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MARKETING OF FOOD CROPS IN THE AGRICULTURAL DIVERSIFICATION  
PROGRAMME IN BARBADOS\*

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Introduction

This paper attempts to highlight the main characteristics of food crop marketing in the agricultural diversification programme of Barbados. Marketing problems and diversification policies of commodities other than food crops are also considered. A model of a marketing institution mainly for handling food crops such as vegetables, root crops and fruits, but also capable of handling other commodities such as livestock products and fish, is presented.

The figures used in our estimates (internal rate of return calculation) are based on actual cost and revenue data of the present Barbados Marketing Corporation.

Background to Marketing

The marketing of agricultural produce in Barbados was started by hawkers (or hucksters). They would make their purchases at the farm gate, sometimes actually harvesting or picking the crop. They began this marketing function by travelling around on foot or in animal drawn carts and gradually moved up to motor transport; presently some use station wagons.

There were two types of hawkers: the itinerant hawkers who travelled from village to village selling to the consumer; and the sedentary hawkers who assembled at advantageous locations and sold to consumers there. These sedentary hawkers were numerous on certain streets of Bridgetown in the 1940s and early 1950s.

During the development plan period 1955 to 1960, the government saw the need for centralised market places and three large public market places were built. Two were built in the city and one in a rural district. Plans were also made to establish three others in strategic parts of the Island. The hawkers were forced to assemble in these public markets. The itinerant hawkers have not changed their method of operation.

As food production increased, the need for a more modernised system of marketing became evident. In 1956 to 1960 a study of the marketing system was conducted by the government and recommendations were made to establish a marketing corporation. The Barbados Marketing Corporation (BMC) was established by an Act of Parliament in 1961. However, the Corporation did not begin operating until April 1963.

Some of the functions and powers of the BMC<sup>1</sup> that are relevant to Agricultural Diversification are given below:

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\*The views expressed in this paper are those of the authors alone and do not necessarily represent those of the Ministry of Agriculture in Barbados.

<sup>1</sup>

Barbados Marketing Corporation Acts 1961, Official Gazette, September 4, 1961.

- "... (a) to stimulate, facilitate and improve the production, marketing and processing of produce in the Island, particularly for the benefit of the producer;
- (b) to secure the most favourable arrangements for the purchase, handling, transportation, exportation, shipping, marketing and sale of produce whether in the Island or out of the Island, and in particular to assist agricultural and fishery co-operative societies to dispose of their produce to the best advantage;
- (c) to secure the most favourable arrangements in the Island or out of the Island for the storage of produce and for the storage of such other matter or thing as the Corporation may think fit."

The Corporation shall, subject to the provisions of the Act, have power:

- "... (a) to buy and sell produce;
- (b) to fix and determine the grading of produce;
- (c) to import and export produce;
- (d) to establish and operate depots and agencies for the purchase, delivery, grading and sale of produce;
- (e) to enter into contracts for the purchase and sale of produce upon such terms and conditions as the Corporation may think fit;
- (f) to enter into contracts for the transport of any produce or of such other commodities as may facilitate the operations of producers;
- (g) to establish and operate facilities for preparing and processing any produce;
- (h) to establish and operate facilities for cold storage or any form of storage for produce."

A Brief Evaluation of the Existing  
Marketing Arrangements

The Hawker/Huckster

The system of marketing as performed by the hawkers is very inefficient. Nevertheless, it is essential, and will be in existence for a few years to come. The hawker uses no system of grading or pricing. He or she goes to the field and bargains with the farmer for a price which is not determined by the market forces of supply and demand. Indeed, the supply and demand situation in Barbados is not known by the farmer, the huckster, or the agricultural policy makers in the government. Because of the limited quantity purchased by hawkers they are forced to make several trips to the field. No contractual arrangements are made between producer and hawker, and all transactions are in cash. There are no storage facilities on the farm or with the hawker. Therefore, if a crop is harvested and a hawker does not show up at the farm, the farmer is faced with spoilage problems; similarly, a hawker experiences losses if he purchases produce and is unable to sell them. Thus this system lends itself to a high level of wastage and risk, low prices to the producer and higher prices to the consumer. Furthermore, there is no encouragement on the part of the producer to produce large quantities of perishable crops.

The majority of market garden producers in Barbados (on estates and smallholdings) use the hawker as the main marketing outlet.<sup>1</sup> The hawker is preferred because he is

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For discussion on this point see, Ingersent, K.A. et al, 'Vegetable Production in Barbados: An Economic Survey', Ministry of Agriculture, Science & Technology, Barbados, 1969.

willing to travel to the farm gate, perform the actual harvesting or picking of the crop, purchase it at one price per unit regardless of the grade, and pay cash for it on the spot.

There are some producers who will sell to hawkers regardless of how efficient a marketing system is developed in future. These producers are either experiencing a shortage of labour for harvesting or they prefer the cash transaction offered by hawkers for ungraded produce. In addition some producers have such small quantities for sale that large efficient marketing institutions will not deal with them on an individual basis. Therefore this producer with small quantities must continue to make use of the hawker. It is for these reasons that we say the hawker will continue to operate for some years to come. We do not visualise the end of the small producer who produces small quantities for sale.

### The Public Markets

The construction of public markets to house the sedentary (street selling) hawkers was a move to centralise market outlets. These markets have also provided for better sanitary surroundings where hawkers can assemble. This step has resulted in a decrease in the number of itinerant hawkers. Although produce is not graded in these markets, yet the consumer can look around and make purchases from the hawker with the best quality produce. Not only has there been a failure to grade produce, but also a failure to establish a uniform pricing system in these markets. In any one public market the same type of commodity could be offered for sale at several prices. Towards the end of the day large quantities of produce remain unsold, then hawkers indulge in 'cut-throat' selling.

### The Barbados Marketing Corporation (BMC)

The Barbados Marketing Corporation was established to provide farmers with a more modern marketing institution. During the past seven years, the BMC has spread its operations to include the following divisions: Vegetable, Abattoir, Sea Food Processing, Shrimp Processing, and Wholesale and Retail Sales.

The key sections in respect of agricultural diversification are the vegetable, abattoir and wholesale sections. These sections have proven to be inadequate and inefficient. The limited capacity of the cold storage facilities for vegetables has forced the BMC to refuse to purchase produce from farmers who have expanded production because of the diversification programme. This unfortunate situation, coupled with the inability of BMC to offer guaranteed prices to farmers, has led to poor relations between the BMC and the producer. The BMC is not in a position to set prices for agricultural produce because they do not have a Marketing Intelligence and Information Service to inform them of the supply and demand situation. The BMC has attempted to set grade standards by producing a booklet of grades and standards.<sup>1</sup> In this booklet standards were established on twenty-four items of vegetables. The fact that only a minority of producers sold produce to BMC meant that standards could only be enforced on a few producers. After losing the faith of the producers, the BMC tried to offer contracts to farmers. This contract was only a guaranteed minimum price for produce sold to the BMC. Since it did not contract a specific quantity, the farmer could have sold the cream of his crop through other marketing

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Barbados Marketing Corporation, Acceptable Grades for Crops, B.M.C., Barbados, 1968.

outlets, and then sell the remainder to the BMC at the minimum price.

Finally, the export market for vegetable produce could not be fully developed because of the difficulty experienced by the BMC in determining whether the local market is adequately supplied. The BMC Act gives the Corporation the power to be the sole exporter of produce.

The BMC was set up with an initial capital of \$1.4 million. Of this amount \$1 million was provided by Government as a long term loan repayable within 20 years at an interest rate of 7 per cent per annum. The remainder of the capital, \$456,850, was provided by the Government as equity capital. The Corporation was allowed to make overdrafts, from specified commercial banks, to use as working capital. During April 1963 and December 1970 the BMC utilised overdraft loans totalling approximately \$2.66 million. The Government continued to provide in its estimates for additional capital expenditure for the BMC. During 1963-1965 the BMC was allocated (by requisition from Capital Estimates) some \$116,000. In April 1965, the BMC was given a grant of \$300,000 from the Price Stabilisation Fund to be used as equity capital. Despite the frequent grants and loans made, the BMC continued to show an annual loss on overall operations. By the end of 1970, total losses were estimated at \$160,000. Of this amount interest owed on loans amounted to \$60,883.

In summary the total amount of money put into the BMC during 1963-1970 totalled approximately \$4.7 million, yet at the end of 1970 the overall operations showed an estimated loss of \$160,000. It must be pointed out here that the granting or lending of money to the BMC from time to time was not enough. The time taken for the financial aid to reach the BMC after a request has been made was a critical factor in the operations of the Corporation. The administrative bottleneck through which the requests from the BMC for monetary aid must pass is very slow. By the time the aid arrives the temporary minor monetary deficit being experienced is spiralled in a major and embarrassing debt.

The quantum of initial equity capital is also important to a marketing institution. It must be emphasized here that the initial capital donated to set up the BMC was grossly inadequate. The loan of \$1.4 million at 7 per cent interest rate and a grant of \$45,850 as equity capital should have been donated by Government as equity capital. Then the BMC should have been authorised to raise an adequate loan to start off on a sound footing. In short, the BMC was established with a loan debt and insufficient equity capital.

A sound financial beginning is not all that is needed to ensure a successful operation. A marketing institution should also be staffed with personnel who have the technical or administrative know-how. There should be no need to spread technical resources too thinly over several divisions of a Corporation. It is sound economic practice to have two or three efficiently-managed marketing divisions rather than five or six inefficient ones. The history of the management of the BMC reveals that the Corporation never had enough well trained personnel to implement modern marketing techniques. The salaries offered by the BMC failed to attract the top marketing technicians in the Area. The few qualified persons who joined the staff of the BMC had to manage all the operations of the BMC. Most marketing institutions can only perform successfully if the trained technicians are given a free hand to make certain management decisions. The BMC is controlled by a Board of Directors of seven persons. None of the present members of this Board by profession or otherwise is specialised or experienced in agricultural marketing or food distribution.

The final aspect of administration worthy of comment is the profit motive approach of the BMC. Certain institutions, because of the functions they have to perform must operate at a loss (in respect of quantifiable benefits only) at least in the early stages of their development. The BMC is such an institution. Yet its untrained management staff were given a directive to operate on commercial lines, that is, with a profit-maximising motive. This directive is seen as an unnecessary approach by the BMC in the context of its long-run objectives. Not all national benefits are easily quantifiable. There are numerous secondary and intangible benefits that can be derived by the economy from a marketing institution.

In summary, it is felt that the BMC has not been properly staffed with the required technical or administrative personnel to implement the marketing functions of the Corporation. Also, the members of the Board of Directors were scarcely more qualified in the skills of formulating and administering national marketing institutions. In short, the Board of Directors over the eight years of BMC's operation must accept the bulk of the responsibility for the failures of the BMC.

#### Problems with the Diversification Programme

The problems of diversification may be broadly classified as production and marketing problems.

Production problems: The main crops produced under the diversification programme are green vegetables such as carrots, tomatoes, beans, cabbage, onions, cucumbers and beets. The major livestock products are milk, pork and poultry. With all of these commodities there are certain problems to be overcome if the commodity is to reach the point of first sale in a satisfactory condition. Such problems include:

- a) use of the correct variety or breed;
- b) selection of the correct pesticide or weedicide;
- c) application of the correct fertilizers;
- d) adoption of machinery for the cultivation and harvesting of the crop;
- e) selection of correct feeds and the determination of feeding rate;
- f) maintaining of a low mortality rate;
- g) achievement of a high conception rate;
- h) access to adequate supplies of labour; and
- i) access to farm credit and extension advice.

These problems which we have classified as production problems have been overcome with some degree of success. In other words, the production problems accompanying diversification have not been a major constraint to a successful diversification programme. The various Research Units within the Ministry of Agriculture (for example, the Horticultural Research Unit and the Animal Nutrition Unit) as well as other interested organisations (The Barbados Sugar Producers' Crop Diversification Unit) have made and are making satisfactory break-throughs within the area of agricultural production.

Marketing Problems: Marketing services include proper handling, adequate transportation, grading, packaging, fair pricing, cool or cold storage, processing, promotion, advertising and distribution. Marketing problems are associated with the provision of these services.

Over the past ten years the progress made towards alleviating these marketing problems, which have grown more complex because of the agricultural diversification programme, has been unsatisfactory. This is so because the BMC, the main

instrument of government agricultural marketing policy has been unable to provide the necessary storage, transport and processing facilities. In addition, the Corporation offers minimum prices for only few products. As a result it handles only about 10 per cent of all vegetables produced in the Island.

It is felt that the future success of the diversification programme depends heavily on the establishment of an efficient, well equipped marketing institution. In our view the BMC as presently constituted cannot perform this task adequately. As an alternative we are proposing a model for a marketing agency to service the Government's agricultural marketing policy within the diversification programme.

#### The Model

This model is concerned with the marketing of food crops in Barbados, although it is envisaged that, in the long run, there will be a central marketing agency operating a food and fruit unit; an abattoir and pork and poultry processing plants; and fish and shrimp storage and processing.

The model assumes that (a) production of food crops in Barbados is technically feasible; (b) the proposed marketing agency will be located near Bridgetown, and (c) existing public markets at Cheapside, Fairchild Street, Eagle Hall, Speights-town and Oistins would be available for use as produce distribution centres.

In addition this model calls for the setting up of collection and buying points at predetermined sites throughout the Island.

The proposed marketing agency would consist of buildings so designed to allow future expansion. It would be constructed along the following lines:<sup>1</sup>

- (a) 3 Cold storage rooms
- (b) 1 Ante room and collecting area
- (c) 1 Grading and packing room
- (d) 1 Processing room
- (e) 1 Sale room
- (f) 1 Laboratory
- (g) Offices.

It would be naive to believe that the mere existence of a central marketing agency would be the panacea to our agricultural marketing ills. The degree of success will depend upon the form which it takes, the personnel chosen to direct it, the policy adopted and the manner in which the policy is carried into effect. Circumstances call for a bold and courageous policy. Such a policy in the early stages may even be incompatible with the concept of financial self-sufficiency and would require some degree of financial subsidisation.

During the establishment and consolidation period the proposed marketing agency would be responsible for innovations into the existing marketing system to effect desired changes in the status-quo of producers, hucksters and consumers. The success of this model would depend heavily on the extent to which the confidence and cooperation of producer, huckster and consumer are won.

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Roberts, J.A., Vegetable Storage and Processing, Unpublished Report, Not dated.

### Policy Objectives

The government's agricultural marketing policy may be outlined as follows:-

- "(a) to provide producers with a reliable outlet for their produce at a price which reflects the production cost incurred by reasonably efficient producers and gives them an adequate return having regard to their production risks;
- (b) to develop a coordinated approach to agricultural production and marketing so that marketing improvements can provide strong incentives for increases in production;
- (c) to safeguard the interest of consumers by ensuring that as far as possible, adequate supplies of produce of an acceptable quantity are available at all times."<sup>1</sup>

### The Functions

The main instrument of government agricultural marketing policy would be the proposed marketing agency -- acting in the capacity of a residual buyer to safeguard producers' interest as well as consumers' interest. It would undertake to perform the following functions:-

- (a) to provide an assured market at guaranteed prices in fulfillment of the government agricultural diversification undertakings;
- (b) to enter contract with producers to purchase specified quantities of commodities at determined minimum guaranteed prices;
- (c) to provide buying, collecting, transportation, grading, storage, processing, selling and distribution functions;
- (d) to be responsible for the maintenance of adequate supplies for internal markets through arrangements for reserve stock holdings and by importation if necessary;
- (e) to undertake disposal of surpluses;
- (f) to control exports and imports;
- (g) to provide marketing intelligence and information services.

### Operations of the Model Agency

Financing: It is proposed that the marketing agency would be an autonomous institution created by statute. For such an agency to play its role in the agricultural diversification programme in Barbados it must be provided with adequate financial resources. It is important, however, to maintain a balance between the amount of money applied and the ability to make good use of it. It must be remembered that the total requirements for capital and for current expenditure in our overall agricultural diversification strategy are large when compared with the limited resources we have. To justify investment in improved marketing and processing facilities, the economic returns from them must compare favourably with these from alternative uses.

The government should provide the proposed institution with fixed capital of its own, as well as with annual grants for operating costs. Furthermore, this budgetary support should take into account the probable losses which are normal (at least in the early years) in operations of this type.

Justification for government sponsorship of this type of institution rests in

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<sup>1</sup> Government of Barbados, Agricultural Development Plan, 1969-72, Bridgetown, Barbados.



the adoption of responsibility for ensuring that agricultural diversification is not held up for lack of marketing services.

Administration and Management: As an autonomous institution the marketing agency would be expected to make sound management and technical decisions of its own within the established objectives. It is envisaged that the agency would be administered by a board of directors appointed by the Minister of Agriculture. The board would consist mainly of producers (large and small) and experts from the Ministry of Agriculture. Its primary responsibility would be to define the agency's specific areas of operation and to see to the implementation of the government agricultural marketing policy.

The institution should be provided with highly qualified and experienced personnel at the management and technical level. The staff should include a General Manager, a Secretary/Controller, a Marketing Manager, a Director of Purchasing/Economist, a Food Technologist/Entomologist, and a Plant Supervisor/Engineer. It is proposed that these would form a Management Team which would meet regularly to discuss the 'decision making' of the agency. Obviously this management team would need to be backed up with adequate supervisory and supporting staff (Figure II).

The management team would treat training for the entire staff as a high priority. Perhaps one member of the management team could serve as the agency's training officer to supervise in-service training and to liaise with the government training unit through which relevant overseas training programmes would be arranged.

Pricing: The authors contend that the key to an efficient and successful marketing system for agricultural production in Barbados is to be found in a sound method of price determination. A sound guaranteed pricing system with the functions efficiently performed would dominate the market where a produce is produced mainly or solely for local consumption. All prices for that commodity would be adjusted to the minimum guaranteed price: if the commodity is in surplus all prices would relate to the minimum guaranteed price offered by the marketing agency, for if any huckster offered a lower price, the farmer would take his produce to the agency. On the other hand if the commodity is in short supply the agency would put produce on the market, out of its reserve stocks, or import at prices consistent with its internal buying price. In effect no consumer would offer a price in excess of what is demanded by the agency and no grower would accept a price below that offered by the agency.

The determined minimum guaranteed price for the specified commodity would be announced by the agency some time ahead as a means of creating confidence. The combination of a guaranteed minimum floor price for some years ahead, with the operating price to change from year to year, but not to fall below the guaranteed minimum, would provide a sound basis for price determination.

The marketing agency would endeavour to purchase or accept all marketing produce which farmers offer for sale. It would encourage all vegetable producers to register with the agency in the hope of attaining a complete register of food crop producers in Barbados. Purchases would be made on three bases:-

- (a) the agency would enter into contract with growers under which the grower would undertake to sell specified quantities of produce of approved quality at a minimum guaranteed price. While farmers may receive the operating price they would only do so in the event that it is higher than the minimum guaranteed price;
- (b) government would determine from time to time the crops for which

- guaranteed prices would be paid and the level of the prices; and
- (c) the agency would buy or accept all crops at the operating price prevailing for which there is a market.

Marketing Channels: It is envisaged that the proposed marketing agency would be developed and operated (as illustrated diagrammatically in Figure 3) along the following lines:-

- Purchase: (a) all produce for which it issued contracts;  
(b) produce (in its discretion) offered by growers not under contracts;  
(c) produce specifically for processing and storage from growers under contract or in its discretion from other growers;  
(d) produce imported from Carifta or otherwise.

Accept: Surplus produce for storage and sale

- Sell: (a) produce - by wholesale  
(b) produce - by retail (if necessary)  
(c) produce to hotels, institutions etc.  
(d) produce - by export.

The proposed marketing agency would purchase food crops etc. from producers at defined 'collecting' or 'buying' points and transport same to Bridgetown in its own vehicles. There the produce would be assembled according to commodity, sorted, graded and if necessary weighted, packaged and stored. The produce would then be sold by wholesale in the public markets or by retail, and by arrangements to hotels and institutions.

Produce to be processed would go directly to the processing room after preliminary preparation in the grading room. The processing section may also draw directly from the storage although processing should usually take place immediately following harvest.

Collection and Transport of Produce: As a service to producers it would seem reasonable to establish two types of collection points:-

- (a) definite points at which a truck would be stationed to which growers would bring their produce; and,  
(b) areas in which the truck would call at farms to collect produce.

The itinerary of the collecting trucks would have to be planned carefully in order to ensure that the number of trucks required and the personnel to man them are employed efficiently and kept to the economic minimum. It is expected that the collecting days would bear some relation to traditional market days in Barbados.

Producers would still be free to transport their produce to the Central Marketing Agency but, as a policy, transportation would be provided by the institution.

Grading: Facilities such as grading and packing are necessary to service wholesale distribution, processing and to a limited degree, storage. Some grading is done for practically every farm product, but the level of grading should relate to the degree of sophistication of the marketing system. The authors accept the importance of grading in the development of an efficient marketing system and in fact propose that the marketing agency should establish grade standards based as far as possible on consumer preferences.

However, we contend that except for the fulfilment of certain contractual obligations to hotels, supermarkets and institutions, for export sales and for processing, grade standards should be elementary in character and should aim essentially at providing a 'type' of uniformity.

It is suggested that the agency would prepare a list of planting materials by varieties that it had approved. This list would be distributed to all producers and the varieties approved would be recommended and sold by the Ministry of Agriculture.

The initial equipment requirement for grading would therefore be relatively small and with proper organisation, would be adequate for a three to five year period.<sup>1</sup> The basic equipment would consist of a rotary vegetable washer, and a spray washer with roller inspection table and a sorting belt.

Storage: Adequate storage facilities would be needed to prevent the deterioration of agricultural products and to hold produce until it is needed by the consumers. Furthermore, in order to perform its function as a residual buyer efficiently, the agency should have adequate storage capacity to make its presence felt as a price and income stabilizer in the economy.

As illustrated in Figure 1, it is proposed to establish a cold storage unit made up of three cold storage rooms and one anteroom with conditioning area. Each room would allow the proper combination of temperature and humidity for the product to be stored or might be regulated so as to allow all the rooms to be operated at the same temperature, to provide storage facilities in case of surpluses of any particular produce.

An F.A.O. consultant on vegetable storage and processing in Barbados<sup>2</sup> recommended a total floor area of 6,436 square feet for this unit with each room having a capacity of 300 tons and the anteroom having 175 tons. In deducing the area and capacity he recommended for storage, he took into consideration anticipated rates of production and consumption. He submitted that a storage section of this type would be adequate for five years.

Sales Distribution: In the proposed plan, provisions are made for a sales room. Such a facility would allow hucksters and consumers (when necessary) to examine and handle the produce available to them for purchase. As a rule, produce would be wholesaled but if and when the need arises, the sales room would be used by the agency to retail produce straight to the final consumer.

Packaged produce would be transported by truck to the various marketing depots where it would be wholesaled to hucksters and other middlemen for their distribution.

Whenever feasible, the marketing agency would work out contractual arrangements (as regards prices, quality and quantity) for produce with hotels, supermarkets and stores. This is clearly a field in which the agency could establish itself and perform an extremely useful marketing function.

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Roberts, J.A., 'Vegetable Storage and Processing', F.A.O. Consultant to the Barbados Government, Unpublished Report, Not dated.

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Op. cit.

### Import and Export:

One of the major functions of the proposed marketing agency would be to control imports and exports of produce. This function is vital if the agency is to have the knowledge and power to regulate supplies with local consumer demand.

As a signatory to the Carifta Marketing Protocol, Barbados has a quota to supply the Area in respect of certain graded commodities in specified quantities. It is envisaged that such produce would pass through the grading rooms where:-

- (a) unmarketable produce would be rejected;
- (b) produce of sub-export standard would be accepted for local trade;
- (c) the remainder would be selected and put into an export section for storage or immediate final packing, grading and export.

It is envisaged that expansion of the Carifta trade would be based upon contracts with specific, reliable growers and certain specific commodities, using approved varieties of planting material only so as to produce basic uniformity of desirable types. It may be that the proposed marketing agency would have to depend heavily on the Agricultural Development Corporation in the early stages to set the standard required by producing and supplying this desirable quality produce.

When locally grown produce is in short supply, produce would be imported in sufficient quantities for wholesale distribution on the local market. The proposed marketing agency would make great efforts to foster and develop intra-regional trade.

Processing: The trend of rising demand for processed food products would suggest some degree of feasibility for fruits and vegetable processing in Barbados. The effect of modern processing facilities on production in Barbados has been demonstrated by our Pine Hill Dairy Industry. It is strongly felt that the provision of efficiently managed processing and storage facilities would have even a greater effect on our food crop production.

It is, of course, recognised that economic operation of a vegetable and fruit processing plant calls for a regular flow of produce in adequate supplies at acceptable prices and quality. Moreover, processing plants cannot operate economically on surpluses. In short, economic food crop production is a vital factor in the efficient operation of any food crop processing unit.

We contend that our ambitious research programme on production problems demand the immediate consideration of a pilot processing unit project. This unit would take the form of a cannery and would offer an opportunity to train staff while at the same time taking surplus products off the market during periods of glut and effecting a slight reduction in imports of canned vegetables. A pilot cannery with a capacity of 4,000 - 6,000 cans per day is suggested.

### Market Intelligence and Information Services

We consider that an efficient market intelligence and crop information service would be vital to the operation of the proposed model. In production and marketing the interests of producers, middlemen and consumers are involved. A market intelligence and crop information service should be established and put

into action to serve these interests. It should provide information on production; consumption and prices. Information as to whether current crop planting is high, normal or low relative to former crops should be reported as well as the progress of the crops, expected yields and quality. Other important data to be included would be the commencement and progress of harvesting and the availability of supplies; daily retail prices, the quality and quantities of produce entering the various markets would also be reported.

Broadly speaking, we would put these reports into four classifications:-

- (a) situation and outlook reports;
- (b) crop estimates;
- (c) daily market information and statistics;
- (d) miscellaneous reports, including such information as cold storage holdings, shipments, reports of research in various marketing problems and interpretation of market conditions.

#### Relationship with Other Agencies:

The overall success of the proposed marketing agency would depend heavily on its ability and willingness to collaborate with other agencies -- both private and public. Indeed, any worthwhile agricultural diversification strategy for Barbados must consist of an integrated packaged approach which gives attention to all the hurdles standing in the way of agricultural diversification progress as opposed to a single factor approach which emphasizes, say, research or extension or marketing and price incentives.

The authors consider development of a close working relationship with the Ministry of Agriculture vital to the successful operation of the proposed marketing model. Specifically, the agency should collaborate and maintain close liaison with the following agencies:-

- The Agricultural Research Division
- The Agricultural Extension Division
- The Agricultural Economics and Statistics Unit
- The Agricultural Development Corporation
- The Agricultural Credit Bank
- The Agricultural Marketing Association
- The Government Training Unit.

#### Marketing in the National Development Plan:

We have emphasized the fact that integration of the expansion of marketing facilities with the expansion of production is vital for sustained momentum in the agricultural diversification and developmental process. We now wish to say that programming for improvement of marketing should be projected on a national level. Marketing has a legitimate place in the total development strategy for Barbados and should be accorded a high position amongst the loss of priorities in the national development plan.

The importance of agricultural marketing to our total economic development forbids that disproportionate emphasis should be put on any one marketing aspect at the expense of the other. Now, what would be the purpose of investing large sums in the construction of massive modern marketing facilities without firstly analysing their financial and other operational requirements, and determining the most appropriate enterprises to run them, the trained personnel needed to administer

them, and how they will fit into and improve the existing marketing channels. Concern for the political and welfare aspects should not be allowed to preclude systematic marketing studies and analyses.

#### Costs and Benefits to the Economy:

This paper would not be complete without the benefit-cost analysis of our proposed model of a marketing agency. The section that follows therefore presents the basic data needed to evaluate our model. The costs and prices used in these calculations are based on the current (1970) market situation. The technical specifications for the building areas and refrigeration requirements were taken from an F.A.O. consultant's study (1968) on vegetable storage and processing in Barbados.<sup>1</sup>

This model was prepared with the hope that such an agency will be financed by the Barbados Government. Hence an Internal Economic Rate of Return (IER) was computed. The calculation shows that the IER for this project is 28 per cent. We estimate that opportunity cost of capital in Barbados is between 12 and 18 per cent. We are satisfied that our model is feasible and practical and that it would bring net benefits to the Economy.

The cost of establishing the proposed marketing agency is summarized below under five broad headings.

Construction Costs: Here estimates were made of what it would cost to erect the buildings required. Estimates were made for four sections, namely, processing section and offices, grading section, cold storage section fully insulated and a laboratory. The estimated construction cost was \$460,480 (EC).

Equipment Costs: A valuation was made of the quantity of equipment needed to operate the proposed facilities. The major item of cost will be the refrigeration equipment. Also needed will be equipment for grading, canning and freezing, office and laboratory. At least two fork lift trucks and six field vehicles will be required. Provision was also made for pallet bins and pallets for field crates. The estimated equipment cost is \$310,500.

Operating and Maintenance Costs: The items of cost included in this section are those items of costs occurring annually. For example, salaries and wages, electricity, fuel, water, general supplies, insurance on capital, advertising and information, repairs and replacement.

Cost of Produce Purchased: The marketing board will purchase for resale all the commodities it handles. An estimate was made of the annual cost of these items which range from \$2.3 million to \$4.6 million over the 10 year period.

Land: An estimate of \$10,000 for the land being utilized is included as a project cost for the first year of the project life.

#### Benefits

Increased Output: It is anticipated that the total production of vegetables and

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Report to the Government of Barbados on 'Vegetable Storage and Processing' based on the work of J.A. Roberts, F.A.O. Consultant, (Unpublished).

livestock products would be increased if adequate marketing facilities were established. Many farmers would expand their production if they were guaranteed a price for their product and if they were assured of a marketing outlet. The authors visualize their model of a marketing agency as providing the farmer with the incentives needed to expand production. We would estimate a 10-20 per cent increase in production.

Reduction in Imports: This could occur if there is an increase in local production, resulting in foreign exchange savings.

Quality Improvement: The grading and packing facilities at this marketing institution would contribute towards the removal of inferior farm products from the market. The consumers in the economy will therefore benefit from this improved quality of product. Also the presence of an entomological inspection service at the marketing institution ensures that products leaving the institution are above a certain health standard.

Changes in Form (Processing): Provision is made to freeze and can some of the produce handled by the Marketing Board. This change in the form of the produce is a benefit to all. In addition to change in the form of the product there is an additional benefit to be derived from a range of processed products.

Losses Avoided: The provision of adequate cold storage facilities allows more produce to be kept for a longer period. Produce that was left unharvested or unsold during glut periods because of lack of storage can now be saved. Revenue could also be obtained from the value of storage rentals.

Cost Reduction: The Marketing Board, as we have outlined it, will not be primarily a commercial profit-making organisation. It will seek to cover its operating investment cost, it will sell the products it handles at minimum costs. Such a practice will result in a net reduction in the price of food products. Also, because of the large volume of produce handled by this organisation, it will assume the role of 'price-leader'.

Agricultural Education: This organisation will be maintaining a marketing intelligence unit. Thus it will be able to inform the economy as to the state of the market for a particular commodity. In addition the agricultural economist on the staff of the institution will assist the Ministry with a farm management advisory service.

Benefit within Non-agricultural Sectors: The non-agricultural sector which will benefit most from an adequate marketing strategy within the agricultural sector is the Tourist Sector. This sector provides a large demand for agricultural products. This demand is especially high for graded and top quality produce. The satisfaction obtained within the Tourist Sector as a result of these marketing facilities is a national benefit.

Value of Losses Foregone: This benefit is one of the most significant benefits the project unit will offer to the economy. During the past four years the Barbados Marketing Corporation incurred heavy losses due to spoilage. Their inventory of spoilage was valued as follows:-

1967	-	\$25,268
1968	-	31,348
1969	-	16,025
1970	-	13,500
Average (1969-1970)	-	21,535

These losses are only part of the total losses resulting in the agricultural sector because farmers have no access to adequate cold storage facilities. The establishment of our proposed marketing agency should serve to reduce losses valued to the equivalent of 1-5 per cent of the value of goods purchased.

Value of Products Sold: All the products bought will be sold at a reasonable price to bring in revenue to the project. This benefit can be qualified and has been evaluated and reproduced in the revenue estimates calculations. The estimated revenue ranges from \$2.8 million to \$5.7 million over the life of the project.

Secondary Benefits: The provision of adequate marketing facilities guarantees to the producer that a larger portion of his marketable crop will be sold. This opportunity will result in an increase in incomes to farmers and farm employees. Such an increase in income will have 'multiplier' effects in the economy.

Such a marketing project as we have outlined could result in an increase in investment in the agricultural sector. The assurance of improved marketing for agricultural products should eventually result in an increase in agricultural diversification units capable of utilizing high levels of technology.

Intangible Benefits: The increase in local production which will result in a decrease in imports is a benefit in the form of 'national independence'. The Barbadian economy will be less dependent on the economy of another nation for certain food products.

#### References

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|--------------------------------|--|
| Barbados Marketing Corporation | Barbados Marketing Corporation Acts 1961, Official Gazette, September 4, 1961.   |
|                                | <u>Acceptable Grades for Crops</u> , B.M.C., Barbados, 1968.   |
| Government of Barbados         | <u>Agricultural Development Plan, 1969-72</u> , Bridgetown, Barbados.  |
| Roberts, J.A.                  | <u>Vegetable Storage and Processing</u> , F.A.O. Consultant to the Barbados Government, Unpublished Report, Not dated. |
| Ingersent, K.A. et al          | 'Vegetable Production in Barbados: An Economic Survey', Ministry of Agriculture, Science & Technology, Barbados, 1969. |



Appendix 1Cost EstimatesCapital Expenditure

<u>Construction:</u>	(\$)	
Processing section and offices (2880 sq. ft. @ \$25/sq. ft.)	72,000	
Grading section (4352 sq. ft. @ \$20/sq. ft.)	87,040	
Cold storage section (6528 sq. ft. @ \$45/sq. ft.)	293,760	
Laboratory (384 sq. ft. @ \$20/sq. ft.)	7,680	
	<hr/>	
Sub-total		\$460,480
<u>Equipment:</u>		
Grading room	40,000	
Canning and freezing	50,000	
Fork lift truck (2 trucks)	20,000	
Field trucks (3 trucks, 3 vans)	40,000	
Pallet bins 1 ton cap. (600 @ \$60 each)	36,000	
Pallets for field crates (300 @ \$25 each)	7,500	
Laboratory	5,000	
Office	12,000	
Refrigeration installed (40 tons @ \$25/ton)	100,000	
	<hr/>	
Sub-total		\$310,500
<u>Land:</u>		
1 acre	10,000	10,000
	<hr/>	
TOTAL		\$881,000 =====

Appendix 1 (continued)

<u>Operating and Maintenance Cost</u>	<u>(\$)</u>
Installation engineering	55,000
Salaries and wages	448,000 - 542,000
Electricity	22,000
Fuel and water	10,000
General supplies	25,000
Repairs and replacements (1% of Capital)	9,000
Insurance (on Capital - \$7 per 1,000)	6,200
Advertising and information	4,800
Contingencies	15,000

Table 1      Barbados Marketing Corporation: Cost of Volume Purchased

Commodity	Years					
	1	2	3	4	5	Average 6-10
	(. . . . . \$'000 . . . . .)					
Tomatoes	-	258.0	322.5	387.0	451.5	516.0
Onions	-	182.4	228.0	273.6	319.2	364.8
Carrots	-	179.8	224.7	269.7	314.6	359.6
Beans	-	116.0	145.0	174.0	203.0	232.0
Cabbage	-	211.6	264.6	317.5	370.4	423.3
Cucumber	-	56.8	71.0	85.2	99.2	113.6
Yam	-	138.7	173.4	208.0	242.7	277.4
Other Vegetables	-	320.1	400.1	480.1	560.2	640.2
Fruits (Fresh)	-	814.4	1,018.0	1,221.7	1,425.3	1,628.9
<b>Total</b>	-	<b>2,277.8</b>	<b>2,847.3</b>	<b>3,416.8</b>	<b>3,986.1</b>	<b>4,555.8</b>

Table 2

## Barbados Marketing Corporation: Revenue Estimates

Commodity	Total Consumption 1969	Estimated Percentage of Items Consumed to be Handled by Marketing Board					
		1	2	3	4	5	Average 6-10
		0%	40%	50%	60%	70%	80%
(..... '000 pounds .....) )							
Tomatoes	1,290.0	-	516.0	645.0	774.0	903.0	1,032.0
Onions	3,800.0	-	1,520.0	1,900.0	2,280.0	2,660.0	3,040.0
Carrots	1,550.0	-	620.0	775.0	930.0	1,085.0	1,240.0
Beans	1,000.0	-	400.0	500.0	600.0	700.0	800.0
Cabbage	1,470.0	-	588.0	735.0	882.0	1,029.0	1,176.0
Cucumber	568.0	-	227.2	284.0	340.8	397.0	454.4
Yams	4,953.5	-	1,981.4	2,476.7	2,972.1	3,467.4	3,962.8
Other Vegetables	3,201.0	-	1,280.4	1,600.5	1,920.6	2,240.7	2,560.8
Fruit (Fresh)	5,090.4	-	2,036.1	2,545.2	3,054.2	3,563.3	4,072.3

Table 3

## Barbados Marketing Corporation: Value of Volume Sold

Commodity	Years					
	1	2	3	4	5	Average 6 - 10
	(. . . . . \$'000 . . . . .)					
Tomatoes	-	361.2	451.5	541.8	632.1	722.4
Onions	-	304.0	380.0	456.0	532.0	608.0
Carrots	-	223.2	279.0	334.8	390.6	446.4
Beans	-	144.0	180.0	216.0	252.0	288.0
Cabbage	-	264.0	330.7	396.9	463.1	529.2
Cucumber	-	68.2	85.2	102.2	119.1	136.3
Yam	-	178.1	222.9	267.5	312.1	356.7
Other Vegetables	-	384.1	480.1	576.2	672.2	768.2
Fruit (Fresh)	-	916.2	1,145.3	1,374.4	1,603.5	1,832.5
Total	-	2,843.8	3,554.7	4,265.8	4,976.7	5,687.7

Table 4

Barbados Marketing Corporation: Buying and Selling  
Prices, <sup>1</sup> 1969

Commodity	Prices Paid for Produce 1969	
	Average Buying	Average Selling
	(. . . . . cents . . . . .)	
Tomatoes	50	70
Onions	12	20
Carrots	29	36
Beans	29	36
Cabbage	36	45
Cucumber	25	30
Yams	7	9
Other Vegetables	25	30
Fruit (Fresh)	40	45

<sup>1</sup> Prices based on BMC prices and prices from selected supermarket as collected by Barbados Statistical Service.

Table 5      Barbados Marketing Corporation: Internal Rate of Return for the Proposed Marketing Institution  
Project with an Assumed Life of 10 Years

Year	PROJECT COSTS				BENEFITS					
	Capital Costs	Operation and Maintenance Costs	Purchases Costs	Total Costs	Gross Value of Sales	Net Benefits (= Cash flow)	p.w.f. 25%	Present Worth 25%	p.w.f. 30%	Present Worth 30%
	(.....)				(\$'000 .....)					
1	644.0	-	-	644.0	-	- 644.0	.8000	-515.2	.7692	-495 4
2	77.0	595.0	2,277.8	2,949.8	2,843.8	- 106.0	.6400	-67.8	.5917	-62 7
3	50.0	540.0	2,847.3	3,437.3	3,554.7	117.4	.5120	+60.1	.3501	+41 1
4	-	540.0	3,416.8	3,956.8	4,265.8	309.0	.4096	+126.6	.2693	+83 2
5	-	540.0	3,986.1	4,526.1	4,976.7	450.6	.3276	+147.6	.2072	+93 4
Average 6-10	-	634.0	4,555.8	5,189.8	5,687.7	497.9	.8813	+438.8	.6561	+326 7
Total	771.0	2,849.0	17,083.8	20,703.8	21,328.7	624.9	3.5705	+190.1	2.8436	-137 0

Figure I

Diagrammatic Layout of Proposed Marketing Agency

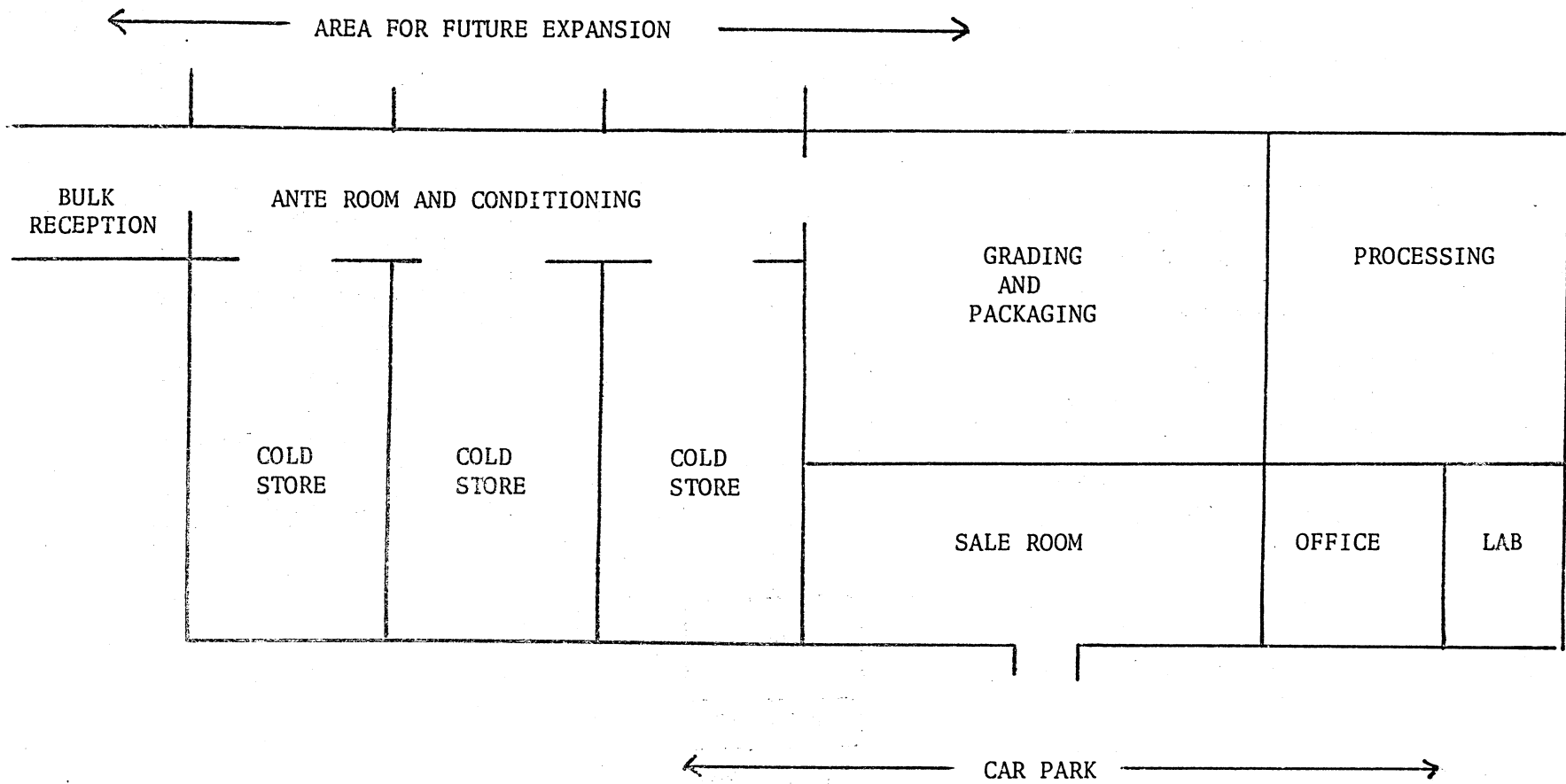


Figure 2 Organizational Line Chart of Proposed Marketing Agency (Model)

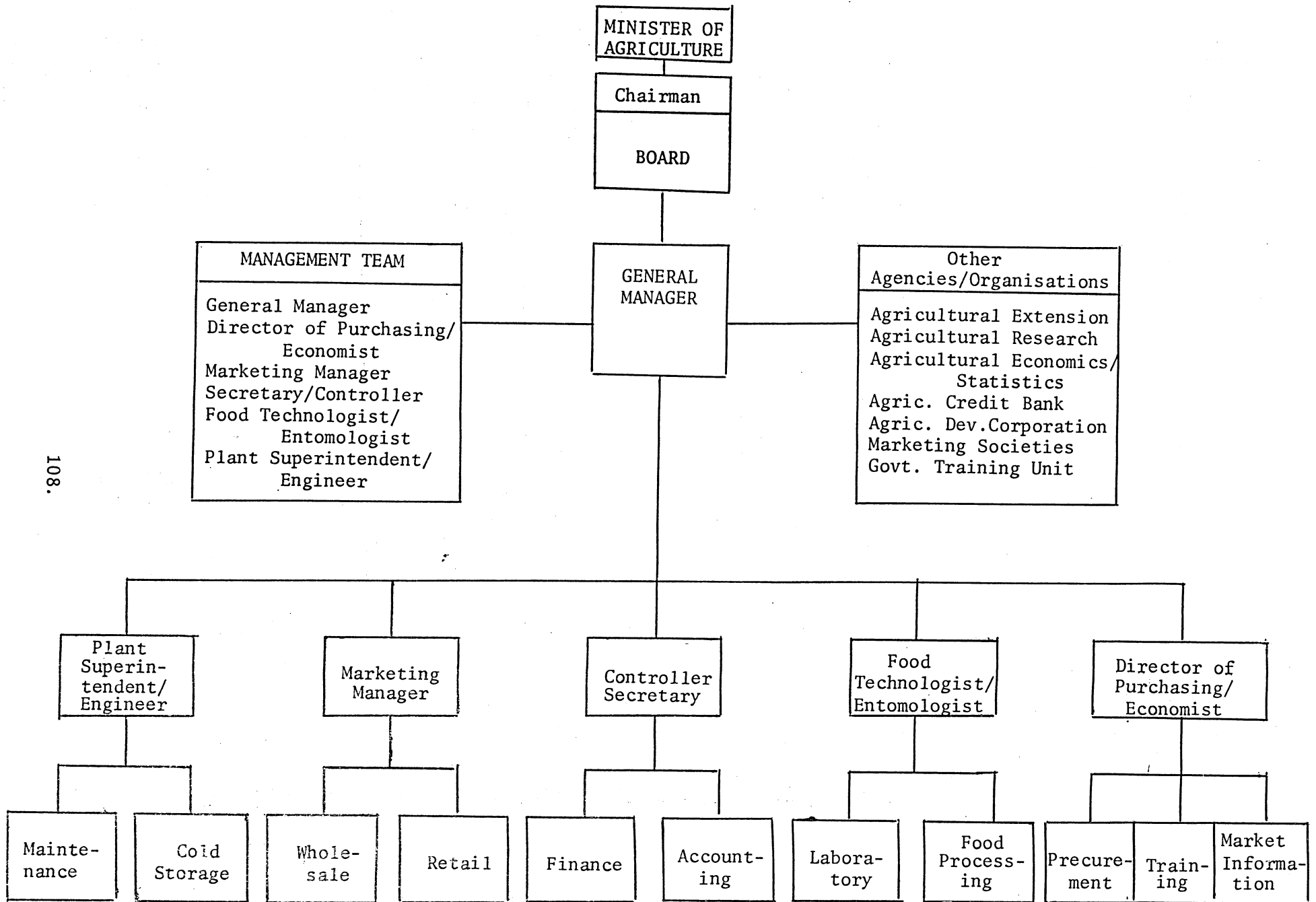




Figure 3

Proposed Marketing Channels

