	47	47	72	56
Fresh Fish	37	40	37	57	76	49
Dried Fish	77	50	50	53	76	61

Source: Dietary Report, Haiti Nutrition Status Survey, 1978 (first draft).

Attachment 4

Percent of Children that Consumed Each Food
by Rural and Urban Universes

Foods	Rural Sample	Urban Sample
Fats and Oils	91.8	92.0
Sugar	67.3	88.6
Cereal	63.3	49.4
Tubers	60.2	39.2
Pulses	62.7	76.1
Bread	46.8	67.0
Meat and Fish	43.8	60.8
Fresh milk	29.3	20.5
Other milk	5.4	38.6
Flour	16.9	29.0
Vitamin A. vegetables	15.5	17.6
Other vegetables	19.6	18.7
Fruits	27.4	25.5
Tea or Coffee	54.6	42.0

Data for Figure 3
Dietary Report, Haiti Nutrition
Status Survey 1978
Nov. 1979

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Attachment 5

Percent Distribution of All Children by WT/HT
Z-Score and by Foods Consumed

Foods	WT/HT Z-Score		
	≤ -2.00 N=109	-1.99 to +1.99 N=942	≥ +2.00 N=13
Cereals	56.9	61.8	38.5
Tubers	52.3	57.5	38.5
Pulses	55.9	66.3	38.5
Bread	45.9	50.7	46.2
Wheat Flour	16.5	19.0	30.8
Meats and Fish	29.4	32.6	15.4
Fresh Milk	20.2	28.8	23.1
Powdered or Canned Milk	6.4	11.1	30.8
Vit. A Vegetables	14.7	14.2	7.6
Other Vegetables	9.2	20.9	0.0
Fruits	23.8	27.4	30.8
Sugar	67.0	71.5	53.8
Fats and Oils	91.7	92.1	69.2
Teas and Coffees	58.7	52.1	30.8

Percent of Rural Communities that Produce a Food,
Percent in Which it is Available at the Time of the Survey,
and Percent of Children in the Universe that consume the Food

Food	Communities		Children Consume
	Produce	Available	
Tubers	100	97	60.2
Cereal	100	86	63.3
Pulses	97	70	62.7
Vegetables	97	90	19.6
Vit.A Vegetables	100	93	15.5
Fruits	100	98	10.6
eggs	92	88	1.5
Fresh Milk	89	84	29.2
Meat or Fish	82	78	43.8
Canned or Powdered milk	--	56	5.4
Bread	---	86	46.8
Wheat Flour	---	66	16.9
Oils and Fats	---	93	91.7
Sugar	---	86	67.3

Data for Figure 2
Dietary Report, Haiti Nutrition Status
Survey 1978

Nov. 1979

Percent of Children that Consumed Each Food
by Rural and Urban Universes

Foods	Rural Sample	Urban Sample
Fats and Oils	91.8	92.0
Sugar	67.3	88.6
Cereal	63.3	49.4
Tubers	60.2	39.2
Pulses	62.7	76.1
Bread	46.8	67.0
Meat and Fish	43.8	60.8
Fresh milk	29.3	20.5
Other milk	5.4	38.6
Flour	16.9	29.0
Vitamin A. vegetables	15.5	17.6
Other vegetables	19.6	18.7
Fruits	27.4	25.5
Tea or Coffee	54.6	42.0

Data for Figure 3
Dietary Report, Haiti Nutrition
Status Survey 1978
Nov. 1979

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Percent of Communities by Region in which Certain Industrialized
and semi-industrialized Products with commercial Distribution were
Available at the Time of the Survey

Food	North- West 001	North 002	Arti- bonite 003	West 004	South 005	Total Rural
Sugar	90	73	77	97	96	86
Commercial oils & fats	83	86	83	87	96	86
Homemade fats	70	63	80	93	90	79
Flour	60	63	60	63	86	66
Bread	77	90	80	90	93	86
Cassave	87	93	93	97	93	93
Mamba	77	73	83	57	59	70
Canned or Powdered Milk	57	57	47	47	72	56
Fresh Fish	37	40	37	57	76	49
Dried Fish	77	50	50	53	76	61

APPENDIX G - 1

Economic Considerations in Food Fortification, July 1982.

DIR 82-1
SP-5

July
1982

Economic Considerations in
Food Fortification

John P. Nichols

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PREFACE

In 1976 the Market Research and Development Center at Texas A&M University undertook a cooperative program with the Nutrition and Agribusiness Group, Office of International Cooperation and Development of the United States Department of Agriculture. The purpose of this program is to assist in the design and evaluation of food marketing programs related to nutrition intervention projects in developing countries. More specifically the focus is on intervention efforts involving the commercial marketing of nutritionally improved food products aimed at particular at-risk target populations in these selected developing countries.

This is one of several staff papers prepared in conjunction with this continuing project. Information on research reports and other papers may be obtained from Dr. John P. Nichols, Department of Agricultural Economics, Texas A&M University, College Station, Texas 77843.

ECONOMIC CONSIDERATIONS IN FOOD FORTIFICATION

John P. Nichols*

Economics has been defined as the study of the allocation of scarce resources among alternative uses. In the field of food fortification decisionmakers are often faced with selecting among alternative programs and there is always a scarcity of resources. There are many ways in which economics may play a role in defining problems, analyzing costs and benefits and making program decisions.

The discussion in this paper is intended to provide an overview of economic considerations in planning, implementing and controlling a food fortification program. While examples from applicable research are cited in several places, the main purpose is to identify principles and issues that arise in their application to programs of this type. Issues in identifying the target population and alternative plans or programs are discussed in the first section. Following this is a discussion of the identification and valuation of benefits. Costing considerations are also outlined in this section which is followed by a discussion of methods of comparing alternatives using both cost-effectiveness and cost-benefit approaches.

Paper presented at the Food Fortification Symposium, Maseru Lesotho, August 25-27, 1981.

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Target Groups and Food Distribution Systems

A food fortification program typically involves a direct intervention in a food commodity system. The commodity system includes firms and individuals from the production level through processing, marketing and consumption. These levels of the system are linked together by an economic exchange process where prices and quantities are determined in some type of market. At an early stage in planning, the target group for the program must be defined. While this is usually done on the basis of some documented or perceived nutritional need, it is also important to evaluate the target group in terms of its relationship to the commodity system.

Snodgrass indicates that two aspects of the commodity system are important; (1) the structure of the system and (2) the dynamics of the commodity's movement through it. Structural analysis involves the identification of marketing channels which are best suited to reaching the target group. In describing these channels, specific account should be taken of the firms involved, their methods of exchange or trading, and the economic incentives or margins which exist at each level and make the system work. Distribution channels will vary and what may work in one country will not necessarily reach the same type of consumer in another.

How the commodity flows through these channels is also important. Identification of the main levels of processing and storage helps to determine feasible methods of intervention. The feasibility of centralized fortification obviously depends on a clear understanding of the points at which the commodity is accumulated. Snodgrass notes that

village level fortification may be done at the point of milling even if the grain is not being sold but rather custom milled. If the service of milling is being utilized by a large share of the target group then this represents a potential point of fortification intervention.

The main principle here is that the structure and dynamics of the commodity system must be understood. This must be evaluated with specific reference to the target group. Strategies can then be devised on a more informed basis and the realities of reaching particular population subgroups assessed. In some cases the expectations regarding coverage of the target group may have to be redefined in light of these realities.

Identifying Benefits and Costs

The central role of economics in planning and management of food fortification programs is to assess the relationships between costs and benefits in economic terms. Typically this means determining the monetary value of each and comparing these values across program alternatives. While costing out a project is often difficult and sometimes requires heroic assumptions, the benefits side is usually the most troublesome. For this reason we turn first to a discussion of the identification and valuation of benefits.

Identification of Economic Benefits

For the most part the economic benefits which might flow from a food fortification project are those which would result from any investment in human capital. These benefits focus on the potential increases in productivity and reduced social costs associated with improved health status and quality of life.

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Popkin and Lidman have developed a useful listing of these economic benefits which flow from improved nutritional status. This list includes the following:

1. Improved physical performance
2. Improved mental performance
3. Reduced morbidity
4. Reduced mortality
5. Improved structural development
6. Improved mental health
7. Long-term fertility decline
8. External effects
9. Intergenerational effects
10. Associated benefits

The nutrition literature suggests that improved nutrition should increase the capacity for prolonged physical work. While this seems logical the economic literature is not entirely conclusive in demonstrating the economic value of this relationship as will be discussed later. Mental performance is linked to better nutrition through improved capacity for learning and better cognitive development. The literature generally supports this relationship.

Better nutritional status also expresses itself through increased resistance to diseases and therefore lower morbidity. This reduction in morbidity is of value in terms of better attendance at school or work. Through its impact on disease resistance, better nutrition is also linked to reduced mortality and its attendant costs to society.

The development of increased physical structure has been associated with nutritional status though the value of this in economic terms has not been documented. Behavioral disorders such as irritability, restlessness and anxiety may also be associated with inadequate nutritional status. These types of disorders are particularly difficult to understand but the effects would likely be expressed in terms similar to those for mental performance discussed above.

Arguments abound with regard to effects of improved nutrition on fertility. In the short-run one might expect an increase in fertility associated with better health. Some have argued that over the long term fertility will decline associated with the improved security derived by the individual from perceived advances in the survival of children into adulthood. The literature is not clear on this and benefits are difficult to assess.

External effects are those which accrue to society and individuals outside the target group. This might be expressed in terms of a reduced tendency to spread communicable diseases, etc. Total benefits are likely to be greater than the sum of the benefits to the target group. In a similar manner intergenerational effects may be beneficial. Better health through improved nutrition may be expressed. Healthy parents beget healthier and better educated children, the value of which could be estimated.

Associated benefits, according to Popkin and Lidman include an accounting of the reduced demand for medical services and perhaps even a reduction in burial expenses by the poor. Part of these savings may accrue to the individual and part to society, depending on who is currently paying the costs.

Valuation of benefits

The identification of possible benefits such as those discussed above is an important first step. But these benefits must be placed in an economic framework if a useful analysis is to result. While some benefits do not lend themselves to valuation, and must therefore be set aside for the moment, recognition of their existence is important in making a final decision among alternatives particularly when the economic differences are not very great. They must be examined in a non-economic context outside the formal structure of a cost-benefit analysis.

There are several approaches to the valuation of benefits from nutrition intervention programs. They are generally based on underlying theoretical and limited empirical relationships between nutrition and various measures of physical and mental output or capacity. Since the literature in this field is by no means conclusive, the physical or biological coefficients which are used may be modified as additional research findings are documented.

In deriving an estimate of benefits it is important to make as complete an accounting as possible of those that accrue to both the individual and society as a whole. The distinction between private and public benefits is real but both must be estimated. Since the investment in fortification is likely to be made by the public sector, all benefits are relevant whether or not they can be directly "captured" by an individual.

Another important consideration in deriving estimates of benefits is the concern over whether society can productively utilize the increased capabilities in the work force inherent in improved nutritional status. Some have argued that surplus labor already exists in most developing countries and that increased productive capacity in the labor force is redundant. Popkin and Lidman argue that this is not supported by basic economic theory which suggests that some increase in output should nearly always result from an addition of labor input. Also they argue that major breakthroughs might result from improved management or faster adoption of new technology which could be expected from a more alert, better educated work force. These concerns, however, should be recognized as limitations to our ability to provide precise economic estimates of benefits.

One approach to quantifying benefits is analogous to a study of benefits to investments in education. Using an estimate of the relationship between improved nutrition and the speed of learning one estimates the reduction in number of grades repeated in school. This results in the individual entering the labor force earlier which can be evaluated in terms of the annual value of earnings for an individual of the assumed age, sex and training. Also, lifetime earnings differentials can be derived for school graduates versus dropouts.

Productivity gains have been estimated in some studies. A study in Indonesia (Basta et al) identified a 20 percent increase in output of rubber plantation workers associated with an iron fortification program. This increased output resulted in earnings increases of about \$44 (U.S.) per man year at a cost of about \$0.67 per man year for fortification and administration of the program. These benefits were estimated through a controlled experiment and values established at the piece rate value of the increase in worker output.

Another procedure which has been used to quantify benefits is to estimate the value of natural resources consumed by individuals who never reach the point of productively entering the labor market. This provides a generally lower-limit estimate which may be particularly useful in countries where the value of additional or better quality labor is not so clear. This valuation process accounts for the cost of such goods and services as medical care, food, clothing and education. Estimates using this approach range from 6 percent of national income in St. Lucia at the turn of the century to 3 percent in India and one percent in the United States and United Kingdom (Popkin and Lidman).

Another approach is to estimate the value of days lost from work. In developed countries such statistics are available. In other countries estimates would have to be derived using special surveys and experiments.

Cost Estimates

From an economist's point of view the identification and valuation of relevant costs is easier than dealing with benefits. Costs cannot be estimated, however, until fairly specific aspects of the fortification program alternatives have been decided upon. Specific cost estimates are therefore not discussed here; rather the emphasis is on procedures and issues in costing.

Developing a cost budget for any activity requires two basic steps: (1) estimating the physical quantities of each input including both operations and investments in plant and equipment and (2) converting this to monetary values by obtaining and multiplying by per unit cost for each input. Snodgrass discusses specific procedures involved in estimating physical inputs required. It will involve a close working relationship between the economist, engineers, technologists, and nutrition planners because it is not a purely economic activity.

All program inputs should be included in the initial listing regardless of who provides them. It is important that one agency not overlook the costs of administration, for example, which might be incurred by a different agency. It is also important to look only at additional inputs required. Allocation of overhead costs should be done only on the basis that additional overhead cost is going to result for an agency if the program is adopted. If an agency can undertake the program by using previously idle staff capacity, then no real cost has been incurred.

The concept of opportunity cost should be noted at this point. Placing a price on various inputs can be done using various market prices for the inputs involved. This is the typical approach. However, this may be misleading if the market price doesn't really reflect the value of that input in its "next best use" or what is referred to by economists as opportunity cost. Prices of inputs used should be evaluated in this light.

In a recent bread fortification study in South Korea, Nichols and Barrett observed that opportunity costs for management and plant capacity played a role in determining project success. For a private baking company with a limited quantity of managerial resources, the allocation of this talent was based on relative returns from alternative enterprises. It was found that other product lines competed favorably with the fortified bread product for limited management time and in some cases plant capacity because the firm perceived greater returns from these ventures. In this case the opportunity cost of managerial time was so high that it was one factor in discontinuing the production and sale of fortified bread.

Typically in preparing the list of project costs several types of costs are separated out (Snodgrass). Capital costs are those associated with the investment in plant and equipment. This provides the basis for determining part of the annual fixed costs of the operation. Annual operating costs include both variable and fixed costs. Variable costs are all those which vary directly with the level of output such as fortificant, packaging, some utilities and much of the labor. Annualized fixed costs account for all those items which are required regardless of the level of output including management labor, property taxes, license fees, etc.

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Budgets may be prepared separately for components of the total project; for example the fortification process at the plant level may be budgeted separately from the administration, logistical, monitoring, and other program level costs. Several case studies examined by Snodgrass suggest that the cost of the fortificants is often the major component of total annual program costs particularly in macrofortification programs such as protein supplementation. He also has observed that microfortification with vitamins or minerals are generally much less expensive than macrofortification programs. Bread fortification with soy flour, however, may approach being cost free. The Korean project noted above and a similar program in Ecuador (Hoover) revealed that the fortified product was not necessarily more expensive than the regular bread on a price per loaf basis.

Each program is different, of course, and that is why a specific analysis of costs (and benefits) must be made for each. Generalizations from other countries or other products are useful primarily in identifying the nature of benefits and costs to be examined, not the absolute level of their magnitude.

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Program Analysis

The bottom line of the economic analysis is comparison of costs and benefits as measured in monetary terms. True cost-benefit analysis requires the estimation of the economic value of benefits as discussed earlier. Since this is not always an easy task, cost-effectiveness measures are often used for making tactical decisions among alternative programs of the same general type. Cost-benefit analysis is done only for larger or strategic decisions where the choice is between public expenditures of entirely different types such as investments in housing, defense, education or nutrition.

Cost-effectiveness

Cost-effectiveness measures relate the coverage achieved by the program to other important variables such as program cost or amount of total nutrients delivered. Ratios of various types relating these variables are estimated for each potential program. They are then compared to see which program does the best job in meeting the objectives. In essence, the decisionmaker has already looked at the potential benefits of this general class of programs and decided they are worth pursuing. Therefore the question now is how to get there most efficiently.

Important objectives of fortification program design include the extent of coverage, intensity of that coverage and cost of coverage (Snodgrass). There may be differing emphasis among these which the decision-maker will want to reflect in his overall assessment.

Snodgrass suggests several specific ratios in his review of cereal fortification. One is the penetration ratio which simply compares the number of recipients in the target group with the total size of the target group.

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$$\text{Penetration ratio} = \frac{\text{Recipients in target group}}{\text{target group}}$$

This is converted to a cost-effectiveness measure by ratioing the coverage achieved (recipients in target group) to total program cost. Such a measure yields an estimate of recipients covered per million dollars of program cost.

$$\text{Coverage effectiveness ratio} = \frac{\text{size of target group covered}}{\text{total program cost}}$$

A similar measure can be obtained for comparing the amount of nutrients delivered to total cost. Measurement of the number of target recipients is again required. Also an estimate of the share of nutrients going to this group is needed which may require some follow-up surveys or experiments.

$$\text{Delivery effectiveness ratio} = \frac{\text{Nutrients delivered to target group}}{\text{total program cost}}$$

Delivery effectiveness might also be compared by looking at nutrients provided to the target group in relation to the estimated nutritional deficit. This latter figure might be available from consumption surveys or estimates done to document the original need for the program.

Additional approaches to cost effectiveness comparisons include the direct measurement of biological response to food fortification provided through various program modes. This is a complex process requiring a great deal of time and effort. It can, however, provide more concrete measures of program results in terms of growth, morbidity or possibly mortality.

Cost-benefit analysis

As noted above, comparison of food fortification projects with completely different programs requires some form of cost-benefit analysis where the benefits are measured in monetary terms comparable to costs. Procedures such as those

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discussed earlier are applied to generate an estimate of the value of benefits.

When comparing costs and benefits the economist does not just add up costs and equate them to the simple sum of benefits. The important concept of present value of costs and benefit streams must be considered. Most food fortification projects will have some projected life or planning horizon. Costs will be incurred in various amounts over the life of the project. Likewise a stream of benefits will be generated over this future time period. In most programs the way these costs and benefits will be distributed over time will be quite different and also will differ from one project to another. Often substantial investment costs are incurred early in the life of the project while benefits will flow more evenly or may be weighted toward later years.

To adjust for these differences the present value of both costs and income streams must be calculated. This recognizes the fact that the money invested in the project, including operating costs, has some value over time. One dollar today is worth more than the guarantee of a dollar sometime in the future because it can be put to some alternative use now. The value of this money in its alternative use determines the discount rate used in evaluating the project.

Once the present value of costs and benefits of the project are estimated they then provide the basis for a cost benefit ratio. These ratios are compared among alternative programs to identify those providing the best return or a return which meets some standard which has been adopted by policymakers. It is obviously important that the discounting procedures be the same for all programs being compared.



A recently published example of cost-benefit analysis discusses the results of vitamin A fortification in the Philippines (Solon et al). This procedure was used to identify and measure both private and social benefits of the program. Using a 15 year project life and 8 percent discount rate, the estimated social benefit/cost ratios were 6.2 and 8.4 for urban and rural areas, respectively. When the discount rate was increased to 15 percent the benefit cost ratios were 2.4 and 3.8 for urban and rural, respectively. Though using the higher rate results in lower ratios, social benefits still exceeded social costs by more than two to one.

Conclusions

The role of economics in food fortification is primarily one of providing a useful, uniform set of information upon which decisions can be made. Analysis of the food production and marketing system to identify potential points where a fortification program may be constructed is a logical first step. The economics of that system must be understood so that policy planners can build in the incentives necessary to enhance the chances of success.

Economics is also central to the identification and appropriate evaluation of all costs and benefits related to the project. While these assessments depend on many technical engineering and biological relationships the function of economics is to convert this information to a common measure so that programs which may differ greatly can be compared.

Cost-benefit analyses are not always able to incorporate the full range of benefits which accrue to food fortification projects. In such cases these "external" benefits must be weighed in a more flexible framework. Economics does provide a framework, however, for incorporating a

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a wide variety of benefits and is also particularly useful for comparing the cost-effectiveness of programs which have relatively similar objectives.

Studies have shown positive net returns to food fortification under a wide variety of conditions, though obviously not all projects are successful. Microfortification under centralized, controlled conditions often can be done at a relatively low cost. Where less centralization is involved, when greater quantities of fortificant are required (as in protein fortification) and where potential benefits are not easily identifiable, then the analysis becomes more difficult and less generalization from previous studies can be made. A well planned food fortification program requires careful attention to economic considerations if it is to be successful and represent a wise use of public resources.

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APPENDIX G - 2

**Consumer Acceptance and Market Testing in
Food Fortification Projects, July 1982.**

DIR 82-1
SP-6

July
1982

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in Food Fortification Projects

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PREFACE

In 1976 the Market Research and Development Center at Texas A&M University undertook a cooperative program with the Nutrition and Agribusiness Group, Office of International Cooperation and Development of the United States Department of Agriculture. The purpose of this program is to assist in the design and evaluation of food marketing programs related to nutrition intervention projects in developing countries. More specifically the focus is on intervention efforts involving the commercial marketing of nutritionally improved food products aimed at particular at-risk target populations in these selected developing countries.

This is one of several staff papers prepared in conjunction with this continuing project. Information on research reports and other papers may be obtained from Dr. John P. Nichols, Department of Agricultural Economics, Texas A&M University, College Station, Texas 77843.

CONSUMER ACCEPTANCE AND MARKET TESTING
IN FOOD FORTIFICATION PROJECTS

John P. Nichols*

Success of a food fortification program is viewed in terms of improvement in the quality of human life through improved nutritional status. This success can be measured in terms of increased nutritional status though often analysts attempt to document the number of recipients reached or quantity of nutrients delivered as an indicator of a successful nutrition intervention program.

But success depends greatly on the careful blending of technical, economic and distribution factors. None is more important than the recognition that consumers make choices in their food consumption decisions which are critical to achieving the desired nutritional effect. These choices are influenced greatly by forces which are beyond the traditional considerations of economists; that is price and income.

In this paper we will address the importance of consumer choice in food fortification, questions which must be answered in the planning and implementation process and methods by which data are generated to provide these answers. While a broad understanding of the role of culture is important in assessments of this type and a basic theory of consumer behavior is implied, these topics will not be addressed herein. Rather the focus will be on the pragmatic questions and answers with which the nutrition planner or analyst must deal.

Paper presented at the Food Fortification Symposium, Maseru, Lesotho, August 25-27, 1981.

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All food fortification programs are based on the idea that consumers will choose to use the fortified product. In all cases the consumer is asked to make a trade or exchange of some kind. In a commercial venture this is obvious because the exchange of money for the fortified product occurs in an open, observable market. But even where delivery of the product is carried out through a "free" or institutional system, consumers make a choice with regard to its use. Factors of convenience and acceptability are important even if the product does not require a direct outlay of money by the consumer.

The discipline of marketing addresses itself to the problems inherent in assessing consumer needs and delivering a product to meet these needs. The marketing concept has been extended greatly in recent years to include considerations of social marketing where trade is not necessarily in a traditional private sector market for goods and services. This is a recognition that basic marketing strategy considerations are important in any situation where consumer choice is involved.

Marketing management concepts identify several basic areas where strategic decisions must be made; (1) product characteristics (including packaging), (2) pricing, (3) promotion and (4) distribution. Decisions in each of these areas are necessary to the development and implementation of most food fortification projects. Consumer acceptance testing focuses on questions of product design or formulation, with the other dimensions of market strategy being somewhat less important. In market testing, however, all aspects of strategy may be addressed in one way or another as deemed appropriate by the program planner.

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Important Questions in Evaluating Acceptance and Market Success

Consumer acceptance and market tests are the focus of this paper. The methods of designing and conducting analyses of this type are determined by the nature of the questions which the nutrition policy planner addresses. There are certain basic questions which are commonly answered through the use of consumer acceptance studies and market tests. In some cases the answers to these questions may be known or partially understood without resorting to a formal study. In some cases what is known may be helpful in narrowing down the number of questions which still need answers. Therefore, before getting into the detail of how to do consumer acceptance and market tests, it is useful to review the important questions we are trying to answer.

What Product?

The consideration of consumer acceptance in planning a food fortification project must start well before the formulation of the fortified product is undertaken. The first and foremost question which must be answered is "What is the appropriate food to use?". Also important is its corollary, "Why?". While these are not generally considered as the main focus of testing consumer acceptance, if they have been studied and answered successfully, the problems of consumer acceptance of the fortified product will be greatly reduced.

Extensions of this same basic question relating to the distribution of consumption of this food over space and time are also important. "How much is consumed?" and "Does this vary seasonally or geographically?" are questions that must be addressed. The form in which the product is purchased and typical methods of preparation and serving must be known and variations within the target population explicitly recognized.

Market penetration of various competing or substitute products should also be documented.

Will Fortificant Alter Product?

The main question addressed in consumer acceptance studies is whether the product is acceptable to potential consumers. Fortification of food products, ideally, should be done so that no detectable difference results. In a few instances this might be possible with certain microfortificants. However, in many cases measurable changes occur in one or more attributes of the product such as taste, odor or color. To the extent real or perceived differences exist, there is a question of consumer acceptability. Without consumer acceptance the program will be a failure so there is an obvious need to resolve this question as early as possible.

Organoleptic factors should not be the only criteria. Changes in convenience or method of preparation affecting shelf life characteristics are also important determinants of acceptability which must be addressed.

Will Consumers Use the Product?

There are several aspects to this basic question which go beyond simply knowing whether or not the fortified food is used by the intended households. Intra-household use must be considered since individuals within the household are usually the target population. The quantity consumed by those individuals relative to the identified nutrient deficit is also important. Preparation and serving practices are often important factors in this relationship. The question of reaching sales levels sufficient to be commercially viable will also be important in food fortification programs which depend on regular market channels for successful distribution.

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How to Effectively Market Product

There are often many components of a marketing program involved in food fortification projects. In addition to developing the product there are considerations of efficient distribution systems, publicity, consumer education and advertising, and packaging. The choice among alternative strategies in each of these areas may be made easier by properly raising questions in the consumer research stage or designing a test market that will offer useful comparisons.

Consumer Acceptance

Many different methods have been used to assess the consumer acceptability of new or altered products. Some of these will be discussed below. Not all approaches are necessary or desirable in any particular project. The specific unknowns in each case must be considered and methods selected which are consistent both with the objectives of the project and the resources available for the consumer acceptance studies.

Surveys of Consumption Patterns

At an early stage in planning of any food fortification program it is important to have a complete understanding of basic food consumption patterns, particularly among those who have been identified as the target group. In many cases some of this information will already have been gathered through on-going government sponsored surveys. Specifically, this information should include for fairly detailed food categories the following: quantities consumed by time period, usual sources of supply, methods of storage at home, preparation and serving methods and variation in each of these by age, sex, region, season, urbanization, household income, education, and similar socio-economic variables.

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Among the sources which may already have this information are expenditure surveys done by the central bank or economic planning agency. These will often provide insight into basic consumption patterns and have the advantage of being fairly current. The main limitation is that studies of this type usually focus on expenditures and do not provide sufficient detail on the quantities of various products or insights into how food is consumed in the household.

Another helpful source of previously collected data are nutrition surveys conducted by the ministry of health or some related local or international agency. In fact, such studies are often the basis for identifying the need for food fortification in the first place. If properly designed this survey may have elicited much of the information needed in guiding the early stages of product development.

If data of this nature are not available from any secondary source then it usually is necessary to conduct a household survey to collect it. Such surveys are time-consuming, expensive and require careful planning. In many cases the target group has been identified using existing information but further data is desired on specific consumption relationships critical to the success of the project. In these circumstances the sample size and length of questionnaires may be reduced to a more manageable size. Consumption patterns surveys usually can be narrowed down using existing data to a size compatible with the food fortification project. Assistance in designing and conducting such surveys may be obtained from local or international agencies, universities or private companies skilled in marketing research.

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Laboratory Evaluation Panels

Once formulation of the food product has begun screening procedures are established to insure an acceptable product will result. In addition to objective laboratory tests, a panel of trained individuals may be established to evaluate the more subjective characteristics of the product. These laboratory panels assist in screening alternative formulations of the fortified food.

A laboratory panel usually consists of a small group of researchers and office workers, screened and trained to be able to detect differences in selected organoleptic characteristics of interest. Detecting differences is one of the main purposes of such a test although the panel may also be trained to check acceptability against some known standard. Standard procedures for the design of laboratory panels for sensory evaluations are provided in several references (Committee on Sensory Evaluation, Larmond).

Consumer Taste Panels

Once a fortified food product has been developed which satisfies the requirements established in the laboratory, its evaluation moves to a new arena. The laboratory panel, while efficient at screening out unacceptable products, is not necessarily representative of the consuming public and should not be used as a basis for projecting ultimate consumer acceptance.

An efficient way to obtain a quick reading on consumer use and acceptance is to conduct taste testing in a facility where a reasonably representative sample of potential consumers may be found. Clinics are a particularly logical location as the clientele may often be quite typical of the population the product is intended to reach. Churches or women's clubs also provide possibilities. The number of persons evaluating the product should be much larger than a laboratory panel and several locations

should be used in an attempt to obtain as wide a cross-section as possible.

The food is typically prepared, tasted and evaluations completed at the central location giving the respondent some degree of privacy in making judgements. Control is exercised over preparation method, serving procedures, lighting and other variables to the extent possible so that the effects of these factors do not enter into the evaluation. Questions should be kept simple and straight-forward so that the judgements of untrained persons will be useful. Procedures for setting up various discrimination or acceptance tests are available in the references noted earlier.

A test of this general type was used recently to evaluate differences among four types of tortillas in Guatemala, including three different fortified ones (Urrutia). The sample consisted of 360 persons in five villages. A triangle test was used to determine if any differences were detectable. Also respondents were asked to indicate preferences. The results helped in determining the final product formulation.

In-household Testing

In many cases an evaluation of the fortified food under typical household preparation conditions is desired. The product is delivered to the home and left with preparation instructions, evaluation forms, and related information. After several days a second visit is made to pick up the evaluation forms.

This approach is the most sophisticated type of consumer acceptance test in terms of the amount of planning and resources required. However, it also provides the best opportunity to yield detailed results relating to many aspects of the product. Through careful design a representative sample can be obtained. Most important, however, is the evaluation of the product in terms of storage, convenience of preparation, packaging and similar factors in addition to taste, texture and appearance.

Since the product is prepared and served in the household, it is possible to obtain information on the way it was served, who consumes it and how this may deviate from the planners intention. In other words, we are now testing the entire product concept, not just the specific organoleptic factors examined by a taste panel.

A recent evaluation of this type was conducted in Sri Lanka on Thriposha, a cereal based fortified food (Corea). In designing this survey we knew that the product was likely to be acceptable from a purely organoleptic point-of-view because the product had been used previously and tested before. What we were concerned about was the question of its acceptability as a commercial product. The results of this phase of the research confirmed the viability of the project and helped give direction to changes needed before a test market for Thriposha could be undertaken.

Market Testing

The final measure of success of a fortified food, as with any product, comes when it is put into distribution and consumers are given an opportunity to make a choice to use it. At this stage all modifications suggested by laboratory and earlier consumer acceptance testing have been incorporated into the product. Since a full treatment of the topic of market testing requires more space than available here only the basic principles will be discussed. Several references may be consulted regarding specific aspects of market testing (Banks, Boyd and Westfall, Breen, Ferber).

Marketing Plan

The organization or firm responsible for the project must have a clear plan regarding each of the marketing strategy factors discussed earlier.

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Consideration of each of these elements must begin much earlier than the test market stage but they all come together at that point and a well-organized coherent plan is important. This is true for both commercial ventures as well as subsidized or institutional food fortification programs. Remember that the element of free consumer choice always exists and thus it is important to consider all factors affecting this decision over which some element of control can be exercised. Development of such a plan is discussed further in a recent paper relating to the marketing of low-cost extrusion cooked foods (Nichols).

Design of Market Test

Two considerations are basic in designing a test market: representativeness and control. The results of the test market will be used to project the ultimate success of the product and potential volume of distribution. Therefore, the test market must be designed to insure that the area included is broadly representative of the total anticipated market.

The other aspect of importance is control. This concern also places a limit on the way the test market is designed. The purpose of a test market is to obtain a sound basis of projection with the smallest possible outlay in terms of product, investment or market exposure. Therefore, we don't typically place the product in full distribution unless the size of the total market is very small. Areas such as cities, geographical or political subdivisions or sales territories are used as a basis for reducing the size of the test markets to manageable levels. Most often this will be dictated by the already defined subdivisions in the distribution system planned for the fortified product.

Control is also important because of the need for accurately measuring the rate of product movement in the test market. Regional sales territories

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are a convenient means of obtaining sales figures for a commercial product. Similar subdivisions will exist in any distribution system. It is important to avoid imposing artificial regions on this system because it will be difficult to obtain accurate data or to relate the data to other known characteristics of the region involved. It will also be difficult to insure efficient product flow if artificial territories are created. Leakage of the fortified food out of the test area should be minimized. Control can best be exercised by taking advantage of the natural pattern of physical movement and administrative control in the distribution system.

Measuring Success

Three types of information may be generated through the test market: (1) distribution volume, (2) consumer reaction and (3) trade reaction. Volume sold or distributed over time is the primary type of data desired from a test market. This is the basis for all projections of marketwide volume, nutritional impact and potential for program success. A system for regularly collecting, adjusting and reporting of this data should be worked out in advance. As discussed above the test market should be designed to make this as easy and informative as possible.

Data should be maintained separately for each logical sub-area within the test market and on as short a time interval as is consistent with normal record-keeping (monthly or weekly). Data on inventory changes within the system should also be considered. Volume shipped from the plant or manufacturing center is not a very good indicator of retail movement if there are sizeable inventory changes at the wholesale level. Movement indicators should be established as close to the retail or consumption level as possible.

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The test market also provides the ideal laboratory for evaluating consumer reactions and identifying the type of consumer who uses the product. This, however, requires follow-up surveys of a sample of households. Such a survey must be carefully designed to insure that market penetration can be estimated and a representative sample of using households is identified. An individual household survey is needed to obtain an accurate estimate of the share of households using the product and a profile of the individuals consuming it in various quantities. Methods of preparation and serving can also be evaluated if this is a potential problem area with the particular food product involved. A study currently underway in Guyana is designed to evaluate the market for Cerex, a cereal based weaning food. One of the major concerns is to influence the method of preparation and serving in order to insure the greatest nutritional value. The follow-up survey we have designed will be used in part to measure how successful the project is in this area.

A third type of information available is trade reaction. Test markets measure the success of the product in all important dimensions. This includes any concerns of significance to people at the wholesale or retail level of the distribution system. If there are some particular problems with storage or shelf-life for example they may be revealed most clearly by the persons involved in handling the fortified food.

A survey of distribution firms should be conducted to identify problem areas. This does not need to be particularly expensive or time consuming but can provide valuable insights. While problems of major importance will usually surface by themselves, there may be more subtle considerations which should be elicited by consciously going into the field and asking questions.

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Summary and Conclusion

Since all food fortification projects depend on influencing the food consumption decisions of consumers, marketing related considerations are important. The process of evaluating fortified food projects begins with identifying the easiest method of achieving the desired nutritional impact. Using this as a basic product concept, alternatives may be tested in a laboratory setting before launching into direct consumer evaluations. When the alternatives have been narrowed it is necessary to use a consumer taste panel or in-home testing to verify the acceptability of the product. A test market is the logical conclusion to this development process. From this basis, a projection can be made of the size of the market and potential total nutritional impact.

Consumer acceptance and market tests are widely used to evaluate fortified foods. While they are not always particularly sophisticated, a conscious effort should be made to conduct an organized assessment. Expensive mistakes can be avoided through careful consideration of basic consumer needs and the way they make choices regarding food consumption. Conclusions regarding success or failure of any food fortification project requires careful monitoring of how consumers use the product once it is introduced.

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