The Michigan Township Extension Experiment: The Farm Families .. Their Attitudes, Goals and Goal Achievement
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The Michigan Township Extension Experiment:

The Farm Families . . Their Attitudes, Goals and Goal Achievement

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CONTENTS

PERSPECTIVE

THIS IS THE THIRD in a series of final reports on the Michigan township extension experiment—an experiment in which five extension agents worked intensively with farm families in township areas for five years.

The primary objectives of the experiment were to determine the effect a program of extension education would have on increasing agricultural output, increasing farm earnings, speeding up the application of improved agricultural practices, bringing about higher levels of living for farm families, and accomplishing improvement in rural communities.

The first in this series of final reports was Technical Bulletin 274, "The Michigan Township Extension Experiment: CHANGES IN AGRICULTURAL PRODUCTION, EFFICIENCY AND EARNINGS." The second was Technical Bulletin 284, "The Michigan Township Extension Experiment: THE EXPERIMENTAL PROGRAM AND FARMERS' REACTIONS TO IT."

Readers may find the information on the research design and the analysis of kinds of extension programs conducted by the township agents reported in the first two bulletins useful background for the present report.

The fourth and final report will include analyses of relationships among the variables to provide insights on why and how changes came about; final conclusions regarding the impact of the experiment on farms, farm families, and communities; benefit-cost ratios; and what was learned that will be helpful in organizing, financing, and conducting extension programs in the future.

ACKNOWLEDGEMENT

The author wishes to give special acknowledgement to the substantial contribution made by E. O. Moe of the department of sociology and anthropology who collaborated closely on the research reported in this bulletin. Professor Moe assisted in designing the questionnaire for obtaining the data for most of the variables reported here, participated in pretests of the questionnaire, and provided valuable insights on the analysis and interpretation of the data.

SUMMARY

FARMERS IN THE EXPERIMENTAL AREAS made substantial progress in achieving their farm and family goals during the experimental period. They made significantly more progress than control farmers in increasing their net farm earnings during the 5-year experimental period. Net farm earnings for the total experimental sample increased an average of $1646 from 1953 to 1958 as compared to an increase of $938 for the total control sample.

Living level indicators, however, revealed that experimental farmers made only slightly more progress than control farmers in obtaining items which would contribute to higher levels of living. Farmers in the experimental samples concentrated on building up their farming units rather than emphasizing immediate consumption. The higher rate of investments in productive farm assets in the experimental areas as compared to the control areas may result in still further increases in farm earnings, and these may be reflected in higher levels of living in the years following the termination of the experiment.

Farmers in the experimental areas who perceived that their goals were not being fulfilled in agriculture tended to either get out entirely or to strive harder to make a go of it in farming. Control farmers, on the other hand, were more apt to adjust their goals downward, hang on and make the best of it, or to seek a part-time job off the farm. Part of this differential reaction between experimental and control farmers is attributable to the township program.

At the end of the experiment, farmers in the experimental samples generally saw a brighter future in agriculture than those in the control samples.

There were no changes in farmers' memberships in farm or other formal organizations or in levels of formal participation that could be attributed to the township program.

The township program made a moderate contribution to the improvement of farmers' managerial ability. However, in some cases the frequent contact and close relationship between agent and farmer resulted in the farmer becoming highly dependent on the agent for advice in decision making. The largest factor determining the impact on farmers' managerial ability was the approach used by the township agent, and especially the extent to which the agent emphasized work on farm analysis and planning.

The Michigan Township Extension Experiment:

THE FARM FAMILIES . . THEIR ATTITUDES, GOALS AND GOAL ACHIEVEMENT

By JAMES NIELSON

DEPARTMENT OF AGRICULTURAL ECONOMICS

INTRODUCTION

Conceptual Framework

FOUR TYPES OF VARIABLES relating to individual behavior and achievement are involved in the research on the township extension experiment: (1) predispositional variables, (2) situational variables, (3) behavioral variables, and (4) outcome variables.

Research on the township extension experiment focuses attention on the behavior of farmers in the experimental areas. Insights are sought on how the behavior responded to the stimulus in the form of the experimental extension program, and how both the behavior and the outcome were influenced by predispositional and situational variables.

The predispositional variables constitute the internal forces within the individual which make him predisposed to react or behave in a certain way in a given behavioral situation. Individual values, factual beliefs, goals, and attitudes are examples of variables in this category.

Situational variables are factors in the environment within which the individual lives and reacts. For farmers, the category includes such variables as agricultural production possibilities, off-farm work opportunities, family situation, and the values, goals and sanctions of the social system of which he is a part. The situational variables suggest alternative lines of action to the individual and at the same time impose limits on his behavior.

Behavioral variables refer to the actions taken by the individual. Participating in the township extension program, adopting improved farm practices and making changes in farm organization are examples

of behavioral variables which are especially relevant to the research on the experiment.

Behavior is motivated by either internal or external stimuli, and is influenced by both the predispositional and the situational variables. Behavior results from the dynamic interaction of the various predispositional and situational forces. Faced with the perception of a stimulus, the individual goes through a more or less conscious decision-making process in deciding what action to take, if any.

Outcome variables refer to the results of the individual's behavior interacting with situational variables (such as weather, government programs, price conditions at buying and selling time, etc.). A general form of outcome is goal achievement; net farm earnings and levels of living attained are examples of specific types of outcomes.

Outcomes in one period of time may have an impact on the individual's situation or on his predispositions to action, and thus influence future behavior and outcomes.

The Purposes of this Bulletin

This report serves the following purposes:

1. To present data on:
    a. The characteristics of the communities in which the experiment was conducted (situational variables).
    b. Personal characteristics of the farm operators in the samples (situational variables).
    c. Farmers' goals (a predispositional variable).
    d. Farmers' attitudes (a predispositional variable).
2. To report changes in the experimental and control samples during the experimental period on the following variables, and to provide insights on the extent to which differential changes between the experimental and control were attributable to the township program:
    a. Goal achievement in general, with emphasis on earnings and levels of living of farm families (outcome variables).
    b. Certain aspects of managerial process (a behavioral variable).
    c. Farmers' participation in formal organizations[1] (a behavioral variable).

[1]Farmers' participation in the township program and factors related to this participation were reported in Technical Bulletin 284.

These factors all have a relationship to goal achievement. In addition to the analyses of relationships among the variables included in this report, these data will have further use in the analyses of relationships which will be reported in the concluding bulletin in the series. At that point, situational and predispositional variables will be related to behavioral variables such as practice adoption and changes in farm organization, and behavioral and situational variables will be related to outcome variables such as net farm earnings.

The Data

Farmers in each of the five experimental and five control areas were interviewed on benchmark, intermediate and terminal surveys in 1954, 1956, and 1959, respectively. Only the data from farmers who remained through the terminal survey were used.

Sampling procedures were outlined in Technical Bulletin 274. For the reader's convenience, the sample sizes are repeated here.

	Newton	Tri-Twp.	Denmark	Almont	Odessa	Total
Experimental samples	26	20	36	28	38	148
Control samples	27	28	37	37	34	163

Heavy reliance was placed on direct questioning procedures in obtaining information on all variables, including the predispositional variables (goals and attitudes). However, some hypothetical and some indirect questions were used in obtaining information on goals and attitudes.

The goal and attitude data, as well as terminal measurements for the other variables reported here, were obtained on the terminal survey. Four mature graduate students served as interviewers on this survey. All of them had farm backgrounds and had considerable interviewing experience previously.

Prior to the terminal survey, farmers in the samples had participated in the two previous surveys made in connection with the research. The researchers had maintained a continuing relationship with the farmers through letters and other contacts throughout the 5-year period.

Because of the researchers' previous contacts with the respondents and the ability and experience of the interviewers, a high level of interviewing rapport was attained with most of the respondents.

Relationships among the variables included in this report were

tested for statistical significance in cases where theory or previous research experience indicated that a relationship could be logically expected. Relationships which were statistically significant at the .10 probability level (10 chances in 100 that the relationship could have arisen through sampling error) are reported in the text. All relationships tested and the actual levels of statistical significance are given in the Appendix.

The statistical tests used in analyzing the relationships among variables and in testing the matching of control with experimental samples on situational variables are outlined in the Methodological Notes in the Appendix.

THE EXPERIMENTAL AREAS: THE AGRICULTURE, THE PEOPLE AND THE COMMUNITIES

A picture of the people involved in the experiment and the setting in which they lived and acted is given below. Capsule descriptions of the experimental areas as they were at the beginning of the experimental period are provided. More detailed descriptions are provided in the Appendix.

Farmers in the experimental samples were representative of the operators of farms of the dominant farm type in each area. Characteristics of these farm operators and their families were obtained on the benchmark and intermediate surveys, and are presented in Appendix Tables 1-12. Where changes in the variables were of interest, data for the terminal year are also provided.

In order to isolate the effects of the township program as much as possible, the experimental design called for the use of control samples. An attempt was made to select a control sample that matched each of the experimental samples as closely as possible in characteristics that seemed likely to affect the outcome of the program. Farmers in the control samples had access to county extension programs, but not to the township extension program.

Data on the characteristics of the operators and families in the control samples are given in Appendix Tables 1-12 along with the information for the experimental samples.

Benchmark data on the farms, farm operators, and families were tested statistically to determine how well the control samples matched the experimental samples. In general, satisfactory matching was attained. Differences between matched experimental and control

samples that were significant at the .10 level are indicated in Appendix Tables 1-12, and other information on the matching is presented in the Appendix.

It should be noted that in the Newton experimental area, an extension association was set up to serve a specific group of 40 to 50 farm families, whereas in the other four areas, the township program was available to all the farm people living in the township areas.

The location of the experimental areas is indicated roughly in the map on the front cover (starting at the top and reading clockwise: the Tri-Township area, Kalkaska county; Denmark township, Tuscola county; Almont township, Lapeer county; the Newton area, Calhoun county; and Odessa township, Ionia county).

The Newton Area

Newton township is located in the dairy and general farming area of Southern Michigan. At the beginning of the program, there was considerable enterprise diversity on farms in the area, with dairy the most common enterprise.

There were no towns or villages in the township, but there were several rural villages in the area served by the township extension association. Since there was considerable industry in cities near the area, there were many families living in the township who had little or no interest in farming. There was much part-time farming in the area.

The farm people in the Newton association were generally friendly toward each other, but were not united in a community sense.

Farmers in the area were generally progressive and receptive to new ideas. Those who joined the township extension association were probably more highly motivated than the entire farm population in the area.

The Tri-Township Area

The Tri-Township area is located in the dairy and potato area of Northern Michigan. Dairying, mostly for the production of manufacturing milk, was the most important enterprise at the beginning of the experiment. The soils in the area are light and sandy, and the growing season is short. Farm earnings and levels of living at the beginning of the experiment on the average were the lowest of the five experimental areas.

Since the area is sparsely populated, the Tri-Township program covered three adjacent townships. Most of the people who live in the three townships are primarily farm oriented. There are two villages in the townships, and a town nearby. There were limited off-farm employment possibilities.

Although some farm families felt somewhat isolated, community spirit at the beginning of the experiment was high.

Some of the farm people in the area had adjusted to the idea of having lower levels of living, some were considering quitting farming, some were striving to build larger, more productive farm units. The latter group especially was receptive to help from extension.

The Denmark Area

Denmark township is located in the cash crop area of the Saginaw Valley. Beans, wheat, corn and sugar beets are the main crops grown. Soils in the area are heavy, and when adequately drained are highly productive. Average farm earnings were the highest of the five experimental areas. Levels of living also were generally high.

There are two villages in the township and several larger cities which provide considerable off-farm employment opportunities within easy driving distance. The rural people had established deep roots in the community and were strongly oriented toward agriculture.

About three-fourths of the farm operators in the township were from predominately German ancestors. The German Lutheran church was an important influence in the community. Many of the activities in the community were family, kinship, and church oriented, with relatively little community-wide unity or activity.

Prior to the establishment of the township program, most of the farm people in the township had had little to do with extension. The proposal to establish the program in the area received little enthusiasm. Many of the farmers in the township felt they were already farming as well as possible.

The Almont Area

Almont township is located in a specialized dairy area in southeastern Michigan and dairying is the most important farm enterprise. Soil building was needed on many of the farms at the beginning of the experiment.

A village near the center of the township serves as a trade and

community center. Although the Detroit metropolitan area is 40 miles south of the township, the township was predominately agricultural.

At the beginning of the experiment there were few community-wide activities that brought the farm people together. While there was fair unity among the farm people, there was considerable animosity between the farm and the village people.

Farmers in Almont ran the gamut from those who were progressive and eager to improve themselves to those who were mildly interested in change to those who were content to do as they had done in the past. Prior to the township program, only a few of the farmers in the township had been closely associated with extension.

The Odessa Area

Odessa township is located in the southern Michigan dairy and general farming area. The main farm enterprises at the beginning of the experiment were dairy, hogs and cash crops.

The Odessa area provided the most nearly natural community setting for the experiment. A town of about 1600 population lies within the township. It serves as a focal point for trade, schools, recreation, and community activities for the entire township. There are two larger urban-industrial centers about 40 miles away.

The farmers were united into a fairly close-knit community, associated in family groups, and participated in a number of community-wide activities. On the other hand, there was some division and lack of understanding between the farm and the town people in the township.

As in Almont township, farmers in Odessa scattered over a wide range in regard to their willingness to change, and the history of cooperation with extension was "spotty."

GOALS

Definitions and Conceptual Relationships Among Values, Goals and Means

While the terms "value" and "goal" are sometimes used interchangeably, distinguishing between the two concepts is essential from an operational standpoint.

A *value* can be defined as "a conception, explicit or implicit, dis-

tinctive of an individual—of the desirable which influences the selection from available modes, means, and ends of action."[2]

Values are normative concepts. They are higher order and more enduring concepts than goals. According to Leonard, values are developed early in life through association with parents and others in one's cultural environment, and are modified through everyday experiences of later life.[3]

A *goal* is a condition not yet attained, which an individual is trying or could try to attain. Goals are sometimes referred to as objectives or levels of aspiration. Goals provide bases for choice in behavioral situations.

An individual's choice of goals is influenced strongly by his values. Kluckhohn, Larson and others have pointed out that values are the criteria by which goals are chosen.[4]

While selection of goals is influenced by the individual's values, it is also influenced by his perception of factual concepts in his environment—his circumstances, the possibilities which are or appear to be open, the ideals of the community or social groups to which he belongs, etc. Thus, an individual's values might indicate that something was desirable, but he would not set it up as a goal to work for if his perception of circumstances led him to the conclusion that the object was unattainable.

Thus, one distinction between values and goals is that values are normative concepts, whereas goals are a combination of both normative and factual concepts. A second distinction is that goals are a lower order concept than values. They are less enduring, more subject to change over time. Goals may change, for example, in response to changes in environment and to success or failure in accomplishing previous goals.

A *mean* is an instrumental act which an individual undertakes in attempting to attain a goal. An individual's values, attitudes and his circumstances all have a significant influence on his choice of means for attaining a goal. If the best means conceived by the individual appear too difficult or disagreeable, he may decide to abandon the goal.

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[2]Kluckhohn, Clyde, "Values and value-orientations in the theory of action," in Talcott Parsons and C. A. Shills (1952), *Towards a General Theory of Action,* Cambridge, Mass.: Harvard University Press, p. 395.

[3]See Leonard, Olen E, "Rural social values and norms," in Bertrand, Alvin L. & Associates: 1958, *Rural Sociology: An Analysis of Contemporary Rural Life,* New York: McGraw-Hill Book Co., pp. 35-47.

[4]See Kluckhohn, *op. cit.* and Larson, Olaf F., "Basic goals and values of farm people," in *Goals and Values in Agricultural Policy* by the Iowa State University Center for Agricultural and Economic Adjustment (1961). The Iowa State University Press.

Investigating Goals in This Research

In this research, information was obtained on the goals of farm operators.[5] Since individuals have goals in relation to the various roles they play in life, farmers' goals in farming (their occupational goals) and their goals as the head of a family were singled out for study. No attempt was made to determine the goals of the wives or other members of the family. It is recognized that the extent to which the goals of other members of the family reinforce or compete with those of the farm operator, and the manner with which competing goals are resolved within the family, will have an impact on the farm business and the family.

The questions used were designed to elicit information on the goals the farm operators were specifically striving for in connection with the two roles specified. No attempt was made to obtain information or to draw inferences regarding farmers' basic values—such as values placed on life, freedom, etc. It was believed that goal information could not only be obtained more easily, but would also be a more meaningful variable to relate to change in outcome variables (since there is a more direct connection between goals and goal achievement, whereas values for the most part influence behavior only indirectly through their impact on goals, attitudes, etc.).

Readers should recognize two things about the goal information presented in this report. First, a number of other researchers have used techniques similar to those used here and presented similar data which they referred to as information on farmers' values. In most cases, these researchers have not differentiated between the concepts values and goals, and have tended to use the two terms interchangeably. Secondly, while the author has not attempted to do so, some inferences about the respondents' values probably could be drawn from the data on goals presented here.

The data obtained on farmers' goals are to be used (1) in studying the relationships between goals and goal achievement and (2) in testing hypotheses regarding the relationships between goals and farmers' responses to the township program. For these purposes, goal information obtained at the beginning of the experiment would probably have been best. (Although, as noted in Technical Bulletin

[5]Information on goals and attitudes was obtained from farmers in all experimental and control samples. Since these data will be more crucial in the analysis of relationships in the concluding publication, only the goal and attitudinal information for the experimental farmers are reported in this bulletin. Data for the control farmers were similar to these for the farmers in the matching experimental samples.

284, greatest opportunity for response to the program developed after the second year for most farmers.) Since it did not appear to be feasible to attempt to obtain goal information on the first interview with the farmers, the goal information was obtained on the terminal survey. While goals are subject to change over time, it was believed that farmers' goals were not so transient that the information would not be useful for the purposes intended.

Farming Goals

Direct questioning regarding farming goals

Respondents were first asked an open-ended question to get insights into their farming goals. The question was asked as follows: "People have different things they strive for or wish to accomplish. What are your main ambitions *as far as farming is concerned?*" Emphasizing "farming as a business" was necessary in helping some respondents concentrate on farming as opposed to family goals.

Twenty-five different goals were identified by farmers in the five samples in response to this question. The 10 goals listed most frequently are shown in Appendix Table 13. "Making a good or comfortable living" was the goal mentioned most frequently. "Growing high yielding crops and/or high producing livestock" and "building security for later years" were second and third, respectively, in frequency mentioned.

Verbal rankings of farming goals

After farmers had responded to the open-ended question, they were handed a card which contained the seven farming goals which appear in the stub of Appendix Table 14. Respondents were asked to check the four items which were most important to them in decisions they made about farming. They were then asked to rank these four items in order of importance to them.

Some respondents could select and rank the items with little difficulty, some only with considerable difficulty; a few could not rank the items at all. Some indicated that two or more items checked were of equal importance to them.

The percentages of farmers in each sample ranking each of the seven items first are shown in Appendix Table 14. "Owning a farm free from debt" was ranked first by more farmers in every sample. "Making the highest possible income from the farm" was second, and

"making a living which is at least average in the community" was third in the frequency of first place ranking.

The interviewers reported that some respondents gave indications that certain goals ranked high in their minds, but that they seemed reluctant to assign a high ranking to these goals. The interviewers noted this hesitancy most often in connection with the two goals "making a living somewhat above the average in the community" and "being recognized as one of the better farmers in the community." On the other hand, it was apparent from their responses that some respondents rated "making the highest possible income from the farm" high, both in response to the open-ended question and in the verbal rankings, because they felt it was socially acceptable and even expected of them.

Farm goal orientations

To further summarize farmers' responses to the farm goal questions, and to provide categories for future analytical work, six dominant farm goal orientation categories were formulated. Farmers' responses to the open-ended question on farming goals was the main basis used in formulating the six categories. An attempt was made to develop distinct and mutually exclusive goal orientation categories. As will be seen, there is some similarity between certain categories.

Farmers' responses to the open-ended question and the verbal rankings were used in classifying each respondent into one of the six categories. Many respondents made verbal rankings which were consistent with their responses to the open-ended question; some did not. Careful study of the responses and consultation with the interviewers indicated that, where there were discrepancies, responses to the open-ended questions were apt to be more valid indicators of farmers' goals. Consequently, in such cases, heavier weight was attached to the responses to the open-ended question in categorizing farmers.

In putting the respondents into goal orientation categories, it is of course recognized that most farmers have more than one goal. Thus, because a farmer puts emphasis on a high level of living does not rule out the possibility that he also has important security seeking goals. An attempt simply was made to ferret out the goal emphasized most. This was a clear-cut and easy decision in categorizing many respondents, with considerable evidence to reinforce the decision (such as detailed elaboration and reiteration of the goal in response

to the open-ended question coupled with giving a ranking of first or second to it on the verbal rankings). In some cases, the decision was less clear cut, and in a few instances categorizing was extremely difficult.

The percentages of farmers classed into the six goal orientation categories are shown in Table 1.

TABLE 1—Farmers' dominant farm goal orientations: experimental samples

Farm goal orientation	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers classified in each goal orientation					
No goals verbalized	—	5	—	7	—	2
Security or owning a farm free from debt	25	17	18	21	36	24
High level of living	12	28	35	18	25	24
Farm production	25	33	24	11	17	21
Success or prestige	17	6	23	22	8	16
Average level of living	17	11	—	14	3	8
Farming as a way of life	4	—	—	7	11	5
Total	100	100	100	100	100	100

Twenty-four percent of the farmers in the total experimental sample were classified into the category with the dominant farm goal orientation of "security or owning a farm free from debt." Many farmers in this category placed major emphasis on security in retirement—having enough to live on, being able to live comfortably, not having to worry, or not having to live on welfare or depend on someone else after they retire. Others in this category emphasized security in the present, or in the accumulation stages leading up to retirement. Many of these stated their main goal in terms of being out of debt, having less debt, or getting into financial position so that a major adversity would not "wipe them out."

Twenty-four percent of the total experimental sample placed major emphasis on a "high level of living." Farmers classed in this category emphasized such things as having a good or comfortable living, making a living above average of the community, having a modern home and conveniences, and having recreation and travel. Emphasizing "making the highest possible income from the farm"

did not necessarily result in a farmer being classified into this category unless he gave indication that he wanted to use the income to obtain the items which would provide a high level of living.

In contrast to those in the "high level of living" category were the 8 percent who were classed into the goal orientation of wanting farming to provide them only "an average level of living." Following are responses typical of those received from farmers in the "average level of living" category: "I just want to make a living—have enough to eat and the necessities" and "Just a living—just food, clothing and shelter."

Twenty-one percent of the respondents were classed as being "farm production" oriented. Farmers in this category emphasized goals such as having modern farm machinery and buildings, growing high yielding crops, having high producing livestock, enlarging the farm business or a segment of it, or building soil fertility. Some of the farmers in this category may have had more ultimate goals in mind, thus making these items intermediate goals or means to the more ultimate goals; if so, however, they did not verbalize the more ultimate goals.

Sixteen percent of the farmers were classed as being "success or prestige" oriented. Some farmers in this category said specifically that they wanted to be a success or to have a successful farm operation. Others expressed this thought in terms of having a large, well organized, well managed and/or profitable farming operation. Some farmers in this category appeared to want to feel in their own minds that they were doing a good job or were successful. Others appeared to want to be recognized by their neighbors and others as being successful farmers. No doubt some had both motivations.

Five percent of the respondents were put in the category of "farming as a way of life." These farmers gave responses such as "like farming," "like to see things grow," "like to work outside," and "want to demonstrate to children that farming is a good way of life." Many of the responses implied a belief in agricultural fundamentalism.

Within each of the five experimental areas, the farm goal orientations which occurred most frequently were as follows: Newton—"farm production" and "security;" Tri-Township—"farm production;" Denmark—"high level of living;" Almont—"success" and "security;" Odessa—"security." The differences in goal orientations among areas probably reflect the influences of community and social group pres-

sures, and the circumstances or opportunities open to the respondents by virtue of differences in agricultural resources and incomes, as well as the values of the farmers in the samples.

Length of run in farm goal formulation

Table 2 shows the percentages of farmers in each sample who emphasized short-run goals in their farm goal formulations, the percentages who emphasized long-run goals, and the percentages who gave about equal emphasis to long-run and short-run goals.

TABLE 2—Farmers' emphasis on short-run and long-run farming goals: experimental samples

Emphasis on short-run or long-run goals	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers classified in each category					
No goals verbalized	—	5	—	7	—	2
Emphasis on short-run goals	50	56	53	32	28	42
Emphasis on long-run goals	12	6	6	18	11	11
About equal emphasis on short-run and long-run goals	38	33	41	43	61	45
Total	100	100	100	100	100	100

There was a strong tendency for respondents to emphasize short-run goals. It is possible, of course, that farmers who emphasized only short-run goals may have had longer-run goals in mind which they did not verbalize.

In the total experimental sample, 42 percent emphasized short-run goals and 45 percent put about equal emphasis on long-run and short-run goals. Very few farmers in any sample emphasized long-run goals exclusively. Odessa and Almont farmers more often emphasized long-run goals than farmers in the other samples.

Almost no farmers in any of the samples verbalized short-run goals that appeared to be integrated with their long-run goals. Of those who emphasized both long-run and short-run goals, only a few expressed short-run goals that could be considered means of attaining the longer-run goals which they listed.

Clearness of farm goal formulation

Each respondent was given a rating on the clearness with which he verbalized farming goals in response to the open-ended question. While clarity in goal formulation may be viewed as a continuum, respondents were classified into three discrete groups for analytical purposes. The percentages classified into each of the three categories are given in Table 3.

TABLE 3—Clearness of farmers' farming goal formulations: experimental samples

Clearness of farming goal formulations	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers classified in each category					
Goals clearly verbalized.....	17	22	26	14	14	19
Goals fairly clearly verbalized..	46	33	41	54	64	49
Goals not clearly verbalized....	37	45	33	32	22	32
Total.....	100	100	100	100	100	100

Respondents in the first category expressed a set of farming goals clearly and specifically without the use of probe questions by the interviewers. Farmers in the third category could verbalize no farming goals at all, or at best mentioned only a vague or general farming goal.

Only 19 percent of the farmers in the total sample were classed as having clearly verbalized farming goals. Forty-nine percent were rated as having their farming goals fairly clearly verbalized and 32 percent as having goals not clearly verbalized.

The inability of some farmers to verbalize farming goals clearly may be due to any one of several reasons. First, some respondents may have had goals that were well thought out, but had difficulty in expressing them to the interviewer. Secondly, there was evidence that some respondents did not verbalize clearly formulated goals because their goals were in transition or in a state of flux. This particularly was true of farmers who were struggling with the decision as to whether to stay in or get out of farming. Finally, however, some farmers had apparently never formulated farming goals in their minds. A number specifically told the interviewers that they really had never thought about their goals.

Family Goals

Direct questioning regarding family goals

Following the questioning regarding farming goals, farmers were asked an open-ended question to obtain information on their goals as the head of a family.

Altogether, 19 different family goals were mentioned by the respondents. The eight family goals expressed most frequently are given in Appendix Table 15. "Having a comfortable home or having modern conveniences in the home" was the family goal mentioned most frequently. "Providing children with a good education," "having peace and harmony in the home" and "having a good living" ranked close to "having a comfortable home" in terms of the frequency with which they were emphasized as family goals.

Verbal rankings of family goals

Farmers were asked to check and rank family goals from a list of eight in a manner parallel to the procedure used in obtaining information on farming goals. The percentages of respondents ranking each of the eight family goals first are presented in Appendix Table 16.

"Providing children with a good education" was ranked first by nearly half the farmers in the total sample. "Building security for later years" and "helping the family win and hold respect of people in the community" were second and third in the frequency in which they were ranked first.

The interviewers reported that a number of respondents had considerably more difficulty in ranking the family goal items than they did in ranking the farming goal items. This may have been due partly to the respondents' having their family goals less clearly thought out in some cases. Some of the difficulty may have been due to deficiencies in the family goal items included on the card. The list did not, in the final analysis, include a very satisfactory item for a good living. The item "having modern conveniences in the home" may have been too simple for some respondents and the item "moving up to more gracious living" may have been too pretentious for others. There was no place on the card for farmers to rate goals relating to religious aspirations, family relationships, or happiness.

Family goal orientations

Five family goal orientation categories were developed in a manner similar to the formulation of the farming goal orientations. The percentages of respondents who were classified into the different orientation categories are shown in Table 4.

TABLE 4—Farmers' dominant family goal orientations: experimental samples

Family goal orientation	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers classified in each orientation					
No goals verbalized	—	—	9	7	11	6
Family or children	42	44	44	36	42	42
A comfortable living	42	50	35	29	44	39
Ultimate happiness or salvation	4	6	3	28	3	9
Security, social status or other	12	—	9	—	—	4
Total	100	100	100	100	100	100

Forty-two percent of the farmers were classed as "family or children" oriented. Some respondents in this category emphasized broader family goals such as peace and harmony in the family, having a happy home life, and having the family enjoy working, playing or being together. Many in this category emphasized goals specifically related to children such as bringing up a good family, providing the children with a good education, helping the children become successful, and being able to leave something for the children. The emphasis on education for the children was a dominant theme in many of the responses from farmers classified into this category.

Thirty-nine percent of the respondents were classed in the "comfortable living" category. Whereas different levels of living toward which respondents were striving could be differentiated in the responses to the questions on farming goals, responses to the family goal questions did not lend themselves to such differentiation. Respondents in this category emphasized having a comfortable home, having specific conveniences or furnishings in the home, having recreation and travel, etc.

Nine percent of the sample were placed in the category "ultimate happiness or salvation." Some respondents in this category empha-

sized happiness on earth, stressing such things as living "the good life," living a full life, and attaining happiness for themselves and their families. Other respondents in this category emphasized getting to heaven and attaining peace or salvation in the life hereafter. Stressing the goal of wanting to be active in church activities was not sufficient to classify a respondent in this category. Other respondents may have had goals similar to those in this category, but did not express them to the interviewers.

The fourth family goal orientation category related to security. Relatively few respondents emphasized security seeking goals in response to the family goal questions; those who were security oriented stressed this goal in response to the questions on farming goals.

The fifth goal orientation was social status. Very few respondents mentioned social status items in response to the open-ended question, and only a few ranked social status items high on the verbal rankings. It is probable that some farmers were reluctant to express goals related to social status to the interviewers.

In Table 4, the "security" and the "social status" oriented respondents are included in the last item along with a scattering of respondents who could not be classed into any of the five categories.

Clearness of family goal formulation

Respondents were rated on the clearness with which they verbalized their family goals, and the percentages classified into each of three categories are shown in Table 5.

Only 14 percent of the respondents were classed as having family goals which were clearly verbalized. The majority of the respondents

TABLE 5—Clearness of farmers' family goal formulations: experimental samples

Clearness of family goal formulations	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers classified in each category					
Goals clearly verbalized.....	29	11	15	14	3	14
Goals fairly clearly verbalized..	58	50	56	57	64	58
Goals not clearly verbalized....	13	39	29	29	33	28
Total.....	100	100	100	100	100	100

were classified into the category of having family goals fairly clearly verbalized, with sizeable percentages having goals not clearly verbalized.

Relationships Among Goal Items

Consistency between goal orientation categories and verbal rankings of goals

There was a statistically significant relationship between the respondents' dominant farm goal orientation category and the farm goal they ranked first on the verbal rankings. This is only a rough measure of consistency because some of the goal orientation categories had no counterpart, or only an approximate counterpart, on the cards used in the verbal rankings.

However, 84 percent of the respondents in the "security" farm goal orientation category rated "having own farm free of debt" first on the verbal rankings. Fifty-three percent of those in the "success or prestige" category rated "highest possible income" first—and others in this category gave high rankings to items that were consistent with the category.

The relationship between dominant family goal orientation and family goal ranked first was not statistically significant. This was due to at least two factors. First, the open-ended question uncovered several important family goals which were not included on the card used in the verbal rankings. Secondly, more respondents had difficulty in making meaningful rankings of the family goals than had difficulty in ranking the farming goals.

Farm goal orientation as related to emphasis on long-run or short-run goals

Farmers in dominant farm goal orientation categories "average level of living" and "farm production" tended to emphasize short-run goals. Those in the "security," "success or prestige," and the "farming as a way of life" categories most frequently gave about equal emphasis to long-run and short-run goals. Some farmers in the "high level of living" category emphasized short-run goals, some emphasized long-run goals, and some gave about equal emphasis to both.

Farm goal orientation as related to clearness of goal formulation

There was a significant relationship between farm goal orientation and clearness with which farm goals were formulated. Farmers in

the "success or prestige" category had their farming goals most clearly formulated. Farmers in the "security" and "high level of living" categories were intermediate, and farmers in the "farm production," "average level of living," and "farming as a way of life" categories more often had goals not clearly formulated.

Emphasis on long-run or short-run goals as related to clearness of farm goal formulation

There was a strong relationship between length of run and clearness of farm goal formulation. Farmers who emphasized short-run goals generally expressed less clearly formulated goals, and those who gave about equal emphasis to short-run and long-run goals most often verbalized clearly formulated goals.

Family goal orientation as related to clearness of family goal formulation

Respondents who were "family or children" oriented tended to have their family goals most clearly formulated, those in the "living" category tended to have their goals least clearly formulated, and those in the "happiness" category were in an intermediate position.

Clearness of farm goal formulation as related to clearness of family goal orientation

While there were some farmers who had farming goals clearly verbalized and family goals not (and vice versa), there was a strong tendency for those having clearly verbalized farming goals to also have clearly verbalized family goals.

Relationships Between Goals and Other Variables

Factors related to farm goal orientations

The relationship between farm goal orientation and size of farm business as measured by total farm capital investment was significant. Farmers in the "security" and the "average living" orientations tended to be in the low capital investment group; those in the "high level of living," "farm production," and "farming as a way of life" orientations tended to be in the medium capital group; and the "success or prestige" oriented farmers were concentrated in the high investment group.

Respondents with the "success or prestige" farm goal orientation tended to be high participators in formal organizations, those with the "high level of living" and the "farm production" orientations tended to scatter through the various participation levels, and those in the "security" and "average living" categories tended to be low participators.

Factors related to emphasis on long-run or short-run in farm goals

The higher the level of formal education the farm operator had attained, the greater the tendency to emphasize long-run farm goals.

Emphasis on short-run goals tended to increase as the amount of operator's work off farm increased.

Factors related to clearness of farm goal formulation

There was a significant relationship between clearness of farm goal formulation and net farm earnings. There was a very strong tendency for those with clearly formulated goals to be in the highest earnings group, and a fairly strong tendency for those in category with goals not clearly formulated to be in the lower income groups.

Factors related to family goal orientations

There was a significant relationship between family goal orientation and the level of education attained by the farm operator. Farmers who were in the "family or children" orientation category concentrated in the group that attended or graduated from high school. Those in the "living" orientation were about equally divided between the group that had eight years of formal education or less, and the group that attended or graduated from high school. Those in the "ultimate happiness" category generally had at least high school, and many of them had attended or graduated from college.

Stage in the family cycle was associated with family goal orientation. Those in the pre-child or pre-school stages generally concentrated in the "living" category—those in the earlier stages in the family cycle apparently were concentrating on obtaining conveniences and furnishings for the home. Farmers in the school stage in the family cycle were more often "family or children" oriented as would be expected, although a sizeable proportion were also "living" oriented. Those in later stages in the family cycle again concentrated in the

"living" orientation, with 40 percent of the "ultimate happiness" group falling in this family stage.

The relationship between the number of children at home and family goal orientation was significant. The larger the number of children in the family, the greater the tendency for the operator to be classed in the "family or children" category.

Factors related to clearness of family goal formulation

There was a significant relationship between formal education of the farm operator and clearness of family goal orientation. Those with more formal education tended to have more clearly formulated family goals than those with less formal education.

There was a definite tendency for farmers with clearly formulated family goals to be in the higher net farm earnings groups.

ATTITUDES

An attitude can be defined as "an enduring organization of motivational, emotional, perceptual, and cognitive processes with respect to some aspect of the individual's world."[6] An individual's attitudes affect the way in which he responds to objects and situations. While the concepts "value" and "attitude" are sometimes used interchangeably, particularly by social psychologists, we follow Straus in referring to an attitude as a lower order concept than value, and one which relates to a more specific and more immediate response predisposition.[7] Attitudes, like goals, are influenced partly by the individual's value system, partly by his experiences.

Data were obtained and are reported below on experimental farmers' attitudes toward farming, toward the role of science in agriculture and toward the use of credit.[8] The attitudinal data will be used in testing hypotheses regarding the relationships between farmers' attitudes and their responses to the experimental program. As in the case of the goal information, attitudinal data were obtained on the terminal survey.

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[6]David Creech and Richard S. Crutchfield (1948). *Theory and Problems of Social Psychology*, McGraw-Hill Book Company, Inc., New York, p. 152.

[7]Straus, Murray A. 1959, A technique for measuring value in rural life, Wash. Agr. Expt. Sta. Tech. Bul. 29, p. 2.

[8]Farmers' attitudes toward their communities are included in Description of Areas in the Appendix. Detailed information on farmers' attitudes toward the township program, and some information on their attitudes toward the Extension Service in general, were presented in Technical Bulletin 284.

Attitudes Toward Farming

Farmers were asked a direct question regarding how they felt about farming as an occupation as compared to other occupations. The percentages of farmers expressing various degrees of satisfaction with farming are shown in Table 6.

TABLE 6—Farmers' attitudes toward farming as an occupation: experimental samples

Degree of satifaction expressed with farming	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers expressing each degree of satisfaction with farming					
Very well satisfied	38	65	36	44	45	44
Fairly well satisfied	50	20	42	37	44	40
Neither satisfied nor dissatisfied	—	5	11	8	8	7
Not very well or not at all satisfied	12	10	11	11	3	9
Total	100	100	100	100	100	100

Forty-four percent of the total sample said they were very well satisfied with farming; 40 percent said they were fairly well satisfied. Nine percent of the respondents indicated they were either not very well or not at all satisfied with farming.

High percentages of farmers in all samples mentioned one or more things they liked about farming. The positive aspect of farming that respondents mentioned most often was that they enjoyed farming, that it was a happier way of life, or that it was interesting work.

Other things farmers said they liked about farming were: (1) that they could make a fair or good income or that farming was an easier way to make a living than some other occupations, (2) that in farming they had steady employment and security, (3) that in farming they were their own boss, and (4) that they liked to live in the country, liked to live on a farm, or that the county was a good place to raise a family.

Respondents also mentioned a number of things they disliked about farming. Even among those who rated themselves as very

well or fairly well satisfied with farming, 50 percent went on to mention one or more aspects of farming that they did not like.

The aspect of farming that respondents liked least was that incomes were low, expenses high, or that farm prices were out of line with the prices that farmers had to pay. A number of farmers stressed that they liked farming and farm work very much, but said they were dissatisfied with the income and living derived from farming. Some were philosophic about the income situation such as this one: "I like farming very much. There isn't much in it, but I like it. You've always got something to eat, anyway." Many others were disturbed and some even bitter about the income possibilities in farming, and for example, commented as follows: "I think it's disgusting to farm a 160-acre farm and still have to work in a shop in order to make out," and "It's a good thing to do if you want to die poor."

Other things farmers disliked about farming were (1) the large capital investment required, (2) that the work was hard and the hours long, (3) that farmers had little time for vacation or that farming was a confining occupation that kept a person tied down, (4) that they disliked government interference and controls.

The respondents were also asked whether they would encourage a young person, say a son, to go into farming, or whether they would encourage him to go into another occupation. This question was designed as an indirect approach to gain further insights into farmers' attitudes toward farming. The information obtained in response to this question reinforced the responses obtained from the direct question, both in terms of the advice respondents said they would give a young person and in terms of the reasons offered. There was a very strong tendency (statistically significant at the .01 level) for farmers who were well satisfied with farming to say they would encourage a young person to go into farming, and a strong tendency for those who were from indifferent to dissatisfied to say they would discourage a young person from going into farming.

Attitudes Toward the Role of Science in Agriculture

Farmers were asked an open-ended question, "As you see it, how important are research findings from the Experiment Station at MSU and other research agencies in your farming operations, and in the management of your farm business?" Most farmers tended to respond

in terms of the research of the Agricultural Experiment Station. On the basis of their response to this question, farmers were classified into the four categories shown in Table 7.

TABLE 7—Farmers' ratings of the importance of agricultural research findings in the operation and management of their farms: experimental samples

Rating of the importance of research findings	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers giving each rating					
Very important	54	40	50	34	37	43
Somewhat important	27	40	33	33	31	32
Very or somewhat important with qualifications	19	15	14	22	24	19
Not very important or not at all important	—	5	3	11	8	6
Total	100	100	100	100	100	100

Forty-three percent of the total sample gave responses that indicated they rated research as very important and 32 percent that they rated research as somewhat important. Nineteen percent rated research very or somewhat important, but added significant qualifications. Six percent rated research as not very or not at all important.

Farmers who indicated that research findings were very important or somewhat important to them most often mentioned the following reasons for doing so: (1) research leads to higher crop yields, (2) research leads to higher rates of production on livestock, (3) information on soils and fertilizer recommendations is useful, and (4) research provides guidance on the best way to farm. Other reasons farmers reported were (1) information on livestock breeding, feeding and management is useful, (2) the research is necessary because individual farmers cannot do their own research, (3) information on insect and disease control is useful, and (4) research leads to higher farm incomes.

Farmers who rated research findings very or somewhat important, but added qualifications, most frequently pointed out that some or many of the research findings did not apply to their operations. Some elaborated this qualification by pointing out that they had to do a great deal of study and use considerable judgment of their own in deciding what research findings they could use on their farm (which

is not necessarily unreasonable to expect). A number of the respondents emphasized that some recommendations based on the research were too expensive to follow. Others emphasized the belief that research findings would be more useful if they could be gotten out to farmers quicker.

Farmers who indicated that research findings were not very important or not at all important most often said that they couldn't follow the research because they didn't have the money or that a farmer would lose money if he used the research findings. A number of farmers who rated research low said that the findings were not adequately tested; about an equal number said that the Experiment Station was behind the times or too slow in getting findings out to farmers. Others found it confusing that new findings resulted in such frequent changes in recommendations in some areas of agricultural production.

In response to a structured question, 59 percent of the farmers in the total sample said that more research should be done in the future as compared to the present, 34 percent said about the same amount should be done, and 7 percent said they did not know.

In response to both of the questions on attitudes toward the role of science in agriculture, many farmers, including some who expressed very favorable as well as some who expressed unfavorable attitudes toward research, expressed concern over spending money for agricultural research while farm surpluses were piling up. Some argued strongly that more research should be done on marketing, utilization and new uses for agricultural products.

Attitudes Toward the Use of Credit

To obtain information on attitudes toward the use of credit, farmers were asked a set of four hypothetical questions. The four questions related to farmers' attitudes toward borrowing money to buy land, fertilizer, livestock, and farm machinery. In each case the farmer was asked to imagine himself in a position in which he needed more of the item in question, that it would be profitable to purchase more, and that insufficient funds were available to make the purchase. In the case of land, livestock, and machinery, the respondent was then asked whether under the circumstances he would prefer to borrow in order to purchase the item, or whether he would prefer to wait until he had saved enough to pay cash for it. In the case of fertilizer,

the respondent was asked whether he would prefer to borrow in order to get all of the fertilizer he thought he needed, or whether he would prefer to buy only as much as available cash would permit.

Most farmers were willing to respond to the questions in the form in which they were asked. Some who had large amounts of capital available found it difficult to respond because they apparently had never faced the necessity of borrowing and could not imagine themselves in this circumstance. Others found it difficult to abstract from certain other realities of their current situation. For example, some responded by saying that they didn't *need* any more machinery, etc. On being asked again to put themselves in a position where purchasing more of the item in question would be profitable, most farmers appeared to give meaningful responses.

The percentages of farmers in each sample who said they would borrow for each item without reservation, and the percentages who said they would borrow under certain conditions are shown in Table 8.

TABLE 8—Farmers' attitudes toward the use of credit for specified purposes: experimental samples

Willingness to use credit to buy specified items	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers who would use credit with or without reservations for each purpose					
Land:						
Would borrow without reservation	69	80	86	59	68	73
Would borrow under certain conditions	4	5	6	4	10	6
Fertilizer:						
Would borrow without reservation	81	75	92	77	69	79
Would borrow under certain conditions	—	5	3	8	13	6
Livestock:						
Would borrow without reservation	77	75	79	81	71	76
Would borrow under certain conditions	—	5	—	—	—	1
Machinery:						
Would borrow without reservation	77	60	78	66	89	76
Would borrow under certain conditions	8	20	8	15	—	9

For each individual item under consideration, about three-fourths of the respondents in the total sample indicated they would borrow without reservation in order to obtain the item. A number of respondents supported their responses with comments such as, "If you wait until you've got the cash to pay for it, you'll never get it," and "I don't believe you can get along without credit in your farming operations today."

Small percentages of farmers said they would borrow only under certain conditions. Those who attached reservations to their willingness to borrow most often mentioned the following qualifications: (1) they preferred to borrow, but it depended upon the rest of their debt load, (2) they preferred to borrow, but it depended on how profitable the buy was, (3) in the case of land, they would be willing to take on a mortgage on new land to be purchased, but would not encumber the present property, (4) in the case of fertilizer, they would borrow but would use less than if they had the cash to pay for it, (5) the amount they would borrow depended upon the weather and crop and price outlook, and (6) they would borrow if the amount were small.

For each item considered, about a fifth of the respondents said they would not borrow under any circumstances. A number elaborated on their attitudes with comments such as, "I don't owe anyone anything and I'll never go in debt," and "I have been taught *not* to go into debt. I should have been taught *how* to go into debt."

Some farmers expressed a willingness to use credit for certain purposes but not for others. A number explained their position in comments such as, "Mortgage debts and other credit such as installment buying are vastly different. Mortgage debt is bad because you can lose your place. Other debt is not bad but in fact, may be desirable," and "I would borrow for livestock but not for machinery. Livestock can reproduce and so you gain. Machinery depreciates and so you lose."

Farmers' responses to the questions indicated that, where profitable investment opportunities existed, farmers' attitudes toward the use of credit could be a moderate to serious obstacle to nearly half of the sample farmers in preventing them from using as much credit as would be profitable. These attitudes might be a particularly crucial factor in explaining farmers' responses to an intensive extension program such as the township experiment.

Relationships Between Attitudes and Other Variables

Factors related to attitudes toward farming

There was significant tendency for farmers who were well satisfied with farming to put about equal emphasis on long-run and short-run farm goals, whereas those who were dissatisfied with farming generally expressed only short-run farm goals.

Farmers who reported little or no work off the farm were generally better satisfied with farming as an occupation than those who held a part-time nonfarm job.

Farmers who were well satisfied with farming as an occupation were heavily concentrated in the group who were highest extension participators.

Factors related to attitudes toward the role of science in agriculture

High extension participation was closely associated with favorable attitudes toward the role of science in agriculture.

Favorable attitudes toward the role of science in agriculture were significantly related to high participation in formal organizations.

There was a significant relationship between the importance farmers attached to research findings and their attitudes toward the use of credit.

Factors related to attitudes toward the use of credit

Farmers who were "success or prestige" oriented generally had most favorable attitudes toward the use of credit and those who were "security" oriented had least favorable attitudes toward the use of credit; those in the "average living" category had considerable reservation with respect to borrowing; and those in other categories occupied intermediate positions in regard to their attitude toward credit.

Farmers in the earlier and later stages in the family cycle indicated a greater willingness to use credit than farmers in intermediate stages.

Favorable attitudes toward the use of credit were associated with high participation in formal organizations.

Farmers who were higher extension participators generally had more favorable attitudes toward the use of credit than lower extension participators.

CHANGES IN PARTICIPATION IN FORMAL ORGANIZATIONS

Through participation in formal organizations, farmers may obtain information or technical help which is useful in organizing and operating their farms; this is especially true of participation in farm organizations. Within limits, participation in formal organizatons may be considered a desirable end in itself.

Data were obtained from farm operators in all experimental and control samples on their participation in formal organizations in the benchmark and terminal years. Analysis of the data revealed that membership in farm and other formal organizations and the levels of participation as measured by participation indexes were essentially the same in the experimental as in the control samples in the benchmark year. The township program had no appreciable impact on farmers' participation in formal organizations; there were no significant changes in formal participation during the experimental period in either the experimental or the control samples.

The findings in regard to the relationships between formal participation and other variables were essentially the same as found in previous studies of farmers' formal participation.

FARMERS' APPRAISALS OF CHANGES IN THEIR MANAGERIAL ABILITY

Even though improving the managerial processes used by farmers was not one of the primary objectives of the township experiment, insights were sought on the extent to which the program had an impact on managerial behavior. These insights were sought for two reasons: (1) improvements in managerial ability could be a factor which would help explain the extent to which the primary objectives of the program were met and (2) improvements in managerial ability could be considered a desirable, even though indirect, outcome of the experiment.

On the terminal survey, farmers in the experimental and control samples were asked to appraise their ability to manage a farm as compared to five years previous. Managerial ability relates to the effectiveness with which a manager carries out the eight processes or functions of management: (1) formulation of goals, (2) recognition and definition of problems, (3) obtaining information, (4) specification and analysis of alternatives, (5) making decisions, (6) taking action,

(7) bearing responsibility, and (8) evaluating the outcome.[9] However, on the survey, farmers were asked a set of questions about their managerial ability in general, with emphasis on the functions leading up to and including decision-making. In considering the responses to these questions, both memory bias and difficulties involved in making individual appraisals of such a diffuse variable must be taken into account.

Sixty-four percent of the experimental farmers and 53 percent of the control farmers said they felt their ability was either "much better" or "somewhat better" at the end of the experiment as compared to the beginning (see the first line in Table 9).

Twenty-seven percent and 37 percent of the farmers in the total experimental and total control samples, respectively, said they thought their ability was about the same. A number of farmers in both experimental and control samples pointed out that the greater complexity of farming had partially or completely eclipsed their improvement in managerial ability.

Seven percent of the farmers in the total experimental and in the total control sample said they thought their ability had declined; these farmers generally attributed the decline to increased age or poorer health.

Farmers who reported that their managerial ability was "much better" or "somewhat better" were asked in what ways their ability had improved. Responses are summarized in Table 9.

Twenty-five percent of the experimental farmers and 31 percent of the control farmers reported a general feeling that their managerial ability had improved, but could verbalize no specific way in which it had improved.

Twenty-five percent of the farmers in the total experimental sample and 31 percent in the total control sample said they could manage better because they had more or better information to use in making decisions. This response does not necessarily imply improved ability to carry out any managerial process, including the information gathering process. For managers who have the ability to make effective use of information more and better information probably leads to better decisions.

Fourteen percent of the experimental farmers and 8 percent of the control farmers reported that they had developed improved

[9]See Nielson, James, December 1961. "Improved managerial processes for farmers," *Journal of Farm Economics.*

TABLE 9—Ways in which farmers reported their managerial ability had improved: experimental and control samples

	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farmers reporting various ways in which ability had improved											
Reported improved ability	61	51	50	61	53	40	80	50	71	64	64	53
Ways in which ability had improved:												
Reported general feeling ability had improved	26	26	22	35	18	27	31	25	30	42	25	31
Have more information to use in making decisions	13	15	17	17	36	19	27	14	25	12	25	16
Developed improved ability to gather and analyze information, make decisions, etc	21	15	11	4	3	3	19	11	16	9	14	8
Have more confidence in myself, in my decisions	9	—	11	4	12	3	19	3	8	9	12	4

ability to carry out managerial processes such as gathering and analyzing information, making decisions, etc. Some of the farmers giving this type of response went on to point out that this improved ability made it possible for them to more effectively evaluate new information or ideas to see which fit their farm, or that they could more effectively plan the basic organization of a farm business.

Twelve percent of the experimental farmers and 4 percent of the control farmers said they had more confidence in themselves or in their decisions, or that they were more decisive in their decision making.

The extension programs conducted by the township agents could be expected to contribute to improvement in farmers' managerial ability. While none of the township agents made direct attempts to teach farmers improved managerial processes as such, some farmers no doubt gained insights on improved processes through the farm analysis and planning work emphasized by several of the township agents.

The Almont, Odessa and Newton agents made some use of group farm and home planning procedures early in the experimental period. The Newton and Odessa agents particularly, and the Denmark agent to a lesser extent, spent considerable time helping individual farmers with complete farm analysis and planning after the second year of the program. The farm analysis and planning work was conducted partly to lead farmers to make changes in the organization and management of their farms, partly to give farmers insight into procedures which they could use in planning their own farming operations. While the Almont agent did relatively little farm analysis and planning work as such, he reported that he frequently took the whole farm organization into account in making suggestions to farmers, and presented alternatives wherever possible. The Tri-Township agent did little work on farm analysis and planning.

All of the township agents established close personal relationships with a number of farmers in their townships. In some cases the frequent contact and close personal relationships between agent and farmer resulted in farmers learning how to become better managers. In other cases, the opposite outcome appears to have resulted. Some farmers became increasingly dependent on the agents, and hesitated to make even small decisions connected with their farm business (and in some cases their family business) without consulting the agents. This phenomenon was reported by both agents and farmers. On the

terminal survey, some farmers said that the township agent had given them so much detailed specific advice and followed them so closely that they came to depend on the agent to tell them what to do. A few said specifically that their power to take information and make decisions for themselves had decreased as a result of the township program. By quite a wide margin, this kind of response was received most often in the Newton area.

The extent to which farmers became dependent on the agent depended to a large extent on the approach used by the agent. Where the agent conceived his role as one of getting changes made on farms and pursued this objective aggressively, more farmers were apt to become highly dependent on the agent. The higher the frequency of farmer-agent contact, the greater the likelihood of the farmer becoming dependent on the agent. However, the personality and initiative of the farmer appears also to be a crucial factor. For example, the Odessa township agent generally followed the approach of presenting information and analyses without making strong individual recommendations to farmers. The result was that the more progressive farmers were pleased with the program. Some of the less progressive, on the other hand, expressed disappointment and indicated that the program would have been more useful to them if the agent had made more definite recommendations.

Considering all evidence, it appears that the township program made a moderate contribution to the net improvement in farmers' managerial ability. The extent to which the program contributed to this improved ability depended largely upon the approach used by the individual agents in working with farmers and particularly on their emphasis on farm analysis and planning. The self appraisals summarized in Table 9 probably understate the differential improvement between experimental and control farmers.

To the extent that farmers in the experimental areas learned improved processes, the improved ability would be an asset to them as long as they remained in farming and could be used to some extent in occupations outside farming.

GOAL ACHIEVEMENT

Insights were sought on farmers' progress in goal achievement and on the impact of the township program on farmers' abilities to attain their goals.

Bringing about higher levels of living, which is an important form of goal achievement for most farm families, was one of the primary objectives of the experiment. All of the township agents conducted extension programs which emphasized building up more productive farm units that would produce higher net earnings. Increasing farm earnings was the program objective stressed most by the township agents (and is also a form of goal achievement for some farm families). The township agents expressed the belief that if their programs resulted in higher farm earnings, the earnings could be used by the farm families to obtain items which would contribute to higher levels of living. It may be noted, however, that the township agents did not consider it their role to assist farm families in allocating their income between production and consumption, nor to assist the families in planning their consumption expenditures so as to make best use of the income which was allocated to the home and family living.

Information was obtained and is presented on changes in farm and nonfarm earnings, changes in some level of living indicators, farmers' conceptions of their own progress in attaining their goals, and obstacles to goal achievement that they perceived. Farmers' goal achievement in the form of progress in building up their farming units, adopting improved farm practices, increasing yields and rates of production, increasing net worth and related information were reported in Technical Bulletin 274.

Farm and Nonfarm Earnings

Measures of farm and nonfarm earnings for each experimental and control sample for 1953, 1958, and the change from 1953 to 1958 are shown in Table 10.

Net farm earnings for the total experimental sample increased an average of $1,646 from 1953 to 1958 as compared to an increase of $938 for the total control sample — a differential of $708 in favor of the experimental group. The largest differential increase in net farm earnings between the experimental and control samples was in Newton township where the association approach was used, with the second largest differential in Denmark. The Tri-Township experimental farmers had only slightly greater increases in farm earnings than the control farmers. In the case of Almont, control farmers showed greater increases in farm earnings than the experimental farmers, partly because of some over-matching of control with experimental farmers.

TABLE 10—Farm and nonfarm earnings, 1953 and 1958: experimental and control samples

	Newton			Tri-Township			Denmark			Almont			Odessa			Total		
	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change
	Average per farm																	
Net farm income:(*a*)																		
Experimental samples ..	$2,253	$4,963	+$2,710	$2,468	$2,857	+$389	$6,486	$7,466	+$980	$4,438	$5,420	+$ 982	$3,490	$6,030	+$2,540	$4,044	$5,701	+$1,657
Control samples.....	2,930	3,606	+676	990	1,317	+327	6,443	6,290	−153	3,623	5,875	+2,252	2,435	4,793	+2,358	3,434	4,585	+1,151
Value of farm products used at home:(*b*)																		
Experimental samples..	485	213	−272	577	576	−1	258	182	−76	488	430	−58	467	640	+173	437	426	−11
Control samples.....	565	367	−198	869	403	−466	363	183	−180	504	381	−123	516	431	−85	561	348	−213
NET FARM EARNINGS:(*c*)																		
Experimental samples..	2,738	5,176	+2,438	3,045	3,433	+388	6,744	7,648	+904	4,926	5,850	+924	3,957	6,670	+2,713	4,481	6,127	+1,646
Control samples.....	3,495	3,973	+478	1,859	1,720	−139	6,806	6,473	−333	4,127	6,256	+2,129	2,951	5,224	+2,273	3,995	4,933	+938
Total nonfarm receipts:(*d*)																		
Experimental samples..	1,624	2,853	+1,229	562	1,396	+834	688	1,465	+777	486	1,025	+539	611	1,240	+629	778	1,558	+780
Control samples.....	1,128	3,293	+2,165	944	1,303	+359	681	2,027	+1,346	584	1,348	+764	618	1,130	+512	765	1,771	+1,006
TOTAL FARM AND NONFARM EARNINGS:(*e*)																		
Experimental samples..	4,362	8,029	+3,667	3,607	4,829	+1,229	7,432	9,113	+1,681	5,412	6,875	+1,463	4,568	7,910	+3,342	5,259	7,685	+2,426
Control samples.....	4,623	7,266	+2,643	2,803	3,023	220	7,487	8,500	+1,013	4,711	7,604	+2,893	3,569	6,534	+2,785	4,760	6,704	+1,944

(*a*) Gross farm income minus cash operating expenses and depreciation.
(*b*) Priced at an "on-the-farm" basis.
(*c*) Net farm income plus value of farm products used at home.
(*d*) Income from work off the farm, interest, nonfarm dividends, rents, royalties, nonfarm business, social security, pensions, etc.
(*e*) Net farm earnings plus total nonfarm receipts.

The $708 average differential increase in favor of the experimental farmers is statistically significant at the .10 level and appears to be attributable to the experiment. Further, the research indicates that the full impact of the township program on farm earnings had not been felt by the end of the experimental period.[10]

On the average, control farmers showed a little over $200 more increase in nonfarm receipts than the experimental farmers. About 85 percent of the nonfarm receipts came from work off the farm.

Total farm and nonfarm earnings increased about $500 more for the total experimental sample as compared to the total control sample.

Level of Living Indicators

Material possessions

Information was obtained from families in all experimental and control samples on their possession of 12 items in the benchmark and terminal years. Items were selected which would contribute to a better living on the farm, and on which definite information could be readily obtained from farmers. The items were (1) automobile 3 years old or newer, (2) telephone, (3) central heating system, (4) piped hot water, (5) bathroom with bathtub or shower and flush toilet, (6) automatic washer, (7) clothes dryer, (8) electric dishwasher, (9) vacuum cleaner, (10) television set, (11) high fidelity phonograph, and (12) piano.

While information was obtained on some of the major items commonly included in level of living indexes, data were not obtained on expenditures for such important living items as health care, recreation, vacations, and certain cultural items. Hence, computation of an overall level of living index did not seem justified.[11] However, a material possessions score was computed for each family for the benchmark and for the terminal year. In computing the score, one point was counted for each of the 12 items possessed by the family. Average material possessions scores for each sample are given in Table 11.

There were wide differentials among samples in the percentages of families possessing individual items in the benchmark year, with the percentages generally lowest in Tri-Township experimental and control samples. There were sharp increases from 1953 to 1958 in

[10]See Technical Bulletin 274 for changes in the farm business which resulted in the increases in farm earnings, and for evidence supporting these conclusions.

[11]Also, while the frame of reference implies (as in the case of all level of living indexes) that it is desirable for every family to possess the items in question, this is not necessarily so because of family circumstances and individual tastes and preferences.

TABLE 11—Average material possessions scores and average newspaper-magazine scores, 1953 and 1958: experimental and control samples

	Newton			Tri-Township			Denmark			Almont			Odessa			Total		
	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change	1953	1958	Change
Average material possessions scores:																		
Experimental samples....	7.13	8.65	+1.52	4.50	6.17	+1.67	6.79	8.53	+1.74	6.35	7.85	+1.50	6.03	8.09	+2.06	6.27	7.99	+1.72
Control samples.....	6.70	8.52	+1.82	3.44	5.16	+1.72	5.97	7.62	+1.65	6.48	7.68	+1.20	6.32	7.89	+1.57	5.88	7.47	+1.59
Average newspaper-magazine scores:																		
Experimental samples.....	3.62	4.04	+.42	3.50	3.75	+.25	3.42	3.75	+.33	3.89	4.44	+.55	2.92	3.39	+.47	3.42	3.84	+.42
Control samples.....	3.89	4.19	+.30	2.68	2.86	+.18	3.51	3.73	+.22	3.43	3.92	+.49	3.32	3.44	+.12	3.37	3.64	+.27

possession of television sets in all samples with particularly spectacular increases among Tri-Township experimental and control families. There were also substantial increases in all samples in the percentages of families possessing automatic washers and clothes dryers.

On the whole, experimental families made modestly more progress than control families in obtaining the material possessions considered. The average material possession score increased slightly more for the total experimental than for the total control sample. Pianos, high fidelity phonographs, and vacuum cleaners accounted for a substantial portion of the differential increase between experimental and control.

The largest differential increase between experimental and control samples occurred in Odessa. In the case of Newton, there was a larger increase in the average score in the control than in the experimental sample.

Daily newspapers and magazine subscriptions

Information was obtained for the benchmark and terminal years on whether or not the families in the samples received a daily newspaper. Respondents were also asked to name all of the magazines to which they subscribed in each of the two years. The magazines were classified into six categories as follows: (1) general farm, (2) commodity or other special interest group in agriculture, (3) news, (4) general, (5) home or ladies', and (6) other.

A simple newspaper-magazine score was computed for each family for 1953 and for 1958. One point was counted for receiving a daily newspaper and one point for each magazine category in which the family had one or more subscriptions. Average newspaper-magazine scores for each sample are shown in Table 11.

Families in the total experimental sample showed a slightly larger increase in average newspaper-magazine scores from 1953 to 1958 than families in the total control sample. The average increase was larger for every experimental sample than its matched control, with the greatest differential between the Odessa experimental and control samples. Subscriptions to "commodity or other special interest group" magazines and "other" magazines accounted for most of the differential increase between experimental and control.

The township agents carried out no activities which could be expected to result directly in increases in daily newspaper or magazine subscriptions; activities of the township agents which centered around new developments and change may have had an indirect impact.

Level of education attained by children

There was little difference between experimental and control farmers in the level of formal education attained by their children as of the terminal year of the experiment. Many of the children of families in all samples were still in grade and in high school, so the highest level which they would reach was not yet known at the end of the experiment.

Farmers' Perceptions of Their Goal Achievement

On the terminal survey, farmers in the experimental samples were asked what progress they had made in accomplishing their farming goals during the previous five years, and a similar question regarding accomplishing their family goals. The interviewers related the questions on goal achievement directly to the goals the farmers had expressed in response to the questions on goals.

Ninety-three percent of the total experimental sample reported some progress in achieving their farming goals during the experimental period. The kinds of progress in farm goal achievement reported most frequently were (1) increased production, (2) increased crop yields or rates of production on livestock, (3) reduced debt, (4) newer and/or more farm machinery, (5) increased farm income, and (6) better living.

Ninety-three percent of the farmers reported some progress in achieving their family goals during the experimental period. The kinds of progress most frequently reported were (1) providing education for children, (2) more conveniences or improvements in the home, (3) building security for later years, (4) more recreation and travel for the family, and (5) being more active in organizations and community affairs.

Obstacles to Goal Achievement

Obstacles perceived by farmers

On the terminal survey, farmers in the experimental samples were asked if there had been things that had stood in the way of their making as much progress as they would have liked in achieving their farm or family goals during the previous five years. Respondents who reported perceiving obstacles were asked what the obstacles were. Respondents were not asked to differentiate between obstacles to achievement of farming goals as opposed to home and family goals.

Sixty-three percent of the total experimental sample reported encountering one or more obstacles. Low farm prices and/or low farm incomes was the obstacle reported most frequently. In this response, farmers placed emphasis on price-cost factors which were beyond farmers' control but which they felt resulted in low farm incomes.

The obstacle reported second most frequently was the inability of the operator himself to attain farming or family goals due to poor health, old age, or lack of knowledge. This obstacle was emphasized particularly in the Tri-Township and Almont areas.

Insufficient capital or insufficient credit was an obstacle reported by a number of farmers, particularly in the Odessa and Tri-Township areas. Other obstacles reported included (1) low crop yields due to bad weather, (2) loss of livestock through disease, (3) loss of buildings or livestock by fire, (4) tenure problems, and (5) conflict with landlords or partners.

Farm-home conflicts in the use of income

One form of obstacle to goal achievement is insufficient income to make all of the expenditures desired, a problem which is common to many farm families. Since the farm family is both a producing and a consuming unit, major expenditures on the home and family living affect future farm production and income. Likewise, investments in the farm business affect current consumption.

On the terminal survey, farmers in the experimental and control samples were asked if they could recall instances during the previous five years in which they had to choose between making an expenditure for the farm and one for the home when lack of income ruled out the possibility of doing both. Farmers who said "yes" were asked to specify the farm and home items involved in the conflict, and to describe how the conflict was resolved.

Sixty percent of the total experimental sample and 43 percent of the total control sample cited one or more specific instances of farm-home conflicts in the use of income which they had encountered during the experimental period. Farmers in the experimental samples more often resolved the conflict in favor of the farm item, and farmers in the control samples more often resolved the conflicts in favor of the home expenditure.

Implications for Future Goal Achievement

Experimental farmers perceived and reported substantial progress in achieving their farm and family goals during the experimental period. Earnings data indicated that experimental farmers had made signifiicantly more progress than control farmers in increasing their net farm earnings. The level of living indicators, however, revealed that experimental farmers had made little more progress than control farmers in obtaining items which would contribute to higher levels of living.

It appears that during the experimental period, farmers in the experimental samples concentrated on building up their farming units rather than emphasize immediate consumption. This behavior is probably attributable to the township program. The township agents emphasized farm development programs which included increases in farm size, farm reorganization, and adoption of new technology. Many of these changes required investments in the farm business. The fact that more experimental than control farmers could cite instances of farm-home conflicts in the use of income may have resulted from insights into investment opportunities gained through the township program. The fact that more experimental than control families resolved conflicts in favor of the farm expenditures may be due to the emphasis on farm development in the township program. In response to the questions on progress in goal achievement, a number of farmers in the experimental samples said specifically that they had postponed expenditures for home and family items in favor of building up their farming operations.

Data in Technical Bulletin 274 indicated that, starting from about the same level in 1953, experimental farmers on the average increased their annual rate of cash outlay for productive farm investments about twice as much as the control farmers.

Experimental farmers' emphasis on investments in the farm business implies postponement in accepting opportunities to increase consumption; it is even possible that levels of living are lowered while the farm development programs are being undertaken. However, the investments in the farm business may well result in still further increases in farm earnings, and these earnings may be reflected in higher levels of living, in years following the termination of the experiment.

HOW FARMERS SEE THE FUTURE

Increased farm sizes, new technology, greater specialization and other changes in agriculture create both opportunities and problems for those who seek a satisfying living through farming. Farmers were asked a question on the terminal survey to obtain their impressions on how such changes affected their future in farming. In responding to the question, most respondents took into account their own particular circumstances as well as the changes that were taking place in agriculture in general.

While many farmers in both the experimental and the control samples expressed considerable doubts about the future, farmers in the experimental samples generally saw a brighter future in agriculture than those in the control samples.

Forty-one percent of the total experimental sample and 37 percent of the total control sample thought that their opportunities in farming were increasing. Eighteen percent of the experimental sample and 11 percent of the control thought their opportunities were about the same as in the past. Forty-one percent of the experimental sample and 52 percent of the control felt that their opportunities in farming were decreasing. Odessa and Almont experimental farmers were most optimistic about the future, and Denmark experimental and control and Tri-Township control farmers were least optimistic about the future.

Respondents who thought their opportunities in farming were increasing most often gave the following responses: (1) new methods and new types of machinery make it possible for a farmer to do more in less time, (2) a farmer must keep up-to-date and work harder, but if he does so opportunities will be greater, and (3) with fewer people in farming, the opportunities are increasing for those who remain in farming. Those who thought that opportunities in farming were decreasing most often said (1) it is becoming too difficult to get together the large operations needed to be successful, (2) there is too much government control in agriculture, and (3) land and machinery costs are too high in relation to the return.

Among the experimental farmers, those who were classified in the dominant farm goal orientations of "success or prestige" and "farming as a way of life" generally felt strongly that their opportunities in farming were increasing; those in the "security" and "high level of living" orientations were about evenly divided between feeling that

their opportunities were increasing and feeling that their opportunities were decreasing, with few in an intermediate position; those in the "farm production" category were about evenly divided between feeling that in the future their opportunities were increasing, about the same, and decreasing; and those in the "average living" category generally felt that their opportunities were decreasing.

Insights gained through the research indicated that farmers who perceived that their goals were not being fulfilled in farming reacted in any one of several ways.

Some farmers attempted to discover changes in their farming operations and determined to strive harder to attain their goals through farming. Evidence of this reaction was noted more often in the experimental than in the control areas.

Some who discovered they probably could never attain their highest priority goals in farming adjusted their goals downward and decided to make the best of it. Here is the reaction of one farmer who was typical of this group: "One of the things Mother and I wanted more than anything else was a vacation, but I don't guess we'll ever get it. We wanted a furnace, but we had to buy a baler, a new milker, and a corn-picker." Such reactions were received slightly more often from farmers in control than in the experimental areas.

Faced with unsatisfactory farm earnings, a number of farmers sought part-time jobs off the farm. This was especially true of farmers in the control samples. During the experimental period, the percentage of farmers in control samples who sought and obtained part-time jobs off the farm increased; the amount of off-farm work per farmer with a nonfarm job also increased substantially in the control samples. In the experimental samples, the percentage of farmers working off the farm decreased, while the average months for those who worked off farm increased moderately (see Appendix Table 12).

A number of farmers decided that farming held no future for them and quit farming entirely. More farmers in the experimental than in the control areas decided to quit farming during the experimental period. Following are the percentages of the farmers in the original benchmark samples (samples of approximately 40 farmers each) who quit farming during the period.

	Newton	Tri-Twp.	Denmark	Almont	Odessa	Total
Experimental samples	8	48	—	26	11	18
Control samples	18	20	—	2	5	9

In addition to those who quit farming, a number of others clearly indicated that their preference would be to get out of farming entirely, but that for one reason or another they felt trapped in farming. One reason a number of farmers felt that they had no other alternative was their age. Another reason was that some felt they did not have the training or skill for obtaining employment off the farm. Others felt trapped because of their heavy investments in farm assets which had little salvage value.[12]

A particularly poignant process through which some farmers became trapped in farming grew out of beliefs instilled in them by their parents. On the one hand some parents taught their sons that no other occupation could compare with farming as a way of life. Others instilled such a sense of obligation in their sons that the sons felt they could not leave the farm and go out on their own. They felt they had to stay and help run the farm or to "take care of the folks." Some of these sons then wake up to find themselves in their 50's, with too few assets to really make a go of it in farming, not having wanted to farm in the first place, with no skills other than farming, and no financing to learn a new skill — even if it were feasible to do so at their age.

What impact did the township program have on farmers' feelings and actions in respect to farming as an occupation? While the issue was not clear cut, there was a tendency for farmers in experimental areas, faced with unsatisfactory earnings in agriculture, to either get out of farming entirely or to strive harder to make a go of it in farming. Control farmers, on the other hand, were more apt to adjust their goals downward, hang on and make the best of it, or to seek a part-time job off the farm. It seems reasonable to attribute at least part of the differential reactions between experimental and control farmers to the township program.

While a number of factors contributed to the movement out of agriculture during the experimental period, [13] the fact that more experi-

[12]For example, one farmer commented as follows: "Everything a person buys has gone up while farm prices have gone down, and it's getting worse. I wouldn't have the equipment I have now if I hadn't worked off the farm to earn the money. Now that I have the money invested in it I feel trapped in farming. If I were to sell the equipment it would only bring scrap prices. The old cooler was worth practically nothing when I sold it."

[13]For example, the high level of activity in the industrial sector which provided job opportunities off the farm, retirement benefits under social security which became available to farmers at the end of 1956, and the availability of the soil bank program in 1957 and 1958 which led some farmers, particularly older farmers, to withdraw their land from cultivation.

mental than control farmers quit farming during this period is partly attributable to the work of the township agents. The township agents probably helped some farm families raise their sights; they certainly helped some families see the realities of the situation they were in. The Tri-Township agent particularly carried out activities which contributed to the pronounced movement out of agriculture in his area. For example, he helped some farmers of all ages see that there was little future for them in farming, and helped many older farmers build up their social security coverage so that they could retire. Many of the younger farmers in this area who quit farming during the experimental period moved to industrial areas of southeastern Michigan.

The township program contributed to greater satisfaction of many farmers who remained in farming by helping them adopt improved practices and improved organizations which resulted in higher farm earnings. The township agents also helped build farmers' morale, provided encouragement, helped instill confidence, and helped develop a sense of pride in farming as an occupation.

APPENDIX

Methodological Notes

Tests of matching control with experimental samples

In testing the closeness of the matching of the control with their experimental samples, a "t" test of the following form was applied to the means of quantifiable variables:

$$t = \frac{\bar{X}_e - \bar{X}_c}{\sqrt{\frac{S_e^2 - S_c^2}{N_e - N_c}}} \quad 1$$

Where the X's are the means, the S²'s are the variances within samples, the N's are the number of cases in the samples and e and c are subscripts for the experimental control samples.

Chi-square analysis was used in testing for differences in non-quantifiable variables (such as ethnic background).

Since the variables tested applied to all operators, the number of cases used in the tests was the same as the sample sizes reported earlier.

All chi-square values were computed using actual frequencies, whereas only the percentages are reported in the tables.

Analyses of relationships among variables

Chi-square analysis was used in testing the relationships among variables. Data for the total experimental sample were used for this purpose. The number of cases used in the tests was the total for the experimental sample (148) reduced by the small number of respondents from whom data could not be obtained on some items.

Relationships Tested and Levels of Statistical Significance

The relationships among variables that were tested by chi-square analysis and the levels of statistical significance are summarized below. The nature of the relationships is indicated in the text. All of the personal items apply to the farm operators.

Relationships among goal items

Relationships among the major goal items are shown in the table at the top of the following page.

[1]Adapted from Walker, Helen M. and Joseph Lev, (1953) *Statistical Inference*, New York: Henry Holt and Co., p. 175.

Relationship between		Level of statistical significance
Dominant farm goal orientation	Farm goal ranked first on verbal rankings	.01
Dominant family goal orientation	Family goal ranked first on verbal rankings	*
Dominant farm goal orientation	Emphasis on long-run or short-run goals	.01
Dominant farm goal orientation	Clearness of farm goal formulation	.10
Emphasis on short-run or long-run goals	Clearness of farm goal formulation	.01
Clearness of farm goal formulation	Clearness of family goal formulation	.01
Dominant family goal orientation	Clearness of family goal formulation	.02

* Not significant at .10 level.

Relationships between goals and other variables

Relationships between goals and other variables which were significant at the .10 level are shown in the upper part of the following table. With the exception of these relationships, none of the relationships between each of the five goal items and 14 other variables in the lower part of the table were significant at the .10 level.

Relationship between		Level of statistical significance
Dominant farm goal orientation	Total farm capital investment	.01
	Participation in formal organizations	.02
Emphasis on long-run or short-run farm goals	Formal education	.10
	Months worked off farm	.05
Clearness of farm goal formulation	Net farm earnings	.05
Dominant family goal orientation	Formal education	.05
	Stage in family cycle	.05
	Number of children at home	.05
Clearness of family goal formulation	Formal education	.01
	Net farm earnings	.05

Dominant farm goal orientation Emphasis on long-run or short-run farm goals Clearness of farm goal formulation Dominant family goal orientation Clearness of family goal formulation	Nationality background Formal education Full-time nonfarm experience Total years of farming experience Age State in family cycle Number of children at home Ownership status Months worked off farm Total farm capital investment Net farm earnings Net worth Extension participation Participation in formal organizations

Relationships between attitudes and other variables

Relationships between attitudes and other variables which were significant at the .10 level are shown in the upper part of the following table. With the exception of these relationships, none of the relationships between each of the three attitudinal items and other variables in the lower part of the table were significant at the .10 level.

the considerable opportunities for off-farm employment while carrying on substantial farming operations, and by industrial workers who did some farming as a side line.

While the farmers still looked upon the area as a farming community, some of the farm people resented the "encroachment" of the nonfarm people on the rural area and the consequent need for services, higher taxes, and increase in land prices.

There were no towns or villages in Newton township, although there were several rural villages in the area served by the association. There was a town hall in Newton township at which township annual meetings, educational meetings, and other activities were sometimes held. A number of farmers interviewed commented that prior to the township program, township-wide activities such as meetings, picnics, and social events had fairly well died out.

Because of the lack of a central shopping or community center, or any other force to bring them together, the farm people in the area were not united in a community sense; this applies to the people in the area in general, and to the members of the township extension association in particular. The farm people, however, were generally friendly and neighborly toward each other.

The farmers in the Newton experimental sample were mostly descendants of German or English ancestors, or German or English mixed with other nationalities. Many were descendants of homesteaders whose farms had remained in the family for 100 years or more. About half the farm operators in the sample had farmed in the same township 10 years or longer. Only 4 percent had moved twice or more since they started to farm. However, 59 percent of the operators had spent a year or more in a full-time occupation other than farming before starting to farm for themselves.

Fifty percent of the farm operators in the Newton sample had graduated from high school or had formal education beyond high school (such as attending college short course, or attending or graduating from college or technical school). Seventy-seven percent of the operators' wives had a high school education or more.

There was considerable enterprise diversity on farms in the Newton area, with dairy the most common enterprise. Too many small enterprises and inadequate volume of business was a prevalent problem in the area at the beginning of the experiment. Net farm earnings (which include value of home used products) averaged only a little over $2700 on sample farms in 1953. However, the families in the sample had average nonfarm receipts of over $1600; most of this was from off-farm employment of the farm operator, and in a number of cases, of the operator's wife. Levels of living, for the most part, were relatively high.

Farmers in the Newton area were generally progressive and willing to accept new agricultural information and put it to use. Most of those who joined the township extension association had a history of cooperation with extension, and were probably more highly motivated than the entire farm population in the area. A number of them joined the association because they had a specific problem on which they wanted help.

The Tri-Township area

Since there were few farms per township in the Kalkaska county area, the Tri-Township program was set up to serve three adjacent townships. The northern boundaries of the townships were about three miles south of the town

of Kalkaska, the county seat. The actual farming area included in the townships was about equivalent to one township, since large parts of two townships were owned by the State Conservation Department.

The total population of the three townships in 1950 was 819, with 138 living in the two villages which were located in the townships; the remainder lived in the open country areas. At the beginning of the experiment there were 90 farm units on which substantial farming operations were being carried out. The area was primarily rural and farm oriented.

The town of Kalkaska served as the primary trade center for the area. A wire factory in Kalkaska provided some off-farm employment opportunities. Some farmers in the Tri-Township area were active in civic organizations which were located in Kalkaska. For the most part, however, there were fewer formal organizations available to farmers in the area, and the average level of formal participation was the lowest of the five areas.

As the slow process of movement out of agriculture had taken place over the years, some who remained in farming in the area tended to look on themselves as one of the few real farmers left. Some expressed a feeling of being isolated from other farm people, partly because of the distance between farms. On the other hand, community spirit seemed high as evidenced by the friendliness of the farm people toward each other, borrowing and lending of farm machinery, community-wide building bees, and willingness of the farm people to help their neighbors who needed help because of sickness or accident. A leading farmer in the area expressed the view that living pretty much on their own in a sparsely populated area had led to considerable individual and community responsibility on the part of the farm people in the area.

The ancestors of the farm people in the area were mostly of West European origin, predominately English. Three-fifths of the farm operators in the sample had lived in the same township 10 years or longer. Only 15 percent had moved twice or more since they started farming. However, 45 percent of the operators spent one year or longer in a full-time nonfarm occupation before they started to farm for themselves.

When the township program began, much of the farm land was in the hands of older farmers. This was reflected in the sample in that 40 percent of the operators were 50 years of age or older, and 47 percent of the families were in the post school and/or post child stages in the family cycle.

Forty percent of the farm operators in the sample and 50 percent of the wives had a high school education or more.

Dairying, mostly for the production of manufacturing milk, was the most important farm enterprise in the area at the beginning of the experiment. Potatoes were also an important enterprise. Many of the farmers interviewed recognized that this northern Michigan area was not one of the best farming communities. The soils in the area are light and sandy, and require careful handling to prevent blowing. Winters are long, the growing season short.

While the farms in the sample averaged over 200 tillable acres, there were many small, subsistence farms in the area. Some of the farms were inadequately capitalized, and a number had more labor than could be profitably employed. Net farm earnings on sample farms (which were larger than average for the area) averaged $3045 in 1953. Nonfarm receipts brought the average total farm and nonfarm earnings to about $3600. Levels of living in general and for the families in the sample were low as compared to the farm areas of southern Michigan.

A number of the farm people in the area had adjusted to the idea of earning lower incomes and having lower levels of living. A number specifically said they were not interested in making a high income or in "getting rich"— that they were willing to settle for making a living. Many had always lived in the area. Some expressed the feeling that the friendly, neighborly atmosphere somewhat compensated for some of the material things. Some were striving to increase their levels of living by supplementing their farm incomes through taking advantage of the somewhat limited off-farm employment opportunities in the area. On the other hand, a number of farmers were striving hard to build larger, more productive farm units which would produce good incomes. This latter group of farmers was generally progressive and receptive to change.

The Denmark area

Denmark township is located on the western edge of Tuscola county in the heart of the Saginaw Valley cash crop area.

The total population of the township in 1950 was 2042. Slightly over half of the population (1032) lived in villages and the remainder lived in the open country. At the beginning of the experiment there were 175 farm units on which substantial farming operations were conducted. There were few people living in the open country whose main interest was not primarily in farming.

There were two villages in the township which served as trade and community centers. The villages were definitely rural and agriculturally oriented; the businesses were oriented toward farm trade, and many of the village residents were retired farmers.

There were several larger cities within easy driving distance providing additional trading facilities, markets for farm products, and opportunities for off-farm employment. A foundry which provided some off-farm employment possibilities was located in a town just outside the township.

About three-fourths of the farm operators in the township were from predominately German ancestors. The German Lutheran Church was an important influence in the community. Many of the activities in the township were centered in the family, kinship groups, the churches and the parochial schools, with relatively little community wide unity or activity. Extension group meetings and other community wide events in the area generally had been unsuccessful.

There were a number of neighborhood farmers' clubs in the township; many of the farm people in the township were active in these clubs. Each club was composed of a small number of farmers who were close friends, neighbors or relatives. Meetings were held regularly; most of the meetings were dinner meetings in which the entire family participated.

There was considerable tendency for the farm people in the township to stick together in family and kinship groups. There was relatively little association between those with German and those with non-German backgrounds. A number of the people of German descent acknowledged that they liked being among "their own kind." Those who were not of German descent felt that those with German backgrounds were clannish. However, even though they did not feel close to many of their neighbors, the farm people generally had the conviction that their neighbors would help them out if they really needed help.

The farm people in Denmark township had established deep roots in the community, and were strongly oriented toward agriculture. Over four-fifths of the farm operators in the sample had farmed in the township 10 years or longer.

Only one-fifth of the operators had worked a year or longer in a full-time nonfarm occupation before going into farming, and only 9 percent had moved twice or more since they started farming.

Forty-five percent of the operators in the sample and 65 percent of the wives had a high school education or beyond.

Denmark township is in the most concentrated cash crop area in Michigan. Beans, wheat, corn, and sugar beets are the main crops grown. About a fifth of the farms had a dairy enterprise at the beginning of the township program. Soils in the area are heavy, and when adequately drained, are highly productive. Many farm units had insufficient acreages to build an adequate volume of business, particularly under cash crop farming. The demand for land to add to existing farm units was such that land was difficult to buy and high in price. The fact that a large proportion of the families wanted one or more of their sons to stay in farming in the community, if at all possible, added to the competition for land.

Average farm earnings of over $6700 in 1953 were the highest of any of the five experimental areas. In addition, families in the sample had average nonfarm receipts of nearly $700, mostly from work off the farm. In many cases the off-farm work consisted of the operator holding a job in the factory during the winter months. Levels of living of the farm people generally were high.

A number of respondents interviewed commented that there were many farmers in the township who were not interested in change — some because they felt they were already doing as good as possible, some because they were unwilling to change. A number pointed out that the ones who were most resistant to change were the older farmers and those with the least education.

Prior to the establishment of the township program, most of the farm people in the township had had little to do with extension. The proposal to establish the program in the area received little enthusiasm. At the beginning of the program, many of the farmers in the area were undecided regarding the value of the program, and tended to be cool and suspicious toward the program and the new agent. The farm people generally felt they had kept themselves informed of the latest production practices through the farm magazines and newspapers. On highly productive land, hard working, with extreme pride in their farming ability, many felt they had no need for a special agent.

The Almont area

Almont township is located in the southeast corner of Lapeer county about 15 miles from Lapeer, the county seat. The area is about 40 miles north of Detroit.

The total population of the township in 1950 was 2032. Slightly over half the population (1035) lived in the village. There were 135 farming units with substantial farming operations at the beginning of the experiment. There was a sprinkling of residences in the open country housing families of workers from the metropolitan area to the south. Farmers were aware that considerable urbanization was taking place in rural areas around them, and expressed satisfaction that theirs was still a farming community.

The village of Almont near the center of the township, served as a trade and community center for the township. The village was largely dependent on the trade from the rural area in and surrounding the township. Businessmen appeared less oriented toward the farm than those in the villages in Denmark

township, however. There were many older people living in the village, many of them retired farm people.

There were relatively few community-wide activities that brought the farm people together. Mixed feelings were expressed by the farm people regarding their relationships with their neighbors. Many of the farm people were friendly toward each other, and some farmers spoke of their community as one with fine, cooperative neighbors. On the other hand, other farmers expressed an undercurrent of feeling that some of their neighbors probably would not go out of their way to help them even if they needed help.

While there was a fair amount of unity among the farm people, there was considerable animosity between the farm and the village people at the beginning of the experiment.

The farm people in the township were primarily from West European ancestors. Some families lived on farms that had been in the family over 100 years. Slightly over half of the farm operators in the sample had farmed in the township 10 years or longer. About two-fifths of the operators had spent one year or longer in a full-time nonfarm occupation before going into farming, and one-fourth had moved twice or more since they started farming.

Seventy-five percent of the operators and 76 percent of the wives had a high school education or more.

Dairying was the most important enterprise in Almont township, with about half the farmers having a sizeable dairy herd. Fruit and vegetables were grown on the muck areas. General farming was practiced on the remainder of the farms. According to the township agent, much of the farm land in the township was badly run down when the township program started. There were considerable opportunities for increasing crop yields, particularly of corn and forage crops, and for improving dairy herd production.

Average net farm earnings were slightly over $4900 in 1953, and total farm and nonfarm earnings averaged about $5400. Levels of living of farm families, for the most part, were relatively high.

Farmers in Almont township ran the gamut from those who were progressive and eager to improve themselves to those who were mildly interested in change to those who were content to do things as they had done them in the past.

There were several farmers in the township who had a very good long time history of cooperation with extension. For the most part, however, the farmers had not been closely associated with extension work. At the beginning of the program many felt that they could very adequately obtain and interpret the information they needed without the help of a township agent.

The Odessa area

Odessa township is located on the southern edge of Ionia county, about 10 miles from Ionia, the county seat, and about half way between Lansing and Grand Rapids.

The total population of the township in 1950 was 2576. Over 60 percent (1596) lived in town. Most of the remaining population who lived in the country were oriented toward farming. There were 150 farm units on which substantial farming operations were being carried out at the beginning of the experiment.

The Odessa area provided the most nearly natural community setting for

the experiment. A town located near the southern border of the township served as a focal point for trade, schools, recreation, and community activities for the entire township.

A local canning plant provided off-farm employment opportunities. Additional industry was located at the county seat. Two larger urban-industrial centers about 40 miles from the township provided additional market, trade and recreational facilities as well as possibilities for off-farm employment.

The farmers in the township were united into a fairly close knit community. Farmers were generally friendly toward each other. They associated in family groups, and participated in a number of community-wide activities. A number of farmers cited cases of their neighbors helping them out when they were in trouble, and others said they were sure their neighbors would help if they ever needed them.

On the other hand, there was some division and lack of understanding between the farm and town people in the township.

The ethnic background of the farm people in the township was primarily West European. Three-fifths of the operators in the sample had lived in the township 10 years or longer. Over half of the operators had spent a year or more in a full-time occupation other than farming; 43 percent of the operators had moved twice or more since they started farming.

Seventy-four percent of the operators in the sample and 84 percent of the wives had graduated from high school or gone further in their formal education.

The main farm enterprises in Odessa township were dairy, hogs and cash crops. Many farmers had soil management problems such as maintaining fertility and providing drainage. Too many small enterprises and inadequate volume of business were also common problems in the township.

Average net farm earnings were a little under $4000 in 1953. Nonfarm receipts, primarily from work off the farm, averaged about $600, bringing the average total farm and nonfarm earnings to around $4600. On the average, levels of living of farm families were fairly high.

As in Almont, farmers in Odessa township scattered over a wide range in regard to their willingness to change. There were some exceptionally alert, aggressive farmers who were anxious to put new agricultural information to use. Others, particularly some of the older farmers, were less anxious to change.

There were a number of farmers with a good history of cooperation with extension in the township. A group of local farmers and businessmen had taken aggressive action to get the experimental program for their township. Enthusiasm for extension work was far from unanimous, however. Many of the farmers had never used extension. Some were noncommittal, and a number were outright opposed to the township program.

How Well the Control Samples Matched the Experimental Samples

Statistical tests were applied to determine how well the farm operators, families, and farming units in the control samples matched the respective experimental samples. The results of the tests of matching are summarized in the table below. All tests were applied to data for the benchmark year.

The tests of matching revealed few differences between matched experimental and control samples on variables which seemed likely to affect the outcome of

Item	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Level at which differences between experimental and control samples were statistically significant					
Nationality origin of farm operator	*	.05(*a*)	.05(*b*)	.05(*c*)	*	*
Formal education of farm operator	*	*	*	*	.05(*d*)	.10(*d*)
Formal education of operators' wives	*	*	*	*	*	*
Percent of farm operators who grew up on a farm	*	*	*	*	*	*
Percent of operator's wives who grew up on a farm	*	*	*	.10(*e*)	*	*
Number of years farm operator had spent in full-time occupation other than farming	*	*	*	*	*	*
Number of years farmed by farm operator	*	*	*	.10(*f*)	*	*
Number of times farm operator had moved since started farming	*	.10(*g*)	*	*	.01(*g*)	*
Age of farm operator	*	*	*	*	*	*
Stage in family cycle	*	*	*	*	*	*
Number of persons in household	*	*	*	*	*	*
Number of children at home	*	*	*	*	*	*
Ownership status	*	*	*	.10(*h*)	.10(*i*)	.10(*i*)
Months worked off farm by farm operator	*	*	*	*	*	*
Extension participation of farm operator	.10(*j*)	*	*	*	*	.05(*j*)
Tillable acres	*	.01(*k*)	*	*	*	*
Total farm capital investment	*	*	*	*	*	*
Total months of farm labor	*	*	*	*	*	*
Percent of gross income from various sources	*	.10(*l*)	*	*	*	*
Net farm income	*	.05(*m*)	*	*	.10(*m*)	*

* Not significant at .10 percent level.
(*a*) More experimental than control farmers were of English ancestry.
(*b*) More experimental than control farmers were of German ancestry.
(*c*) More control than experimental farmers were of German ancestry.
(*d*) Experimental farmers had attained higher levels of formal education than control.
(*e*) Larger percent of wives in control than experimental sample grew up on a farm.
(*f*) Control farmers had more farming experience than the experimental.
(*g*) Experimental farmers had been more mobile than the control.
(*h*) More control than experimental farmers owned all of the land they operated.
(*i*) More experimental than control farmers owned all of the land they operated.
(*j*) Level of extension participation was higher for the control than for the experimental farmers.
(*k*) Average number of tillable acres higher for the experimental than for the control sample.
(*l*) Experimental farmers had a higher percent of their gross income from poultry and from crops than farmers in the control sample.
(*m*) Average net farm income was higher on experimental than on control farms.

the township program. Other information (largely nonquantifiable) provides the basis for two additional observations regarding differences between experimental and control samples. Farmers in the Newton experimental sample were those who joined the association when it was organized and remained in it for 3 or more years of the experiment. Even though the tests showed essentially no significant differences between the Newton experimental and control samples, in all probability the farmers in the experimental sample were more willing to make changes than those in the control. On the other hand, farmers in the Almont control sample appeared to be more change oriented than those in the experimental sample.

Some of the differences between individual experimental and control samples fairly well canceled each other out in the total experimental and total control samples. There were statistically significant differences between the total experimental and the total control sample on only three of the items tested. Farmers in the total experimental sample had attained slightly higher levels of

formal education and more of them owned all the land they operated as compared to the total control sample. In the benchmark year, the level of extension participation was higher in the total control than in the total experimental sample.

While the matching certainly was not perfect, both the statistical tests and informal observations indicate that the total control sample matched the total experimental sample well enough to make it highly useful in drawing conclusions regarding how much of the differential change between experimental and control samples to attribute to the experiment.

APPENDIX TABLE 1—Nationality origin of ancestors of farm operators: experimental and control samples (a)

Nationality origin of ancestors	Newton		Tri-Township[5]		Denmark[5]		Almont[5]		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
German	21	19	—	7	69	36	21	24	13	26	29	23
English	12	23	28	7	11	5	11	—	13	9	14	8
German and other	29	4	6	14	3	11	11	44	26	12	15	18
English and other	21	31	22	4	11	24	25	16	35	24	23	20
Other	17	23	44	68	6	24	32	16	13	29	19	31
Total	100	100	100	100	100	100	100	100	100	100	100	100

(a) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.

APPENDIX TABLE 2—Formal education of farm operators: experimental and control samples (a)

Education	Newton		Tri-Township		Denmark		Almont		Odessa[5]		Total[10]	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
8th grade or less	27	22	40	61	38	54	18	35	26	32	30	41
Attended high school, did not graduate	23	26	20	21	17	11	7	3	—	18	12	15
Graduated from high school	23	26	20	14	31	24	54	51	58	44	39	33
Attended or graduated from college or short course	27	26	20	4	14	11	21	11	16	6	19	11
Total	100	100	100	100	100	100	100	100	100	100	100	100

(a) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.

APPENDIX TABLE 3—Formal education of farm operators' wives: experimental and control samples (a)

Education	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of operators' wives											
8th grade or less	15	8	28	41	22	38	16	21	3	12	15	24
Attended high school, did not graduate	8	19	22	18	13	13	8	3	13	16	12	13
Graduated from high school	42	35	22	32	27	27	44	47	55	53	40	39
Attended or graduated from college or technical school	35	38	28	9	38	22	32	29	29	19	33	24
Total	100	100	100	100	100	100	100	100	100	100	100	100

(*a*) No significant differences between matched experimental and control samples at the .10 level.

APPENDIX TABLE 4—Percentages of farm operators and of operators' wives who grew up on a farm: experimental and control samples (a)

Grew up on a farm	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of operators and percent of wives											
Operators(*b*)	88	74	100	89	100	97	89	95	100	97	96	91
Wives	54	74	89	88	75	74	60^{10}	81^{10}	76	73	70	77

(*a*) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.
(*b*) No significant difference between matched experimental and control samples at the .10 level.

APPENDIX TABLE 5—Frequency distributions of number of years farm operators spent in full-time occupation other than farming: experimental and control samples (a)

Years	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
0	41	37	55	55	78	58	57	70	49	56	57	56
1-4	11	18	25	15	6	20	7	12	26	26	14	19
5 or more	48	45	20	30	16	22	36	18	25	18	29	25
Total	100	100	100	100	100	100	100	100	100	100	100	100

(a) No significant differences between matched experimental and control samples at the .10 level.

APPENDIX TABLE 6—Frequency distributions and average years farmed by farm operators, 1953: experimental and control samples (a)

Years farmed	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
Less than 5	31	4	10	29	3	11	14	11	3	6	11	7
5- 9	23	19	25	—	17	19	32	11	24	26	24	20
10-19	27	55	20	32	38	29	36	43	41	26	34	37
20-29	4	15	25	14	28	14	7	16	16	26	16	17
30 and over	15	7	20	25	14	27	11	19	16	16	15	19
Total	100	100	100	100	100	100	100	100	100	100	100	100
Average years	12	16	18	19	18	19	14[10]	19[10]	16	18	16	18

(a) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.

APPENDIX TABLE 7—Frequency distributions of the number of times farm operators had moved since started farming, 1955: experimental and control samples (a)

Number of times moved	Newton		Tri-Township[10]		Denmark		Almont		Odessa[1]		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
0	73	59	70	86	77	61	57	78	22	73	57	72
1	23	22	15	7	14	30	18	8	35	15	22	17
2	4	4	15	—	6	3	14	3	19	6	12	3
3 or more	—	15	—	7	3	6	11	11	24	6	9	8
Total	100	100	100	100	100	100	100	100	100	100	100	100

(a) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.

APPENDIX TABLE 8—Frequency distributions and average ages of farm operators, 1953: experimental and control samples

Age	Newton		Tri-Township		Denmark		Almont		Odessa		Total	
	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control	Expt'l	Control
	Percent of farm operators											
Under 30	12	7	20	11	3	5	18	11	11	18	12	10
30-39	31	33	25	18	39	25	29	43	39	35	33	31
40-49	26	38	15	32	39	35	24	16	32	21	29	28
50 and over	31	22	40	39	19	35	29	30	18	26	26	31
Total	100	100	100	100	100	100	100	100	100	100	100	100
Average ages(a)	43	42	43	47	43	45	42	42	41	41	42	44

(a) No significant differences between matched experimental and control samples at the .10 level.

APPENDIX TABLE 9—Percentages of families in various stages of the family cycle, 1953 and 1958: experimental and control samples (a)

Stage in family cycle	Newton				Tri-Township				Denmark			
	Experimental		Control		Experimental		Control		Experimental		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958
	Percent of families											
Prechild	15	12	—	—	24	9	10	10	13	5	15	2
Preschool(*b*)	14	7	11	—	—	4	13	3	3	8	5	10
School(*c*)	18	22	26	33	10	23	17	7	24	18	32	15
Preschool and school	28	22	15	22	19	14	17	13	26	16	10	10
Post school(*d*), and post school and post child(*e*)	7	11	33	34	33	32	33	47	21	27	20	29
Post child	18	22	11	11	14	18	10	13	5	18	15	24
Other combinations	—	4	4	—	—	—	—	7	8	8	3	10
Total	100	100	100	100	100	100	100	100	100	100	100	100

Stage in family cycle	Almont				Odessa				Total			
	Experimental		Control		Experimental		Control		Experimental		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958
	Percent of families											
Prechild	11	8	14	5	10	4	16	9	13	7	12	5
Preschool(*b*)	11	4	11	14	10	3	14	8	8	5	10	8
School(*c*)	30	29	17	22	32	30	14	11	24	25	21	17
Preschool and school	22	11	31	27	18	18	25	34	23	16	19	21
Post school(*d*), and post school and post child(*e*)	19	26	8	13	22	22	17	26	20	23	22	29
Post child	7	15	19	19	8	18	8	9	10	18	13	16
Other combinations	—	7	—	—	—	5	6	3	2	6	3	4
Total	100	100	100	100	100	100	100	100	100	100	100	100

(*a*) No significant differences between matched experimental and control samples at the .10 level in 1958.
(*b*) Have children under 5 years old.
(*c*) Have children 5 to 17 years old, or over 17 if in college.
(*d*) Have children over 17 years old at home.
(*e*) Have all children living away from home (other than at college).

APPENDIX TABLE 10—Average numbers of persons in households and average numbers of children at home, operating families, 1953 and 1958: experimental and control samples (a)

	Newton				Tri-Township				Denmark			
	Experimental		Control		Experimental		Control		Experimental		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958
	Averages											
Number of persons in household(b)	3.74	4.07	4.07	4.26	3.70	4.05	4.87	4.70	3.97	4.00	4.05	3.97
Number of children at home	1.59	1.89	2.00	2.15	1.57	1.71	2.70	2.60	1.79	1.89	1.87	1.85

	Almont				Odessa				Total			
	Experimental		Control		Experimental		Control		Experimental		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958
	Averages											
Number of persons in household(b)	4.52	4.63	4.11	4.80	4.67	4.62	4.32	4.92	4.17	4.29	4.28	4.54
Number of children at home	2.37	2.37	2.00	2.69	2.35	2.40	2.09	2.60	1.97	2.08	2.11	2.37

(a) No significant differences between matched experimental and control samples at the .10 level in 1953.
(b) Includes all persons living in the households regardless of their relationship to the operators.

APPENDIX TABLE 11—Ownership status of farm operators, 1953 and 1958: experimental and control samples (a)

Status	Newton				Tri-Township				Denmark				Almont				Odessa				Total			
	Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	10 1953	1958	10 1953	1958	10 1953	1958	10 1953	1958	10 1953	1958	10 1953	1958
	Percent of farm operators																							
Own all of land operated	54	58	44	48	65	60	67	60	50	47	56	57	36	25	63	65	42	37	29	41	48	44	52	55
Rent all of land operated	27	19	15	4	—	—	4	4	6	—	3	—	14	14	5	11	21	11	9	3	14	9	7	4
Combination ownership and rental	19	23	41	48	35	40	29	36	44	53	41	43	50	61	32	24	37	52	62	56	38	47	41	41
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

(a) The superior numbers in the table refer to the percentage levels of statistical significance between matched experimental and control samples.

APPENDIX TABLE 12—Frequency distributions and average months worked off farm by farm operator, 1953 and 1958: experimental and control samples

Months worked off farm by farm operator	Newton				Tri-Township				Denmark				Almont				Odessa				Total			
	Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control		Expt'l		Control	
	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958	1953	1958
	Percent of farm operators																							
None	38	49	45	30	45	50	58	58	44	49	63	55	46	60	65	—	53	56	61	55	47	53	59	51
Less than 4	35	12	30	22	45	35	14	14	31	17	24	27	46	21	27	—	34	21	21	18	37	20	23	21
4- 6	4	8	11	7	—	—	14	14	19	17	5	5	4	11	—	—	3	13	12	12	8	11	8	10
7- 9	19	4	7	4	10	—	14	7	6	14	3	5	4	4	3	—	5	5	6	6	6	6	6	5
10-12	4	27	7	37	—	15	—	7	—	3	5	8	—	4	5	—	5	5	—	9	2	10	4	13
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Average months(a)	2.4	3.3	2.4	4.7	1.3	2.2	2.3	2.3	1.8	2.1	1.4	1.9	.8	1.4	.9	1.7	1.5	1.7	1.3	2.3	1.6	2.1	1.6	2.5

(a) No significant differences between matched experimental and control samples at the .10 level in 1953.

APPENDIX TABLE 13—Farming goals listed most frequently by farmers in response to open-ended question: experimental samples

Farming goal	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers listing each goal					
Making a good or comfortable living	23	35	46	38	29	34
Growing high yielding crops and/or high producing livestock	15	25	23	15	13	18
Building security for later years	19	5	26	15	16	17
Making an average living, or just making a living	23	25	3	19	18	17
Owning a farm free from debt	19	5	11	15	18	14
Having nice looking buildings and farmstead	27	10	6	8	11	12
Being a successful farmer	12	5	11	12	5	12
Having less debt or being out of debt	12	20	—	8	11	9
Building up the land	12	10	3	8	13	9
Showing children farming is a good way of life	12	5	11	—	13	9

APPENDIX TABLE 14—Percentages of farmers ranking specified farming goals first on verbal rankings: experimental samples

Specified farming goal	Newton	Tri-Township	Denmark	Almont	Odessa	Total
	Percent of farmers ranking each goal first					
Owning a farm free from debt	34	65	34	41	50	45
Making the highest possible income from the farm	15	10	31	26	16	21
Making a living which is at least average in the community	8	5	17	4	10	10
Making a living somewhat above the average of the community	8	5	6	11	11	8
Growing high yielding crops and/or high producing livestock	19	5	3	7	8	8
Having modern farm machinery and buildings	8	5	6	4	—	4
Being recognized as one of the better farmers in the community	8	—	—	4	5	4
Other responses	—	5	3	3	—	—
Total	100	100	100	100	100	100

APPENDIX TABLE 15—Family goals listed most frequently by farmers in response to open-ended question: experimental samples

Family goal	Newton	Tri-Township	Den-mark	Almont	Odessa	Total
	Percent of farmers listing each goal					
Having a comfortable home; having modern conveniences in the home	50	35	34	15	26	31
Providing children with a good education	23	35	20	26	32	27
Having peace and harmony in the home	27	15	46	30	13	27
Having a good living; having better things in life	38	20	17	30	24	25
Bringing children up right; giving them a good start in life	15	15	14	41	18	21
Having leisure, recreation and travel for self and family	15	10	26	15	18	18
Attaining happiness for self and family	15	5	14	19	18	15
Having a Christian home; providing religious training for children	12	10	14	22	11	14

APPENDIX TABLE 16—Percentages of farmers ranking specified family goals first on verbal rankings: experimental samples

Specified family goal	Newton	Tri-Township	Den-mark	Almont	Odessa	Total
	Percent of farmers ranking each goal first					
Providing the children with a good education	46	65	37	54	41	47
Building security for later years	19	10	20	12	21	17
Helping family win and hold respect of people in community	12	15	17	19	20	17
Having modern conveniences in the home, a comfortable home	8	5	9	8	10	8
Being active in organizations and the community	11	—	11	—	8	7
Moving up to more gracious living, a better livelihood	4	—	—	4	—	2
Having recreation and travel for the family	—	—	6	—	—	2
Having influence in community affairs	—	—	—	—	—	—
Other responses	—	5	—	3	—	—
Total	100	100	100	100	100	100

Related Research

An important part of the funds for conducting the Michigan Township Extension experiment were provided by a grant from the W. K. Kellogg Foundation.

The Kellogg Foundation has also provided grants to help support research on the evaluation of Farm and Home Development programs in four states: Iowa, New York, North Carolina and Washington. The University of Wisconsin, using Experiment Station funds, has conducted recent research on the evaluation of its Farm and Home Development program. Reports of the research in these states can be obtained by writing to the following:

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Dr. Frank D. Alexander
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