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FARM BUSINESS, BEHAVIOURAL AND PARTICIPATION CHARACTERISTICS OF LIMITED RESOURCE FARMERS

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FOREWORD

This study on behavioural and economic characteristics of limited resource farmers is the second phase of a four-phase project designed to identify a broad range of policy instruments for improving the farm performance and general well-being of these farmers. This phase attempts to determine economic and behavioural relationships which may affect the performance of these farmers and their acceptance and use of assistance programs.

The overall project is conducted under a special three-year contract funded by the Small Farms Development Program of Agriculture Canada and carried out with cooperation and additional support from the Ontario Ministry of Agriculture and Food. This publication is submitted in fulfillment of the contractual requirements with Agriculture Canada for reporting on the second phase of the project. The report was prepared by an interdisciplinary team in agricultural economics and extension education at the University of Guelph. The report draws strongly on M.Sc. thesis material, prepared as part of this project, by Terry Stringer and Richard K. Ellis who examined behavioural factors, and Kathleen Morten-Gittens and Gerald Bouma who examined economic characteristics.

The report begins with a summary of the findings, implications and policy suggestions for those interested in a brief description of the results. The main text of the report follows. It begins with a description of the nature of the study and the classification system, developed in Phase I, which serves as the basis for some of the analysis in this phase. The objectives of the Phase II study, the conceptual framework, and the procedures

used in the study are also discussed. In the next section, the description of the variables studied are presented together with the major findings as an aid in understanding some of the study results. Behavioural factors are first examined, followed by economic characteristics and then relationships between the behavioural and economic variables. The final section presents the implications and suggestions.

ACKNOWLEDGMENTS

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The authors also wish to acknowledge the contributions of G. Gerald Bouma, Richard K. Ellis, Kathleen E. Morten-Gittens, and Terry M. Stringer through their M.Sc. thesis research, the help of James Houghton in undertaking additional computer analyses, and the cooperation and assistance by farmer respondents in the study. Appreciation is expressed to Terry Stringer for her further assistance in preparing a preliminary summary of some of the findings in this study. The authors, however, accept full responsibility for the data and their interpretation as herein reported. Any errors or omissions are the complete responsibility of the authors.

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SUMMARY OF FINDINGS AND IMPLICATIONS

INTRODUCTION

The general purpose of this study was to identify and evaluate the economic and behavioural framework of limited resource farmers who planned to stay in agriculture. It attempted to determine economic-behavioural relationships which may affect the adjustment processes of this group of farmers. Their acceptance and use of potential and currently available advisory services was also examined.

This study was the second phase of a four phase research project undertaken by the School of Agricultural Economics and Extension Education, Ontario Agricultural College at the University of Guelph , under the sponsorship of the Small Farm Development Program of Agriculture Canada in cooperation with the Rural Development Branch, Ontario Ministry of Agriculture and Food. The first phase of this project produced a classification system of limited resource farmers and later phases will evaluate adjustment potential of representative farms and the appropriateness of various improvement programs.

The general objectives associated with the second phase of the overall study were:

1. To collect and analyze farm business data of limited resources farms whose operators plan to stay in agriculture.
2. To determine economic, social and humanistic expectations of limited resource farmers who plan to stay in agriculture.
3. To ascertain these farmers' perceptions of what constitutes success, failure, or satisfactory farm performance.

4. To identify what farmers consider as satisfactory and acceptable ways and means of achieving expectations.

5. To ascertain the use of currently available advisory services as aids to adjustment processes.

NATURE AND SCOPE

The second phase attempted an in-depth analysis of both economic and behavioural characteristics of limited resource farmers. Nonfarm focus and retirement age farmers (65 years and older), identified in the Phase I classification system, were not included in the Phase II study.

The behavioural component of the study examined human characteristics of the farmers which may influence their farm performance and receptivity to change. These characteristics include social-demographic factors, behavioural nature (value orientations, basic needs, and self-images), perceptions and inclinations. In addition, the respondents' participation in various programs and organizations, their contacts with professional services and use of media, and several indications of their policy preferences were analyzed. Throughout most of the analysis, farmers were controlled according to their apparent receptivity to farm improvements.

The economic component of the study was concerned with the identification of various income targets needed to meet the economic viability requirements of the farm-family unit. The four income targets analyzed included:

Target 1: Income sufficient to cover current farm expenses.

Target 2: Income to cover current farm expenses and to provide minimum family living requirements.

Target 3: Income to cover current farm expenses, family requirements, and current farm debts.

Target 4: Income to cover farm expenses, family requirements, current farm debt and to provide a margin for farm growth.

For each respondent the study also determined the level of family income that the family perceived as its 1) bare minimum, and 2) satisfactory level for family living.

In addition to these income targets, a "reasonable" level of potential income, given behavioural limitations, was determined for the unreceptive farmers. The potential income of these farmers was calculated under the assumptions that resources were used to full capacity, and that appropriate management changes were made to achieve average yields in the farmers' county, with standard input levels and prices. Potential income levels were also compared with income targets to determine the potential viability levels of the unreceptive limited resource farmers.

SUMMARY OF FINDINGS

Data collected from two separate interview schedules yielded information on both the economic and behavioural characteristics of the respondents. Additional economic and social-demographic data were obtained during the Phase I study.

Social Characteristics

Analyses of data revealed that this sample of limited resource farmers exhibited the following social-demographic characteristics:

1. The limited resource farmers typically were relatively old (most in their 50's or older), with relatively low levels of formal education attainment. Those farmers who were receptive to farm improvements were on the average nine years younger and had higher levels of education than did farmers that were not receptive to farm improvements.

2. Approximately one-third of the sample had some form of health problem. The receptive group was generally in better health than the unreceptive group.

3. The majority of farmers had been farming for at least 25 years, the unreceptive group having farmed the longest time.

4. Fifty percent of the farmers supported three or more dependents. The receptive farmers had the greatest average number of dependents living with them at the time of the study.

Behavioural Characteristics

The behavioural data indicated that there were many similarities among the respondents. However, there were some significant differences between the receptive and unreceptive groups and between the overall group of limited resource farmers and typical characteristics of commercial farmers as determined in other studies.

1. Limited resource farmers might be characterized as non-participants as they generally did not participate in various organizations or programs available to them, nor make extensive use of professional advisory services or media information sources. Those respondents who were receptive to farm improvements were likely to have indicated higher participation rates than members of the unreceptive group.

2. The respondents indicated that they tended to be risk averse, socially as opposed to economically oriented, moderately independent and relatively strongly adhered to scientific as opposed to traditional values. The receptive group tended to be more risk accepting, more economically oriented and more willing to work in groups than were the unreceptive farmers. There did not seem to be significant differences in the farmers' reported level of scientific orientation between receptive and unreceptive groups.

3. The limited resource farmers were typically fairly high aspirers, especially with reference to their families and their farms. The receptive group showed higher aspiration levels than the unreceptive group.

4. Respondents tended to indicate that family needs took priority over farm achievement or social needs. Although need for achievement was somewhat

higher for the receptive group, the difference was not statistically significant at the .05 level.

5. The limited resource farmers were generally not favourably impressed with the utility for them of various potential advisory services and programs, and the majority indicated a higher preference for direct income transfers than more indirect income assistance through such things as production and management programs. However, the receptive group was more likely to have perceived various advisory programs to be useful. In general, limited resource farmers did not feel they experienced limitations on income due to a lack of various resources such as land, credit, off-farm work and education.

6. The limited resource farmers were typically satisfied with farming as a way of life but were still dissatisfied with the financial returns in farming. They felt a strong degree of attachment to their communities and were not likely to leave even for better opportunities elsewhere. The majority of respondents perceived that they had rather limited occupational alternatives, but a significant number felt that additional government assistance to agriculture was not desirable.

Economic Characteristics

Three areas of concern were analyzed in reference to the economic characteristics of the limited resource farmers. These were:

1. The economic performance levels of the farmers studied.

2. The viability targets of the receptive and unreceptive groups.

3. The potential income targets of the unreceptive group.

Certain of the economic performance levels were compared to benchmark figures for commercial farmers obtained from Canfarm data.

1. Economic Performance Levels

a. The receptive farmers generally had higher average scores for use of recommended technical practices (20.8) than did the unreceptive farmers (15.8). Within the unreceptive group the farm focus farmers averaged higher technical practice scores (17.5) than the mixed focus farmers (12.6), while the market oriented had higher scores (17.4) than the traditional (14.7).

b. Average farm sales for the receptive group ($20,438) were considerably higher than average gross farm sales for the unreceptive group ($8,978), but much lower than averages for commercial farmers ($60,439 from Canfarm records in 1976). Average net farm income was also significantly higher for the receptive group ($5,467) than the unreceptive group ($2,537), but both had much lower net farm income than the commercial farmers studied from Canfarm records ($12,300).

c. Receptive farmers turned over their asset value in gross farm sales in 8.1 years compared to 13.7 years for the unreceptive group. Both were much longer than the 2.8 to 4.7 year average for commercial farmers (from Canfarm records). The unreceptive group had the lowest return to resources, including labour, netting 12% of their gross farm sales compared to 31% for the receptive farmers. Income levels were higher for market oriented unreceptive than for traditional unreceptive farmers.

d. Farm size, whether measured in acres, total assets, or gross farm sales, was at least 50% higher for receptive farmers than unreceptive farmers. Use of resources, management scores and resulting production yields for the receptive group were also at least 50% higher than those for the unreceptive group. Considering the focus of the farmers, farm focus farmers generally

had larger farms than did mixed focus farmers.

2. Viability

a. The average income levels which the respondents perceived would be i) minimum to live on and ii) sufficient to be comfortable were higher for the receptive group ($8,627 and $12,110 respectively) than the unreceptive group ($6,193 and $7,496). For the unreceptive group, the level of income perceived as satisfactory for meeting family needs was on average 16% above the current total average family income. In addition, the perceived minimum for family living was only 4% below their current total family income, indicating general dissatisfaction with current income levels.

b. The amount of income required to produce a viable farm and family unit (Target 4) was also higher for the receptive than the unreceptive farmers. The Target 4 requirements for the receptive limited resource farmers averaged $11,444, while the requirements for the unreceptive group averaged only $8,064. Commercial farmers from Canfarm records averaged $16,010. For the unreceptive limited resource farmers, average income requirements for farm and family viability (Target 4) were 25% above their existing total family income. The average income requirement for farm and family viability for the unreceptive group was in turn 7.5% above the farmer's perceived minimum level of income.

c. Only 9% of all the limited resource farmers studied generated enough income from farm sources alone to achieve viability of the overall farm-family unit (Target 4). However, 35% were able to achieve viability (Target 4) with total family income. Among the unreceptive group, almost 94% were not viable on current net farm income alone, and less than 1/3 (29%) of the families generated enough total family income to insure farm and family viability.

d. About 60% of the current total family incomes of the unreceptive farmers were below the Statistics Canada low income cut-off points. These farmers also perceived minimum income requirements that were lower than poverty levels described by Statistics Canada.

e. Within the unreceptive group, the more market oriented farmers, especially those with a farm focus, had the highest average viability levels as well as the highest levels of income perceived as minimal and satisfactory for meeting family needs. The traditional sub-groups had the lowest average perceived minimum income and viability levels and gross sales.

3. Potential Income Targets (for unreceptive farmers only)

a. Average current net farm income levels for unreceptive farmers were 21% of potential net farm income. The farm focus subgroups achieved on average 43% of potential income, while the mixed focus subgroups achieved only 13% of potential income.

b. Only 42% of the unreceptive farmers could have been viable (Target 4) on potential net farm income alone (about 50% of the farm focus farmers had enough potential income to reach farm family viability (Target 4) on farm income alone, while only 29% of the mixed focus farmers had enough potential net farm income to achieve this level of performance). The most significant discrepancy between potential income and Target 4 was for mixed focus traditional farmers who only had potential to be viable on net farm income alone in 11% of the cases.

Relationships Between Economic and Behavioural Characteristics

1. Generally speaking, the following behavioural characteristics were associated with higher numerical values for gross farm sales, total family income, total assets, debt obligations (lower % equity), acreage, income

Targets 3 and 4, and management scores:

a. higher aspirations (especially farm aspirations).

b. stronger economic, scientific, and risk-accepting value orientations and weaker independence orientations.

c. more positive self-image scores.

d. higher achievement needs, higher social needs, and lower security needs.

e. higher participation rates in organizations and programs, as well as greater use of media and professional advisory services.

f. higher levels of perceived utility of direct income transfer programs.

g. greater perceived limitations to farm income due to the availability of education information, credit and land.[1]

h. lower degree of community attachment.

2. With regard to the unreceptive group, farm focus farmers were older and had fewer dependents, lower achievement needs, poorer self-images and slightly lower family aspirations than did mixed focus farmers. However, mixed focus farmers typically were less scientifically oriented and participated in fewer organizations and programs.

3. Regression analysis showed that for the total sample of limited resource farmers, the technical practice score was the most significant (accurate) predictor of gross sales, as well as a statistically significant positive factor in determining income performance (net farm income, achievement of Target 4, and % achievement of potential net farm income). Other statistically significant factors related to gross sales in a positive direction were tillable acres and the behavioural factors of risk acceptance, participation in government programs, and use of agricultural magazines.

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[1] Land was also perceived as a relative limitation for mixed focus farmers in the unreceptive group who did not have the economic characteristics specified in this paragraph.

IMPLICATIONS AND SUGGESTIONS

Although the intent of this phase of the overall project was not to arrive at implications for policy or practice (that will be covered more fully in phases III and IV), several implications and suggestions are apparent.

1. Based on the income achievement values and the income requirements of many of the limited resource farmers, it is apparent that significant increases in income would be required for many of the farmers to achieve a high enough income for farm and family viability. However, agricultural improvements would still appear as a feasible alternative for many of the farmers to improve their incomes to a viable level. However, management improvement through appropriate training and counselling services would be necessary. Continued reliance on complementary nonfarm income sources also should be promoted for many to provide for an adequate level of family well-being. Many of the farmers with substantial health limitations or management inadequacies are not likely to be helped enough by agricultural programs alone.

2. The evidence supports the importance of many behavioural characteristics in affecting the economic performance of limited resource farmers and their participation in activities designed to improve their performance. This implies a need to work within a knowledge of the behavioural frameworks of limited resouce farmers when formulating and implementing policy instruments.

3. The findings reported in this project to date support the conclusion that limited resource farmers are a relatively heterogenous group along several dimensions although they do have many common characteristics. In

view of these observations, it seems evident that a variety of programs, and methods of implementing them, are needed if they are to be relevant and effective with a broad cross-section of these farmers.

FARM BUSINESS, BEHAVIOURAL, AND PARTICIPATION CHARACTERISTICS OF LIMITED RESOURCE FARMERS

THE NATURE OF THE STUDY

Introduction

This study is the second phase of a four-phase project investigating the economic and behavioural characteristics of limited resource farmers. The overall, four-phase project is designed to identify operational goal-oriented behavioural frameworks for limited resource farmers that can be used a) to identify and evaluate human and economic components which enhance or inhibit adjustment processes for these farmers, and b) to assist in developing improved assistance programs to meet the specific needs of different types of limited resource farmers throughout Canada.

In the overall project, Phase I developed an initial classification system for limited resource farmers based on both economic and behavioural characteristics. Phase II research (this study) next undertook a more rigorous analysis of behavioural and economic characteristics to identify the most predictive factors of the respondent's behaviour, especially as it related to his ability and willingness to undertake farm improvements. The Phase III research will involve prototype farm analyses, utilizing behavioural and budgetary data to analyse alternatives for the major groups of limited resource farmers. The Phase IV research will involve the evaluation of policy instruments on the basis of the findings of the previous phases.

Throughout the overall project, limited resource farmers are defined as

those with $25,000 or less gross sales in 1975 and 1976. Initially the farmers were selected from the 1971 Census of Agriculture as those with $15,000 or less in 1970, but the level of gross sales was increased for 1975 and 1976 to account for increased value of farm products, sales volumes, and costs due to inflation. These farmers typically have earned low incomes from agriculture, and many have low standards of living. Some have too few physical resources, while others are limited primarily by their management ability. Some have combined farm with nonfarm work, but many remain primarily dependent on agriculture. A large number of limited resource farmers, however, desire to remain in agriculture. For these farmers, improvements in agricultural performance often offer them a good opportunity to increase their standard of living. With this in mind, the overall project was undertaken to help develop more effective programs for assisting limited resource farmers in agriculture.

The Phase II Study

The Phase II study provided an in-depth analysis of the economic and behavioural characteristics of limited resource farmers desiring to stay in agriculture. Social and psychological characteristics were analyzed to examine the farmer's personality and decision making framework as it affected his farm performance. These characteristics included attitudes, values, basic needs, aspirations and perceptions, as well as the farmer's personal and family goals. The farmer's participation in and use of programs that might affect his farm performance and the achievement of other personal goals were also determined.

Economic performance was examined at the same time to provide a benchmark for the farmer's level of achievement in farming. Farm goals were

identified, followed by a determination of the farmer's level of gross sales, net farm income, total family income, and the achievement of different levels of income targets. In many cases, income levels were constructed from the physical data on the farm and records of sales, purchases, etcetera.

Relationships between the economic and behavioural factors were also examined to identify a variety of factors affecting farm performance and participation in assistance programs. These included the farmer's perceived satisfaction from his current income and standard of living, factors affecting income achievement, what kinds of incentives were considered important to the limited resource farmers, and how much and what kind of adjustments were considered possible (given the behavioural constraints of the farmer). For farmers unreceptive to farm improvements, a reasonable level of potential income that could be achieved by small (usually acceptable) changes was also calculated to determine the farmer's potential viability within agriculture or whether nonfarm or public welfare assistance would be needed.

The specific objectives of the Phase II study were:

1. To collect and analyse farm business data associated with limited resource farm groups whose operators planned to stay in agriculture.
2. To determine economic, social and humanistic expectations of families associated with groups of limited resource farmers.
3. To ascertain family perceptions of what constitutes success, failure, or satisfactory performance.
4. To identify satisfactory and acceptable ways and means of achieving expectations.
5. To ascertain the use of currently available advisory services.

Background to the Study: The Phase I Classification System

The analysis of limited resource farmers in Phase II and subsequent

phases of the overall project is based in part on differences in farmers identified in the Phase I classification system. In the classification system, twelve different subgroups of farmers were identified with different general behavioural characteristics, resources and program needs for each subgroup. These subgroups are shown in Figure 1 together with a summary description of the general characteristics and anticipated program needs of the farmers in each subgroup. The overall classification system also is described in detail in the Phase I report.

The classification system in Figure 1 has several major categories of differentiation. First, farmers are classified as farm, mixed, or nonfarm focus depending on their degree of involvement in agriculture and their dependence on it as an important source of income. Farm focus farmers generally were those farming full or nearly full-time, with a maximum of 30 days of off-farm work. Mixed focus farmers were part-time farmers who still relied on agriculture as an important source of income. Generally the latter farmers worked 30 to 200 days off the farm but had annual gross farm sales of over $4,000. In some cases, they may have worked more than 200 days off the farm, but still farmed seriously to earn income for their family. Nonfarm focus farmers primarily farmed as a hobby or tax write-off, and usually worked off the farm more than 200 days.

The classification system also differentiates farmers by their market orientation and receptivity to farm improvements. Most of the farmer subgroups were market oriented, but traditional oriented and retirement age farmers tended to have only a limited market orientation and a much higher degree of self-sufficiency. Receptivity to farm improvements reflected the farmer's willingness at the time of the study to make improvements on his farm in order to improve his farm performance. Some farmers, for example, previously had been

Limited Resource Farmer Classification System

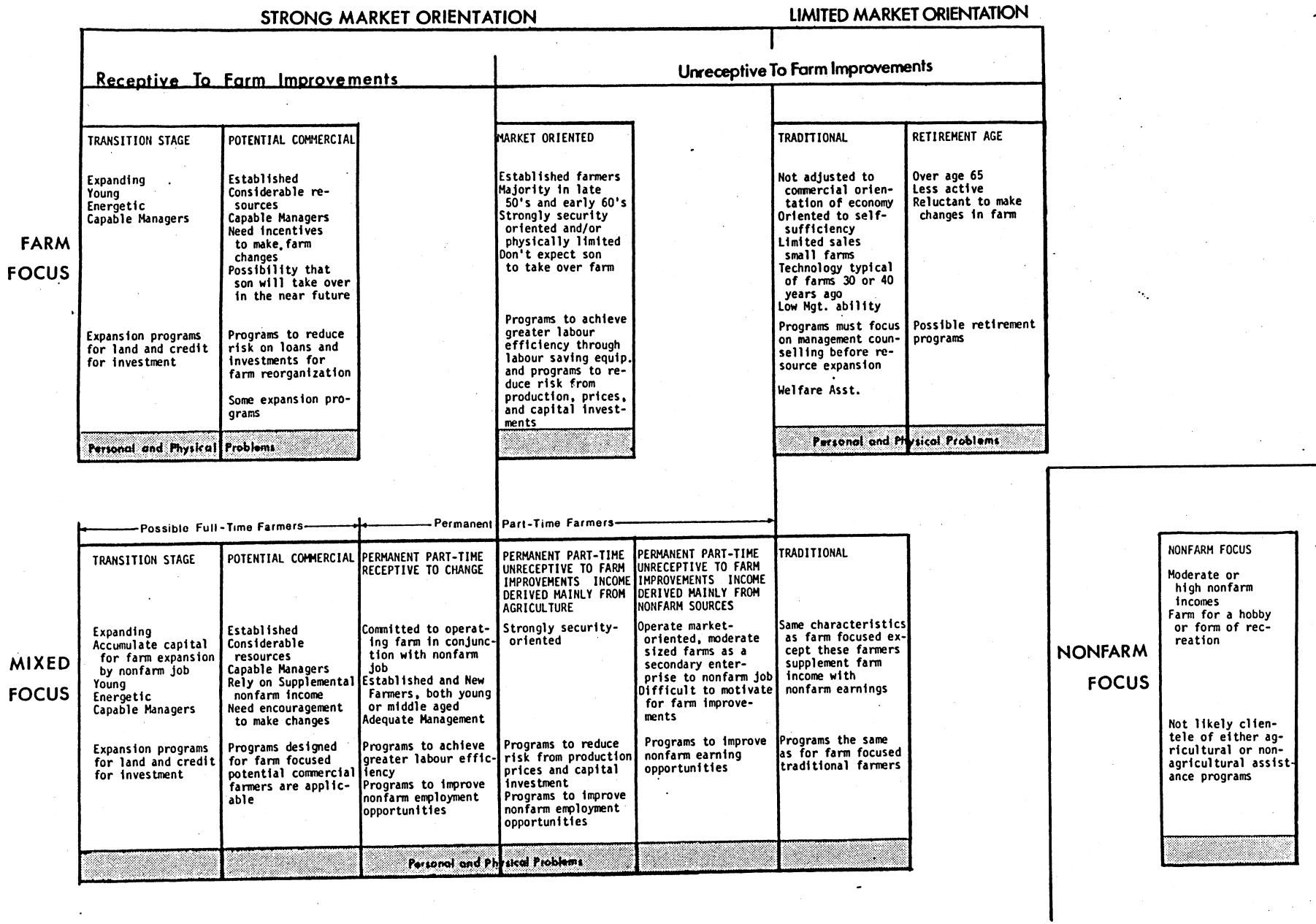


Figure 1

receptive to farm improvements but had changed their receptivity, because of such things as age or health, and were classified unreceptive in the study. The distinction between receptive and unreceptive farmers was a major distinction used in the Phase II study as the two categories of farmers had many different behavioural characteristics and likely would respond to different assistance programs.

Within these different categories of farmers, specific subgroups were identified to represent farmers with different characteristics and needs. Generally there was a steady transition between the subgroups with those composed of farmers having the greatest receptivity to farm improvements. management ability, farm resources, and gross sales located to the left of the classification system and those with the lowest receptivity etc. on the right. In addition, farm and mixed focus subgroups with similar characteristics were located directly above and below each other to indicate their similarity (i.e. farm focus and mixed focus transition stage farmers). The overall classification system distinguished such different types of farmers as transition stage (those in the process of enlarging their farm and becoming commercial operators), market oriented unreceptive to farm improvements (basically older, security oriented farmers desiring to finish their years in farming as they are now), and traditional farmers (more subsistence oriented farmers using traditional, outdated farming practices). In the Phase II study, retirement age and nonfarm focus farmers were not included because the study was primarily concerned with the characteristics of and programs needed by pre-retirement farmers who still depended on agriculture as an important source of income.

Research Framework

A farmer's economic performance is directly related to his managerial

ability and use of technology, his resources, and market conditions for agricultural inputs and products. Usually an individual farmer has little control over market conditions and prices, but he can alter his farm performance substantially through his management decisions and actions to improve production, cut costs, adapt new technology, and obtain more resources. These decisions and actions in turn are influenced by the farmer's behavioural makeup, including such factors as his attitudes, values, goals, basic needs, aspirations and perceptions. Depending on its nature, the farmer's behavioural makeup may affect his farm performance by either facilitating or inhibiting his adjustments to changing market conditions, farming technology and family needs.

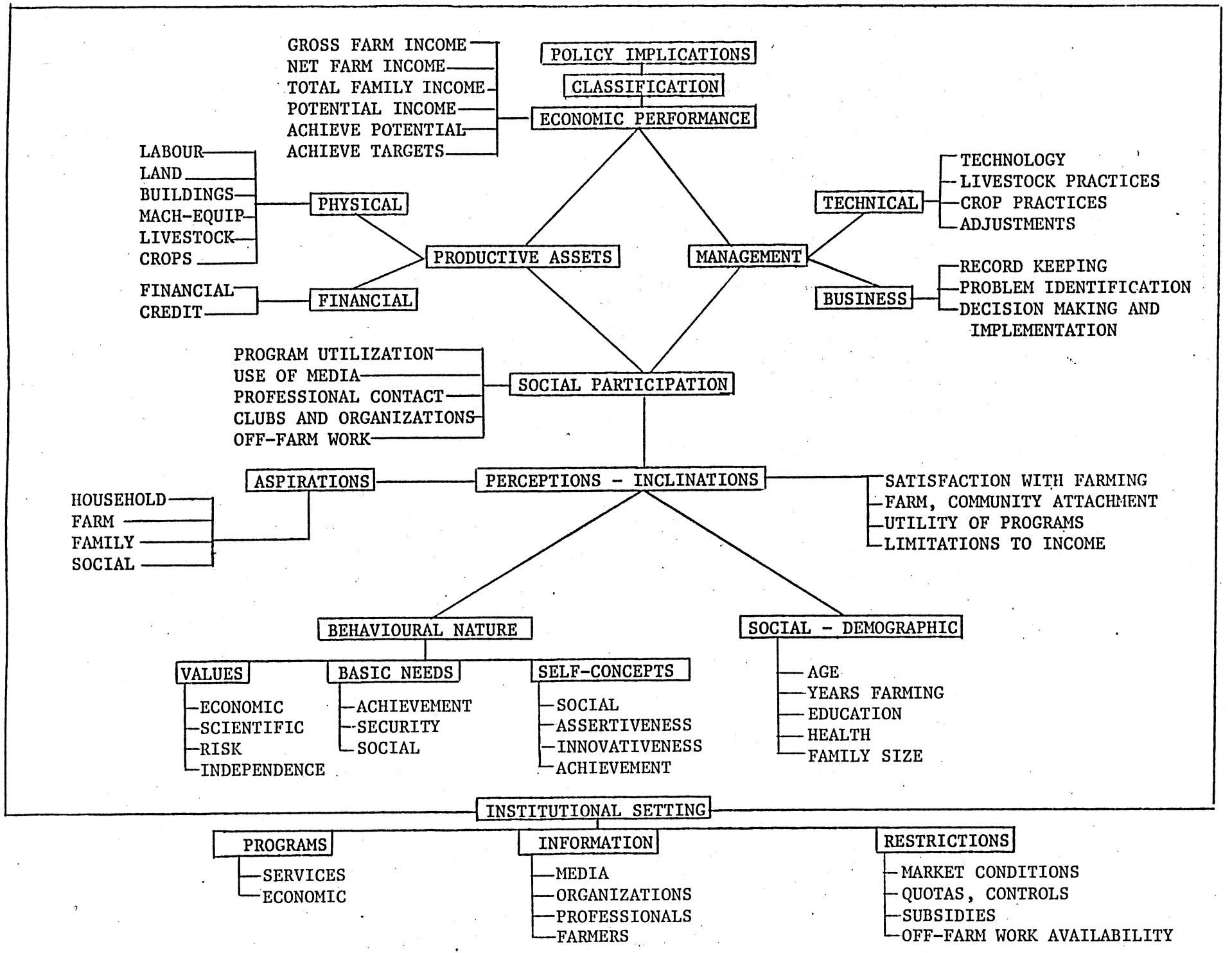
Generally a farmer is considered to be economically rational when he responds to positive economic incentives by increasing production and efficiency to increase his income. This is usually the case with commercial farmers. Limited resource farmers, on the other hand, often seem slow, unwilling, or unable to undertake farm improvements, even when these improvements would increase their income appreciably. A substantial part of the difference in responses to economic conditions between commercial and limited resource farmers may be explained by differences in their social-psychological makeup. Behavioural constraints characterizing many limited resource farmers include high aversion of risk and need for security, low overall receptivity to change, satisfaction with low level goals, and a limited ability to make decisions, identify problems, and follow through in solving these problems. These behavioural factors in turn react with economic factors to affect the farmer's day-to-day business decisions on the farm and his planning for future operations, thus affecting his potential income from farming.

Given the importance of examining farm adjustments for limited resource farmers from a joint behavioural and economic perspective, the analysis in the Phase II study was undertaken within the conceptual framework outlined in Figure 2. At the bottom of the figure are basic characteristics of the farmer described as his behavioural nature and his social-demographic factors. The farmer's behavioural nature consists of fundamental personality traits such as values, basic needs, and his self-concept (self-image), which influence his everyday actions and decisions. In the Phase II study, groups of values were examined to determine the farmer's orientation to economic, scientific, risk or independent behaviour. Basic needs were examined to determine the farmer's degree of desire for achievement, security, or social affiliation. The farmer's self-image was also examined to identify the farmer's feelings about his social acceptance, assertiveness, innovativeness and his achievement. These factors, together with social factors such as age, health, education and family size that enable or limit certain kinds of activities, form the basis for the farmer's initial behavioural actions.

At the next level up in the figure are found aspirations and inclinations which represent the farmer's feelings about certain activities and the situation in which he finds himself. These aspirations and inclinations include aspirations and goals for the household, farm, family and social interaction, as well as feelings about the farmer's attachment to the community and farm, his perceived utility of different kinds of assistance programs, factors which he identifies as limitations to his income, and the degree of satisfaction he derives from different levels of income. These aspirations, perceptions and inclinations are both influenced by the farmer's basic behavioural nature and social factors, and in turn influence his farm and nonfarm activities (social participation).

Figure 2

CONCEPTUAL FRAMEWORK



Social participation includes a wide variety of activities that the farmer may undertake to achieve his basic needs and goals. For some, off-farm work may be the most appropriate alternative. For those intending to stay in agriculture, however, there are many activities such as assistance programs, mass media and information sources, professional contacts, and participation in clubs and organizations that may be utilized to help improve farm performance. These activities were measured in this study to determine their use by farmers and to identify means of increasing their use where the programs could provide substantial benefits to limited resource farmers.

At the top of the figure are those aspects of farming directly involved in making farm improvements. These include the farmer's management capabilities, his productive assets, and measures of his eventual economic performance. Farmers may improve their income levels by doing a better job with their existing resources through better technical practices and financial management, and/or by increasing their land, labour, livestock or financial resources. These aspects in turn are highly related to the farmer's behavioural nature, perceptions, etcetera, and his access to and use of information on better farming and management practices. Limitations on income from small land acreages, for example, may be directly influenced by the farmer's basic orientation toward minimizing risk, and result from him not taking on more land because of its greater degree of risk. His specific management decisions in turn may be influenced by his perceptions of what his problems are, as well as his values and aspirations. The interrelationships between the various levels and kinds of factors, diagrammed in Figure 2, therefore can be very important and require a broad analysis to correctly identify important inhibitors which limit the performance of limited resource farmers.

Finally, the economic-behavioural framework of the farmer must also be analysized within the institutional setting in which the farmer finds himself. This institutional setting generally represents the legal rules and social organization in the society, and includes the types of market conditions and regulations about farming, nonfarm work opportunities, available technology and information, and the kinds of assistance programs, etcetera. These institutional conditions serve as a set of rules and constraints governing what the farmer can or cannot do, and what is available to help him adjust.

The Sample

The initial sample for this project was drawn by Statistics Canada from its 1971 Central Farm Registry. It consisted of approximately 400 respondents from two Ontario counties (Renfrew and Grey) primarily chosen at random from farmers who had less than $15,000 gross sales in 1970. To insure confidentiality of Statistics Canada information, however, a five per cent error factor of farmers with unknown gross sales was included into the sample to make it impossible to identify any particular farmer as grossing under $15,000 until after each farmer was interviewed. In the Phase I study, about 200 respondents were contacted.

From the Phase I sample, 87 respondents were selected for the Phase II research. The farmers excluded from the Phase I sample were commercial farmers earning more than the chosen limited resource income, people of retirement age, nonfarm focus respondents and those intending to leave agriculture. The criteria used to identify these excluded groups were:

1) Commercial Farmers: Farmers with gross farm sales in excess of $25,000 in 1975.
2) Retirement Age Farmers: Farmers 65 and older

3) Nonfarm Focus Farmers: (a) Limited resource farmers with 150 to 199 days of off-farm work per year, combined with gross sales of less than $4,000 and a loss of less than $1,000 in net farm income, or (b) 200 or more days of off-farm work per year, combined with gross sales of less than $4,000 and a loss of less than $2,000 in net farm income.

Data Collection and Analysis

The economic and behavioural data were obtained from each farmer through two separate personal interviews. Generally, appointments were made in advance by phone, except where phone contact could not be made. Interviews lasted from about one-half hour to two and one-half hours. Farmers were not requested to provide written records but many referred to or supplied income tax and/or farm account records. Interviews to obtain economic data were carried out with either the farmer or the farmer's spouse, while behavioural data interviews were conducted with the farmer himself. Several measurement scales that had been validated in other studies were used to collect some of the behavioural data. Typically, interviews were done at least one week apart, although in a few instances both interviews were done together. Interviewing began in mid-August 1976 and was completed by early October 1976.

The data were coded and keypunched on computer cards and processed with the aid of facilities at the University of Guelph Institute of Computer Science. Various statistical tests were calculated where applicable. Data from the economic questionnaires was combined with behavioural data and analysed through cross tabulation, correlation, and regression analysis.

FARMER BEHAVIOURAL AND ECONOMIC CHARACTERISTICS

Behavioural Characteristics

Researchers and workers in the field are becoming increasingly aware of the importance of certain social-psychological factors, as noted in the outline of the conceptual framework for this study, in the prediction of human behaviour. Descriptive date in these social-psychological areas are presented herein for farm and mixed-focus limited resource farmers according to their classification as either receptive or unreceptive to farm improvements.

Social Factors

Social factors were determined in Phase I of the study by asking the respondents their age, formal educational attainment, number of dependants, years since started farming, and the state of their health.

Data in Table 1 show that limited resource farmers tended to be an older population (averaging 47 years of age) with receptive farmers tending to be somewhat younger than unreceptive. Most of these farmers did not graduate from high school (only 20% of the receptive and 8% of the unreceptive were graduates). Approximately 70 percent of the respondents had been farming for at least 25 years (the unreceptive longer on average than the receptive). One-half of the respondents had two or less dependants with receptive farmers averaging more dependants than those classified as unreceptive. Health problems were a significant factor among these limited resource farmers, particularly among the unreceptive group (38% of whom experienced health problems that would hamper their farming operation).

Behavioural Nature

Value orientations, basic socio-psychological needs, and self-concepts

TABLE 1 PERCENT DISTRIBUTION OF RESPONDENTS BY SELECTED SOCIAL FACTORS

SELECTED SOCIAL FACTORS	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Age						
25 to 34 years	5	20%	1	2%	6	8%
35 to 44 years	7	28	8	15	15	19
45 to 54 years	9	36	18	34	27	35
55 to 65 years	4	16	26	49	30	38
Total	25	100%	53	100%	78	100%

Formal Education	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Grade 8 or less	14	56%	3	70%	51	65%
Some high school	6	24	12	22	18	23
Vocational training	2	8	2	4	4	5
Highschool graduate	0	0	2	4	2	3
Highschool plus vocational	2	8	0	0	2	3
College graduate	1	4	0	0	1	1
Total	25	100%	53	100%	78	100%

Year Started Farming	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Before 1936	5	16%	9	17%	13	17%
1936 to 1940	1	4	7	13	8	10
1941 to 1945	1	4	18	34	19	24
1946 to 1950	6	24	8	34	14	18
1951 to 1960	5	20	7	13	12	15
1961 to 1971	8	32	4	8	12	16
Total	25	100%	53	100%	78	100%

Number of Dependants	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
None	0	0%	5	9%	5	6%
One	4	16	13	25	17	22
Two	5	20	12	23	17	22
Three	5	20	5	9	10	13
Four	6	24	8	15	14	18
Five	2	8	6	11	8	10
Six	2	8	1	2	3	4
Seven	1	4	3	6	4	5
Total	25	100%	53	100%	78	100%

Health Status	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
No health problems	21	84%	26	50%	48	61%
Cause irritation but can still work	--	--	6	12	6	8
Hamper operation but can still work	4	16	10	19	14	18
Very seriously hamper ability to work	--	--	10	19	10	13
Total	25	100%	53	100%	78	100%

[a]Not ascertained for one respondent

of respondents are included under this heading. It was felt that many of these factors individually or together are likely to influence the motivation and behaviour of respondents.

Value Orientations: Value orientations are defined as an organized system of values within an individual that determines desired ends of behaviour and prescribes norms or socially acceptable means of attaining them. Values considered to be at opposing poles of four continua were examined in this study. These value continua were:

1. Economic vs. Social -- a continuum representing priority placed on financial success, growth in the farm business, etcetera, compared to priority placed on time spent with family and friends and involvement in the community;

2. Scientific vs. Traditional -- a continuum representing an orientation toward use of modern methods, research information, scientific method of decision making and the like, as opposed to traditional methods, where decisions were based solely on what had been done before and using primary reference groups as information sources;

3. Risk vs. Non-Risk -- a continuum representing an orientation toward acceptance of risk in decision making and a willingness to make changes involving some elements of uncertainty, as opposed to an orientation toward risk aversion or an unwillingness to make changes that involve elements of risk;

4. Independent vs. Group Action -- a continuum representing a preference for making decisions without seeking the advice of others and for working alone, as opposed to a preference for working in groups and sharing decision making or seeking advice of others.

Each of the four continua above were represented by five groups of paired opposing statements. For example, in the economic-social category, five statements placing priority on economic advancement were paired with five statements placing priority on family and friends. The respondents were asked to choose one of the two statements that best represented their own feelings or which was most important to them.

Scores of "zero" or "one" were assigned to respondents' answers indicating value preferences. A "one" was given to answers indicating economic,

scientific, risk acceptance, and independent choices, while a "zero" was given to social, traditional, non-risk, and group action choices. In this way a total score was calculated by adding points for all five statements in each category. For example, the economic-social continuum would be made up as follows:

Score-0 : 0 economic statements, 5 social statements
Score-1 : 1 economic statement, 4 social statements
Score-2 : 2 economic statements, 3 social statements
Score-3 : 3 economic statements, 2 social statements
Score-4 : 4 economic statements, 1 social statement
Score-5 : 5 economic statements, 0 social statements

An individual with a total score of "zero" was considered to be strongly socially oriented while an individual with a score of "five" was strongly economically oriented. The other three continua were scored in the same manner.

Table 2 outlines distributions of respondents according to the four value orientation continua which were utilized. Data indicate that the majority of respondents tended to be much more socially than economically oriented, that is, they indicated a higher value on relations with family and friends and their role in their community, than they did on financial or economic success.

The majority indicated risk averse value orientations rather than risk acceptance. The economic and risk averse value orientations combined may provide important insight into the lack of acceptance of certain kinds of credit and production improvement programs.

The respondents' scientific or traditional orientations seemed to be less polarized than the previous two orientations. More respondents tended to be "middle of the road", having chosen some scientific statements and some traditional statements.

The majority of respondents were neither strongly independent nor strongly

TABLE 2 FARMERS' PERCEIVED VALUE ORIENTATIONS

		Receptiveness to Change					
		Receptive		Unreceptive		Total	
Economic Value Scores		N	%	N	%	N	%
Low Economic	0	6	24%	22	42%	28	36%
(High Social)	1	5	20	18	34	23	30
	2	10	40	6	11	16	20
	3	1	4	6	11	7	9
(Low Social)	4	2	8	1	2	3	4
High Economic	5	1	4	0	0	1	1
Total		25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
Scientific Value Scores		N	%	N	%	N	%
Low Scientific	0	1	4%	6	11%	7	92
(High Traditional)	1	3	12	8	15	11	14
	2	5	20	6	11	11	14
	3	5	20	15	29	20	26
(Low Traditional)	4	7	28	12	23	19	24
High Scientific	5	4	16	6	11	10	13
Total		25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
Risk Value Scores		N	%	N	%	N	%
Low Risk	0	7	28%	28	53%	35	45%
(High Non-Risk)	1	8	32	16	30	24	31
	2	5	20	6	11	11	14
	3	3	12	2	4	5	6
(Low Non-Risk)	4	1	4	1	2	2	3
High Risk	5	1	4	0	0	1	1
Total		25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
Independence Value Scores		N	%	N	%	N	%
Low Independence	0	5	20%	3	6%	8	10%
(High Group)	1	4	16	6	11	10	13
	2	8	32	15	28	23	29
	3	5	20	15	28	20	26
(Low Group)	4	1	4	10	19	11	14
High Independence	5	2	8	4	8	6	8
Total		25	100%	53	100%	78	100%

group action oriented. However, there was a trend toward the independent end of the continuum with 48 percent having independence scores of three or more. This could have implications for the utilization of group structured educational programs as well as participation in community organizations and other group projects.

The receptive to change group appeared to be generally more economically and scientifically oriented than the unreceptive group. This group also typically was more risk accepting and more willing to work in groups than was the unreceptive group.

Basic Needs: Past research in the social and psychological fields has established that people experience various needs which are motivating forces in their behaviour. Maslow[1] has provided an interesting way of interrelating many human motives. He arranges the motives in a hierarchy ranging from low to high. Motives lowest in the hierarchy will be aroused first and must be satisfied or they will be dominant. However, once they are satisfied to a large degree, motives on the next highest level become the primary energizers and directors of behaviour. This implies that the hungry man will not philosophize, and similarly, the lonely man will have difficulty focusing on self-actualization and self-respect. Maslow suggested that lowest order needs include survival and safety, with sex, love, acceptance and affiliation needs being next highest. At the upper level would be found self-esteem and achievement types of needs. In this study an attempt was made to focus on security, affiliation (social) and achievement needs.

Although the measurement of basic needs or motives is more difficult than measurement of many other characteristics, their measurement was considered important for several reasons. Basic needs are likely very fundamental to human behaviour and thus play an important part in the formulation of

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[1] A.H. Maslow. Motivation and Personality. Harper and Row. 1970.

aspirations and values. Basic needs can be expected to change far more slowly over time than will specific values and thus may be a more dependable predictor of behaviour.

The forced choice format used to measure value orientations was also used to indicate which of three basic needs (security, affiliation, achievement) was predominant for each respondent. Six phrases were utilized in total. Each of the three needs were represented by two of the phrases. A scale was formed by matching one phrase with each of the phrases in the other two need categories. This produced six paired phrases from which the respondent was to choose the one of the two phrases that represented the need that was most important to him.

The question was scored by allotting one point for each of the phrases chosen by the respondent. The points were added for each of the three need categories giving a total Achievement score, Affiliation (social) score, and Security score. These scores were then used to provide an indication of the relative importance of the three needs for each respondent.

Need for achievement was considered a most important factor because of its possible relationship to managerial decision making. For this reason, a second method for measuring need for achievement was used that involved a graphic rather than verbal test. The respondents were shown a drawing containing various lines and scribbles. After seeing the drawing for two seconds they were asked to reproduce what they saw as closely as possible on a blank sheet of paper. The drawings obtained from the respondents were scored according to the system presented by Aronson[1] (see Appendix I).

The Aronson scoring system was based primarily on the property of 'discrete-fuzzy' lines. That is, "the major distinction perceived was that the drawings of 'highs' (high achievers) contained a preponderance of single,

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[1] E. Aronson. Motives in Fantasy, Actions and Society. Van Nostrand. 1968.

unattached discrete lines, while those of the 'lows' (low achievers) seemed more overlaid, fuzzier." Need for achievement score was also derived to a lesser extent from certain additional configurations including: space (amount of page filled), diagonal configurations, S-shaped lines, and multi-wave lines.

Table 3 contains data which outline the frequency distribution of respondents according to their scores for security, affiliation and achievement needs. Data indicate that respondents tended to have highest scores for affiliation (social) needs followed first by achievement and finally security needs. These findings suggest that, for the majority of respondents, their relatives and friends had first priority in their need hierarchy, followed by success with their farming operations or some other means of satisfying the need for achievement.

The second measure of basic needs involved the Aronson need for achievement test. The mean score for this measure was 5.0, representing what appeared to be a relatively low score compared to average scores for some other populations studied using the Aronson test. An earlier study of a group of college students yielded a mean score of 9. Thus it appears that the majority of respondents had relatively low need for achievement scores based on the Aronson test. The distribution of respondents' scores for need for achievement are given in Table 4. Some differences were observed in need for achievement scores between the receptive and unreceptive groups. For the unreceptive group, 74 percent had scores of three or less while only 29 percent of the receptive group had scores in that range. A comparison with viable commercial farm operators is not available but might be enlightening.

Self-Concepts: The perception of self or image a person holds about himself and his abilities and talents is likely to affect the way he reacts to

TABLE 3 FARMERS' PERCEIVED BASIC NEEDS

Need for Security		Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low Security	0	8	32%	11	21%	19	24%
	1	8	32	15	28	23	30
	2	5	20	14	26	19	24
	3	3	12	10	19	13	17
High Security	4	1	4	3	6	4	5
Total		25	100%	53	100%	78	100%

Social Need		Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low Social	0	3	12%	7	13%	10	13%
	1	4	16	11	21	15	19
	2	5	20	10	19	15	19
	3	3	12	14	26	17	22
High Social	4	10	40	11	21	21	27
Total		25	100%	53	100%	78	100%

Need for Achievement		Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low Achievement	0	3	12%	3	6%	6	7%
	1	3	12	13	24	16	21
	2	9	36	17	32	26	33
	3	5	20	11	21	16	21
High Achievement	4	5	20	9	17	14	18
Total		25	100%	53	100%	78	100%

TABLE 4 NEED FOR ACHIEVEMENT (ARONSON TECHNIQUE)

	Receptiveness to Change					
	Receptive		Unreceptive		Total	
Score	N	%	N	%	N	%
-5	0	0%	1	2%	1	1%
-4	0	0	1	2	1	1
-1	0	0	1	2	1	1
0	1	4	4	8	5	7
1	1	4	6	12	7	10
2	2	9	4	8	6	8
3	3	12	10	20	13	18
4	7	29	5	10	12	16
5	2	9	3	6	5	7
6	3	12	3	6	6	8
7	2	9	5	10	7	10
8	1	4	4	8	5	7
9	1	4	2	4	3	4
10	0	0	1	2	1	1
14	1	4	0	0	1	1
	24[a]	100%	50[b]	100%	74	100%

a,b
One and three non-responses respectively

the world around him and therefore the decisions he makes. In order to examine this phenomenon of self-concept, four characteristics were identified and measured. These included sociability (likeability or friendliness); assertiveness (leadership ability); achievement orientation (how determined to succeed or get things done, conscientiousness); and innovativeness (try new things).

To measure each of these characteristics, the respondents were asked to react to either four or five relevant phrases for each characteristic. They were asked to choose the category, from a five point scale, that most closely represented how well each of several phrases described them. The respondent was than given a score depending on each response (ranging from four for "very definitely describes me" to zero for "very definitely does not describe me"). These scores were accumulated to yield a total score for each farmer for each of the four characteristics.

Table 5 outlines the distribution of respondents according to their self-concept scores. The majority of respondents saw themselves as being highly achievement oriented (90 percent had scores of 18 to 25). A smaller majority (65 percent) had relatively high sociability scores of 15 to 20. The distribution of respondents based on self-perceptions of innovativeness and assertiveness was somewhat lower but a majority indicated medium to high ratings. A slightly larger proportion of farmers categorized as receptive to farm improvements scored higher in these four characteristics than did farmers categorized as unreceptive.

It seems apparent that a majority of this sample tended to feel relatively confident of themselves with respect to the four characteristics measured. These findings are contrary to some other studies that found that low income populations tended to have relatively poor self-images and lacked confidence in their abilities.

TABLE 5 RESPONDENTS' SELF-CONCEPTS

		Receptiveness to Change					
		Receptive		Unreceptive		Total	
SOCIABILITY (4 items)		N	%	N	%	N	%
Low	0-3	0	0%	0	0%	0	0%
	4-7	1	4	2	4	3	4
Medium	8-10	7	28	17	32	24	31
	11-13	10	40	29	55	39	50
High	14-16	7	28	5	9	12	15
	Total	25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
ASSERTIVENESS (4 items)		N	%	N	%	N	%
Low	0-3	0	0%	2	4%	2	3%
	4-7	8	32	16	30	24	31
Medium	8-10	8	32	33	42	30	38
	11-13	6	24	13	24	19	24
High	14-16	3	12	0	0	3	4
	Total	25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
INNOVATIVENESS (4 items)		N	%	N	%	N	%
Low	0-3	0	0%	0	0%	0	0%
	4-7	1	4	14	26	15	19
Medium	8-10	9	36	18	34	27	35
	11-13	9	36	18	34	27	35
High	14-16	6	24	3	6	9	11
	Total	25	100%	53	100%	78	100%

		Receptive		Unreceptive		Total	
ACHIEVEMENT (5 items)		N	%	N	%	N	%
Low	0-4	0	0%	0	0%	0	0%
	5-8	0	0	0	0	0	0
Medium	9-12	1	4	7	13	8	10
	13-16	14	56	32	61	46	59
High	17-20	10	40	14	26	24	31
	Total	25	100%	53	100%	78	100%

Perceptions and Inclinations

This section examines some of the respondents' aspirations, their satisfaction with farming and their attachment to the community, their perceptions of things that limited their farm income, and the potential utility of selected programs.

Aspirations: Aspirations were measured in four areas: household (a desire to attain a more up-to-date home, greater comforts and holidays); farm aspirations (a desire to improve the farm business through better quality crops and livestock, larger farm size and so on); social aspirations (a desire to participate in community groups and activities toward the attainment of a more prosperous and viable community and toward establishment of mutually agreeable relationships with other community members); and family aspirations (a desire to improve the environment and opportunities for their children and family).

These aspirations were measured using a series of phrases representing each of the areas specified. Each respondent was asked how important each of these statements were to him, taking into consideration the amount of time, energy and capital resources that he was allocating to achieve them. The respondents were to choose an answer from a five point scale (that included very important, important, indifferent (neutral), unimportant, and very unimportant) and an aspiration score was determined by allotting scores of four through to zero for answers ranging from "very important" through to "very unimportant" respectively and accumulating the total score for each aspiration area.

Data in Table 6 outline the distribution of respondents according to the aforementioned aspiration categories. The respondents appeared to have moderately high aspirations in both the farm and family areas (as indicated

TABLE 6 FARMERS' PERCEIVED ASPIRATIONS

		Receptiveness to Change						
		Receptive		Unreceptive		Total		
Household Items (3)		N	%	N	%	N	%	
Low	0-2	1	4%	0	0%	1	1%	Normalized mean score 11.5/20
	3-4	0	0	4	7	4	5	
Medium	5-7	13	52	30	57	43	56	
	8-10	11	44	18	34	29	37	
High	11-12	0	0	1	2	1	1	
	Total	25	100%	53	100%	78	100%	
		Receptive		Unreceptive		Total		
Farm Items (7)		N	%	N	%	N	%	
Low	0-5	0	0%	0	0%	0	0%	
	6-11	0	0	2	4	2	3	Normalized mean score 13.5/20
Medium	12-17	4	16	12	23	16	20	
	18-23	18	72	36	68	54	69	
High	24-28	3	12	3	5	6	8	
	Total	25	100%	53	100%	78	100%	
		Receptive		Unreceptive		Total		
Family Items (4)		N	%	N	%	N	%	
Low	0-3	0	0%	0	0%	0	0%	
	4-7	0	0	2	4	2	3	Normalized mean score 13.5/20
Medium	8-10	8	32	18	34	26	33	
	11-13	15	60	25	47	40	51	
High	14-16	2	8	8	15	10	13	
	Total	25	100%	53	100%	78	100%	
		Receptive		Unreceptive		Total		
Social Items (5)		N	%	N	%	N	%	
Low	0-4	1	4%	2	4%	3	4%	
	5-8	6	24	20	38	26	33	Normalized mean score 9.5/20
Medium	9-12	9	36	25	47	34	44	
	13-16	8	32	6	11	14	18	
High	17-20	1	4	0	0	1	1	
	Total	25	100%	53	100%	78	100%	

by a normalized mean score of 13.5/20). Household aspirations were slightly lower with a normalized mean score of 11.5/20. Aspirations were lower on average in the social area, but the normalized mean score of 9.5 suggests that aspirations were moderate even in this area.

These results may appear contradictory to the popular view that people in the lower income strata are generally low aspirers and low achievers. However, the situation may be more one of their not having either the physical, mental or economic resources needed to attain the levels to which they aspire.

Satisfaction with Farming: Data in Table 7 suggests that the majority of respondents were generally satisfied with farming as a way of life. A higher proportion of respondents classified as receptive to farm changes

TABLE 7 FARMERS' LEVEL OF SATISFACTION WITH FARMING

	Receptiveness to Change					
	Receptive		Unreceptive		Total	
Score	N	%	N	%	N	%
Very satisfied	18	72%	20	38%	38	49%
Satisfied	7	28	24	45	31	40
Slightly dissatisfied	0	0	5	9	5	6
Very dissatisfied	0	0	4	8	4	5
Total	25	100%	53	100%	78	100%

indicated a higher level of satisfaction than those classified as unreceptive. However, nearly one-fifth (17 percent) of the unreceptive farmers indicated at least some dissatisfaction with farming.

Community Attachment: The degree of community attachment indicated by the respondents is presented in Table 8. The majority of the respondents expressed strong attachment to their communities. This observation may have implications for the success of programs designed to encourage these types of people to leave farming if such a move entails leaving their communities.

TABLE 8 DISTRIBUTION OF RESPONDENTS BY COMMUNITY ATTACHMENT

Community Attachment	Number	Percent
I would never consider leaving.	21	27%
I might leave if I had to but I would really prefer not to.	36	46
It would depend on how good my opportunities were elsewhere.	13	17
I would really like to leave if I had any other opportunity.	2	2
Total	78	100%

Factors Limiting to Income: Respondents were asked the degree to which they felt availability of land, credit, buildings and equipment, agricultural information, off-farm work, and formal education were limiting their income. Table 9 contains data which show the distribution of respondents' responses to these potentially limiting factors. A high percentage of the respondents felt that most of these factors, with the exception of buildings and equipment, were not at all limiting their income. Availability of land to rent or buy was also identified as a limiting factor by slightly more than one-half of the farmers classified as receptive to farm changes.

It can be reasonably implied that if the limited resource farmers do not perceive that they are restrained by limited resources, programs to alleviate their problems by providing these resources may not be well received. The very low degree of perceived limitation of agricultural information and formal education by most of the respondents coincides with the observation of low levels of participation in educational or information-based programs.

Utility of Potential Programs: One measure of policy preferences involved respondents' perception of the utility of various potential policy instruments. A series of hypothetical programs were presented to the

TABLE 9 FARMERS' PERCEPTIONS OF LIMITATIONS TO INCOME

Availability of Land to Rent or Buy	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	3	12%	6	11%	9	12%
Moderately	5	20	6	11	11	14
Slightly	5	20	2	4	7	9
Not At All	12	48	39	74	51	65
Total	25	100%	53	100%	78	100%

Availability of Credit	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	1	4%	1	2%	2	3%
Moderately	2	8	3	6	5	6
Slightly	2	12	1	2	4	5
Not At All	19	76	48	90	67	86
Total	25	100%	53	100%	78	100%

Availability of Off-Farm Work	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	1	4%	5	9%	6	8%
Moderately	1	4	4	8	5	6
Slightly	2	8	2	4	4	5
Not At All	21	84	42	79	63	81
Total	25	100%	53	100%	78	100%

Table cont'd.....

TABLE 9 (Cont'd)

Buildings & Equipment as Limiting Factor	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	2	8%	9	17%	11	14%
Moderately	6	24	10	19	16	21
Slightly	5	20	9	17	14	18
Not At All	12	48	25	47	37	47
Total	25	100%	53	100%	78	100%

Formal Education as a Limiting Factor	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	0	0%	2	4%	2	3%
Moderately	3	12	8	16	11	14
Slightly	5	20	5	10	10	13
Not At All	17	68	36	70	53	70
Total	25	100%	51[a]	100%	78	100%

Availability of Agricultural Information	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Limiting	0	0%	2	4%	2	3%
Moderately	3	12	2	4	5	6
Slightly	5	20	7	13	12	15
Not At All	17	68	42	79	59	76
Total	25	100%	53	100%	78	100%

[a]Response not ascertained from two respondents.

respondents to determine, in a cursory way, what types of additional programs they would consider useful in their operation. The hypothetical programs included:

1. A production advice program.
2. A management advice program.
3. Retirement planning advisory program.
4. Direct transfer payment program to make up the difference between cost of production and returns.
5. Indirect subsidies like credit arrangements and training programs, or subsidized services like R.O.P. and feed testing.

The data in Table 10 indicate a fairly varied impression of the utility of the various potential programs. The least favoured programs were educational in nature (including advisory services for production, farm management and retirement planning). Indirect assistance in general was seen as being slightly to moderately useful by the majority of respondents. The one program that was perceived as likely to be very useful (by sixty-nine percent of the respondents) involved direct government income support. This form of support was favoured, over indirect subsidies, by over two-thirds of the respondents. Generally a higher proportion of the receptive group found all the programs to be more useful compared to the unreceptive group.

Program Suggestions: Respondents were asked to indicate or suggest any specific type of programs that they thought governments should have for farmers like themselves. A wide variety of suggestions were forthcoming. Responses were combined into nine categories as outlined in Table 11. The most widely suggested program was greater government involvement in price stabilization which was supported by one-third of the respondents. However, nearly one-fifth (18 percent) of the respondents felt that nothing additional was needed and a similar number felt that less government involvement would be desirable. The latter findings imply that public support for additional policy instruments

TABLE 10 PERCEIVED USEFULNESS OF ADDITIONAL SPECIAL PROGRAMS AT THIS TIME

Agricultural Advisory Services For Production	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Useful	11	44%	10	19%	21	27%
Moderately Useful	7	28	16	30	23	29
Slightly Useful	6	24	11	21	17	22
Not At All	1	4	16	30	17	22
Total	25	100%	53	100%	78	100%

A Management Advisory Service	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Useful	7	28%	5	9%	12	15%
Moderately Useful	6	24	12	23	18	23
Slightly Useful	8	32	9	17	17	22
Not At All	4	16	27	51	31	40
Total	25	100%	53	100%	78	100%

Advisory Service on Retirement Planning	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Useful	5	20%	14	26%	19	24%
Moderately Useful	8	32	8	15	16	20
Slightly Useful	5	20	8	15	13	17
Not At All	7	28	23	44	30	39
Total	25	100%	53	100%	78	100%

Table cont'd.....

TABLE 10 (Cont'd)

Direct Subsidies (Government Transfer Payment Programs)	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Useful	20	80%	34	64%	54	60%
Moderately Useful	2	8	4	8	6	8
Slightly Useful	2	8	6	11	8	10
Not At All	1	4	9	17	10	13
Total	25	100%	53	100%	78	100%

Indirect Subsidies (Credit Arrangements, Training, or Subsidized Services)	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Very Useful	9	36%	9	17%	18	23%
Moderately Useful	8	32	18	34	26	33
Slightly Useful	8	32	16	30	24	31
Not At All	0	0	10	19	10	13
Total	25	100%	53	100%	78	100%

Preference of Gov't Subsidies (Direct or Indirect)	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Direct	17	68%	34	69%	51	69%
Indirect	8	32	15	31	23	31
Total	25	100%	49	100%	74[a]	100%

[a]Responses were not obtained for four respondents.

TABLE 11 PERCENT DISTRIBUTION OF RESPONDENTS BY THEIR SUGGESTIONS FOR PROGRAMS

Program Suggestions	Number	Percent
Price stabilization	24	32%
Less government involvement	14	18
Marketing system	6	8
Credit and grants	5	7
Inputs	4	5
Participation	4	5
Advisory services	3	4
More off-farm work	2	3
Nothing additional needed	14	18
Total	76	100%

may be quite weak, at least unless they are carefully developed and provide assistance in new areas.

Social Participation

The various behavioural areas included under this broad label included participation in organizations and clubs, use of agricultural mass media, contacts with agricultural professionals and related agencies, and utilization of currently available government agricultural programs.

Organizational Participation: Respondents were asked to indicate to which of a wide array of clubs and organization they belonged as well as the extent of their activity in each of these. A modified Chapin scale [1] was used to derive an organizational participation score for each respondent (one point for each: membership; officeship in past; officeship at present; attendance at 1/3 to 2/3 of meetings, plus an extra point for attendance at more than 2/3 of organization meetings).

[1] F. Stuart Chapin, Experimental Designers in Sociological Research. New York: Harper, 1955, Appendix B, pp. 275-278.

The distribution of respondents according to their organizational participation scores is outlined in Table 12. Respondents' scores ranged from zero to twenty-five with a mean score of four. It is apparent that

TABLE 12 RESPONDENTS' ORGANIZATIONAL PARTICIPATION

Organizational Participation Score		Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low	0-4	13	52%	36	68%	49	64%
	5-9	7	28	11	21	18	23
Medium	10-14	3	12	4	7	7	9
	15-19	1	4	1	2	2	2
Highest	20-25	1	4		2	2	2
	Total	25	100%	53	100%	78	100%

the majority of respondents had very limited participation in clubs and other organizations in their community. These findings are similar to those observed in other studies with this type of population.

Use of Agricultural Mass Media: The respondents were asked to indicate the number of farm magazines, newspapers or bulletins which they received and also which farm radio or television programs they happened to follow. Data in Table 13 indicate that a relatively small number of farm magazines, newspapers or bulletins were received by respondents. By far the most frequently mentioned publication was Report on Farming (received by 60 percent) followed by the Country Guide (which was received by 47 percent).

These results may indicate that although there is some potential for dissemination of program information through magazines and the like, the range of publications for this purpose is very limited.

The number of farm programs followed regularly on radio and television is also outlined in Table 13. Seventy-one percent followed either no programs

or only one program regularly. This result would seem to indicate that the effectiveness of farm broadcasts in reaching the low income group as

TABLE 13 RESPONDENTS' MEDIA USE

Number of Farm Magazines		Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low	0	2	8%	2	4%	4	5%
	1	2	8	14	26	16	21
	2	5	20	18	34	23	29
Medium	3	6	24	9	17	15	19
	4	7	28	6	11	13	17
	5	2	8	2	4	4	5
High	6	1	4	2	4	3	4
Total		25	100%	53	100%	78	100%

Number of Farm Radio and Television Programs		Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Low	0	4	16%	23	43%	27	35%
	1	9	36	19	36	28	36
	2	11	44	10	19	21	27
Highest	3	1	4	1	2	2	2
Total		25	100%	53	100%	78	100%

a whole is fairly limited. The data also indicates once again that the receptive group made more extensive use of media services as sources of

agricultural information than did the unreceptive group.

Professional Contacts: The respondents were asked to indicate the extent that they had contact during the past year with each of the following: bankers, or credit union agents, accountants or lawyers, Farm Credit Corporation advisors, Rural Development officers (or A.R.D.A. staff) and the county extension staff.

For those agencies the respondents had contacted they were asked how often they had various types of contacts in the past year, including office calls or letters, farm visits, meetings, field days and courses. Each respondent was scored by being given a point for each contact he had had over the previous year with any of the agencies. The sum of these points represented a total professional contact score.

Table 14 contains data which indicate the frequency distribution of respondents by contacts with these professionals. It can be seen that

TABLE 14 PROFESSIONAL CONTACTS IN PAST YEAR

Type of Contact	Contact Frequencies by Percent					Total	
	zero	1-2	3-5	6-11	12 or more	N	%
Banker or C.U. Manager	53%	27	11	3	6	78	100%
Lawyer or Accountant	41%	54	3	1	1	78	100%
F.C.C. Advisor	92%	5	1	1	0	78	100%
A.R.D.A. Counsellor	97%	3	0	0	0	78	100%
County Extension Staff	59%	25	6	6	4	78	100%

the majority had very little contact with those agencies listed. The most frequently contacted professionals were accountants and lawyers (with 59 percent having one or more contacts). The majority of these might be once a

year meetings with accountants regarding income tax matters. The second most often contacted professionals were bankers (with 48 percent having one or more contacts), followed by county extension staff (with forty-one percent having one or more contacts). Contacts with Farm Credit and A.R.D.A. Rural Development Staff were very low although the latter may have been covered in the county extension staff category.

Table 15 outlines the distribution of respondents by professional contacts as separated by receptive and unreceptive groups. Respondents that

TABLE 15 CONTACTS WITH PROFESSIONALS

Contacts Banker or Credit Union Manager Per Year	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Zero	6	24%	35	66%	41	53%
1-2	9	36	12	22	21	27
3-5	6	24	3	6	9	11
6-11	1	4	1	2	2	3
12 or more	3	12	2	4	5	6
Total	25	100%	53	100%	78	100%

Contacts Accountant or Lawyer Per Year	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Zero	7	28%	25	47%	32	41%
1-2	15	60	27	51	42	54
3-5	2	8	0	0	2	3
6-11	0	0	1	3	1	1
12 or more	1	4	0	0	1	1
Total	25	100%	53	100%	78	100%

Table continued....

TABLE 15 (Cont'd)

Contacts Farm Credit Corporation Advisor Per Year	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Zero	22	88%	50	94%	72	92%
1-2	2	8	2	4	4	6
3-5	1	4	0	0	1	1
6-11	0	0	1	2	1	1
12 or more	0	0	0	0	0	0
Total	25	100%	53	100%	78	100%

Contacts A.R.D.A. Counsellor Per Year	Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Zero	23	92%	53	100%	76	97%
1-2	2	8	0	0	2	3
3-5	0	0	0	0	0	0
6-11	0	0	0	0	0	0
12 or more	0	0	0	0	0	0
Total	25	100%	53	100%	78	100%

Contacts with County Extension Staff Per Year	Receptiveness to Change: Receptive N	Receptive %	Unreceptive N	Unreceptive %	Total N	Total %
Zero	9	36%	37	70%	46	59%
1-2	7	28	12	22	19	25
3-5	3	12	2	4	5	6
6-11	4	16	1	2	5	6
12 or more	2	8	1	2	3	4
Total	25	100%	53	100%	78	100%

were receptive to farm improvements tended to have had more intensive contact with all of the professionals (especially the extension service and banks or credit unions) than did the unreceptive group.

Utilization of Current Programs: To measure past utilization and thus acceptance of current government programs, a list of popular programs was constructed. The respondents were asked for which of the listed programs they had applied. They were scored one point for each program in which they had been involved. The sum of these points provided a total participation score. The number of programs of which they were not aware was also recorded. The programs listed included: A.R.D.A. land transfer, Crop Insurance, Capital Grants, Low Interest Livestock Loans, R.O.P. or D.H.I., Farm Management Short Course and Grey-Bruce Farmers Week (Grey County).

TABLE 16 PERCENT DISTRIBUTION OF RESPONDENTS BY UTILIZATION OF SPECIFIC PROGRAMS

Program	Applied For		Not Applied But Aware Of		Not Applied Not Aware		Total	
	N	%	N	%	N	%	N	%
A.R.D.A. Land Transfer	5	6%	70	90	3	4	78	100%
Crop Insurance	1	4%	70	90	1	1	78	100%
Capital Grants for:								
Drainage	15	19%	57	73	6	8	78	100%
Buildings and Equipment	31	40%	41	53	6	8	78	100%
Feed Storage	5	6%	67	86	6	8	78	100%
Field Enlargement	13	17%	59	76	6	8	78	100%
Wells and Dugouts	12	15%	58	74	8	10	78	100%
Farm Vacation Hosts	1	1%	71	91	6	8	78	100%
Low Interest Livestock Loans	8	10%	62	80	8	10	78	100%
Feed and Soil Testing	33	42%	43	55	2	3	78	100%
R.O.P. or D.H.I.	3	4%	70	90	5	6	78	100%
Grey Bruce Farmers Week	5	6%	25	32	4	5	34	100%
Farm Management Course	5	6%	67	86	6	8	78	100%

Table 16 shows the distribution of utilization by respondents of each program. It can be seen that the majority of respondents had participated in very few, if any, programs. The feed and soil testing program was the most popular, followed by the capital grant for buildings (42% and 40% participation,

respectively). Since 84 percent of the respondents stated that they were at least aware of all of the programs, it is unlikely that low participation was due primarily to lack of knowledge of the existence of the programs.

The distribution of the number of programs utilized by respondents is outlined in Table 17.

TABLE 17 PARTICIPATION IN TWELVE EXAMPLES OF GOVERNMENT PROGRAMS

Total of Participation	Number	Percent
0	33	42%
1	20	26
2	10	13
3	5	6
4	8	10
5	2	3
6-12	0	0
Total	78	100%

Summary of Behavioural Characteristics by Classification Subgroups

A summary of the behavioural characteristics of respondents, according to their subgroup distribution in the Phase I Classification, is included in Table 18. Scores were normalized, within each major behavioural area, to facilitate comparisons. It should be recognized, however, that the normalized scores are not directly equivalent to some of the behavioural scores presented in earlier tables.

Due to the relatively small number of respondents in the subgroups, it is hazardous to generalize extensively from the data distribution in Table 18 beyond earlier findings.

TABLE 18 SUMMARY OF BEHAVIOURAL CHARACTERISTICS BY CLASSIFICATION SUBGROUPS

Behavioural Factors	Respondents "Receptive" to Farm Improvements				
	Farm Focus		Mixed Focus		
	Transitional Stage (N=5)	Potential Commercial (N=12)	Transitional Stage (N=5)	Potential Commercial (N=1)	Permanent Part-Time Receptive To Change (N=2)
Social Factors					
Number of Dependents	4.6	3.2	2.8	7.0	1.5
Age	40.2	47.6	39.4	46.0	48.0
Value Orientations (Scores normalized based on 5 maximum)					
Economic	2.1	0.8	1.0	1.4	1.1
Scientific	3.2	2.8	3.0	5.0	3.5
Risk	3.0	0.8	1.0	2.0	2.0
Independence	3.2	1.8	1.0	3.0	2.0
Basic Needs (Scores based on 4 maximum)					
Achievement	3.8	1.5	2.4	4.0	1.5
Security	1.6	1.3	1.0	0.0	1.5
Social	0.6	3.3	2.6	2.0	3.0
Self-Concept (Scores normalized based on 20 maximum)					
Social	14.2	16.3	16.6	17.0	15.5
Assertiveness	14.0	13.8	13.6	14.0	14.0
Achievement	17.6	17.1	17.0	20.0	16.0
Innovativeness	15.2	15.3	15.4	20.0	15.5
Aspirations (Scores normalized based on 20 maximum)					
Household	13.3	13.5	14.1	17.3	11.3
Farm	16.7	15.2	15.7	18.9	14.3
Family	15.8	14.8	16.2	16.0	16.5
Social	10.6	13.7	13.1	9.6	14.0
Social Participation					
Community Attachment	3.8	1.92	1.6	4.0	2.0
Organization Participation	1.6	7.33	6.4	1.0	4.5
Total Professional Contacts	10.0	12.0	11.4	6.0	6.5
Current Program Utilization	2.0	2.5	2.2	1.0	4.0
Total Agricultural Magazines	3.4	2.67	2.2	5.0	4.5
Total Radio and TV	1.2	1.75	1.0	1.0	0.5
Perceptions of Limitations (0 = not at all; 1 = slightly; 2 = moderately; 3 = very limiting)					
Land	1.0	0.7	1.2	3.0	0.5
Credit	0.6	0.4	0.4	0.0	0.0
Off-Farm Work	0.6	0.4	0.4	0.0	0.0
Buildings & Equipment	1.2	1.2	0.4	0.0	1.0
Agricultural Information	0.8	0.2	0.2	2.0	0.5
Formal Education	0.6	0.3	0.2	2.0	0.5
	(1 = Direct; 2 = Indirect)				
Preference for Direct vs. Indirect Subsidy	1.4	1.4	1.2	1.0	1.0

Table continued....

TABLE 18 (Cont'd)

Behavioural Factors	Respondents "Unreceptive" to Farm Improvements				
	Farm Focus			Mixed Focus	
	Market Oriented		Traditional	Market Oriented	Traditional
	Unreceptive due to age or health (N = 13)	Unreceptive due to attitude (N = 16)	(N = 6)	Nonfarm major source of income (N = 9)	(N = 9)
Social Factors					
Number of Dependents	3.3	3.1	2.5	4.6	4.9
Age	55.5	55.6	58.1	47.6	48.4
Value Orientations (Scores normalized based on 5 maximum)					
Economic	0.9	0.7	0.2	0.5	0.9
Scientific	2.8	3.1	3.5	1.8	2.3
Risk	0.8	0.6	0.7	0.9	0.7
Independence	3.3	2.3	2.3	2.2	3.0
Basic Needs (Scores based on 4 maximum)					
Achievement	1.7	2.4	1.8	2.1	2.9
Security	1.9	1.3	1.7	2.2	1.0
Social	2.4	2.3	2.5	1.7	2.1
Self-Concept (Scores normalized based on 20 maximum)					
Social	14.6	14.8	14.5	14.9	15.7
Assertiveness	12.3	11.8	12.5	13.6	12.6
Achievement	16.7	15.6	14.9	16.7	16.4
Innovativeness	13.0	14.4	12.7	13.5	13.9
Aspirations (Scores normalized based on 20 maximum)					
Household	14.3	13.3	12.3	13.9	12.3
Farm	14.8	14.9	14.1	14.2	14.3
Family	15.3	14.5	14.3	16.9	14.9
Social	10.6	12.1	10.8	11.4	11.1
Social Participation					
Community Attachment	1.85	2.12	1.83	2.55	1.89
Organization Participation	6.69	2.62	3.33	1.67	2.55
Total Professional Contacts	3.08	2.87	4.00	4.00	1.00
Current Program Utilization	1.15	1.00	0.17	0.55	0.00
Total Agricultural Magazines	2.38	3.00	2.17	2.22	1.22
Total Radio and TV	0.54	0.94	0.83	0.88	0.78
Perceptions of Limitations (0 = not at all; 1 = slightly; 2 = moderately; 3 = very limiting)					
Land	0.0	0.5	0.0	1.8	0.9
Credit	0.1	0.1	0.3	0.6	0.0
Off-Farm Work	0.2	0.1	0.5	0.8	1.2
Buildings & Equipment	0.5	1.1	0.8	1.4	1.4
Agricultural Information	0.2	0.5	0.2	0.4	0.1
Formal Education	0.0	0.8	0.5	0.0	0.9
	(1 = Direct; 2 = Indirect)				
Preference for Direct vs. Indirect Subsidy	1.9	1.6	1.5	1.5	1.2

Economic Characteristics

Since many of the limited resource farmers in the study planned to stay in agriculture, it was considered important from a policy standpoint to determine the actual and potential viability of these farmers. In this study, farm and family viability were examined from three different perspectives. These consisted of:

1. comparing the farmers' actual (or simulated) net income with income targets required to reach various levels of viability ,

2. measuring the farmers' perceived satisfaction for different levels of actual and potential income, and

3. determining a "reasonable" level of potential income that could be earned by unreceptive farmers, given their behavioural limitations.

Viability Targets

Four income targets were established to measure degrees of viability of the farm-family unit. These targets consisted of 1) enough income to cover farm expenses, 2) enough income to provide minimum family needs, 3) additional income to cover current debt obligations, and 4) additional income to provide for growth of the farm. These targets can be ordered logically as follows:

Target 1: Net Income $\geq$ 0 (farm expenses covered)

Target 2: Net Income $\geq$ SMFV (statistical minimum family viability, representing minimum family needs provided according to low income criteria by Statistics Canada)

Target 3: Net Income $\geq$ SMFV + CDO (Target 2 plus covering current debt obligations)

Target 4: Net Income $\geq$ SMFV + CDO + MG (Target 3 plus margin for growth)

The order of the targets was selected on the premise that the limited resource farmers first had to cover operating expenses to stay in business. After that, any net income would be used first to satisfy minimum family living requirements before being used for farm debts or improvements. For all targets, net farm income was calculated by deducting total current farm production expenses from gross farm sales. Family labour, land, and other equity capital were treated as the resources of the farm rather than expenses. Net farm income therefore represented returns to these resources. All other resources were treated as production expenses. All targets were examined for both net farm income alone and for total family income from all sources. The targets and their measurement are discussed in greater detail below.

1. Target 1 represented the break-even point where receipts just equalled expenses and net income was not negative. Income and expenses were obtained from the farmer directly, or constructed from physical production and sales data if not available.

2. Target 2 represented the minimum family income requirement as determined by Statistics Canada for non-poverty incomes. These incomes were determined for each family according to family size and location of residence. In 1976, for example, the minimum non-poverty level of income for a farm family of four was $6636.00. It should be noted, however, that these income measures represent an average level of income for viability as determined by the overall society, and may not represent the farmer's perception of his own viability.

3. Target 3 was composed of the current debt obligations in addition to the statistical minimum family income requirement. Current farm debt

obligations were calculated from the farmer's balance sheet and included all capital payments due in 1976 on machinery and livestock loans, as well as on farm mortgages and other farm loans. Interest payments were not included but were treated as current farm expenses in the calculation of net farm income. Where Target 3 is achieved, the family's needs and current debt obligations are covered, but there is no allowance for growth and continued development of the farm.

4. Target 4 consisted of Target 3 plus a margin for growth to provide long-term continuity and development of the farm business. The margin for farm growth was calculated as 2% of total farm assets which was derived from the farmer's balance sheet. If Target 4 is satisfied by net farm income alone, then the farm is economically viable. If Target 4 cannot be achieved by net farm income alone, but it can be achieved by total family income, the farm is not viable by itself, but the farm-family unit is.

Farmers' Perceived Satisfaction from Different Levels of Income

Since the measure of minimum family viability used in Target 2 was representative of the societal norm (Statistics Canada), each farmer was asked to provide additional measures of his own perception of the usefulness of different incomes. The farmers' perceived income requirements were measured by asking them to indicate the amount of income required for family living needs on a five point scale consisting of:

1. Able to do everything we want.
2. Quite comfortable.
3. Satisfactory.
4. Barely enough to take care of our family.
5. Not enough for our family.

Most of the limited resource farmers in the study reported that their perceived satisfaction with their current total family income was either

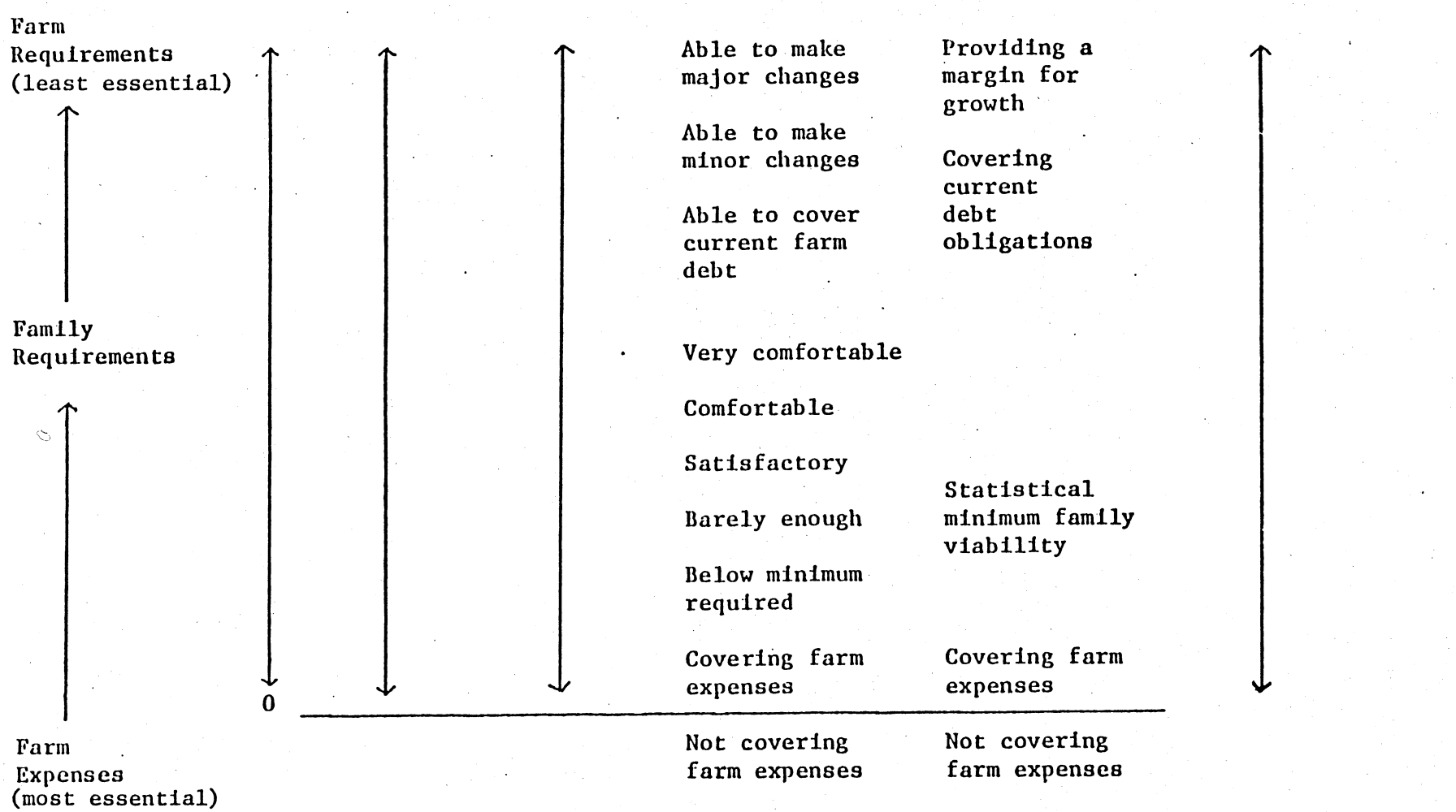
satisfactory (level 3), or barely enough to take care of the family (level 4, defined as the farmer's perceived minimum income for family viability). Where possible, the amount of change in income required to reach different levels of satisfaction was determined by adding or subtracting income from the current amount until a different satisfaction level was reached.

Potential Income

Potential income targets were examined only for the unreceptive group of farmers, and represented an income level that could be achieved with reasonable changes in their farming operation, given their behavioural framework and other constraints. The "feasible" level of the unreceptive farmer's potential income was based on reasonably attainable management improvements to obtain county average yields and farm performance, and was consistent with the current resource base and the farmer's perception of his ability to manage more livestock. Potential income was measured by calculating budgets for each enterprize and multiplying the profitability per unit (per cow, per acre) by the number of units.

Figure 3 outlines the relationships between expenditure priorities, actual income, satisfaction, and income targets achieved by current and potential income. Income levels falling toward the bottom of the diagram likely would be used mostly for covering farm expenses, and would be unsatisfactory to provide an adequate level of living. Higher income levels could provide more income for family living requirements, and generate greater family welfare. Still higher levels of income could be used to provide farm debt repayment and growth, which would be necessary for the long-term viability of the farm. The gap between current and potential

FIGURE 3. Actual, Potential and Target Income Levels



income in turn would indicate the amount of improvements in income and family welfare that could be expected from "reasonable" improvements in farming.

Findings

Some of the major economic characteristics of the limited resource farmers studied are given in Table 19, along with comparative data from commercial farmers selected from CANFARM records. In general, the commercial farmers had much greater gross farm sales (averaging $60,439) than the limited resource farmers. The receptive limited resource farmers averaged only $20,438 in gross sales, but this was still more than double the $8,978 averaged by the unreceptive limited resource farmers. With the exception of the commercial cow-calf operators reported in Table 19 (who had low incomes due to depressed calf prices in 1976), the commercial farmers also had considerably higher net incomes. The commercial operators averaged $12,300 net farm income, while receptive and unreceptive limited resource farmers averaged only $5,467 and $2,537 respectively.

Some of the higher incomes by commercial operators may be explained by greater acreage and assets, but the receptive limited resource farmers had the greatest average acreage (288 acres compared to 181-205 acres for commercial and 110 for unreceptive limited resource farmers). The large holdings by receptive limited resource farmers, however, tended to be of poorer quality land than that used by the commercial operators. In all cases, commercial operators had greater assets and many limited resource farmers appeared unwilling to use credit to acquire more assets. The receptive and unreceptive group of limited resource farmers averaged 88% and 97% equity in their farms, compared to only 64% for the commercial industrial milk

TABLE 19. Average Incomes, Tillable Acres, Total Assets and Financial Ratios for Limited Resource Farmers and Commercial Farmers, 1976

Farmer Classification Group	No. of Farmers	Gross Farm Sales ($)	Net Farm Income ($)	Tillable Acres (No.)	Total Assets ($)	% Equity (%)	Capital Turn-over[a] (years)	Cost Control Index[b] (%)	Return on Investment[c] ($)
Commercial Farms*									
Industrial milk	29	67,251	14,168	182	193,385	63.6	2.88	21.1	1.8
Cow-finish	9	63,176	14,864	205	205,529	78.4	3.25	23.5	1.7
Cow-calf	8	32,666	2,647	181	152,648	86.1	4.70	8.1	-4.6
Total	46	60,439	12,300						
Limited Resource Farmers									
Receptive	25	20,438	5,467	288	144,353	88.4	8.1	31.3	-2.6
Unreceptive	51	8,978	2,537	110	85,332	97.7	13.7	12.0	-8.2
Total	76	12,748	3,501	169	104,746	94.6	11.9	18.3	-6.4

* Source: Canfarm (1977) Selected farmer records

[a] Capital Turn-over = Total Farm Assets ÷ Gross Farm Sales measured in Years.

[b] Cost Control Index = Net Farm Income ÷ Gross Farm Sales X 100 expressed as a %.

[c] Return on Investment = Net Farm Income + Interest Paid + Operator's or Manager's Wages and Salaries deducted from Gross Sales - ($10,000 imputed value for operator labour and management X Man Equiv.) ÷ Total Assets.

producers.

Some indications of the relative management ability among the various groups can also be seen from the very long capital turnover periods among the limited resource farmers, averaging 8.1 and 13.7 years for the receptive and unreceptive groups respectively. Commercial farmers on the other hand, turned their capital over in 3 to 5 years. Receptive limited resource farmers had a relatively high cost control index (net income as a percentage of gross sales), indicating a large share of value added from labour. Unreceptive limited resource farmers, in contrast, had a much lower percentage, indicating their low level of efficiency. If farm labour had been valued at $10,000 per year, receptive and unreceptive limited resource farmers would have received a -2.6% and -8.2% return on equity capital respectively, while the commercial industrial milk and cow-finish operators selected would have received 1.7 to 1.8% return.

Additional information on total family income, viability target levels, and perceived income levels for minimum and satisfactory family viability is given in Table 20. Although the limited resource farmers had very low average net farm incomes, their total family incomes were much higher. Receptive limited resource farmers averaged $12,073 total family income (221% of net farm income), while the unreceptive group averaged 6,439 (254% of net farm income).

Target 2 levels were dependent on family size rather than farm performance, so they did not vary much between commercial and limited resource farmers. Targets 3 and 4, however, followed a similar pattern to gross and net farm income. Average values of Target 3 were lowest ($6,497) for unreceptive farmers, moderate ($9,020) for receptive farmers, and highest

TABLE 20. Average Income and Viability Targets for Limited Resource Farmers by Receptive and Unreceptive Groups, and Commercial Farmers, 1976

Farmer Classification Group	No. of Farmers	Gross Farm Sales	Net Farm Income	Total Family Income	Target 2	Target 3	Target 4	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income
		dollars							
Commercial Farmers*		60,439	12,300		6,636[a]	12,260[b]	16,010[c]		
Limited Resource Farmers									
Receptive to farm improvements	25	20,438	5,467	12,073	6,314	9,020	11,444	8,627	12,110
Unreceptive to farm improvements	51	8,978	2,537	6,439	5,816	6,497	8,064	6,193	7,496
Total limited resource farmers	76	12,748	3,501	8,550	5,999	7,327	9,522	6,994	9,014

* Source: (Derived from Canfarm (1977)). Weighted average for 8 cow-calf, 9 cow-finish and 29 industrial milk farmers selected from Canfarm records.

a Target 2 assumed a 4-member family for the commercial group and utilized actual family size for the other groups.

b Target 3 assumed current liabilities were based on 10% of total liabilities for the commercial group and actual debt requirements for the other groups.

c Target 4 assumed a margin for growth of 2% of total assets.

($12,260) for commercial farmers. The corresponding values for Target 4 were $8,064 (unreceptive), $12,496 (receptive), and $16,010 (commercial). The table also indicates that, on average, the net farm incomes of the commercial farmers used as a benchmark were much closer to Target 4 (the farm viability level) than the net farm incomes of the limited resource farmers. This indicates that a higher percentage of the commercial farmers were economically viable as compared with the limited resource farmers, and that the unreceptive limited resource farmers tended to be less viable than the receptive.

Table 20 also shows that the unreceptive limited resource farmers perceived that they required lower income to meet their minimum family needs ($6,193) than the receptive ($8,627). In addition, their perceived satisfactory income level was both lower ($7,496) and a smaller increase over the minimum level ($1,303) than the receptive category ($12,110 total and an increase of $3,483).

Table 21 gives the percentage distribution of farmers according to the highest target achieved by net farm income and total family income. These results indicate that only 9% of all limited resource farmers studied operated viable farms (achieving Target 4 on net farm income) and another 16% could have supported their families adequately (Target 2) on net farm income alone. However, about 36% of the farm-family units were viable (Target 4 on total family income), and an additional 25% of families had sufficient total family income for family viability (Target 2). Almost all (94%) of the unreceptive farmers were not totally viable on current net farm income alone and less than one-third (29%) of these families generated income from all sources to ensure both farm and family viability.

TABLE 21. Percentage Distribution of Limited Resource Farmers by Receptive and Unreceptive Groups According to Highest Targets Achieved with Simulated Net and Total Family Income, 1976

Farmer Classification Group	No. of Farmers	Maximum Target Achieved with Net Farm Income					Maximum Target Achieved with Total Family Income			
		Negative Income	Target 1	Target 2	Target 3	Target 4	Target 1	Target 2	Target 3	Target 4
		... % distribution of farmers ...					... % distribution of farmers ...			
Receptive to Farm Improvements	25	12.0	40.0	16.0	16.0	16.0	16.0	20.0	12.0	52.0
Unreceptive to Farm Improvements	51	19.6	64.7	2.0	7.8	5.9	54.9	5.9	9.8	29.4
Total	76	17.1	57.9	5.3	10.5	9.2	39.5	11.8	13.2	35.5

Additional detail on average incomes, farmers' perceived income requirements, and viability targets are given for subgroups of limited resource farmers in Table 22 for receptive farmers and Table 23 for unreceptive ones. Among receptive farmers, the farm focus subgroups tended to have larger gross sales than the mixed focus, and the transition stage in both farm and mixed focus had higher sales than other subgroups. Many of the farm focus transition stage farmers, however, had expanded their operations and were caught with falling beef prices and milk quota cut-backs, so that their net farm incomes were lower than most other subgroups. Because they devoted most of their time to farm rather than nonfarm work, their total family incomes also tended to be lower. Their relatively lower level (than other receptive subgroups) of perceived minimum and satisfactory level of income for family living apparently reflects an adjustment to their low current available cash income. Their average Targets 3 and 4, however, were the highest of all the subgroups.

The unreceptive farmers followed a more consistent pattern, with the relatively more progressive market-oriented farmers having the highest incomes, perceived income requirements, and income targets (while the traditional farmers had the lowest). The highest incomes were earned by the farm focus market-oriented group who were unreceptive to farm improvement due to age of health, but had the most progressive attitudes toward farming. Income from nonfarm work provided nearly all of the net family income for the mixed focus group, but substantial nonfarm family income was also earned by farm focus unreceptive farmers. Among the receptive farmers, the perceived minimum income for family viability and satisfactory living were highest among the market oriented subgroups. For the farm focus unreceptive due to attitude and the two traditional groups, however, the

TABLE 22 Average Income And Viability Targets For Limited Resource Farmers Receptive To Farm Improvements By Classification Groups, 1976

Farmer Classification Subgroup	No. of Farmers	Gross Farm Sales	Net Farm Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4
Farm Focus									
Transition Stage	5	33752	2997	6777	6617	10004	5978	15119	19382
Potential Commercial	12	18277	6995	13650	11525	14567	6233	8207	10715
Mixed Focus									
Transition Stage	5	19536	5900	12772	7501	12788	6828	9831	11829
Potential Commercial	1	7595	625	19425		19425	8930	11330	13510
Permanent Part-time	2	8806	3822	11848	10598	11848	4976	4976	7131
Total	25	20438	5467	12073	8627	12110	6314	9020	11444

TABLE 23. Average Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups, 1976

Farmer Classification Group	No. of Farmers	Gross Farm Sales	Net Farm Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4
		dollars							
Farm Focus Market Oriented, Unreceptive due to Age or Health	13	13371	4547	9061	8225	10292	5772	6761	8920
Market Oriented, Unreceptive due to Attitude	15	10499	4012	5772	5272	6442	5543	5836	7715
Traditional	6	3883	1030	3483	3617	4400	4805	5309	6046
Mixed Focus Market Oriented, Nonfarm Major Source of Income	8	8938	-632	7685	8602	9727	6790	8263	9800
Traditional	9	4641	998	4629	4374	5295	6143	6439	7210
Total	51	8978	2537	6439	6193	7496	5816	6497	8064

average perceived income level necessary for minimum family viability were below the statistical minimums proposed by Statistics Canada. This indicates that these subgroups would feel they could get by on less money than the poverty level figures of Statistics Canada. The two traditional groups also indicated that they would find that a level of income below the statistical minimum would provide a satisfactory level of living.

Additional detailed information by subgroups is also provided in Tables 24 and 25 for target achievement by receptive and unreceptive farmers respectively. In Table 24, it can be seen that none of the farm focus transition stage farmers achieved more than Target 2 with either net farm or total family income, and most barely covered expenses. The highest level of achievement occurred among the farm focus potential commercial subgroup (25% achieved Target 4 with net farm income and 66.7% with total family income), followed by the mixed focus transition stage subgroup (20% Target 4 with net farm income and 40% with total family income). The other mixed focus farmers had very low achievement with net farm income, but all achieved Target 4 with total family income. Among the unreceptive farmers (Table 25) the two farm focus market oriented groups had the highest achievement. In these groups 15.3% and 6.7% achieved Target 4 on net farm income alone, and 53.8% and 26.7% achieved it on total family income. None of the remaining unreceptive subgroups achieved Target 4 on net farm income, but 37.5% of the mixed focus market oriented group achieved it on total family income (because of off-farm income). Only one traditional farmer generated enough total family income to reach Target 4. Overall, about 55% of all the unreceptive farmers could not even reach Target 2 with their total family income.

Findings on Potential Income for Unreceptive Limited Resource Farmers

This section deals with levels of reasonably attainable potential farm

TABLE 24 Percentage Distribution Of Limited Resource Farmers Receptive To Farm Improvements According to Highest Targets Achieved With Simulated Net And Total Family Income, 1976

Farmer Classification Subgroup	No. of Farmers	Maximum Target Achieved with Net Farm Income					Maximum Target Achieved with Total Family Income			
		Negative Income	Target 1	Target 2	Target 3	Target 4	Target 1	Target 2	Target 3	Target 4
		... % distribution of farmers ...					... % distribution of farmers ...			
Farm Focus										
Transition Stage	5		80.0	20.0			60.0	40.0		
Potential Commercial	12	16.7	16.7	8.3	33.3	25.0		8.3	25.0	66.7
Mixed Focus										
Transition Stage	5	20.0	40.0	20.0		20.0	20.0	40.0		40.0
Potential Commercial	1		100.0							100.0
Permanent Part-time	2		100.0							100.0
Total	25	12.0	40.0	16.0	16.0	16.0	20.0	12.0		52.0

TABLE 25. Percentage Distribution of Limited Resource Farmers Unreceptive to Farm Improvements According to Highest Targets Achieved with Simulated Net and Total Family Income, 1976

Farmer Classification Group	No. of Farmers	Maximum Target Achieved with Net Farm Income					Maximum Target Achieved with Total Family Income			
		Negative Income	Target 1	Target 2	Target 3	Target 4	Target 1	Target 2	Target 3	Target 4
		... % distribution of farmers ...					... % distribution of farmers ...			
Farm Focus										
Market Oriented, Unreceptive due to Age or Health	13		69.3	7.7	7.7	15.3	30.8	7.7	7.7	53.8
Market Oriented, Unreceptive due to Attitude	15		80.0		13.3	6.7	60.0		13.3	26.7
Traditional	6	33.3	50.0		16.7		66.7	16.7	16.7	
Mixed Focus										
Market Oriented, Nonfarm Major Source of Income	8	62.5	37.5				50.0	12.5		37.5
Traditional	9	33.3	66.7				66.7	11.1	11.1	11.1
Total	51	19.6	64.7	2.0	7.8	5.9	54.9	5.9	9.8	29.4

incomes and the degree to which these levels were achieved by subgroups of unreceptive limited resource farmers. Table 26 gives actual and potential income levels and the relationships between the two incomes for the subgroups of unreceptive farmers.

From Table 26 it can be seen that current levels of net farm income were far below potential levels, averaging only 21% of potential for the total group of unreceptive farmers. However, even though the level of potential net farm income was considerably above the actual level, potential income was still quite low for many farmers. Only 42% of the group could have achieved farm and family viability (i.e. attain Target 4) on potential net farm income alone.

The farm focus market oriented farmers, who were unreceptive due to age or health, had the highest average potential net farm income ($11,048) and achieved the second highest average percentage (45%) of potential income. However, only 42% of them would have been viable on potential net farm income alone, and 69% on total potential family income (considering improvements in farming only). The next highest average potential net farm income was associated with the farm focus subgroup who was unreceptive due to attitude ($9,305). These farmers, however, achieved the highest average percentage of potential net farm income (49%) and constituted the highest percentage of farmers in the various subgroups (60%) who would have been viable on potential net farm income alone. In addition, 80% of these farmers could have been viable on total potential family income.

The mixed focus market oriented subgroup also had a fairly high average potential net farm income of $6,705. Of these farmers, 38% would have been viable on potential net farm income alone, and 100% on total potential family income (due to relatively high nonfarm incomes). However, six (75%)

TABLE 26

Average Simulated and Potential Net Farm Incomes for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Group, 1976

Farmer Classification Group	No. of Farmers	Gross Farm Sales	Simulated Net Farm Income	Potential* Net Farm Income	Potential Net Farm Income Minus Simulated Net Farm Income	Aver. % of ** Potential Net Farm Income Achieved by Simulated Net Farm Income	% of Farmers Who Could Achieve Target 4 with Potential Net Farm Income	Total *** Potential Family Income	% of Farmers Who Could Achieve Target 4 with Potential Farm Plus Current Nonfarm Income
		$	$	$	$			$	
Farm Focus Market Oriented, Unreceptive Due to Age or Health	13	13371	4547	11048	6501	45	41	15562	69
Market Oriented, Unreceptive Due to Attitude	15	10499	4012	9305	5293	49	60	11065	80
Traditional	6	3883	1030	6271	5241	24[a]	50	8724	83
Mixed Focus Market Oriented, Nonfarm Major Source of Income	8	8938	-632	6705	7336	9[b]	38	15201	100
Traditional	9	4641	998	4775	3777	16	11	8407	78
Total	51	8978	2537	8128	5591	21	42	12116	80

* Budgeted on a fixed resource base, 1976 prices and average Southern Ontario yields.
** Mean of percentage achievement by each farmer of each group.
*** With farm adjustments only
a Included 2 farmers with negative incomes (0%), one of whom had $19,627 potential income.
b Included 6 farmers with negative incomes (0%), 2 of whom had more than $9,000 potential income.

of these farmers currently had negative net farm incomes. Counting the negative current incomes as a 0 net income, the subgroup averaged only 9% of their potential net farm income.

Both subgroups of traditional farmers had lower potential net farm incomes than the market oriented subgroups. The farm focus traditional farmers had an average of $6,271 potential net farm income, compared to $11,048 and $9,305 for the two farm focus market oriented groups. The farm focus traditional farmers achieved 24% of potential net farm income. Overall, 50% would have been viable on net farm income alone, and 83% on total potential family income. The mixed focus traditional farmers had an average potential net farm income of only $4775, but they achieved a higher percentage of potential net farm income than did the mixed focus market oriented subgroup (16% compared to 9%). However, only about 11% of the mixed focus traditional farmers would have been viable on potential net farm income alone and 78% could have been viable on total potential family income (compared to 38% and 100% respectively for the mixed focus market oriented subgroup).

Further comparisons for unreceptive farmers by 1) farm and mixed focus categories and 2) market oriented and traditional categories are given in Table 27. All unreceptive farm focus farmers together had an average potential net farm income of $9,387 compared to $5,683 for the mixed focus farmers. The farm focus category also had a higher potential for being viable (achieving Target 4) on net farm income alone (43%) than did the mixed focus category (12%). The average total potential family income for all unreceptive mixed focus farmers (with farm improvements and current off-farm incomes),however, was quite similar to the average total potential family incomes for all unreceptive farm focus farmers ($11,604 compared to

TABLE 27 Percentage Achievement of Potential Net Farm Income by Categories of Unreceptive Farmers

Farmer Classification Group	No. of Farmers	Potential Net* Farm Income ($)	Total Potential Family Income ($)	Average %** of Potential Achieved by Net Farm Income	% Who Could Achieve Target 4 on Potential Net Farm Income	% Who Could Achieve Target 4 on Potential Net Farm Income Plus Current Nonfarm Income
Farm Focus	33	9,387	12,274	43[a]	51	76
Mixed Focus	17	5,683	11,604	13[b]	24	88
Market Oriented	35	9,309	13,552	39[b]	48	80
Traditional	15	5,374	8,533	19[a]	27	80

* Budgeted on a fixed resource base, 1976 prices and average Southern Ontario yields.
** Mean of percentage achievement by each farmer of each group.
a Included 2 farmers with negative incomes (0%), one of whom had $19,627 potential net farm income.
b Included 6 farmers with negative incomes (0%), two of whom had $9,000 potential net farm income.

$12,274). Since the two categories had similar viability requirements, their relative potential for achieveing farm and family viability (Target 4) on total family income also was fairly comparable (76% of the farm focus farmers and 88% of the mixed focus farmers).

Examining the unreceptive farmers on the basis of their market orientation also illustrates large differences in economic performance. The market oriented farm and mixed focus farmers together had an average potential net farm income and total potential family income of $9,309 and $13,552 compared to $5,374 and $8,533 respectively for traditional farmers. Market oriented farmers also had a much higher percentage achievement of potential farm income than traditional farmers (39% compared to 19%).

From Tables 26 and 27 several important generalizations are apparent. First, improving farm income to a "reasonable potential" level could provide most of the unreceptive limited resource farmers studied an opportunity to earn enough income for farm and family viability. Overall, 80% of the farmers could be viable with their potential total family income (including nonfarm earnings), compared to only 29% with their current family incomes. Continued reliance on nonfarm income would be important for many of the farmers, however, as only 42% of the farmers would be viable on their potential net farm income alone.

Among categories of unreceptive farmers, the differences between farm and mixed focus farmers appeared smaller than between market oriented and traditional farmers. Farm focus farmers generally had greater potential for achieving viability through improved farming, but the mixed focus farmers had nearly the same potential as farm focus farmers when all sources of income (including nonfarm earnings) were considered. Market oriented farmers (with both a farm and mixed focus), on the other hand, had both considerably

higher potential farm incomes and total family incomes than the traditional category of farmers.

Of all the unreceptive farmers studied, the traditional subgroups would appear to be the worst off with the lowest potential, regardless whether they were farm or mixed focus. Since these farmers on average only achieved about 19% of their potential net farm income, they would require considerable assistance in improving their management just to achieve the "reasonable" levels examined in this study. Furthermore, since only 27% of these farmers would have been viable on net farm income alone, considerable reliance on nonfarm income sources (including income transfer payments in some cases) would be necessary for them to achieve viable income levels. Because of their low farm debts and growth requirements (based on 2% of total assets), however, about 80% could have been viable on total potential family incomes.

Although the market oriented subgroups had higher potential net farm and total family incomes than the traditional farmers, they also generally would benefit from management assistance and require nonfarm income for overall viability. On average, the market oriented unreceptive farmers only achieved 39% of their potential net farm income. The most progressive group of unreceptive farmers, the farm focus market oriented but unreceptive due to age or health, surprisingly would have been viable on total family income only 69% of the time. This occurred because they utilized credit more and had higher current debt obligations than the other subgroups of unreceptive farmers. For those farmers in all subgroups who would not be viable on potential total family incomes, improved nonfarm employment earnings or income transfer payments would be necessary to help them achieve viability.

Relationships Between Behavioural and Economic Variables

Relationships between behavioural and economic characteristics are examined through correlation and regression analysis. Correlation analysis examines the degree of association between two variables, and essentially measures the accuracy of "tightness of fit" of the observations around a particular linear or curvilinear relationship. Correlation analysis therefore can be used to indicate how precise or accurately you can predict a change in one variable given the value of another. It cannot predict the amount of change, however. In contrast, regression analysis can predict the magnitude of change in one variable caused by changing another variable, and was used to measure quantitative cause and effect relationships among the variables.

Correlation Analysis

In the correlation analysis, gross farm sales and the three income performance variables of net farm income, % achievement of Target 4, and % achievement of potential income (for unreceptive farmers only) were correlated with the behavioural variables to identify behavioural characteristics that were strongly associated with economic performance. The correlations for the receptive, unreceptive, and total sample of farmers are given in Table 28. This section will discuss primarily those correlations which were statistically significant at the .05 level. In general, the correlation values were low, typically ranging below .4 and .3. A number of these correlations were still statistically significant, however, and the relatively low correlation values are consistent with other studies of behavioural factors. It should be noted that the low values for the correlation coefficients do not necessarily mean that the behavioural

TABLE 28 CORRELATION COEFFICIENTS FOR ECONOMIC AND BEHAVIOURAL FACTORS

	GROSS FARM SALES			NET FARM INCOME			% ACHIEVEMENT TARGET 4			% ACHIEVEMENT POTENTIAL INCOME		
	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total
Social Participation												
ORGANIZATION PARTICIPATION	-.01	.28	.19		.23**	.20		.18	.17		-.04	
PROFESSIONAL CONTACTS	.10	.12	.29**		-.22	-.22		-.23	-.18		-.22	
MAGAZINES RECEIVED	.13	.10	.20		.07	.13		.19	.18		-.11	
RADIO & T.V. PROGRAMS	.02	-.07	.13		-.17	-.03		-.18	-.09		-.09	
PROGRAM PARTICIPATION	.04	.39**	.39**		.21	.24		.07	.11		-.001	
Community Attachment	.23	.19	.24**		-.11	-.07		-.16	-.16		-.19	
Utility of Potential Programs												
PRODUCTION ADVICE	-.16	.02	.11		-.06	-.03		-.13	-.03		-.07	
MANAGEMENT ADVICE	.21	.06	.22		-.20	-.16		-.18	.15		-.22	
RETIREMENT PLANNING	-.03	.12	.07		.30	-.22		.59	.19		-.01	
DIRECT TRANSFER PAYMENTS	-.05	-.11	.03		-.05	-.04		-.07	.04		.07	
INDIRECT SUBSIDIES	.03	.02	.15		-.31**	-.02		-.35**	-.05		-.26	
Limitations												
LAND	-.33	-.31	.15		-.42**	-.17		-.42**	-.27		-.36**	

Table continued.....

TABLE 28 continued

	GROSS FARM SALES			NET FARM INCOME			% ACHIEVEMENT TARGET 4			% ACHIEVEMENT POTENTIAL INCOME		
	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total
CREDIT	.13	-.05	.12		-.35*	.01		-.34	-.09		-.33	
OFF FARM WORK	.19	-.33**	-.13		-.38**	-.30**		-.39**	.31**		-.25	
BUILDINGS OR EQUIPMENT	-.004	-.16	-.09		-.20	-.05		-.16	-.11		-.14	
AGRICULTURAL INFORMATION	.006	-.18	-.03		-.18	-.14		-.19	-.20		-.07	
FORMAL EDUCATION	-.22	-.23	-.20		-.08	-.01		-.04	-.11			
Values												
ECONOMIC ORIENTATION	.09	-.003	.15	-.53**	-.05	-.18		-.09	-.20		.05	
SCIENTIFIC ORIENTATION	.12	.11	.14	-.09	.05	.02		-.00	-.64		.08	
RISK ACCEPTANCE ORIENTATION	.35**	.18	.40**	-.36**	-.15	-.13		-.11	-.17		-.11	
INDEPENDENT ORIENTATION	-.10	.25	-.07		.28	-.11		.32*	-.05		.29**	
Self-Concepts(Self-Rating)												
ACHIEVEMENT	-.08	-.001	.10		-.14	.05		-.23	-.21		-.24	
ASSERTIVENESS	-.005	-.05	.08		-.35**	-.30**		-.37*	-.33**		-.37**	
SOCIAL	-.11	-.03	.09		-.14	.05		-.18	-.001		-.14	
INNOVATIVENESS	.06	.02	.19		-.19	-.08		-.24	-.21		-.17	

Table continued.....

TABLE 28 continued

	GROSS FARM SALES			NET FARM INCOME			% ACHIEVEMENT TARGET 4			% ACHIEVEMENT POTENTIAL INCOME		
	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total	Receptive	Unreceptive	Total
Aspirations												
HOUSEHOLD	.23	.09	.15		-.13	-.002		-.17	-.05		-.21	
FARM	.02	.14	.21		.04	-.02		.02	-.08		.08	
FAMILY	.14	.09	.12		-.12	-.10		-.19	-.12		-.34**	
SOCIAL	-.22	-.02	.02		.02	.11		-.02	.09		-.19	
Basic Needs												
ACHIEVEMENT	.27	-.31**	.003	-.40**	-.27**	-.32**		-.26	-.35**		-.11	
SOCIAL	-.26	.19	.01		.19	.35**		.21	.35**		.14	
SECURITY	.03	.09	-.02		.06	-.09		.02	-.06		-.06	
ARONSON ACHIEVEMENT SCORE	-.47**	-.13	-.14		.10	.04		.13	-.02		.07	
Social Factors												
AGE	-.03	.11	-.17		-.05	.14		.35*	.23		.46**	
# YEARS FARMING	-.11	-.17	.07		-.26**	-.18		-.28	-.26		-.30**	
EDUCATION	-.20	-.06	-.01		-.11	.05		-.08	-.02		-.17	

** significant at the .05 level

* significant at the .10 level

variables are unimportant in influencing economic performance. In many cases, economic performance may be influenced by a complex interaction of a number of behavioural variables, so that none show up individually as significant and highly correlated with the economic variables. Collectively, however, they may be very important. Furthermore, behavioural variables that are similar among all the limited resource farmers would not show up as highly correlated, because there would be no variation for association with the economic variables. These behavioural variables may be considerably different for commercial farmers, however, and might exhibit a significant correlation if commercial farmers had been included.

The variable gross farm sales was significantly correlated, at the .05 level of significance or less, for the total sample of farmers in a positive direction with risk (correlation coefficient of .40), number of government programs utilized (.39), contact with financial and advisory personnel (.29), and community attachment (.29). This implies that gross sales increase as these variables (or other factors influencing them) increase. Gross farm sales also were correlated significantly at the .05 significance level in a negative direction for the unreceptive farmers with the farmer's basic need for achievement (-.31), and for the receptive farmers with the Aronson measure of achievement (-.47). These negative correlations with achievement measures imply that many limited resource farmers may satisfy their needs for achievement through non-economic or off-farm activity.

Gross farm sales were not correlated significantly with the farmer's perception of the degree to which specific resources limited his ability to increase total family income for the total sample of limited resource farmers or for the receptive group. For unreceptive farmers, however, a

negative correlation (-.33) existed at the .05 level of significance between gross sales and farmer's perception of off-farm work as being limiting. This may be explained partly be the mixed focus farmers often finding off-farm work limiting and having lower gross sales than the farm focus farmers. Some weak (not significant at the .05 level) negative correlations between gross sales and the farmer's perception of land and formal education as limiting also indicate that both receptive and unreceptive farmers with low gross sales found these factors more limiting than did the limited resource farmers with higher gross sales.

There were no statistically significant correlations between gross sales and the farmers' perception of how useful possible programs would be. This reflected a lack of variation in the scores for the total usefulness of possible programs among the farmers studied.

The income performance variables, i.e. net farm income, percentage achievement of Target 4, and percentage achievement of potential income, were generally correlated significantly with different behavioural characteristics than was the gross farm sales variable. Demographic factors tended to be associated somewhat more precisely with net farm income, percentage achievement of Target 4, and percentage achievement of potential income than with gross sales, and value orientations and participation factors less precisely.

For the unreceptive farmers, both net farm income and percentage achievement of Target 4 were strongly correlated with age (.46) and year in which the respondent began farming (.35). This may be explained by the fact that older farm focus unreceptive farmers had larger assets and higher sales, whereas younger mixed focus unreceptive farmers had smaller assets and lower sales. For the total sample, both net farm income and percentage achievement

of Target 4 were weakly correlated with age (.14 and .23 respectively). In general, the income performance variables were very weakly correlated with education level, reflecting the very limited variation and fairly low average schooling (below high school) in both groups.

For the total sample, correlations between the income performance variables and value orientations were weak (for example -.18 to .02 for net farm income). This may be caused in part by differences between receptive and unreceptive farmers and the fact that value orientations tend to affect economic performance indirectly through a number of variables, rather than directly by themselves. The weak associations with the economic performance variables and the value orientation in the study can be explained in part by unusual circumstances during the study period whereby many of the more progressive, receptive farmers with higher value orientations actually had lower net incomes than the unreceptive farmers. This occurred because several of the receptive farmers had made farm expansions and incurred increased debts at a time when prices were depressed for their increased production. Unreceptive farmers on the other hand, had lower costs and debts, sometimes resulting in slightly higher net incomes. The combination of unreceptive farmers with relatively higher net incomes and low economic, scientific and risk orientation scores, and receptive farmers with lower income and higher value orientations produced the weak correlations with these value orientations. The weak correlation for the total sample with independence value orientation resulted from a combination of highly independent receptive farmers with somewhat higher incomes and some less independent receptive farmers with their slightly lower incomes.

Among the receptive farmers only, there were strong negative correlations between net farm income and risk (-.36) and economic (-.52) value orientations,

reflecting lower incomes from poor market conditions for the more economically and risk acceptance oriented farmers in the receptive category who had expanded production. For the unreceptive farmers there were high positive correlations between the income performance variables and independence value orientation (.28 to .32), but weaker relationships with other value orientations. Economic, scientific, and risk scores were low for most of the unreceptive farmers and thus did not show enough variation to be strongly correlated with income performance. The strong correlation with independence value may be explained by the fact that independence (a desire to work on one's own) was stronger for the older farm focus unreceptive farmers, who tended to have relatively higher incomes, than for the younger mixed focus farmers with lower incomes. This implies that counselling on an individual basis may be more appropriate for the older farmers and group counselling for the younger farmers.

Strong positive correlations existed for the total sample of limited resource farmers between the income performance variables and basic needs for social affiliation (.35 with net farm income and .36 with percentage achievement of Target 4). Weaker correlations also existed between the income performance variables and both the importance placed on social items and participation in social organizations, indicating that social rather than economic behavioural orientations were the behavioural strengths of the farmers studied. It could therefore be inferred that policies to assist these farmers should be oriented to their social aspirations and needs rather than to economic aspirations.

The income performance variables for the total sample as well as for the unreceptive farmers were negatively correlated with the farmers' self-concept of personality traits, with their basic needs for achievement, and

with some aspirations (the importance placed on certain farm and related items). The correlation coefficients for these relationships ranged from about -.11 to -.37 and were generally highly significant for achievement needs and the farmer's self-concept of his assertiveness. These negative relationships appear to be explained by the basic difference in age, assets and relative importance of farm incomes between the mixed and the farm focus farmers in both of the receptive and unreceptive groups. Mixed focus farmers generally had higher scores in the above behavioural factors, but lower farm incomes, so they apparently satisfied these needs and aspirations through nonfarm employment. This implies that among limited resource farmers, particularly unreceptive ones, many of those with higher need for achievement, assertiveness, and importance placed on farm and family items tend to turn to the nonfarm sector for achievement rather than farming.

The only proposed assistance program significantly correlated with income was indirect government subsidies, which was significant for unreceptive farmers only. This variable was negatively correlated, meaning that the lower the farmer's income, percentage achievement of Target 4, and percentage achievement of potential income became, the more helpful he conceived indirect subsidies (such as credit and management assistance).

The final relationships reported here are the generally negative correlations for each of the income performance variables with the farmer's perception of various factors as limitations to increasing his income. For the total sample of limited resource farmers, the range of variables considered as limitations to farm income generally correlated weakly with net farm income (.01 to -.30) and percentage achievement of Target 4 (-.09 to -.31). The perception of land and off-farm work as a limiting factor, however, was significant at the .05 level. For the unreceptive

farmers, the correlations between the three income performance variables and the farmers' perceptions of resources as limiting factors ranged from -.25 to -.40 for off-farm work, implying that the more the farmer perceived this variable as limiting, the lower his economic performance. In general, the unreceptive mixed focus farmers with relatively small farms found resources most limiting. These farmers also had low farm incomes, a low percentage achievement of Target 4, and a low percentage achievement of potential net farm income.

Regression Analysis

Further clarification and statistical support of relationships between the income, resource, and behavioural factors was provided by regression analysis. Several regressions were run with different income measures as the dependent variable. These regressions were run in a step-wise fashion whereby the dependent variable was regressed against the most significant independent variable by itself in the first step, than against the first and second most significant independent variables in the next step, and so on until the least significant independent variable was included. The regressions for gross farm sales and technical practices scores are summarized in the following pages. Net farm income was not used as a dependent variable in the regression analysis because it was not considered a good indicator of long-run economic response to some of the behavioural factors during the study period. This occurred because of the unusual circumstances whereby some of the more progressive farmers who had recently expanded operations had been caught by depressed prices for beef and other unfavourable market conditions and earned less net income than some of the less responsive farmers.

Table 29 provides the step-wise regression results for gross farm sales for all farmers as well as for the unreceptive farmers by themselves. The independent variables used in the equation were the behavioural characteristics previously used in correlation equations plus tillable acres and technical practice scores. The results in Table 29 include only the variables found significant at the 0.10 level or less and indicate that the technical practices score (the first variable to enter the equation) was by itself the most accurate predictor of gross farm sales for both the total sample and unreceptive farmers alone. Each point in the technical practices score (30 points possible) increased gross sales by $802 for the total sample and $434 for unreceptive farmers.

After technical practices, risk score and tillable acres were the next most significant variables for the total sample, followed by variables indicating participation in programs and access to information on better practices. For the unreceptive group, the perception of all factors as limiting and tillable acres were the next most significant variables, followed by preference for direct price and income subsidies, community attachment, independence orientation, and risk orientation. Each point in the risk scale (5 points possible) increased gross sales for the total sample and unreceptive farmers by $2411 and $1487 respectively, indicating the differences in farming capabilities among farmers with high and low risk orientations. Each additional acre of tillable land increased gross sales by $39.5 and $32.9 for the total sample and unreceptive farmers respectively, indicating lesser importance on farm size than some of the behavioural characteristics. For the total sample, for example, it would take an increase of over 60 tillable acres to equal the increase in gross sales from a one point increase in risk acceptance or a 4 point improvement in technical

TABLE 29. Multiple Regression Analysis Results, Gross Farm Sales the Dependent Variable

Behavioural Factors, Tillable Acres and Technical Practices Score as Independent Variables

Total Sample (r^2 = .43, Constant = -9203)		Unreceptive (r^2 = .55, Constant = -11138)	
Independent Variable	Regression Coefficient	Independent Variable	Regression Coefficient
Technical practices score**	802.02	Technical practices score**	434.07
Tillable acres*	39.52	Perception of availability of all resources as limiting**	- 697.56
Risk score**	2411.03	Tillable acres**	32.93
Program utilization+	237.91	Preference for direct vs indirect subsidies*	3634.71
Total professional contact+	- 49.39	Community attachment*	1730.20
Total magazines subscribed to+	78.55	Total independence orientation score*	1197.70
		Total risk score*	1487.83

t test: Level of Significance

** p = .01 or higher
* p = .05
+ p = .10

practices, and about a 40 to 50 acre increase for unreceptive farmers.

Since technical practices were the most significant (accurate) predictor of gross sales, an additional regression with the technical practice score as the dependent variable was run in order to identify behaviour factors with an important impact on this variable. These results are given in Table 30, which indicates that program utilization was the most significant variable by itself for predicting technical practice scores. For each additional program participated in (out of a possible 7, with a maximum of 5 utilized by the farmers studied) the technical practice scores for the total sample and the unreceptive farmers alone were increased by 2.93 and 2.12, respectively. For the total sample, the use of radio and TV programs was also highly significant, increasing the practice scores by 1.26 for each additional radio or TV program regularly followed (with a maximum of 3 programs reported by the farmers studied).

Among the unreceptive farmers alone, the second most significant variable in predicting technical practice scores was the farmer's basic need for achievement. In general, unreceptive farmers had quite low need for achievement scores, but the negative sign for the regression coefficient would indicate that the few farmers in this group with high basic needs for achievement generally were trying to gain achievement through nonfarm activities, rather than improved farming practices.

For the unreceptive farmers, their perception of the degree to which both agricultural information and land was limiting to their income, and their participation in social organizations was also statistically significant at the .05 level or less. Those who perceived agricultural information as limiting averaged 1.71 lower technical practice scores for each point (on a four point scale, with 1 for not limiting and 2-4 for slightly

TABLE 30. Multiple Regression Analysis Results, Technical Practices the Dependent Variable

. Behavioural Factors as Independent Variables

Total Sample (r^2 = .44, Constant = 5.28)		Unreceptive (r^2 = .44, Constant = 17.95)	
Independent Variable	Regression Coefficient	Independent Variable	Regression Coefficient
Program utilization**	2.93	Program utilization**	2.12
Radio and T.V. programs*	1.26	Basic need for achievement*	-1.49
Perceived farm aspirations	0.53	Perception of availability of agricultural information as limiting*	- 1.71
Perceived total aspirations	-0.24		
Perceived household aspirations	0.61	Perception of availability of land to buy or rent as limiting*	1.19
		Participation in social organizations*	-0.21

t test: Level of Significance

** p = .01 or higher
* p = .05

to very limiting) than those who did not. This would indicate that adequate agricultural information was important in improving management practices. The unreceptive farmers also had 1.19 higher technical practice scores for each point on the scale identifying higher degrees of limitation from land, indicating that the better farmers recognized a need for more land than they had. The last significant variable for the unreceptive farmers, i.e. participation in social organizations, had a negative sign, indicating that high participation by the farmers may have represented orientation more toward social activities than improving their technical farming operations.

IMPLICATIONS AND SUGGESTIONS

The data from Phase II of this multi-phase study provide additional insights and several implications for dealing with limited resource farmers and developing programs to assist them in improving their farm performance. However, additional data collection and analyses may provide further elaboration or modification of the findings and interpretations presented herein.

1. Based on the income achievement values and the income requirements of many of the limited resource farmers, it is apparent that significant increases in income would be required for many of the farmers to achieve a high enough income for farm and family viability. Receptive farmers averaged $5,467 of net farm income and $12,073 total family income, but unreceptive farmers averaged only $2,537 from agriculture and $6,439 total family income. Only 35% of all the limited resource farmers achieved enough total family income to cover minimum family living expenses, debt requirements and a small margin for farm growth (farm and family viability) and only 9% earned enough farm income to reach this level. About 75% of the limited resource farmers had less than enough or barely sufficient net farm income to cover their farm operating expenses.

Although incomes generally were quite low, agricultural improvements would still appear as a feasible alternative for many of the farmers to improve their incomes to a viable level. From the analysis of potential income among the less viable unreceptive farmers, 80% could have achieved a viable farm and family income level with modest improvements in yields and productivity (to county average levels) with no major expansions in their

farm, but with continued current nonfarm income. Consequently, reasonable farm improvements and continued reliance by many on nonfarm sources of family income should be promoted as complementary income sources for obtaining an adequate level of family well-being. For those unlikely to be able to achieve viability through agricultural improvements (20% of the unreceptive farmers), improved nonfarm employment opportunities may be required, along with public welfare assistance in some cases. Some of the limited resource farmers had health limitations or management inadequacies (especially among traditional farmers) which would limit their effectiveness in both farm and nonfarm work. Generally these latter farmers cannot be helped enough by agricultural programs, and should not be looked upon as primary clientele of agricultural ministries.

2. The evidence in the Phase II study supports the importance of many behavioural characteristics in affecting the economic performance of limited resource farmers and their participation in activities designed to improve their performance. The majority of the limited resource farmers studied tended to be older (over 50 years) and were reluctant to make farm improvements because of the limited time left for them to gain enough benefits to pay for large scale changes. Many also had health limitations which prevented taking on extra work. Furthermore, most of the limited resource farmers expressed a very low tolerance for risks, low economic orientation, a moderate scientific orientation, and moderate orientation towards independence (a preference for making decisions without seeking advice from others and for working alone). Possessing these characteristics would tend to restrict their overall receptivity towards farm improvements. Within the overall group of limited resource of farmers, those receptive to farm improvements had greater risk tolerance, higher economic and scientific orientations,

and a lower independence orientation than the unreceptive farmers. Both groups of farmers also generally had moderately low levels of basic needs for achievement.

The participation by the limited resource farmers in activities to improve their economic performance also appears to have been influenced strongly by their attitudes toward government assistance, their goals, and their perception of limitations on their income. Even though most of the limited resource farmers studied had low incomes, a significant number did not feel government assistance was necessary or would be helpful. About 18% indicated that no additional agricultural assistance was needed and an additional 18% felt that governments were now doing too much. This may indicate the relatively high degree of independence among these farmers and their suspicion of government. About 32% indicated a need for price stabilization, reflecting their high aversion to risk and desire for security. When considering their choice of types of government assistance if it was provided, 70% preferred direct assistance through government transfer payments rather than indirect assistance through training, credit, and subsidized services.

Given the low educational and socio-economic attainment of the majority of the farmers studied, it is not surprising that they had very low participation in activities to help them improve their farm performance. This generalization was found among both the receptive and unreceptive farmers, although the receptive farmers had greater participation the unreceptive ones. On average, the receptive farmers had about 11 contacts per year with professional people (agricultural representatives, lawyers, accountants, etcetera), while the unreceptive group averaged only about three. Receptive farmers in turn utilized on average 2.4 programs that were available to them

(from a list of 12), while unreceptive farmers utilized an average of only 0.7. Both groups had low participation in clubs and organizations and had a moderate to low usage of sources of agricultural information. The low participation rates and professional contacts reflect the observation that limited resource farmers tend to feel more comfortable among their peers rather than with people of higher status. Consequently, they are likely to be reluctant to be involved in community-wide organizations and activities, especially those with a heavy involvement of larger, more progressive commercial farmers. They are also likely to be reluctant to visit with agricultural representatives or other officials perceived to have significantly higher status than the farmer.

3. The findings reported in this project to date support the conclusion that limited resource farmers are a relatively heterogeneous group along several dimensions although they do have many common characteristics. In view of these observations, it seems evident that a variety of programs and method of implementing them are needed if the programs are to be relevant and effective with a broad cross-section of these farmers.

Many assistance programs for limited resource farmers in the past have aimed at alleviating their problems through farm enlargement. However, the behavioural characteristics of this population (such as the large number of these farmers who are older or have substantial health constraints) appears to predict a limited success of enlargement programs. For some, the fact that their son and/or daughter does not want to take over the farm makes expansion seem less desirable. Therefore, it appears that assistance programs directed toward improvement of existing livestock enterprises, better enterprise combinations or existing land, and/or better technical practices would benefit the respondents and ease the restrictions of health and so on. Some

type of risk sharing programs also could prove to be useful, since it appeared that most respondents held a relatively high aversion to risk which would likely inhibit their undertaking of farm improvements.

The strong sense of community attachment, satisfaction with farming or life on the farm, and their perceptions of limited alternative occupations, indicate that programs aimed at increasing the rate of off-farm mobility of these farmers will not be widely utilized. However, it may be helpful in some cases to provide assistance to sons and/or daughters to broaden their horizons, either inside or outside of farming, to reduce the perpetuation or conditions of a limited resource farmer from one generation to another. In this regard, scholarships or assistance to attend management and farming classes or training programs could be useful for farm sons wishing to take over on limited resource farms.

Although most of the retirement-aged farmers were not analyzed in the second phase of this project, indications from some farmers who are nearing retirement age suggest that counselling services may be valuable to assist them in making land transfer agreements, decisions regarding where to retire, wills and estate planning, and so on. However, this population is not likely to actively seek out such counselling assistance and therefore appropriate methods will have to be utilized by counsellors to establish rapport and a working relationship with these farmers.

Many of the respondents who were suffering health problems still had many years left before normal retirement age. They may more appropriately benefit from various programs of social welfare, such as disability compensation and medical services, that might be provided by agencies outside of agriculture.

In view of the large number of limited resource farmers who have off-farm work, public assistance programs should recognize and accommodate the special needs of these mixed-focus farmers. Criteria similar to that developed in the Phase I Classification System in this project might be used to reduce the chance of legitimate mixed-focus farmers being treated or identified as hobby or non-farm focus farmers. Furthermore, manpower training courses or other services facilitating the upgrading of occupational skills of farmers who found that their access to off-farm work was limited by their qualifications might help assist in obtaining more lucrative employment for some farmers. Limited resource farmers in more isolated areas might also benefit from income and training associated with such winter works programs as the ARDA forestry project.

The problems of relatively low involvement and utilization of programs by limited resource farmers (for whom many of the programs are specifically designed) and the development of appropriate means of achieving increased participation in the future certainly need additional consideration. More extensive consideration of the positive characteristic within the behavioural framework of this population might facilitate their increased involvement in assistance programs and encourage farm improvements. For example, these respondents showed fairly positive self-images, especially with respect to their desire for achievement and innovativeness. They also indicated fairly high farm aspirations and scientific orientations. These findings suggest that many of this group may be interested in making at least small changes to improve their farms. Substantially larger changes might also be considered if some of the risk factor could be diminished. Thus, there seems to be some support for the investigation of such policy instruments as risk sharing credit, stabilization programs, income maintenance, and so on.

Many respondents expressed a concern about some recent public interventions in agriculture which had had some undesirable ramifications (such as farmers who expanded production through the Industrial Milk Production Incentive Program only to have their quotas cut back), and this seems to have resulted in some government-induced uncertainty about government programs (particularly among some of the limited resource farmers classified as relatively receptive to farm improvements). This may help account for the earlier observation that nearly two-fifths of the respondents expressed the feeling that no additional government programs were needed or that less government involvement in agriculture was desirable. Policy makers and extension workers must realize that, in spite of the apparent desirability of some existing or potential policy instruments, many limited resource farmers are likely to be initially suspicious or skeptical and hesitant to utilize these programs.

Bearing the aforementioned factors in mind, it is apparent that attempts to approach and directly involve or influence limited resource farmers through community organizations or meetings are likely to meet with very limited success. Many traditional extension methods are likely to be less effective with these farmers, an observation that has been well documented in the past. A larger proportion appear to favour small primary group associations over contacts with formal groups or with professionals. Given these preferences, extension workers who work directly with limited resource farmers should attempt to structure learning experiences around small primary groups or one-to-one contacts. Consideration might be given to utilizing para-professionals (such as other farmers in the community with training in helping others), since they might initially identify with and be accepted more readily by limited resource farmers. Extension field staff also may need to be more aggressive

in directly contacting limited resource farmers to establish rapport and help them to have a better understanding of available assistance programs. It is important in achieving increased participation and utilization of programs that public personnel do not communicate a derogatory opinion of their clients and that the programs designed for limited resource farmers do not stigmatize them in the community or among their peers, nor cause a loss in self-esteem.

LIMITATIONS

The relatively small number of limited resource farmers in this study, and the fact that they were from only two counties in Ontario, must be recognized. Although the researchers feel that the data in this study are likely to be representative of similar farmers in other areas, there would be merit in conducting additional similar studies in other areas of Ontario and Canada to further validate the findings. It should also be appreciated that these economic and other related data were collected for only one time period and thus are subject to bias resulting from such things as the unique market and climatic situations at the time.

The respondents were often unable to provide the exact income and expenditure figures and data relating to their debt commitments. In addition, there may be a need for identifying and refining more precise and sensitive instruments for measuring some behavioural characteristics.

The researchers feel that an examination of comparable behavioural and economic characteristics of viable commercial farmers would be very helpful for comparison with these limited resource farmer characteristics to establish norms to help in interpretation of data.

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A P P E N D I X A

DISTRIBUTION OF FARMERS BY SELECTED INCOME, FARM SIZE AND MANAGEMENT CHARACTERISTICS

TABLE A 1 DISTRIBUTION OF FARMERS BY SELECTED INCOME FACTORS

SELECTED INCOME MEASURES	Number	Percent
Gross Farm Sales		
$3,000 or less	7	9%
$3,001 to $6,000	13	17
$6,001 to $9,000	17	23
$9,001 to $12,000	10	13
$12,001 to $20,000	13	17
$20,001 or more	16	21
Total	76[a]	100%
Net Farm Income		
Negative Net Income	14	18%
Zero to $2,000	17	22
$2,001 to $5,000	24	32
$5,001 to $9,000	15	20
$9,001 or more	6	8
Total	76	100%
Percent of Minimum Viability Level Attained by Total Family Income		
1 to 90 percent	30	40%
91 to 185 percent	26	35
186 or more	19	25
Total	76	100%

[a]Economic data were not obtained from two respondents

TABLE A 2 DISTRIBUTION OF FARMERS BY FARM SIZE FACTORS

SELECTED MEASURES OF FARM SIZE	Number	Percent
Adjusted Acreage 1975		
1 to 50 acres	12	16%
51 to 100 acres	23	30
101 to 150 acres	21	28
151 to 200 acres	10	13
201 to 250 acres	6	8
251 to 300 acres	4	5
Total	76	100%
Adjusted Acreage 1976		
1 to 50 acres	29	38%
51 to 100 acres	16	21
101 to 150 acres	21	28
151 to 200 acres	7	9
201 to 250 acres	2	3
251 to 300 acres	1	1
Total	76	100%
Percent Equity		
50 to 59 percent	2	3%
60 to 69 percent	1	1
70 to 79 percent	5	7
80 to 89 percent	6	8
90 to 99 percent	23	30
100 percent	39	51
Total	76	100%
Total Assets		
$20,000 to $50,000	14	18%
$50,001 to $100,000	29	38
$100,001 to $150,000	21	28
$151,001 to $200,000	6	8
$200,001 to $300,000	5	7
$300,001 or more	1	1
Total	76	100%

Table continued....

TABLE A 2 (Cont'd)

SELECTED MEASURES OF FARM SIZE		Number	Percent
Target Two			
$3,016		4	5%
$4,372		23	30
$5,580		17	22
$6,636		8	11
$7,411		11	14
$8,145		5	7
$8,930		8	11
	Total	76	100%
Target Three			
$3,016 - $6,000		34	45%
$6,001 - $9,000		23	30
$9,001 - $12,000		10	13
$12,001 - $15,000		4	5
$15,001 - more		5	7
	Total	76	100%
Target Four			
$6,000 - or less		12	16
$6,001 - $9,000		32	42
$9,001 - $12,000		18	24
$12,001 - $15,000		6	8
$15,001 - or more		8	10
	Total	76	100%

TABLE A 3 DISTRIBUTION OF FARMERS BY MANAGEMENT CHARACTERISTICS

SELECTED MEASURES OF MANAGEMENT		Number	Percent
Management Score			
1 - 5		8	11%
6 - 10		27	36
11 - 15		38	50
16 - 20		2	3
	Total	76	100%
Technical Practices Score			
1 - 5		0	0%
6 - 10		6	8
11 - 15		21	28
16 - 20		23	31
21 - 26		25	33
	Total	76	100%
Receptivity to Change			
Receptive to Change		25	33%
Not Receptive to Change		53	66
	Total	78	100%
Mixed or Farm Focus			
Farm Focus		52	66%
Mixed Focus		26	34%
	Total	78	100%

A P P E N D I X B

INDIVIDUAL FARMER STATISTICS FOR UNRECEPTIVE FARMERS

TABLE B.1. List of Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups - Market Oriented Unreceptive Due to Age or Health, 1976

1975 Farmer Code	1976 Respondant No.	Gross Farm Sales	Net Farm Income	Operator Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4	Potential Net Farm Income
						dollars					
G58F	4.	20770.	8749.	8749.	8999.	8999.	10000.	5580.	7080.	8869.	12131.
G58B	9	11371.	3253.	4453.	4653.	4353.	4653.	4372.	4372.	6044.	3026.
G55A	19.	21064.	12508.	12508.	11348.	11348.	12848.	5580.	5580.	8404.	17042.
G44B	24.	11756.	1964.	1964.	6414.	11414.	16414.	8930.	9930.	11821.	16160.
G51A	30.	15215.	1095.	1095.	1095.	1095.	4095.	4372.	4372.	8997.	4941.
G53A	31.	19044.	9817.	8917.	9657.	9657.	9657.	6636.	13636.	17161.	15222.
R49C	41.	21757.	6703.	6703.	20303.	16303.	20303.	8930.	9930.	12278.	11063.
R60A	42.	8050.	5127.	5127.	6127.	4127.	6127.	3016.	3016.	4016.	
R54A	43.	8188.	3137.	3137.	19137.	14137.	17137.	4372.	4372.	6765.	6222.
R63C	44.	5212.	1442.	1442.	14692.	14692.	14692.	5580.	7830.	8569.	2932.
R59A	46.	10789.	2052.	2052.	2052.	2052.	4552.	4372.	4372.	5856.	11438.
R63D	48.	15715.	3841.	3841.	11078.	6500.	11076.	4372.	4472.	7390.	24814.
R42A	61.	4895.	322.	922.	2247.	2247.	2247.	8930.	8930.	9788.	7590.
Mean		13371.	4547.	4685.	9061.	8225.	10292.	5772.	6761.	8920.	11048.
Minimum		4895.	322.	922.	1095.	1095.	2247.	3016.	3016.	4016.	2932.
Maximum		21757.	12508.	12508.	20303.	16303.	20303.	8930.	13636.	17161.	24814.
Standard Deviation		6001.	3670.	3593.	6214.	5197.	5750.	2004.	3120.	3384.	6558.

TABLE B.2. List of Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups - Market Oriented Unreceptive Due to Attitude, 1976

1975 Farmer Code	1976 Respondant No.	Gross Farm Sales	Net Farm Income	Operator Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4	Potential Net Farm Income
						dollars					
G50C	7.	14942.	5441.	5441.	12969.	8969.	12969.	6636.	6636.	8636.	10570.
G57B	8.	8184.	3645.	3645.	4795.	4795.	6545.	6636.	6636.	7965.	7893.
G58B	12.	15026.	8676.	8676.	11876.	10876.	11876.	7419.	7419.	9550.	10168.
G50B	16.	8220.	4513.	4513.	4613.	4613.	4613.	4372.	4372.	5817.	11641.
G52D	21.	29337.	4915.	4915.	5754.	3754.	5754.	6636.	9536.	12600.	5793.
G56A	23.	7666.	973.	973.	1873.	1873.	2873.	4372.	5372.	7492.	2864.
G52B	25.	4406.	2000.	2000.	7000.	7000.	7800.	4372.	4872.	6114.	3676.
G48A	26.	8318.	2261.	3261.	7929.	7929.	7929.	7419.	7419.	8658.	4987.
G56B	28.	7824.	3786.	3786.	3786.	3786.	3786.	4372.	4372.	6548.	4983.
R54B	38.	7917.	2936.	2936.	3136.	3136.	5636.	4372.	4372.	5979.	10251.
R61A	47.	7207.	2989.	2989.	3689.	3689.	3689.	5580.	5580.	7048.	12457.
R51A	56.	8510.	3066.	3066.	3330.	3330.	5330.	6636.	6636.	8004.	22603.
R49A	58.	11189.	4622.	4622.	4872.	4872.	4872.	5580.	5580.	7763.	12697.
R60D	73.	12737.	8018.	8018.	8018.	7518.	8018.	4372.	4372.	6902.	9411.
R62A	78.	6006.	2341.	2341.	2941.	2941.	4941.	4372.	4372.	6655.	9583.
Mean		10499.	4012.	4079.	5772.	5272.	6442.	5543.	5836.	7715.	9305.
Minimum		4406.	973.	973.	1873.	1873.	2873.	4372.	4372.	5817.	2864.
Maximum		29337.	8676.	8676.	12969.	10876.	12969.	7419.	9536.	12600.	22603.
Standard Deviation		6035.	2133.	2090.	3249.	2582.	2884.	1237.	1526.	1731.	4869.

TABLE B.3. List of Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups - Farm Focus Traditional, 1976

1975 Farmer Code	1976 Respondant No.	Gross Farm Sales	Net Farm Income	Operator Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4	Potential Net Farm Income
		dollars									
G50A	29.	4065.	1732.	1732.	1732.	1732.	1732.	3016.	3616.	4442.	4822.
R57A	40.	1835.	485.	3245.	3245.	3045.	3245.	3016.	3616.	3718.	2225.
R64B	53.	3058.	575.	2207.	2207.	4207.	5207.	4372.	4372.	5140.	1359.
R55C	54.	7316.	4444.	4744.	4744.	3744.	4744.	4372.	4372.	5294.	9788.
R55B	65.	2099.	-137.	3763.	6363.	6363.	7363.	7419.	7419.	7958.	3334.
R45C	70.	4925.	-917.	-917.	2611.	2611.	4111.	6636.	8462.	9728.	16099.
Mean		3883.	1030.	2462.	3483.	3617.	4400.	4805.	5310.	6047.	6271.
Minimum		1835.	-917.	-917.	1732.	1732.	1732.	3016.	3616.	3718.	1359.
Maximum		7316.	4444.	4744.	6363.	6363.	7363.	7419.	8462.	9728.	16099.
Standard Deviation		2048.	1887.	1976.	1755.	1600.	1902.	1842.	2092.	2306.	5660.

TABLE B.4. List of Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups - Mixed Focus Nonfarm Major Source of Income, 1976

1975 Farmer Code	1976 Respondant No.	Gross Farm Sales	Net Farm Income	Operator Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4	Potential Net Farm Income
		dollars									
G49A	10.	3100.	-1870.	3230.	3480.	2980.	3480.	5580.	6680.	8098.	3839.
G40A	11.	9158.	-4884.	4116.	5366.	5366.	5366.	7419.	10929.	12276.	3872.
G53B	27.	20716.	1810.	1810.	8960.	8960.	10960.	8144.	12144.	14278.	17950.
G41B	34.	3596.	-1365.	6635.	6635.	5635.	6635.	4372.	4553.	6225.	1555.
R60E	35.	7001.	4072.	14072.	15732.	13732.	15732.	4372.	4372.	6131.	6471.
R37A	59.	9861.	-2068.	5932.	11932.	1932.	1932.	8144.	10144.	11850.	898.
R56B	71.	3639.	-691.	3309.	2969.	3809.	7309.	8144.	8144.	9044.	9153.
R28B	76.	4433.	-55.	5445.	6405.	6405.	6405.	8145.	9144.	10502.	9904.
Mean		7688.	-631.	5569.	7865.	8602.	9727.	6790.	8264.	9801.	6705.
Minimum		3100.	-4884.	1810.	2969.	2980.	3480.	4372.	4372.	6131.	898.
Maximum		20716.	4072.	14072.	15732.	21932.	21932.	8145.	12144.	14278.	17950.
Standard Deviation		5878.	2690.	3787.	4350.	6356.	6222.	1727.	2876.	2942.	5596.

TABLE B.5. List of Income and Viability Targets for Limited Resource Farmers Unreceptive to Farm Improvements by Classification Groups - Mixed Focus Traditional, 1976

1975 Farmer Code	1976 Respondant No.	Gross Farm Sales	Net Farm Income	Operator Income	Total Family Income	Perceived Minimum Income for Family Viability	Perceived Satisfactory Level of Income	Target 2	Target 3	Target 4	Potential Net Farm Income
		dollars									
G51B	17.	15199.	2619.	2619.	6083.	5083.	6075.	5580.	7640.	8466.	5039.
R40B	39.	122.	-808.	2192.	3692.	3692.	3692.	8930.	8930.	9784.	2112.
R50B	55.	2455.	419.	4919.	4919.	4419.	4919.	4372.	4372.	5513.	5065.
R62B	57.	2747.	429.	3629.	3829.	3529.	3829.	4372.	4372.	5528.	4732.
R38A	67.	3648.	2625.	3625.	625.	3125.	3625.	3016.	3417.	4054.	4624.
R55D	68.	2944.	-747.	8453.	9543.	7543.	9543.	5580.	5580.	5802.	4798.
R43A	69.	9622.	3672.	6039.	7789.	7789.	9789.	8930.	9130.	9828.	6288.
R51C	74.	680.	-427.	-327.	729.	729.	1729.	8930.	8930.	9401.	5335.
R47C	75.	4358.	1207.	4207.	4457.	3457.	4455.	5580.	5580.	6518.	4991.
Mean		4642.	999.	3928.	4630.	4374.	5295.	6143.	6439.	7210.	4775.
Minimum		122.	-808.	-327.	625.	729.	1729.	3016.	3417.	4054.	2112.
Maximum		15199.	3672.	8453.	9543.	7789.	9789.	8930.	9130.	9828.	6288.
Standard Deviation		4805.	1638.	2475.	2939.	2210.	2737.	2245.	2243.	2179.	1113.

A P P E N D I X C

ECONOMIC AND BEHAVIOURAL FACTOR VALUES

TABLE C.1 Average Economic and Behavioural Factor Values (not normalized) for Receptive and Unreceptive Groups, 1976

Factor	Receptive	Unreceptive	t-value	Probability
Farm Resources				
Tillable acres	189	111	4.37	0.000
Acres utilized	173	124	2.34	0.022
Barn space (sq.ft.)	2,546	2,635	0.14	0.888
Total assets	144,353	85,332	4.11	0.000
Total liabilities	15,421	5,347	2.89	0.006
Income Achievement				
Gross farm sales	20,439	8,978	5.00	0.000
Net farm income	5,467	2,537	2.94	0.004
Total family income	12,187	6,440	4.54	0.000
Income Requirements				
Perceived minimum income	9,678	6,194	3.28	0.002
Perceived satisfactory income	13,412	7,496	4.07	0.000
Target 2	6,308	5,816	1.19	0.238
Target 3	9,780	6,497	3.70	0.000
Target 4	12,496	8,064	4.39	0.000
Management				
Management score	12.7	9.5	4.49	0.000
Technical practices score	20.8	15.8	5.32	0.000
Yield score	3.6	2.9	2.56	0.012
Fertilizer score	3.6	2.4	3.92	0.000
Finances				
% equity	88.4	97.7	4.55	0.000
Capital turn-over ratio	8.1	13.7	1.92	0.059
Cost control ratio	0.31	0.11	0.95	0.346
Social Factors				
Family size	4.1	3.6	0.90	0.374
Age	44.4	53.3	3.84	0.000
Value Orientations				
Economic	1.64	0.98	2.14	0.039
Scientific	3.04	2.70	0.96	0.341
Risk	1.44	0.72	2.72	0.008
Independence	1.96	2.66	2.06	0.046
Basic Needs				
Achievement	2.24	2.19	0.17	0.865
Security	1.24	1.60	1.28	0.206
Social	2.52	2.21	0.90	0.375

Table continued....

TABLE C.1. continued...

Factor	Receptive	Unreceptive	t-value	Probability
Self-Concepts				
Social	15.9	14.9	1.99	0.053
Assertive	13.8	12.4	1.83	0.075
Achievement	21.5	20.1	2.43	0.019
Innovative	15.5	13.6	2.90	0.006
Aspirations Household	10.2	10.0	0.34	0.732
Farm	27.4	25.5	2.72	0.009
Family	15.4	15.2	0.61	0.545
Social	16.0	14.1	2.23	0.03
Participation				
Community attachment	2.28	2.05	0.93	0.353
Social organization participation	5.52	3.53	1.58	0.122
Total professional contact	10.8	2.9	3.59	0.001
Program utilization	2.4	0.7	5.75	0.000
Total agric. magazines (subscribed to)	2.96	2.32	1.79	0.081
Total ratio & T.V. agric. programs (used)	1.36	0.79	2.88	0.006
Perceptions of Limitations				
Land	3.0	3.4	1.34	0.186
Credit	3.6	3.8	1.15	0.259
Off-farm work	3.7	3.5	0.95	0.343
Buildings & equipment	3.1	2.9	0.52	0.605
Agric. information	3.6	3.7	0.69	0.496
Formal education	3.6	3.7	0.41	0.686
Preference for Direct vs Indirect Subsidy	1.3	1.8	1.30	0.199

TABLE C.2 Average Economic and Behavioural Factor Values (not normalized) for Farm Focus and Mixed Focus Unreceptive Groups, 1976

Factor	Farm Focus	Mixed Focus	t-value	Probability
Farm Resources				
Tillable acres	123	88	2.30	0.026
Acres utilized	128	116	0.57	0.570
Barn space (sq.ft.)	3,272	1,435	2.95	0.005
Total assets ($)	98,946	50,140	3.91	0.000
Total liabilities ($)	6,680	3,717	1.43	0.176
Income Achieved				
Gross farm sales ($)	10,430	6,075	2.42	0.019
Net farm income	3,690	231		0.000
Total family income	6,626	6,067	0.41	0.681
Income Requirements and Potential				
Perceived minimum income	6,109	6,363	0.21	0.845
Perceived satisfactory income	7,553	7,380	0.12	0.904
Target 2	5,501	6,447	1.80	0.078
Target 3	6,097	7,298	1.65	0.105
Target 4	7,881	8,429	0.67	0.504
Potential NFI	9,387	5,683	2.38	0.021
% of potential achieved by NFI	43.10	12.70	3.14	0.006
Management				
Management score	10.4	7.6		0.005
Tech. pract. score	17.4	12.6	4.35	0.000
Yield score	3.3	2.0	3.74	0.000
Fertilizer score	2.8	1.5	4.37	0.000
Finances				
% equity	98.2	96.6	1.26	0.219
Capital turn-over	11.2	18.8	1.36	0.192
Cost control	0.3	-0.3	1.56	0.138
Return on assets (excluding labour)	3.96	3.28	0.47	0.642
Social Factors				
Family size	3.1	4.8	2.51	0.019
Age	56.0	48.0	3.61	0.001
Value Orientations				
Economic	1.00	0.94	0.18	0.860
Scientific	3.03	2.06	2.06	0.049
Risk	0.69	0.78	0.35	0.732
Independence	2.68	2.61	0.19	0.853

Table continued....

TABLE C.2 continued...

Factor	Farm Focus	Mixed Focus	t-value	Probability
Basic Needs				
Achievement	2.03	2.50	1.38	0.176
Security	1.60	1.61	0.03	0.975
Social	2.37	1.89	1.29	0.205
Self-Concepts				
Social	14.7	15.3	1.11	0.275
Assertive	12.1	13.1	1.16	0.254
Achievement	19.8	20.7	1.37	0.180
Innovative	13.6	13.7	0.19	0.853
Aspirations				
Household	10.1	9.8	0.53	0.597
Farm	25.8	24.9	0.85	0.400
Family	14.8	15.9	1.63	0.116
Social	14.1	14.1	0.04	0.970
Participation				
Community attachment	1.97	2.22	0.96	0.346
Social organization participation	4.26	2.11	1.64	0.108
Total professional contact	3.14	2.50	0.46	0.652
Program utilization	0.91	0.28	2.87	0.006
Total agric. magazines (subscribed to)	2.63	1.72	2.49	0.017
Total radio & T.V. programs (used)	0.77	0.83	0.31	0.758
Perceptions of Limitations				
Land	3.8	2.7	3.31	0.003
Credit	3.9	3.7	0.64	0.531
Off-farm work	3.8	3.0	2.53	0.019
Buildings & equipment	3.1	2.6	1.77	0.086
Agric. information	3.7	3.7	0.30	0.765
Formal education	3.7	3.7	0.04	0.966
Preference for direct vs indirect subsidies	2.0	1.4	1.61	0.115

TABLE C.3 Average Economic and Behavioural Factor Values (not normalized) for Market Oriented and Traditional Unreceptive Groups, 1976

Factor	Market Oriented	Traditional	t-value	Probability
Farm Resources				
Tillable acres	123.8	81.3	2.21	0.032
Acres utilized	135.1	98.7	1.91	0.063
Barn space (sq.ft.)	3,108	1,450	1.92	0.061
Total assets	102,816	43,372	4.97	0.000
Total liabilities	5,681	4,010	0.75	0.477
Income Achieved				
Gross farm sales	10,912	4,338	4.58	0.000
Net farm income	3,173	1,011	2.28	0.027
Total family income	7,385	4,171	2.43	0.019
Income Requirements and Potential				
Perceived minimum income	7,078	4,071	2.37	0.022
Perceived satisfactory income	8,562	4,937	2.63	0.011
Target 2	5,903	5,608	0.48	0.638
Target 3	6,710	5,987	1.01	0.318
Target 4	8,614	6,745	2.54	0.016
Potential net farm income	9,309	5,374	2.94	0.005
% of potential achieved by NFI	38.7	19.2		
Management				
Management score	10.9	6.2	5.94	0.000
Technical practices score	17.3	12.1	5.17	0.000
Yield score	3.3	1.9	4.16	0.000
Fertilizer score	2.7	1.5	3.24	0.002
Finances				
% equity	97.3	98.6	1.09	0.281
Capital turn-over ratio	11.1	19.9	2.07	0.044
Cost control ratio	0.27	-0.26	1.73	0.091
Return to assets (excluding labour)	4.18	2.67	1.21	0.237
Social Factors				
Family size	3.5	3.9	0.52	0.606
Age	53.7	52.3	0.54	0.598

Table continued....

TABLE C.3 continued...

Factor	Market Oriented	Traditional	t-value	Probability
Value Orientations				
Economic	1.03	0.87	0.49	0.629
Scientific	2.66	2.80	0.30	0.764
Risk	0.74	0.67	0.28	0.781
Independence	2.63	2.73	0.24	0.812
Basic Needs				
Achievement	2.08	2.47	0.97	0.346
Security	1.74	1.27	1.28	0.213
Social	2.18	2.27	0.21	0.838
Self-Concepts				
Social	14.8	15.2	0.73	0.469
Assertive	12.4	12.5	0.15	0.879
Achievement	20.2	19.7	0.69	0.495
Innovative	13.7	13.4	0.39	0.702
Aspirations				
Household	10.3	9.2	1.99	0.060
Farm	25.7	24.9	0.89	0.378
Family	15.3	14.7	1.03	0.315
Social	14.3	13.7	0.54	0.595
Participation				
Community attachment	2.13	1.87	1.10	0.281
Social organization participation	3.79	2.87	0.68	0.501
Total professional contact	3.21	2.20	0.71	0.487
Program utilization	0.95	0.07	3.31	0.002
Total agric. magazines (subscribed to)	2.61	1.60	2.83	0.008
Total radio & T.V. agric. programs (used)	0.79	0.80	0.04	0.966
Perceptions of Limitations				
Land	3.4	3.5	0.31	0.757
Credit	3.8	3.9	0.45	0.655
Off-farm work	3.7	3.1	2.21	0.032
Buildings & equipment	3.0	2.8	0.55	0.588
Agric. information	3.6	3.9	1.18	0.243
Formal education	3.8	3.3	1.60	0.117
Preference for direct vs indirect subsidies	1.7	2.1	0.79	0.434

TABLE C.4 Average Economic and Behavioural Factor Values for Unreceptive Farmers by Classification Groups, 1976 (not normalized)

Economic and Behavioural Factors	Farm Focus			Mixed Focus		t-test comparisons					
	Market Oriented		Traditional	Market Oriented	Traditional						
	Unreceptive due to age or health	Unreceptive due to attitude		Nonfarm major source of income		a	b	c	d	e	f
Farm Resources											
Tillable acres	104	152	93	103	74		*	**	*		
Acres utilized	124	146	93	131	102						
Barn space (sq.ft.)	3,950	2,960	2,580	2,125	822		*			**	*
Total assets	111,003	109,093	47,457	77,742	40,649		**	**	**	**	
Total liabilities	5,058	8,599	8,741	4,360	2,433						*
Income Achieved											
Gross farm sales	13,371	10,499	3,883	7,688	4,641		**	**			
Net farm income	4,547	4,012	1,030	-631	999		**	**	**		
Total family income	9,062	5,772	3,484	7,685	4,630			**			
Income Requirements & Potential											
Perceived minimum income	8,225	5,272	3,617	8,602	4,374			**			
Perceived satisfactory income	10,295	6,442	4,400	9,727	5,295	*		**			
Target 2	5,772	5,543	4,805	6,790	6,143						
Target 3	6,761	5,836	5,310	8,264	6,439						
Target 4	8,920	7,715	6,047	9,800	7,210			*			
Potential net farm income	11,048	9,305	6,271	6,705	4,776		**				
% potential achieved by net farm income	45.3	48.6	24.0	9.0	16.3		**	*	**		
Management											
Management score	11.7	10.9	6.8	9.8	5.8		**	*		**	
Technical practices score	18.8	17.5	14.5	15.0	10.4		**	*		**	*
Yield score	3.8	3.0	2.8	3.0	1.2		**			**	**
Fertilizer score	3.2	2.9	1.8	1.8	1.3		**	**	**		

TABLE C.4 continued...

Economic and Behavioural Factors	Farm Focus			Mixed Focus		t-test comparisons					
	Market Oriented		Traditional	Market Oriented	Traditional						
	Unreceptive due to age or health	Unreceptive due to attitude		Nonfarm major source of income		a	b	c	d	e	f
% equity	97.7	98.0	99.7	95.1	97.8			*	*		
Capital turnover	8.8	12.1	13.9	13.1	23.9						
Cost control	0.3	0.4	0.2	-0.0	-0.6				*		
Return on assets (excluding labour)	4.4	4.2	2.3	3.7	2.9						
Social Factors											
Family size	3.3	3.1.	2.5	4.6	4.9						
Age	55.5	55.6	58.1	47.6	48.4		*		*		*
Value Orientation											
Economic	1.31	1.00	0.33	0.67	1.22						*
Scientific	2.77	3.06	3.50	1.78	2.33						
Risk	0.85	0.56	0.67	0.89	0.67						
Independence	3.31	2.31	2.33	2.22	3.00	*	*				
Basic Needs											
Achievement	1.69	2.38	1.83	2.11	2.89						
Security	1.92	1.31	1.67	2.22	1.00					*	
Social	2.38	2.31	2.50	1.67	2.11						
Self-Concepts											
Social	14.62	14.81	14.50	14.88	15.67						
Assertive	12.31	11.81	12.50	13.55	12.60						
Achievement	20.61	19.56	18.67	20.88	20.44						
Innovative	13.00	14.38	12.67	13.55	13.89						

TABLE C.4 continued...

Economic and Behavioural Factors	Farm Focus			Mixed Focus		t-test comparisons					
	Market Oriented		Traditional	Market Oriented	Traditional						
	Unreceptive due to age or health	Unreceptive due to attitude		Nonfarm major source of income		a	b	c	d	e	f
Aspiration											
Household	10.7	10.0	9.2	10.4	9.2						
Farm	25.9	26.1	24.7	24.8	25.1						
Family	15.3	14.5	14.3	16.9	14.9				*		
Social	13.2	15.1	13.5	14.3	13.9	*					
Participation											
Community attachment	1.85	2.12	1.83	2.55	1.89						
Social organizations	6.69	2.62	3.33	1.67	2.55	*					
Total professional contact	3.08	2.87	4.00	4.00	1.00						
Program utilization	1.15	1.00	0.17	0.55	0.00		**	**		*	
Total agric. magazines	2.38	3.00	2.17	2.22	1.22		*				
Total radio and T.V.	0.54	0.94	0.83	0.88	0.78						
Perceptions of Limitations											
Land	4.0	3.5	4.0	2.2	3.1		*		*		
Credit	3.9	3.9	3.7	3.4	4.0						
Off-farm work	3.8	3.9	3.5	3.2	2.8		*				
Buildings & equipment	3.5	2.9	3.2	2.6	2.6		*				
Agricultural information	3.8	3.5	3.8	3.6	3.9						
Formal education	4.4	3.2	3.5	4.2	3.1	*					
Preference for direct vs indirect subsidy	1.9	1.6	3.5	1.5	1.2						

** p = .01
* p = .05

t-test a Unreceptive due to age X unreceptive due to attitude
b Farm-focus market oriented X other sub-groups
c Farm focus market oriented X farm focus traditional
d Farm-focus market oriented X mixed focus market oriented
e Mixed focus market oriented X mixed focus traditional
f Farm focus traditional X mixed focus traditional