SOCIOLOGICAL ANALYSIS OF FACTORS RELATED TO THE ADOPTION OF RECOMMENDED FARM PRACTICES AMONG MICHIGAN APPLE GROWERS

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ABSTRACT

SOCIOLOGICAL ANALYSIS OF FACTORS RELATED TO THE ADOPTION OF RECOMMENDED FARM PRACTICES AMONG MICHIGAN APPLE GROWERS

by Salah M. Yacoub

This study is focused on the adoption of technological information among apple producers in the western part of the state of Michigan. It is the concern of this study to investigate factors related to the adoption of twenty-one recommended practices in the apple growing industry. More specifically, the focus of this study is to examine the relationship between the adoption of certain farm practices and such concepts as "opening" and "closing" culturally defined goals, "progressive" and "traditional" value orientations, and "local" and "cosmopolitan" orientations of the apple growers.

The following hypotheses were the central focus of the study:

1. Apple growers who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing".
2. "Progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

3. On the whole, adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientation.

Research hypothesis 1 was tested by using five different variables. These variables were: (1) achievement orientation of the apple grower, (2) the grower's attitudes toward his apple business as an occupation, (3) facilitation of the social and business situation of the apple growers, (4) past and future changes in the farm enterprise, and (5) the time in which anticipated changes regarding the farm enterprise were planned.

Research hypothesis 2 was tested by using four different variables. These were: (1) the grower's attitudes toward change generally, (2) the grower's self-rating of his adoption behavior, (3) the grower's attitudes toward credit and loans, and (4) the values which the grower places on science and education.

Research hypothesis 3 was tested by using only two variables, namely: (1) the grower's participation in state and national organizations, and (2) his attendance at organizational meetings held outside the county.

Data for the study were obtained by personal interviews with a sample of 100 respondents selected at random from 2,900 apple growers within a nine county area.

The chi-square test of significance was used to test the significance of the relationships. A 0.05 probability level was chosen to test the significance of relationship between the dependent variable (adoption) and the independent variables under investigation. This means that whenever a X^2 value is found which proves to have 0.05 or more probabilities of being obtained simply by chance, the null hypothesis which states that no relationship exists between the independent and the dependent variables will be accepted. The investigation of the variables yielded the following findings:

Hypothesis 1. Achievement orientation of the apple growers and the type of changes in the farm enterprise, which were used as variables to test "opening" and "closing" culturally defined goals of the growers were significantly associated with adoption of the recommended practices at the 0.05 probability level. Variables 2 and 3, namely the grower's attitudes toward the apple business as an occuption and facilitation of his social or business situation were not significantly associated with adoption. Variable 5, time of changes planned, does not totally support the research hypothesis. Time in which the anticipated expansion and related changes are to take place was significantly associated with adoption; while the time in which reduction and related changes are to take place was not significantly associated with adoption. The above

findings thus suggest that there is no strong relationship between those who see their culturally defined goals as "open or opening" or "closed or closing" and adoption of recommended farm practices.

Hypothesis 2. All four variables which were used to test "progressive" and "traditional" value orientations were significantly related to adoption at the 0.05 level. This supports the research hypothesis that "progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

Hypothesis 3. Two variables, participation in state and national organizations, and attendance of meetings held outside the community, which were used to test "cosmopolitan" and "local" orientations were associated significantly with adoption. The findings support the research hypothesis that adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientation.

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CHAPTER I

INTRODUCTION

The Purpose

In the past two decades, the vast body of research dealing with the diffusion of agricultural technology has contributed to our understanding of the problems in the human communication process in relation to the adoption of farm ideas and practices. Such research has provided a wealth of information from which conclusions and generalizations about the communication process may be drawn. Previous research has demonstrated that farmers, generally, do not tend to adopt a farm practice or idea as soon as they hear about it, in spite of the fact that the practice has been tested by agriculture research experts and the results clearly indicate its usefulness. Research has also shown that there is a variation in the rate at which different farmers adopt a farm practice. The responses of farmers have been correlated with a variety of social, psychological, and economic factors such as income, education, size of farm, age, participation in organizations and others.

It has become increasingly clear that it is necessary to probe in greater depth the factors related to the adoption of recommended practices. A series of diffusion

studies over time in the major type of farming areas of Michigan has been initiated. These studies will probe in depth into a single type of farming at a time. This particular study in the series analyzes certain sociological factors related to the adoption of twenty-one recommended farm practices among apple producers in the western part of the state.[1]

Apple growing was selected for this study, because it is considered as one of the leading fruit enterprises found in Michigan. In 1959, Michigan's apple production reached the third place in the United States. The total commercial apple production during that year in Michigan reached 12,800,000 bushels, with a total value of $18,944,000. This production is compared with the United States total commercial production of 118,227,000 bushels.[2] This type of enterprise, especially in the western part of the state, is becoming highly commercialized, and is constantly undergoing change, as is the case with many other segments of farming enterprises.

Significance of the Study

This series of studies of the diffusion of the

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[1]See Appendix I for a list of these practices.

[2]George S. McIntyre, et al., Michigan Agricultural Statistics, Lansing: Michigan Department of Agriculture and United States Department of Agriculture cooperating, July 1960, pp. 4-5.

selected recommended practices, which is being launched with the study of the acceptance of technology among apple growers, will provide information which will build upon the findings of previous diffusion studies. The study will examine the relationship between the adoption of certain farm practices and such theoretical concepts as "opening" and "closing" goals,[3] "progressive" and "traditional" value orientations, and "local" and "cosmopolitan" orientations. Further investigation of these concepts will add to the body of knowledge concerning motivation theory, the level of aspiration theory, reference group theory, and communication theory. This study will also add to the growing understanding of research methods as applied to adoption studies.

From an applied research point of view, findings of diffusion studies continue to be highly useful in developing greater understanding of educational and change processes, a more efficient allocation of resources, and in providing a sound basis for the evaluation of educational programs. Such research studies have helped commercial firms, extension workers, and other adult educators to upgrade the quality of their educational programs and services for the farmers. Furthermore, these research

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[3]The notion of "opening" and "closing" culturally defined goals came originally from Dr. Edward O. Moe during the early stages of this study.

findings, through their contributions to educational programs, have helped to cut the time lag in acceptance of new ideas. This time reduction, in turn, has helped to make agriculture a more efficient enterprise.

Method of Study

I. Selection of Sample:

Data for the study were obtained by personal interviews with a sample of one hundred apple growers. This study was limited to one commercial farming enterprise, namely apples. A selection of apple growing counties was made. The major apple growing counties in the state have been identified by Horticultural Specialists in the Cooperative Extension Service. From nearly 2900 apple growers located in these counties a random sample of 100 apple growers was selected for detailed study. The proportion of interviews from each county was based on an estimate of the proportion of trees in the county to the total trees for all of the counties. On this basis, the proportion of the sample from each county was as follows:

County	Percent of the Sample
Berrien	25
Kent - Ottawa	25
Van Buren	20
Oceana - Mason	15

County	Percent of the Sample
Allegan	10
Ionia - Montcalm	5

In Kent and Ottawa, Oceana and Mason, and Ionia and Montcalm counties, the list of growers is maintained on a bi-county basis. Since these orchards are similar in their characteristics and types no bias is likely to result from combining these counties in the selection of the sample.

The sample was selected on a random basis from the list of apple growers in the county agent's office. The selection of the sample was governed by the following criteria. These criteria were arrived at in cooperation with M. S. U. Extension Specialists in horticulture. The basic notion was to eliminate all farmers who grew apples only as a minor sideline. In order for the apple grower to be included in the study, he must meet criterion number 1 plus number 2 or number 3 below.

(1) The grower must have at least 10 acres or more of apples.

(2) If he grows only apples, 50 percent or more of his total gross farm income must come from apples in order to be included. If it is less than 50 percent he will not be included in the sample.

(3) If the grower has other fruits in addition to

apples, he must receive 75 percent of his gross farm income from the sale of fruit, and 25 percent of his fruit income must come from the sale of apples.

Apple growers from each county were selected according to the following procedure:

(1) The growers on the county agent's mailing list were numbered consecutively.

(2) A number to begin with was pre-selected from a table of random numbers for each particular county.

(3) Every Nth grower was taken. This figure is determined by dividing the total number of growers by the number of interviews to be obtained in that county. For example: Suppose there are 233 apple growers on Allegan County's mailing list, 233/10 = 23. The first grower will be selected with a table of random numbers. Thereafter, every 23rd grower on the list will be taken.

2. Directions for Computing Adoption Score:

Twenty-one practices which were applicable to every apple grower were chosen from the total practices which appeared in the schedule. Since certain items are more highly recommended than others (it is not always recommended versus not recommended) individual practices were given a numerical value by a Horticultural Extension Specialist. The item which was most highly recommended was given the highest score, with a maximum of 10 points. Items not

recommended were given a zero. Others were scored in between. If two or more of the items in a question were checked by the apple grower, an average score was computed for that particular practice. This score was arrived at by adding the given numerical values for each item checked and dividing the total by the number of items checked. For example, for the following question, "Which rootstocks did you use in your most recent planting?", the apple grower might check both standard and dwarf. In this case the numerical value given to the items checked, 8 for standard and 10 for dwarf, were added and the total, 18, was divided by 2 to give a score of 9, which is considered as the adoption score for the rootstocks practice. The scores for all 21 practices were then added together to give an adoption score for each individual apple grower. This method of determining the adoption score is somewhat different from the method used by most of the diffusion studies. Other studies have tended to take into account the two extremes only, i.e., whether the farmer has accepted or rejected a certain recommended practice. When scoring each practice, a score is usually given to those who accepted it, while zero is given to those who did not accept it. Other practices inbetween the two extremes are usually neglected and are not given a score. Obviously there are some practices which are more highly recommended than others. There are some practices which are regarded

as the best method available. Other practices are valuable but less desirable, while others are not recommended at all.

The practices and the numerical values assigned to them are listed in Appendix I.

During the coding process, the total adoption scores were grouped into five categories. These were:

1. 60-99
2. 100-119
3. 120-139
4. 140-159
5. 160-179

3. Statistical Analysis:

Throughout the study, only one dependent variable was dealt with, namely adoption score. For the purpose of statistical analysis, the total adoption scores were grouped into three main categories, instead of the original five, ranging from low to high adoption. These three categories were as follows:

Category 1: Adoption scores ranging from 60-119. This category is considered to be low.

Category 2: Adoption scores ranging from 120 to 139. This category is considered to be medium.

Category 3: Adoption scores ranging from 140-179. This category is considered to be high.

The three adoption categories were then related to eleven independent variables. The independent variables were measured by the use of thirty-two different items. Weights were arbitrarily assigned for responses under each

individual item. A total score for each independent variable, which has more than one item, was then computed by adding up the weights of the responses checked for all items under that particular variable. Scores were then dichotomized or trichotomized into "low" and "high," or into "low," "medium," and "high" respectively. A chi-square test of association was then made on these frequency tables to determine if an association existed between each of the independent and the dependent variables.[4] A 0.05 probability level was chosen to test the significance of relationship between the dependent variable and the independent variables investigated. If the observed value falls within the rejection region for n degrees of freedom,[5] then the null hypothesis of no relationship is rejected. A contingency coefficient was then computed to measure the degree of association between the two variables.[6]

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[4]The formula used for calculating the chi-square tests is:

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(Oij - Eij)^2}{Eij}$$

Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences, New York: McGraw-Hill Book Company, Inc., 1956, pp. 104-111.

[5]When computing the degrees of freedom, the following formula was used: df = (r-1) (k-1), where r = the number of rows and k = the number of columns in the contingency table. Ibid., p. 105.

[6]The formula which was used for computing the contingency coefficient is:

$$C = \sqrt{\frac{X^2}{N + X^2}}$$ Ibid., p. 197.

In order to find out whether or not individual items, which measure a particular variable, were significantly related to adoption, a chi-square test was computed for each item separately followed by the computation of a contingency coefficient.

Organization of the Study

Following the review of literature, the study is composed of three major sections. Each section deals with a different set of theoretical concepts; therefore, each section is treated as a separate unit. These three sections are:

1. "Opening" and "closing" culturally defined goals and adoption of practices.
2. "Progressive" and "traditional" value orientations and adoption of practices.
3. "Local" and "cosmopolitan" orientations and adoption of practices.

An over-all summary and conclusions will be presented following the major sections of the study.

CHAPTER II

REVIEW OF LITERATURE

Research on the adoption of technological change in agriculture up to 1961 was summarized and synthesized in a recent bulletin published by the Subcommittee for the Study of Diffusion of Farm Practices, which is a part of the North Central Rural Sociology Committee.[1] This bulletin emphasized the characteristics and communication behavior of the adopters of the new farm practices which should be considered carefully by Extension program planners and other change agents who are concerned with the promotion of technical agriculture and with educational programming as well.

Research on diffusion, as a whole, has revealed important information about the way change takes place and the influences that operate in relation thereto. It has dealt, among other factors, with personal, social, psychological, cultural, and farm business characteristics, as well as goals and motivations that condition the rate at which change takes place. Some of the major research findings which are of particular interest to the present

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[1] Adopters of New Farm Ideas, Characteristics and Communication Behavior, Subcommittee for the Study of Diffusion of Farm Practices, North Central Regional Extension Publication No. 13, East Lansing: Michigan State University (Farm Foundation and Federal Extension Service co-operating), October, 1961.

study are reviewed below.

Culture and its Influence on Adoption[2]

The effect of cultural differences and national background on the adoption of the recommended farm practices were treated in depth by two different studies. Pedersen[3] found, in his comparative analysis of the adjustment of a Danish and a Polish ethnic group to the American culture in a dairy farming area in Central Wisconsin, that "the Danish and Polish ethnic groups are two different universes from the standpoint of behavior and reaction to recommended dairy farming practices." The evidence of the study indicates that "the cultural adjustments of Danish group facilitate the introduction of new ideas, whereas the adjustments of the Polish group tend to perpetuate status quo". Hoffer,[4] in his study of the celery growers of Dutch descent, found that the influence of the Circular Bulletin 165 was affected by the cultural heritage of the

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[2]Research findings on culture and its influence on adoption is reviewed because it was originally intended to take into account the effect of ethnic origins of the apple growers on their adoption behavior. Since all, but one, of the respondents were American born, further investigation of this factor became impossible.

[3]Harald A. Pedersen, "Cultural Difference in the Acceptance of Recommended Practices," Rural Sociology, 16, March, 1951, pp. 37-49.

[4]Charles R. Hoffer, Acceptance of Approved Farming Practices Among Farmers of Dutch Descent, East Lansing: Michigan Agriculture Experiment Station, Special Bulletin 316, June, 1942, pp. 27-31.

people. Both of these studies suggest that attitudes of the farmer, as they are developed by cultural heritage and experience, appear to be a chief influence in determining the immediate acceptance of a recommended practice.

Values and their Influence on Adoption

The relationship of personal values to the adoption of farm and home practices was explored by Kimball's study[5] on fifty-three farm couples in Eaton county, Michigan. He found that certain personal values held by the "innovationist farmers" are positively related to the adoption of farm practices. These values were: family life, security, influence, new experience, wealth and freedom. At the same time, he found that there are certain personal values which the "conservatist" held that are negatively related to the adoption of farm practices. These values were: desire for recognition, religion, orderliness, helpfulness, friendship and workmanship.

Wilkening[6] found that emphasis on owning a farm free of debt has been negatively associated with the adoption of improved farm practices.

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[5]William J. Kimball, "The Relationship Between Personal Values and the Adoption of Recommended Farm and Home Practices," Chicago: The University of Chicago, Unpublished Ph.D. Dissertation, 1960.

[6]E. A. Wilkening, Adoption of Improved Farm Practices as Related to Family Factors, Madison: Wisconsin Agricultural Experiment Station, Research Bulletin 183, December, 1953, pp. 34-35.

However, Ramsey and associates[7] found in their study of values related to the adoption of improved dairy practices and to knowledge, critical evaluation, and use of agricultural lime, associations between adoption rates and twelve values scaled according to the Guttman technique were very small. They have shown that adoption was negatively but significantly associated with high emphasis on security and traditionalism. Three value orientations were found to be positively related to knowledge, critical evaluation, and use of lime practices. These were emphasis on material achievement, science, and material comfort; while a desire for security and emphasis upon traditionalism was negatively related to adoption. All correlations were low.

Goals and Motivations and their Influence on Adoption

Wilkening's[8] recent study of goals in decision-making on Wisconsin dairy farmers has revealed the fact that "salience of 'profit' in decision-making is positively associated with exposure to information which emphasizes the consideration of 'profit' as opposed to other considerations in decision-making on the farm."

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[7]C. E. Ramsey, R. A. Polson and G. E. Spencer, "Values and the Adoption of Practices," Rural Sociology, 24, March, 1959, pp. 35-47.

[8]E. A. Wilkening and C. E. Johnson, Goals in Farm Decision-Making as Related to Practice Adoption, Madison: Wisconsin Agriculture Experiment Station, Research Bulletin 225, February, 1961, p. 22.

This finding suggests that the economic orientation of the farmers and their attitudes towards increasing their net farm income affect their decision on whether to accept or not to accept recommended practices.

Ploch[9] has dealt with the attractive forces which motivated the contract broiler grower to enter the contract broiler business. He found that "the prospect of financial reward and the growing popularity of broiler raising were two of the reasons which the operators gave for their becoming contract operators".

Reference Groups and their Influence on Adoption

Lionberger[10] defines the reference group as being "a group to which an individual refers when forming an opinion, making a judgment, or deciding to act". Reference groups play an important part in influencing actions of individuals and the way they behave. The influence that reference groups have on behavior is dependent upon the importance a person attaches to the group, the norms of the group as he perceives them, and his expectations regarding the group.

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[9]Louis A. Ploch, Social and Family Characteristics of Maine Contract Broiler Growers, Orono: Maine Agriculture Experiment Station, Bulletin 596, August, 1960, p. 22.

[10]H. F. Lionberger, Adoption of New Ideas and Practices, Ames: The Iowa State University Press, 1961, p. 8.

Individuals can also serve as referents. Rogers and Beal[11] have indicated that both individuals and groups serve as significant referents in the behavior of individual farmers. These authors were able to show, by the use of projective techniques, that neighborhoods constituted one of the most important reference groups in farm practice adoption behavior, and that they were more important for late than for early adopters.

The same study[12] showed that there were mixed feelings among farmers regarding the scientist as a referent. As may be expected, those with the highest adoption scores expressed the most favorable reactions.

Lionberger and Coughenour,[13] in their Missouri study, found that persons sought for advice in matters related to farming were more likely to have been exposed to formal group influence than those who sought their advice. A significant positive correlation was found between participation in formal social groups and the adoption of new farm practices.

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[11]E. M. Rogers and G. M. Beal, Reference Group Influence in the Adoption of Agricultural Technology, Ames: Iowa State University, 1958.

[12]Ibid.

[13]H. F. Lionberger and C. M. Coughenour, Social Structure and Diffusion of Farm Information, Columbia: Missouri Agricultural Experiment Station, Research Bulletin 631, April, 1957, p. 48.

Other Factors and their Influences on Adoption

The findings of previous studies on the effect of attitudes, values, abilities, group memberships, social status, and farm business characteristics on adoption have been analyzed in the bulletin published by the Sub-committee for the Study of Diffusion of Farm Practices[14] as related to the five adopters' categories namely, innovators, early adopters, early majority, late majority, and late adopters. It was found that innovators have the following personal and farm business characteristics: favorable attitudes toward science, place a high value on the role of science in agriculture and on "the security that comes from being debt-free", willing to borrow money and to take risks in order to realize a profit, read farm magazines and Extension bulletins, active in formal organizations, tend to be cosmopolitan in their participation patterns, have a higher income, larger farms, more wealth, and have more specialized enterprises than other farmers.[15] In other words, it could be said that the above variables, in addition to some others not mentioned here, were found to be positively related to the adoption of the recommended practices.

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[14] Adopters of New Farm Ideas, p. 5.

[15] Ibid., pp. 5-7.

Kopp[16] found in his study of Kansas cattlemen that certain personality characteristics of farm operators, such as the flexibility of their mental approach to problems in farming, were significantly associated with the adoption and non-adoption of the recommended practices.

Hoffer[17] suggested that farm practice adoption was associated with certain social and psychological characteristics of the farm operators, and he emphasized the importance of those factors and their relationship to the adoption of the recommended practices. He found that "if a farmer was efficient, had initiative, and was progressive, he was likely to adopt approved practices. On the other hand if he tended to be conservative and valued security highly, he would postpone the adoption of a practice or possibly never adopt it."

The literature reviewed above is only a part of the vast body of research on diffusion which has relevant findings to the present study. Many studies have been done in this field. A recent bibliography[18] lists 100

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[16]James H. Copp, Personal and Social Factors Associated with the Adoption of Recommended Farm Practices Among Cattlemen, Manhattan: Kansas Agriculture Experiment Station, Technical Bulletin 83, September, 1956, p. 2.

[17]Charles R. Hoffer and D. Stangland, "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing," Rural Sociology, 23, June, 1958, p. 112.

[18]Herbert F. Lionberger, Adoption of New Ideas and Practices, Ames: The Iowa State University Press, 1961, pp. 119-44.

studies of the diffusion of new ideas which have appeared in scientific journals, theses, and research bulletins. Another compilation[19] of farm and home practice diffusion studies listed 228 projects. Rogers,[20] in his recent book, reviews more than five hundred publications on the diffusion of innovations and synthesizes their findings and theories. A more detailed review of literature on diffusion of innovations, can be obtained from the above three sources.

A cursory review of such a great variety of research which has been conducted on the adoption process of new farm practices might suggest that with all that has been done there is scarcely need for further study on the subject. But further analysis reveals that abundant information is available on the relationship of some factors to the adoption of these recommended practices, while others are comparatively unexplored. For example, the influence of frames of reference on aspirations and goals, motivations, and personal values of the farmer on what he absorbs and how he applies it needs further investigation. The review of literature on the acceptance of the recommended

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[19]"Research and Writing on Diffusion of Farm and Home Practices," A Bibliography compiled by National Project in Agriculture, East Lansing: Michigan State University, (Mimeographed), March, 1959.

[20]E. M. Rogers, Diffusion of Innovations, New York: The Free Press of Glencoe, 1962.

practices reveals consistent positive relationships between such situational factors as education, income, size of farm, social participation, contact with Extension, and rural practice adoption. It is clear, at the same time, that little work has been done on the relationship between aspirations, goals, personal values, beliefs, and attitudes and the adoption of such practices. For this reason it is felt that more investigation is needed to pinpoint the influences of such relatively unexplored factors and their relationship to the adoption practices.

The review of literature reveals the need for a synthesis of the wealth of findings available in terms of more general theoretical concepts than have been used in most past studies. In addition there is a need for greater uniformity in procedure, design, and use of concepts.

CHAPTER III

"OPENING" AND "CLOSING" CULTURALLY DEFINED GOALS AND ADOPTION OF PRACTICES

Hypothesis: Apple growers who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing".

Understanding of farmers' motivation with respect to the acceptance of recommended practices requires a more intensive study of the process of decision making in terms of the goals of action. When reviewing previous research, the Subcommittee on the Diffusion and Adoption of Farm Practices reported that the problem of motivation in the acceptance of farm practices has only been touched upon. The report further states, that there are few data on the manner in which the acceptance of farm practices is rationalized in terms of the farmer's goals, both economic and non-economic, and the means available for obtaining those goals.[1]

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[1]"Sociological Research of the Diffusion and Adoption of New Farm Practices," Report of the Subcommittee on the Diffusion and Adoption of Farm Practices, The Rural Sociological Society, Lexington: Kentucky Agricultural Experiment Station, (Mimeographed), June, 1952.

This chapter will deal with two relatively new concepts, namely "open or opening" and "closed or closing" goals and their effect on adoption of farm practices. These concepts are related to the general level of aspiration theory and to a number of key theoretical concepts in social psychology and sociology such as motivation, aspirations, frames of reference, and attitudes. An apple grower is said to have "open or opening" goals, if he believes that his goals, as he sees them, are attainable or becoming attainable, that is, if he sees apple growing as an appropriate and adequate means for accomplishing his ends. On the other hand, he is said to have "closed or closing" goals, if he believes that his goals are not attainable or are becoming less attainable. In other words, he sees apple growing as being or becoming inappropriate or inadequate for accomplishing his ends.

The discussion of the concepts of "open or opening" and "closed or closing" goals which follows shows how these concepts are linked to the level of aspiration theory and to the other social psychological and sociological concepts stated above.

Hilgard[2] defined level of aspiration as being "a goal that the individual sets as something he expects to achieve

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[2]Ernest R. Hilgard, Introduction to Psychology, 2nd Ed., New York: Harcourt, Brace and Company, 1957, p. 583.

or strives to achieve". Level of aspiration and motivation are interrelated. Sherif[3] defined motivation as being "goal directed behavior".

According to Edmund des Brunner and associates,[4] "Research in social psychology has approached the problem of motivation largely by means of the concept of 'level of aspiration'". He further states that "the major premise for "level of aspiration" concept is that an individual raises or lowers his goals within certain frames of reference which are relevant to these goals."

The present study suggests that one not only raises or lowers his goals, depending upon his frame of reference, but also he is influenced in the selection of the means he uses in achiving his goals.

Sherif has demonstrated the importance of the influence of one's frame of reference in determining one's perceptions of the universe about him and in his subsequent adjustment to it.[5] In fact, he has shown that "...When an objective frame of reference is lacking--when the field of stimulation is unstable, vague, and not well structured--the individual perceives the situation as shaped by his

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[3]Muzafer Sherif, An Outline of Social Psychology, New York: Harper, 1948, p. 11.

[4]Edmond des Brunner and associates, An Overview of Adult Education Research, Chicago: Adult Education Association, 1959, p. 32.

[5]Sherif, op. cit., p. 167.

own internally evolved frame of reference."[6]

Chapman and Volkmann[7] have indicated that the frame of reference influences the level of aspiration and that there are important features which come from the "social environment and these features will also influence the aspirational levels of the individuals". Culturally emphasized goals are considered part of the social environment and they, therefore, influence the individual's level of aspiration. According to Merton,[8] profit, money making, and increasing one's net income are goals which are emphasized by the American culture. Considerable emphasis is placed by the culture upon achieving "success" in a monetary way. Merton further indicates that in the American culture "the cultural manifesto is clear: one must not quit, must not cease striving, must not lessen his goals, for 'not failure, but low aim, is crime'. Thus the culture enjoins the acceptance of three cultural axioms: First, all should strive for the same lofty goals since these are open to all; second, present seeming failure is but a way-station to ultimate success;

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[6]Ibid., p. 167.

[7]D. W. Chapman and J. Volkmann, "A Social Determinant of the Level of Aspiration," Journal of Abnormal and Social Psychology, 1939, pp. 225-227.

[8]Robert Merton, Social Theory and Social Structure, Glencoe: The Free Press, 1957, pp. 166-167.

and third, genuine failure consists only in the lessening or withdrawal of ambition."[9]

On the basis of the above, the growing of apples is considered, in the present study, to be a means toward the achieving of one's culturally defined goals, whether they are strictly monetary or otherwise. It is assumed that one's decisions regarding his apple growing business will depend, in large measure, on the extent to which he sees apple growing as an appropriate means of reaching his goals. It is probably appropriate at this point to indicate that apple growing can be viewed both as a means and as a secondary goal. Therefore, as a secondary goal one can examine the means which are used in achieving this secondary goal.

In the present study, if one's frame of reference with regard to growing apples tends to be positive, that is, if he sees apple growing as a means of reaching his goals, the individual is said to have a "positive frame of reference". If, on the other hand, he does not see apple growing as a means of reaching his goals, the individual would be said to have a "negative frame of reference".

It can readily be seen that positive and negative frames of reference are a matter of degree, and there are all shades and degrees from one extreme to the other.

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[9]Ibid., p. 139.

Furthermore, an individual may be becoming more positive or more negative. If an individual has a positive frame of reference or one which is becoming positive he can be said to have goals which are open or opening. This, in effect, is a way of saying that his goals, as he sees them, are attainable or becoming attainable. Conversely, if an individual has a negative frame of reference or one which is becoming negative, he can be said to have goals which are closed or closing.

It seems apparent that the individual who sees his goals as open or opening, who sees apple growing as an appropriate and adequate means for accomplishing his ends, would tend to be more confident in trying out new ideas in his business and more willing to take a risk.[10] On the other hand, one who sees his goals as closed or closing, who sees apple growing as an inappropriate or inadequate means for accomplishing his goals, would tend to be less confident in trying out new ideas in his business and less willing to take a risk.[11]

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[10]It is anticipated that the individual who sees his goals as open or opening is likely to exhibit behavior similar to that described by Merton as the innovation adaptation. In this instance, high emphasis upon the success-goal is maintained, and individuals tend to abandon institutional means of achieving their goals. (Merton, Social Theory and Social Structure, pp. 141-149).

[11]In some ways the behavior of an individual who sees his goals as closed or closing can be linked to the ritualistic type of adaptation discussed by Merton. Merton says that the implicit life-philosophy of the social ritualist

The above line of reasoning led to the development of the above stated hypothesis which is designed to test the relationship between the adoption of recommended practices and one's seeing his goals with regard to apple growing as being "open or opening" or "closed or closing".

The concepts, "open or opening" and "closed or closing" goals, as discussed above, are logically a special instance of the more general level of aspiration theory. The treatment of the concepts here, as they relate to the apple growing occupation, is in part similar to Haller's treatment of "level of Occupational Aspiration" (LOA) concept.[12] Haller considered LOA as being a special instance of the concept of level of aspiration.[13] When developing an instrument to measure the LOA concept, Haller based it on seven variables which are related to the level of aspiration concept. These variables were: object-behavior, means-behavior, group success-orientations, facilitation of personal orientations, willingness

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finds expression in a series of cultural cliches: "I'm not sticking my neck out," "I'm playing safe," "I'm satisfied with what I've got," "Don't aim high and you won't be disappointed." Merton says that such an adaptation is one which tends to abandon major cultural goals and to cling "all the more closely to the safe routines and the institutional norms." (Merton, Social Theory and Social Structure, pp. 150-151).

[12]Archibald O. Haller and Irwin W. Miller, The Occupational Aspiration Scale: Theory, Structure and Correlates, East Lansing: Michigan Agricultural Experiment Station, Technical Bulletin 288, 1963, p. 9.

[13]Ibid., p. 10.

to act independently, and finally self-conceptions.[14]

The present study considers the concepts of "open or opening" and "closed or closing" goals, as they relate to the apple growing occupation, as being based on five variables which are used to test the two concepts. Individuals with either "open or opening" or "closed or closing" goals were characterized in the following ways:

(1) Those whose achievement orientation toward their apple business is high, are more likely to have "open or opening" goals. On the other hand, those whose achievement orientation toward their apple business is low are more likely to have "closed or closing" goals.

(2) Those whose attitudes toward apple growing as an occupation is favorable tend to see their goals "open or opening", while those whose attitudes toward apple growing as an occupation is unfavorable tend to see their goals "closed or closing".

(3) Those whose social and business situation, as expressed by the presence of obstacles, does not facilitate making progress tend to see their goal as "closed or closing", while those whose social or business situation does

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[14] Ibid., pp. 28-33.

facilitate making progress, as expressed by lack of obstacles, tend to see their goal as "open or opening".

(4) Those whose past and anticipated future changes involve expansion of the enterprise (for example, increased acreage, additional storage facilities, or adding new apple varieties) are regarded as having goals which are open or opening. Those whose past and anticipated future changes involve reduction of the enterprise (for example, reducing acreage, going out of business, etc.) are regarded as having goals which are closed or closing.

(5) Those apple growers who anticipate changes within the near future are regarded as having goals which are "open" if such changes involve expansion of the enterprise or other indications that the farmer has a tendency to stay with the apple business. Farmers are regarded as having goals which are "opening" if such changes are anticipated in the more distant future.

Those apple growers who anticipate changes within the near future are regarded as having goals which are "closed" if such changes involve a reduction in the enterprise. Apple growers are

regarded as having goals which are "closing" if such changes are anticipated in the more distant future.

Measurements and Findings:

The following discussion is an attempt to state the concepts "open or opening" and "closed or closing" goals operationally in order to permit their use as a tool for analysis in this particular study.

(1) Achievement Orientation. This variable was used by Haller, among three others, to measure personality orientations of youth.[15] He states that experimental research shows that success results in raising level of aspiration and failure results in the reverse. He also indicates that if personal orientations are such that an individual frequently experiences success in areas believed to be related to occupational achievement, he would be expected to raise his levels of occupational aspiration. Conversely, if his orientations are such that he frequently experiences failure in these areas, he would be expected to lower his level of occupational aspiration.[16]

The same reasoning could be applied also to apple growers. It is believed here, that if an apple grower's orientations are such that he frequently experiences

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[15] Ibid., p. 48.

[16] Ibid,, p. 31.

success in areas related to his apple business, he is expected to have a high achievement orientation and, therefore, would tend to see his goals as "open or opening". On the other hand, if his orientations are such that he frequently experiences failure in areas related to his business, he is expected to have a low achievement orientation and, therefore, would tend to see his goals as "closed or closing".

While Haller used two scales to test the achievement orientation of high school students,[17] this study concerns itself with six attitudinal items. These six items were used to test achievement orientations which the apple growers have in regard to their apple growing business. It should be indicated that more items would provide a more accurate measure of this variable.

In order to justify combining these six items into one total achievement score, for the purpose of analysis, an item analysis was made to see to what extent each contributes to the total score of all items. It was found that all six have relatively high correlation scores, which justifies combining them into a single total achievement orientation score.[18]

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[17] Ibid., p. 48.

[18] The correlation scores for the six items were as follows: Item 1 = .71, item 2 = .45, item 3 = .81, item 4 = .59, item 5 = .63, and item 6 = .43.

These six items and their corresponding type of responses are presented below:

Attitudinal Statements	Type of Response		
	Favorable	Uncertain	Unfavorable
1. Sometimes I feel that farming is a "dead end" operation without a future.	Disagree	Uncertain	Agree
2. Sometimes I really don't know what apple growers like me are trying to accomplish.	Disagree	Uncertain	Agree
3. Many times apple growing gets so confusing and demanding that I wonder where I am at.	Disagree	Uncertain	Agree
4. Practically everything I try to do turns out well for me.	Agree	Uncertain	Disagree
5. I usually fail when I try something important.	Disagree	Uncertain	Agree
6. The future looks very dismal.	Disagree	Uncertain	Agree

The above items were borrowed, with some modification, from three unpublished questionnaires used by Franz,[19] Haller,[20] and Dean[21] in their different studies.

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[19]Item 1 corresponds to item 43, item 2 corresponds to item 47, and item 3 corresponds to item 54. V. R. Franz and A. O. Haller, "Big and Little Co-ops: Attitudes of People in Locally-Owned Cooperatives Toward Mergers With Large Cooperatives," Unpublished Final Report, East Lansing: Agricultural Experiment Station, February, 1962, Original schedule, p. 11.

[20]Item 4 corresponds to item 57, and item 5 corresponds to item 58, Haller and Miller, op. cit., p. 119.

[21]Item 6 corresponds to item 23 in the unpublished Dean's Alienation Scale , used by Dwight G. Dean in his study of "Alienation: Its Meaning and Measurement," American Sociological Review, October, 1961, pp. 753-758.

An achievement orientation score (AOS) was assigned to each apple grower by giving: zero to each unfavorable response, 1 to each uncertain response, and 2 to each favorable response.[22] These weights were arbitrarily chosen for the purpose of this analysis. Scores of responses for all these items were combined for each apple grower to give his AOS. The minimum possible score for achievement orientation is zero, while the maximum possible score is 12 (Table 1). If the score is high, the grower is more likely to have a high achievement orientation toward his apple business, and, therefore, he is more likely to see his goals as "open or opening". If the score is low the reverse is expected, and the grower is likely to see his goals as "closed or closing".

A chi-square test of association was applied to determine whether or not an association existed between achievement orientation and adoption scores. The detailed score categories presented in Table 1 were collapsed for the purpose of statistical analysis into "low" (0-4), "medium" (5-8), and "high" (9-12). The chi-square test of association revealed the existence of a significant association, at the 0.05 probability level, between

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[22]The weights given to each of these responses were arbitrarily chosen, but there are some indications that these weights are not too important if the factors are clearly intercorrelated. See H. R. Cottam, "Housing Scales for Rural Pennsylvania," Journal of the American Statistical Society, 38, 1943, pp. 406-416.

Table 1. Total achievement orientation score by adoption

(N=100)

Achievement orientation score	Percent	Mean adoption score
"Low"		
0-2	6.0	109.5
3-4	16.0	111.4
"Medium"		
5-6	17.0	118.9
7-8	16.0	140.7
"High"		
9-10	23.0	134.3
11-12	22.0	147.7

$X^2=21.84$; 4 d.f.; $P<0.05$; $C=0.42$

achievement orientation score and adoption score (Table 1). The degree of association between the two variables was moderate (C=0.42). The direction of the association was, as expected, apple growers with "high" achievement orientation scores were more prone to adopt recommended practices than those with "medium" or "low" achievement orientation scores.

The items used to test achievement orientation score and their respective responses are presented in more detail in Appendix II, Table 1. It is noted that all six items were found to be associated with adoption. The correlations, expressed by the contingency coefficient, for the first four items were almost identical, 0.30, 0.30, 0.32, and 0.32 respectively. The fifth item had

a contingency coefficient of 0.46, while the sixth item had a contingency coefficient of 0.25. The chi-square test of association for all six items showed that a significant relationship existed at the 0.05 level.

Since achievement orientation is used in this particular study as a variable which measures "open" and "closed" goals, as it was indicated earlier, the above findings support the research hypothesis that apple growers who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing".

(2) Attitudes Toward the Apple Business as an Occupation. Attitudes toward the apple business occupation are related to the object-behavior variable which was used by Haller as one measure of the LOA.[23] For the purpose of this study, object refers to apple growing as an occupation. The attitude toward such object will, no doubt, influence the type of behavior or action directed toward the object.

Copp[24] also investigated attitudes toward future in farming in his study of Kansas cattlemen. He found a definite relationship between a favorable attitude toward

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[23]Haller and Miller, op. cit., p. 30.

[24]James H. Copp, Personal and Social Factors Associated with the Adoption of Recommended Practices Among Cattlemen, Manhattan: Kansas Agricultural Experiment Station, Technical Bulletin 83, September, 1956, p. 30.

farming and adoption. In testing attitudes toward future in farming, Copp used two types of questions, the first one is an open-ended question concerning the kind of advice they would give a farm youth who was considering farming as a career, and the second one was in terms of a rationalization for farming, irrespective of whether the future was favorable or not.

In the present study, three questions were used to reveal the growers' attitudes toward the apple business as an occupation. These questions and the scores arbitrarily assigned to their responses for statistical analysis purposes are as follows:

1. Do you think that apple growing is more desirable or less desirable as an occupation now than it used to be?

   Score given

   2 points ___More desirable
   1 point ___The same as before
   0 point ___Less desirable

2. Knowing what you know now, and if you could start over again, would you be an apple grower or would you choose some other occupation?

   Score given

   1 point ___Apple growing
   0 point ___Some other occupation

3. Have you actually considered giving up apple growing and going into some other occupation?

   Score given

   1 point ___No
   0 point ___Yes

A total attitude score toward apple occupation was computed for each apple grower by adding up the corresponding scores of his responses for the above three questions. Total attitude scores were dichotomized in terms of "low" and "high". A chi-square test was applied to see whether or not a total attitude score toward apple occupation was associated with adoption scores. The result shows no significant association, at the 5 percent probability level, exists between attitude score toward apple business as an occupation and adoption score of the recommended practices (Table 2). The relationship between the two variables investigated is in the expected direction stated in the research hypothesis. Since the chi-square at the

Table 2. Total attitude score toward apple business as an occupation by adoption (N=100)

Attitude score toward apple business as an occupation	Percent	Mean adoption score
"Low"		
0-2	57.0	123.5
"High"		
3-4	43.0	135.1

X^2=3.95; 2 d.f.; P>0.05; C=0.20

0.05 level was not significant, there is no basis to infer that the degree of association in the sample is also present in the population.

A detailed analysis of the three individual items which were used to test attitudes toward apple business as an occupation also revealed the fact that these three items were not significantly associated with adoption score. As part 1 of Table 3 shows, 43 percent of the apple growers in the sample felt that apple growing is more desirable as an occupation now than it usedto be, 7 percent feel that it is "the same as before", while 50 percent feel that apple growing is "less desirable" as an occupation now than it used to be. The first group of growers are considered to have a more favorable attitude toward their occupation than the two latter groups.[25]

The chi-square test of association shows no significant relationship between adoption score and the expressed desirability of apple growing as an occupation. The association between the two variables was found to be in the expected direction.

It is assumed that those who would still choose apple growing rather than other occupations are considered as having more favorable attitudes toward the apple business than those who preferred to choose some other occupation. The first group apparently considers apple

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[25]These two groups were combined when computing the chi-square because the expected frequencies in "the same as before" category were less than 5, the minimum required number. See Siegel, Nonparametric Statistics for the Behavioral Sciences, pp. 46-47.

growing as being an appropriate and adequate means for accomplishing their ends, while the second sees apple growing as being an inappropriate and inadequate means for accomplishing their ends. For this reason, the

Table 3. Attitudes toward the apple business as an occupation items by adoption (N=100)

Attitudes	Percent	Mean adoption score
1. Do you think that apple growing is more desirable or less desirable as an occupation now than it used to be?		
More desirable	43.0	138.3
The same as before*	7.0	124.2
Less desirable	50.0	124.5
$X^2=3.95$; 2 d.f.; $P>0.05$; C=0.20		
2. Knowing what you know now, and if you could start over again, would you be an apple grower or would you choose some other occupation?		
Apple growing	71.0	134.0
Some other occupation	29.0	122.9
$X^2=3.64$; 2 d.f.; $P>0.05$; C=0.17		
3. Have you actually considered giving up apple growing and going into some other occupation?		
No	79.0	131.5
Yes	21.0	128.1
$X^2=0.65$; 2 d.f.; $P>0.05$; C=0.00		

*This category was collapsed with the last one to facilitate the chi-square test.

growers in the latter group would choose some other occupations if they could start over again. Part 2 of Table 3 reports that 71 percent would choose apple growing and 29 percent would choose some other occupation. The chi-square results show no significant difference between the adoption score of those who would choose apple growing and those who would choose some other occupation.

Apple growers who actually considered giving up apple growing and going into some other occupation are regarded as having a negative attitude toward their business. They are also regarded as seeing their goals as "closed or closing". On the other hand, those who have not considered giving up apple growing are considered as seeing their goals "open or opening". Part 3 of Table 3 shows that 21 percent of the total sample have actually considered giving up apple growing. The association, expressed by chi-square, between growers' consideration to give up or not to give up apple growing and their adoption score was not significant.

As indicated earlier, attitudes toward the apple business as an occupation were used as a variable which tests "open" and "closed" goals. The above analysis shows that the total attitude score toward the apple occupation was not significantly associated with adoption scores. In addition, it was found that none of the three items which measure the independent variable was significantly

related to adoption score. All the chi-square results obtained support the null hypothesis of no relationship and reject the research hypothesis that those who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing".

(3) Facilitation of the Social and Business Situation. The treatment of this variable is similar to Haller's treatment of another LOA variable, namely, facilitation of the social situation. Haller indicates that "persons in situations which frustrate the desire to be a success are quite aware of it." He further states that "if the goal of high occupational achievement is learned by all or most youth in the society, and if those in situations which frustrate the attempt to be successful are aware of the factors blocking their achievement, then they would be expected to lower their levels of occupational aspiration."[26] The above reasoning can be applied to apple growers. If the grower is in a social and business situation which frustrates his desire to become a successful apple grower, and if such a grower is aware of the factors blocking his achievement, then he would tend to see his goals as being "closed or closing". On the other hand, if the grower believes there are no such blocking

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[26]Haller and Miller, op. cit., p. 31.

factors, then he tends to see his goals as being "open or opening".

Four variables were used by Haller to test facilitation of the social situation; these were: Social class status, race, parents' willingness to provide financial assistance to the youth, and post-educational work experiences.[27]

In this study only one question was asked to find out whether or not apple growers were actually facing, or aware of, some factors which are blocking their achievement. The question states:

> Have there been any obstacles or things that have stood in the way of your making as much progress as you would have liked in farming or home and family life during the past few years?

The presence of obstacles in farming or home and family life are considered here as blockings which might hinder of delay progress. Therefore, apple growers who are experiencing some of these obstacles are expected to see their goals as "closed or closing", while those who are not experiencing any of these obstacles are expected to see their goals as "open or opening".

The responses for the question presented above were dichotomized into "Yes" and "No" answers. According to Table 4, 56 percent of the apple growers in the sample

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[27] Ibid., pp. 41-44.

have experienced or are experiencing some obstacles, such as "weather obstacles," "low returns and high operating costs," "depressed markets," "old age," and others, while 44 percent indicated that they had not experienced any such obstacles. The chi-square test showed that no significant association existed, at the 0.05 level, between

Table 4. Facilitation of the social and business situation by adoption (N=100)

Question	Percent	Mean adoption score
Have there been any obstacles or things that have stood in the way of your making as much progress as you would have liked in farming or home and family life during the past few years?		
No	44.0	132.9
Yes	56.0	128.6
$X^2=0.95$; 2 d.f.; $P>0.05$; C=0.00		

facilitation of the social and business occupation, as measured by the presence of obstacles, and adoption score (Table 4).

The data presented in Table 4 supports the null hypothesis of no relationship and rejects the research hypothesis that those who see their goals as "open or opening" tend to have a higher adoption score than those who see their goals as "closed or closing".

(4) Changes in the Farm Enterprise. As indicated above, changes in the farm enterprise refer to changes or actions which took place or will be taking place regarding the apple business. This variable is related to Haller's means-behavior variable which he used to measure the LOA concept. Haller[28] considered means-behavior as being the means necessary to carrying one's attitude into behavior. It is believed here that if an apple grower has a certain attitude toward apple occupation, he tends to make what he believes as being necessary changes to carrying his attitudes into actual behavior. Changes in the farm enterprise can be classified in this study as being appropriate or inappropriate to the apple business situation, but at any rate, they are considered by the actor as being necessary for the achievement of his success goals.

Two questions were used to reveal the type of changes which took place or would be taking place in the apple business. These questions and the scores arbitrarily assigned to their responses for computing a total score for"changes in the farm enterprise" variable are as follows:

1. What has happened to your apple business over the last five years as measured by the number of trees?

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[28]Ibid., p. 30.

	Total No. 5 yrs. ago (about 1958)	Total No. in 1962
Non-bearing trees		
Total		

Score given

2 points If the total number of apple trees over the last 5 years has increased.

1 point If the number has remained the same.

0 point If the number has decreased.

2. What type of major changes, if any, do you plan in your apple business in the next few years?

The changes planned were classified into three categories. These categories and the scores given to them are as follows:

Score given

2 points If the changes planned were expansion, i.e., increase acreage, building a C.A. storage, or planting new apple varieties.

1 point If there was no change planned.

0 point If the changes planned were reduction, or getting rid of apples.

A total score for "changes in the farm enterprise" variable was computed for each apple grower by adding up the scores he obtained in both questions. These total scores were dichotomized in terms of "low" and "high" for the purpose of the chi-square test. Tabulation was made to determine whether or not the total score for "change in the farm enterprise" variable was related to the degree

of adoption. This variable is used in this study as a further test for "opening" and "closing" goals. It is assumed that if an apple grower sees apple growing as an appropriate and adequate means for accomplishing his ends, he is more likely to expand and increase the size of his operation. On the other hand, if he sees apple growing as being or becoming an inappropriate or inadequate means for accomplishing his ends, he is more likely to decrease the size of his operation.

Table 5 shows that the chi-square test of association revealed the existence of a significant relationship between nature of "changes in the farm enterprise" and adoption variables. The degree of association between the two variables, as measured by the contingency coefficient, was found to be equal to 0.37. The direction of

Table 5. Total score for "changes in the farm enterprise" variable by adoption (N=100)

Total score for "change in the farm enterprise"	Percent	Mean adoption score
"Low"		
0-2	36.0	113.9
"High"		
3-4	64.0	136.7

X^2=16.02; 2 d.f.; P< 0.05, C=0.37

the association was as expected: apple growers with "high" total scores for "change in the business enterprise" tend

to have higher adoption scores than those with "low" scores for "changes in the business enterprise."

The question used to reveal the type of changes which took place or would be taking place in the apple business and the findings related to them are presented in Table 6.

Table 6. Changes in the farm enterprise items by adoption (N=100)

Question	Percent	Mean adoption score
1. What has happened to your apple business over the last five years as measured by the number of trees?		
Total apple trees		
Increased	59.0	137.3
Remained the same	34.0	120.4
Decreased*	7.0	122.4
X^2=10.30; 2 d.f.; P<0.05; C=0.30		
2. What type of major changes, if any, do you plan in your apple business in the next few years?		
Type of change		
Expansion, i.e., increase apple acreage, better varieties, building C.A. storage, etc.	45.0	141.3
No changes are planned	40.0	122.2
Reduction of apple acreage or getting rid of apples	15.0	117.7
X^2=16.63; 2 d.f.; P<0.05; C=0.37		

*This category was collapsed with "Remained the same" group because the expected frequencies were so small.

It can be seen from part 1 of Table 6 that 59 percent of the apple growers in the sample have increased their apple business in the last five years, 34 percent indicated that the number of apple trees on their farms has remained the same, and 7 percent have decreased it. As indicated above, those whose apple business has increased are regarded as having goals which are "open or opening", while those whose apple business has decreased are regarded as having goals which are "closed or closing".[29] Those whose apple business has remained the same are considered as having goals which are neither "open" nor "closed". When examining the mean adoption scores for the three groups, it is evident that those who have increased their business have a higher adoption score than those who have decreased it or those whose business has remained the same. The association between an increase in the total number of apple trees over the last five years and adoption, as expressed by the chi-square test, is significant at the 0.05 level of probability. A correlation of C=0.30 was found between the two variables.

Part 2 of Table 6 shows the relationship between the type of major changes which the grower is planning to make in his apple business and the adoption score. Expansion,

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[29]Because the expected frequencies for this group was small, it was combined with "remained the same" group when chi-square was computed.

such as increasing the apple acreage, planting better varieties, and building cold atmosphere storage, was planned by 45 percent of the apple growers interviewed. Those who planned to expand are considered as having their culturally defined goals "opening". On the other hand, reduction of apple acreage or getting rid of apples was planned by 15 percent of the growers in the sample.[30] Those who planned to reduce their apple acreage are considered as having their culturally defined goals "closing". Forty percent of the growers planned no change in their apple business. As was expected, those who planned to expand their operations tend to have a higher adoption score than those who planned to reduce them or those who planned no change. A significant association exists between the type of changes planned and adoption. The relationship, as measured by the contingency coefficient, is C=0.37.

It could be concluded, then, that all findings presented above reject the null hypothesis of no relationship and support the research hypothesis that apple growers with "open or opening" goals tend to have a higher adoption than those with "closed or closing" goals.

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[30]Since this group has only 15 cases, it was combined with "no change is planned" group because the expected frequencies in the cells were less than 5, the required number for calculating chi-square.

(5) Time of Changes Planned. As indicated above, this study regards anticipated expansion and related changes in the farm enterprise as an indication that the farmer sees his goals as "open" or "opening". If he sees his goals as "open" it is assumed here that changes are likely to take place fairly soon. An arbitrary limit of four years was selected for purposes of this study. If he sees his goals as "opening" it seems likely that anticipated changes will take place over a longer period of time, that is, beyond four years.

Anticipated reduction and related changes in the farm enterprise are regarded as an indication that the farmer sees his goals as "closed" or "closing". If he sees his goals as "closed" it is assumed here that changes are likely to take place fairly soon, that is, within four years. On the other hand, if he sees his goals as "closing" it seems likely that anticipated changes will take place over a longer period of time, that is, beyond four years.

The information for this aspect of the study was obtained by simply asking the following open-ended question: "When is this change planned?" As a further clarification, if the hypothesis holds the following relationships will exist: The shorter the period of time in which an expansion of the enterprise is anticipated, the more open the goals, therefore, the higher the adoption score. On the other hand, the shorter the period of time in which a reduction of the enterprise is anticipated, the more

closed the goals, therefore, the lower the adoption score. Those apple growers who anticipate no change are likely to have adoption scores in between.

The time in which expansion and reduction changes were planned were dichotomized into "within 4 years" and "beyond 4 years" categories. A chi-square test was computed for each type of change separately to see whether or not an association exists between the time of that type of change and adoption score.

Table 7 shows that the time in which expansion and related changes are to take place was found to be related to adoption scores. The association expressed by the chi-square test was significant at the 0.05 probability level. The degree of association between the time of

Table 7. Nature of change and time planned by adoption (N-100)

Nature of change and time planned	Number	Percent	Mean adoption score
Expansion and related changes			
Within 4 years*	23	51.1	145.1
Beyond 4 years*	22	48.9	139.5
No change planned	40	40.0	122.0
Reduction and related changes			
Within 4 years**	3	20.0	136.2
Beyond 4 years**	12	80.0	112.0

*X^2=14.39; 2 d.f.; $P<0.05$; C=0.49
**X^2= 5.38; 2 d.f.; $P>0.05$; C=0.51

expansion and adoption score was moderate (C=0.49). The direction of association between the two variables was as expected. On the other hand, the time in which reduction and related changes are to take place was not found to be significantly related to adoption scores. The degree of correlation, expressed by the contingency coefficient, between the time of reduction changes and adoption score is C=0.51. The relationship was in the expected direction stated in the hypothesis, but since the chi-square result was not significant at the 0.05 level, we have no basis to conclude that the degree of association present in the sample is also found in the population. It could be possible that the X^2 result obtained for the time of reduction was influenced by the small number of apple growers in the sample whose anticipated changes were classified under "reduction and related changes". Only 15 cases were found in this particular group.

It is concluded on the basis of the above findings that the relationship found between time in which an expansion of the enterprise is anticipated and adoption scores does confirm the research hypothesis that apple growers who see their goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing". Time of anticipated reduction and related changes, on

the other hand, was not significantly related to adoption score. The chi-square result obtained does not confirm the research hypothesis.

Summary and Conclusion:

The discussion on "open" and "closed" culturally defined goals as they relate to the adoption of the recommended farm practices can be summarized as follows:

1. There was a significant association, at the 0.05 level, between achievement orientation scores of the apple growers interviewed and their adoption scores. The degree of association between those two variables is C=0.42. All six items which were used to measure achievement orientation score were found to be significantly related to adoption score. The association between each item and adoption was found to be in the expected direction stated in the hypothesis.

2. The growers' attitudes toward the apple business as an occupation were not significantly associated, at the 0.05 probability level, with adoption scores. None of the three items which were used to measure attitudes toward the apple business occupation was found to be significantly related to adoption score. The association between the first two items and adoption score was in the expected direction, while no correlation was found between the third item (considering giving up apple

growing) and adoption score.

3. No significant association was found, at the 0.05 level, between facilitation of the social and business situation, as expressed by presence or non-presence of obstacles, and adoption score.

4. The chi-square test of association revealed the existence of a significant association, at the 0.05 level, between changes in the farm enterprise and adoption score. The degree of relationship between total score for changes in the farm enterprise and adoption was C=0.37. The two items which were used to measure changes in the farm enterprise were found to be significantly associated with adoption score. The association between each item and adoption score was in the expected direction.

5. Time in which the anticipated expansion and related changes are to take place was found to be significantly associated with adoption score at the 0.05 probability level. The correlation, as measured by the contingency coefficient, was moderate (C=0.49). On the other hand, time in which the anticipated reduction and related changes are to take place was found to be significantly related to adoption score at the 0.05 level. Although the degree of association between the two variables was found to be moderate (C=0.51), we have no

basis to say that such degree of association is present in the population since the chi-square, at the 0.05 level, was not significant. More cases are believed to be needed if a significant association is to be found.

The above findings indicate that the null hypothesis of no relationship between apple growers who see their culturally defined goals as "open" or "closed" and adoption was not totally rejected. The null hypothesis was supported by two variables out of five, namely "attitudes toward the apple business as an occupation," and "facilitation of the social or business situation". Another variable, "time of change planned", was partially found to support the null hypothesis. In other words, the data does not strongly support the research hypothesis that apple growers who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their goals as "closed or closing".

CHAPTER IV

"PROGRESSIVE" AND "TRADITIONAL" VALUE ORIENTATIONS AND ADOPTION OF PRACTICES

Hypothesis:

> "Progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

The concepts "progressive" and "traditional" are value orientations which are ideal types. They were derived mainly from certain theoretical concepts such as values and attitudes, and they are related to such concepts as rigidity and flexibility which are in current use in the literature.

Values and attitudes are key factors in influencing the behavior of the individual. For example, Lionberger[1] states that "values may be regarded as importance ratings which people attach to things, conditions, and circumstances". Newcomb[2] regards values as goal objects to which people orient their thinking, actions, and feelings. As such, values become important organizing themes in the behavior of individuals. Attitudes are also important

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[1]Herbert F. Lionberger, Adoption of New Ideas and Practices, Ames: The Iowa State University Press, 1961, p. 92.

[2]Theodore M. Newcomb, Social Psychology, New York: The Dryden Press, 1950, p. 119.

factors which affect behavior. Newcomb[3] states that attitudes are predispositions to act, perceive, think, and feel in relation to something. Thus, the ways which the individual behaves are influenced to a great extent by his value and attitude systems. Therefore, it can be stated that values and attitudes held by an individual are influential in determining whether one's personality tends to be "rigid" or "flexible".

Personality rigidity has been defined by Cattell and Tiner[4] as: "the difficulty with which old established habits may be changed in the presence of new demands". Meresko and others,[5] on the other hand, defined rigidity as "a person's resistance, or lack of readiness, to be influenced by motivationally relevant situation in such a way as to adjust to his environment as effectively as his behavior repertory permits". It can be logically assumed that the "flexible" personality has characteristics which are the opposite of those of the "rigid" personality.

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[3] Ibid., p. 119.

[4] Raymond B. Cattell and L. Ghose Tiner, "The Variates of Structural Rigidity," Journal of Personality, XVII: 3, June, 1949, pp. 321-341.

[5] Robert Meresko et al., "Rigidity of Attitudes Regarding Personal Habits and its Ideological Correlates," Journal of Abnormal and Social Psychology, 49:1, January, 1954, pp. 89-93.

Copp uses the concepts "rigidity" and "flexibility" as being closely related to Weber's concepts of completely rational and traditional. Copp[6] based his analysis of "rigidity" and "flexibility" upon a scale which was based on three dichotomous items, namely, orientation toward farming, attitudes toward future in farming, and attitudes toward credit. Farmers at the "rigid" extreme of the continuum seemed to regard farm operation in terms of a set of formulas, they tended to glorify hard work, keeping on the job, and avoiding the use of credit. Those at the "flexible" extreme of the continuum tended to regard farming as a problem-solving situation and varied their farm operations to changing conditions.[7] Copp further stated that "flexible" farmers seemed to exhibit a progressive mentality in their farming, while "rigid" farmers appeared to exhibit a more traditional mentality.[8]

The concepts of "Progressive" and "traditional" orientations, as used in this study, are related to the concepts of rigidity and flexibility discussed above. In general, the concept "progressive" is related to the concept "flexible", and the concept "traditional" is

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[6]James H. Copp, Personal and Social Factors Associated with the Adoption of Recommended Practices Among Cattlemen, Manhattan: Kansas Agrictulral Experiemtn Station, Technical Bulletin 83, September, 1956, p. 24.

[7]Ibid., p. 24.

[8]Ibid., p. 24.

related to the concept "rigid".

"Progressive" and "traditional" orientations are also related to the values which Hoffer[9] has called efficiency, self-reliance, and progress on the one hand and security and conservatism on the other hand. Efficiency, self-reliance, and progress are characteristics which indicate progress; while security and conservatism are characteristics which indicate traditionalism. Hoffer based his study upon hypothetical characterizations and asked each informant to indicate in what ways he considered himself like or unlike the hypothetical case. If the farmers identified themselves with the farmer whose behavior indicated efficiency, self-reliance and progress then such farmers were considered efficient, self-reliant and progressive. On the other hand, if they identified themselves with the farmer whose behavior indicated security and conservatism then such farmers were considered to be security oriented and conservative.

Progress and traditionalism which were treated in a study by Ramsey and others[10] are also related to "progressive" and "traditional" concepts used in the present study.

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[9]Charles R. Hoffer and Dale Stangland, Farmers' Reaction to New Practices, East Lansing: Michigan Agricultural Experiment Station, Technical Bulletin 264, February, 1958, p. 19.

[10]Polson Ramsey and Spencer, "Values and the Adoption of Practices," Rural Sociology, 24, March, 1959, p. 35.

Ramsey analyzed progress and traditionalism in terms of certain characteristics which the farm operator might exhibit. A farmer who placed a high value on progress, as discussed by Ramsey, tends to solve problems by organizing the farm on a business basis, tends to move toward the big commercial farm and solicit support from the government, and tends to be optimistic about his ability to help himself. The tradition oriented farmer, on the other hand, when getting ideas, tends to look to older farmers and to "tried and true" methods that he and his father had used. In addition, traditional farmers would not usually look to "scientific experts" for help.

In the present study, the analysis of "progressive" and "traditional" was also based on certain personal characteristics which can be treated as a continuum. Apple growers at the "progressive" and the "traditional" ends of the continuum were characterized in the following way:

(1) Progressive have favorable attitudes toward change generally, while traditional have unfavorable attitudes toward change generally.

(2) Progressive view themselves as being among the first to adopt new ways of doing things. Traditional view themselves as being among the last to adopt new ways of doing things. (NOTE: This is

an attitude about himself and it may or it may not coincide with his behavior).

(3) Progressive have favorable attitudes toward credit and loans, while traditional have unfavorable attitudes toward credit and loans.

(4) Progressive place a high value on science and education. Traditional, on the other hand, place a low value on science and education.

Measurements and Findings:

(1) Favorable and Unfavorable Attitudes Toward Change. This aspect of progressive and traditional orientations was measured by the use of six attitudinal statements. These statements were chosen on the basis of an item analysis from seven statements used by Haller to measure attitudes toward change among high school students.[11] The seven attitudinal statements were also utilized to test attitudes toward change by two other studies.[12] After

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[11]Archibald O. Haller and Irwin W. Miller, The Occupational Aspiration Scale: Theory, Structure and Correlates, East Lansing: Michigan Agricultural Experiment Station, Technical Bulletin 288, 1963, p. 119.

[12]Henry J. Watts, "Methodological Problems in the Measurement of Values," East Lansing: Michigan State University, Unpublished Ph.D. Thesis, 1962, pp. 117-127; and Benjamin Hodgkins, "Religion, Socio-Economic Status, and Work Value Orientations of Lenawee County Adolescent Males," East Lansing: Michigan State University, Unpublished Master Thesis, 1961, p. 31.

running an item analysis on these seven items to see to what extent each contributed to the total score of all items, it was found that one of these items had a correlation of only .21. Since the item does not contribute much to the total score of all items, it was omitted; and only six of these items were retained.[13]

The six items and the corresponding type of responses called for are presented below:

Attitudinal Statements	Type of Response		
	Favorable	Uncertain	Unfavorable
1. I like to try new things.	Agree	Uncertain	Disagree
2. The old ways of doing things are the best.	Disagree	Uncertain	Agree
3. Life would be boring without new experience.	Agree	Uncertain	Disagree
4. I like people who are willing to change.	Agree	Uncertain	Disagree
5. Most changes make things worse.	Disagree	Uncertain	Agree
6. The happiest people are those who do things the way their parents did.	Disagree	Uncertain	Agree

An attitude toward change score was assigned to each apple grower by giving 0 to each unfavorable response,

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[13]The correlation scores for the six items used were as follows: Item 1 = .93, item 2 = .52, item 3 = .65, item 4 = .83, item 5 = .85, and item 6 = .62.

1 to each uncertain response, and 2 to each favorable response. The scores of each respondent for all the six items were combined to give his attitude toward change scores. The minimum possible score for attitude toward change is 0, while the maximum possible score is 12 (Table 8). If the score is high the grower will be more likely to have favorable attitudes toward change and, thus, tend to be more progressive. On the other hand, if the score is low the grower will be more likely to have unfavorable attitudes toward change and, therefore, tend to be more traditional.

A chi-square test was used to determine whether or not a relationship existed between attitudes toward change score and adoption score. Although Table 8 presents data in more detail, the scores were collapsed for the purpose of the chi-square test into "low" (0-8), and "high" (9-12). The data presented in Table 8 show that none of the apple growers in the sample were in the first category ranging from 0 to 2. Only one grower was in the second category, 3-4; and two under the third category, 5-6. Since 92 percent of the cases tend to cluster in the last two categories, namely 9-10, and 11-12, the attitudes toward change score intervals distinguishing the two dichotomies "low" and "high" were not equal. The interval given to "low" was larger than that given to "high" in order

to allow for enough cases to be classified under "low" for the purpose of chi-square analysis. Because of the nature of the data presented in the table, and since attitudes toward change score were dichotomized into "low" and "high", it was felt that dichotomizing adoption scores into "low" ranging from 60 to 119, and "high" ranging from 120 to 179 seemed more meaningful instead of having it trichotomized as usual into "low" ranging from 60 to 119, "medium" ranging from 120 to 139, and "high" ranging from 140 to 179.

Table 8. Total score for attitudes toward change by adoption (N=100)

Attitudes toward change score	Percent	Mean adoption score
"Low"		
0-2	0.0	00.0
3-4	1.0	129.5
5-6	2.0	94.5
7-8	5.0	115.5
"High"		
9-10	22.0	121.8
11-12	70.0	135.4

$X^2=4.03$; 1 d.f.; $P<0.05$; $C=0.20$

The inconsistency of the adoption scores for categories 3-4 and 5-6 undoubtedly is due to the lack of cases in these categories. More cases are needed in order to

determine more accurately the relationship between attitudes toward change, which is used to test "progressive" and "traditional", and adoption. This relationship appears to be more consistent when analyzing the results for categories 7-8, 9-10, and 11-12 where there are more cases. It is clear that the adoption score increases as the attitudes toward change score increases.

The chi-square test of association revealed the existence of a significant relationship between adoption and attitudes toward change score (Table 8). The association between the two variables was in the expected direction. The degree of relationship, as measured by the contingency coefficient, was not high (C=0.20). Since attitudes toward change is used as a variable which tests "progressive" and "traditional" value orientations of the apple growers, the findings, in Table 8, tend to support the research hypothesis that "progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

The six items used to measure attitudes toward change and their respective responses are presented in more detail in Appendix II, Table 2. It should be pointed out that, while all 6 items are in the expected direction, only 2 of the 6 items are significantly associated with adoption when tested separately. These were items 1 and 5.

The degree of relationship between all items and adoption was low. Items 1 and 5 show a correlation of 0.37 and 0.27 respectively. Items 2, 3, 4, and 6 have a correlation of 0.22, 0.18, 0.10, and 0.18 respectively. However, the association, expressed by chi-square, between these four items and adoption was not significant.

Since the relationships between all these items and adoption were in the expected direction, additional investigation in this area is needed.

(2) Individual's Self-rating of his Adoption Behavior. Rogers[14] measured the individual's self-rating by asking the respondents to indicate whether they were: behind the average, average, ahead of the average, or far ahead of the average in adopting new farm practices. A similar method was used in the present study to measure one's self-rating of his adoption behavior. The following questions were asked:

> "If we let the line on this card represent the time between the first adoption of a new way of doing things in the apple growing business and when most apple growers accept the idea, about where would you place yourself?
>
> . . . . . .
> 0 10 20 30 40 50 60 70 80 90 100
>
> Why would you put yourself at this point on the scale?"

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[14]Everett M. Rogers, "Personality Correlates of the Adoption of Technological Practices," Rural Sociology, 22, 1957, p. 267.

To facilitate chi-square analysis, responses of the two questions were given an arbitrary score as follows:

Score given	
3 points	for being among the first 1-39 percent
2 points	for being among 40-59 percent
1 point	for being among 60-79 percent
0 point	for being among 80-100 percent
2 points	for giving progressive reasons
1 point	for giving qualified reasons
0 point	for giving conservative or traditional reasons

A total score to measure one's self-rating of his adoption behavior was computed for each apple grower by adding up the scores assigned to his two responses. The scores were classified as "low" ranging from 0 to 1, "medium" ranging from 2 to 3, and "high" ranging from 4 to 5. If the score is high the grower is more likely to have "progressive" value orientation. On the other hand, if the score is low, the grower is more likely to have a "traditional" value orientation. Table 9 indicates that

Table 9. Total score for individual's self-rating of his adoption behavior by adoption (N=100)

Total individual's self-rating score	Percent	Mean adoption score
"Low"		
0-1	50.0	115.1
"Medium"		
2-3	23.0	135.1
"High"		
4-5	27.0	147.6

$X^2=25.65$; 4 d.f.; $P< 0.05$; C=0.45

there is a significant association between one's self-rating score of his adoption behavior and his actual adoption score. The degree of this association was moderate (C=0.45). The direction of the association between the two variables was as expected.

The two questions used to test the growers' self-rating of their adoption behavior were found to be significantly associated with adoption. Those who rated themselves as being among the first apple growers to adopt new ideas are considered as being "progressive"; while those who rated themselves as being among the last apple growers to adopt new ideas are considered as being "traditional". Table 10 compares the growers' rating of adoption behavior with their actual adoption scores. The grower's

Table 10. Individual's self-rating of his adoption behavior items by adoption (N=100)

Question	Percent	Mean adoption score
1. If we let the line on this card represent the time between the first adoption of a new way of doing things in the apple growing business and when most apple growers acdept the idea, about where would you place yourself?		
Among the first 39 percent	24.0	149.9
Among 40-59 percent	25.0	134.7
Among 60-79 percent	28.0	124.1
Among 80-100 percent	23.0	114.7
X^2=31.81; 6 d.f.; P< 0.05; C=0.49		

Table 10 (cont.)

Question	Percent	Mean adoption score
2. Why would you put yourself at this point on the scale?		
Gave progressive reasons	20.0	151.5
Qualified reasons	25.0	136.3
Gave conservative or traditional reasons	55.0	120.8
$X^2=24.77$; 4 d.f.; $P<0.05$; $C=0.45$		

self-rating of his adoption behavior is found to be significantly associated with adoption. As part 1 of Table 10 shows, the degree of relationship between these two variables is moderate (C=0.49).

The reasons which each apple grower gave for rating himself as he did were analyzed in terms of whether they tended to be progressive or traditional in nature. Part 2 of Table 10 shows that 20 percent of the respondents gave progressive reasons for rating themselves as they did on the adoption scale. Examples of their responses were: "I am willing to try new things," "I am receptive to new ways of doing things," and "I always like to try new things." Such responses are considered as being progressive in nature. On the other hand, 55 percent of the respondents gave conservative or traditional reasons for rating themselves as they did on the adoption scale.

Examples of their responses were: "I am cautious when it comes to trying new things," "I wouldn't consider myself among the first ones to accept new ideas, I like to wait and be sure about the results before accepting them," and "I am conservative." Such responses are considered as being traditional in nature. After comparing the adoption scores of the two groups, it can be clearly stated that the adoption score of the group which gave progressive reasons is somewhat higher than the adoption score of the group which gave traditional reasons. The adoption scores are 151.5 and 120.8 respectively. The mean adoption score (136.3) for the 25 respondents who gave qualified reasons which cannot be classified as being either strictly progressive or traditional is located between the two extremes. Examples of such reasons were: "I don't like to be among the first or among the last to accept new practices," "it depends on the source of practice," and "recommended practices are usually well tried and proven to be successful and I see no harm in accepting them." The chi-square test of association revealed a significant association between the reasons which an apple grower gave for rating himself as he did and his adoption score. The degree of such association, expressed by the contingency coefficient, was moderate (C=0.45). It is quite likely that those who gave

progressive reasons were those who rated themselves among the first to adopt new practices, while those who gave traditional reasons rated themselves among the last. This is a matter which requires further explanation.

The findings presented above support the research hypothesis that "progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

(3) Attitudes Toward Credit and Loans. Attitudes toward credit was used by Copp as one measure for the rigidity-flexibility dimensions which he developed in his study of Kansas cattlemen.[15] He measured this attitude by using a hypothetical question to indicate the operator's willingness to borrow $500 for one year and $2000 for five years in order to adopt desirable farm practices. When constructing his rigidity-flexibility scale, Copp considered those who said that they would borrow at least $500, with or without qualification as being "flexible," and those who said that they would not borrow as being "rigid." Hoffer, in his study of Michigan corn growers,[16] used attitudes toward mortgage to measure the value placed on security. Those who did not believe in mortgages were considered as having a high value

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[15]James H. Copp, loc. cit., pp. 24-26.

[16]Hoffer and Stangland, loc. cit., p. 19.

placed on security. Attitudes toward credit (borrowing money from the bank), on the other hand, was used in the same study to measure conservatism. Those who did not believe in borrowing money were considered conservative.

The present study used attitudes toward credit and loans as one measure to distinguish between the "progressive" and the "traditional" apple growers. As used here, a favorable attitude was regarded as progressive, while an unfavorable attitude was regarded traditional. Four fixed answer questions were asked in order to find out whether or not apple growers had favorable attitudes toward credit and loans. These questions and the scores arbitrarily assigned to their respective responses for the purpose of chi-square analysis are as follows:

1. If you believed the farm unit you had was too small, would you prefer to take on a mortgage so as to buy more land or would you prefer to wait until you had saved enough to pay cash for it?

   Score given

   1 point ___Prefer to take on a mortgage
   0 point ___Prefer to wait

2. If you needed more fertilizer or spray materials, would you prefer to:

   Score given

   1 point ___Borrow in order to get all the fertilizer or spray materials you thought you needed
   0 point ___Buy only as much as your present finances would permit

3. If you needed more planting stock, would you prefer to:

Score given	
1 point	___Borrow in order to buy soon
0 point	___Prefer to wait until you have saved enough to pay cash

4. If you needed more farm machinery, would you prefer to:

Score given	
1 point	___Borrow or buy on installment plan, in order to buy soon
0 point	___Wait until you have saved enough to pay cash

A total attitude score toward credit and loans for each apple grower was calculated by adding up the scores given to his responses on the four questions. When computing the chi-square test, the total attitude scores toward credit and loans were trichotomized into "low," "medium," and "high." Those with a "high" score are considered to be "progressive," while those with a "low" score are considered to be "traditional."

It appears that those who have favorable attitudes toward credit and loans, expressed by their willingness to borrow in order to buy the things which they need, have a higher mean adoption score than those who have unfavorable attitudes toward credit and loans, expressed by their unwillingness to borrow in order to buy such things (Table 11). As indicated earlier, favorableness is an indication of "progressive", and unfavorableness is an indication of "traditional" value orientations.

Table 11 indicates that a significant association existed, at the 0.05 level, between attitude score toward credit and loans and adoption scores. The degree of correlation, measured by the contingency coefficient, was equal to 0.37.

Table 11. Total score for attitudes toward credit and loans by adoption (N=100)

Total attitude toward credit score	Percent	Mean adoption score
"Low"		
0-1	25.0	115.9
"Medium"		
2-3	25.0	122.3
"High"		
4	50.0	141.9
X^2=16.84; 4 d.f.; P< 0.05; C=0.37		

Since "attitude toward credit and loans" variable is used in this study to test "progressive" and "traditional" value orientations of the apple growers, it could be concluded that the above findings support the research hypothesis that "progressive" apple growers tend to be higher adopters than the "traditional" apple growers.

The questions which measured attitude toward credit and loans and their results are presented in Table 12. Willingness to buy land on mortgage, willingness to borrow in order to buy planting stock, and willingness to borrow in order to buy the needed farm machinery were found to be

significantly associated with adoption. Willingness to borrow in order to buy fertilizer or spray materials was not significantly associated with adoption.

Table 12. Attitudes toward credit and loans items by adoption (N=100)

Attitudes	Percent	Mean adoption score
1. If you believed the farm unit you had was too small, would you prefer to take on a mortgage so as to buy more land or would you prefer to wait until you had saved enough to pay cash for it?		
Prefer to take on a mortgage	59.0	139.5
Prefer to wait	41.0	118.3
X^2=14.97; 2 d.f.; P< 0.05; C=0.36		
2. If you needed more fertilizer or spray materials, would you prefer to:		
Borrow in order to buy	86.0	132.2
Buy only as much as finances permit	14.0	122.4
X^2=1.14; 2.d.f.; P>0.05; C=0.10		
3. If you needed more planting stock, would you prefer to:		
Borrow in order to buy	61.0	138.8
Wait until money is saved	39.0	118.2
X^2=10.00; 2 d.f.; P< 0.05; C=0.30		

Table 12 (cont.)

4. If you needed more farm machinery, would you prefer to:		
Borrow in order to buy	70.0	135.4
Wait until money is saved	30.0	120.2

$X^2=8.35$; 2 d.f.; $P< 0.05$; C=0.28

The degree of relationship expressed by the contingency coefficient between the type of responses for each question and adoption score differs somewhat depending on the reason for which the grower would borrow. Willingness to take on a mortgage in order to buy more land and willingness to borrow in order to buy planting stock, for example, were found to have a higher correlation with adoption than the other two items, namely, willingness to borrow in order to buy more fertilizer and willingness to borrow in order to buy farm machinery (Table 12). The former two items have a relationship of C=0.36 and C=0.30 respectively, which are not too different, while the latter ones have a relationship of C=0.10 and C=0.28 respectively. The relationship between all four items and adoption was in the hypothesized direction.

(4) Values Placed on Science and Education. For the purpose of this study, those who have favorable attitudes toward science and education are regarded as being progressive, while those who have unfavorable attitudes toward

science and education are regarded as being traditional.

Ramsey[17] measured belief in science by using a scale analysis in which the respondents were asked to indicate what they believed were the best ways to meet the problems in farming, and whether or not they considered keeping up with new farming methods and education in agricultural colleges as important for meeting such problems.

The present study looks at value placed on science from another point of view. It is anticipated that value placed on science is reflected in the apple grower's attitude toward farm practices recommended by Michigan State University and in the confidence he places in the county agent as a source of scientific information. If the grower is generally in favor of farm practices recommended by Michigan State University and if he has confidence in the county agent as a source of scientific information he is considered as having a favorable attitude toward science and thus tends to exhibit progressive characteristics. On the other hand, if he exhibits the reverse of the above characteristics, he is considered to be traditional.

It is assumed in this study that if an apple grower takes an active part in extension programs he is more likely to have a favorable attitude toward extension personnel and programs, and he is more likely to have confidence in the county agent as a source of scientific information. Therefore, he tends to be "progressive".

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[17]Ramsey, et al., op. cit., p. 39.

On the basis of the above, the following questions were asked to measure values placed on science. Responses for each question were given an arbitrary score for the purpose of statistical analysis.

(1) What do you think about the farm practices recommended by Michigan State University?

Score given

2 points for giving a favorable type of response to the open-ended questions
1 point for giving unfavorable type of response
0 point for giving unclassified type of response

(2) Suppose you have heard about a new insecticide recommended by the county agent, but you have heard of no one who is trying it out, would you:

Score given

2 points ___Try it out yourself
1 point ___Don't know
0 point ___Wait until someone else had tried it out

Rogers and Capener[18] have developed an Extension Contact Scale to measure the farmer's overall contact with the County Extension Agent by giving one point for each type of contact that a farmer had with the County Extension Agent in a one year period preceding the interview. The present study used a similar method to measure participation in Cooperative Extension Programs. The growers were asked to indicate the number of times they came into contact with certain county Extension personnel or programs

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[18]E. M. Rogers and H. R. Capener, The County Extension Agent and his Constituents, Wooster: Ohio Agricultural Experiment Station Research Bulletin 858, June, 1960, pp. 13-14.

(see list in Appendix II, Table 3) during the year preceding the interview. One point was given for each time the grower came into contact with any of these Extension programs or activities. A participation score in Cooperative Extension programs was then computed for each apple grower by adding all of the points he received. Extension participation scores were grouped into five categories. These categories were given an arbitrary score for purposes of statistical analysis as follows:

Score given	Contacts with Extension
0 point for	0-10
1 point for	11-20
2 points for	21-30
3 points for	31-40
4 points for	41-50
5 points for	51 and over

Farmers with a higher score are regarded as more "progressive" than those with a lower score.

For the purposes of this study it was felt that the value placed on education would be reflected in the degree of education the farmer feels is needed to make a success in the apple business. The higher the education which he feels is needed, the more progressive he is considered to be. Conversely, the lower the education which he feels is needed, the more traditional he is considered to be.

The question asked in order to determine the grower's attitude toward the need for education and the scores assigned to its responses are as follows:

(1) How much education do you think an apple grower needs to make a success of the apple growing business these days?

Score given

3 points	___College
2 points	___High school
1 point	___Grade school or less
0 point	___Other

As discussed above, values placed on science and education were used, in this study, as variables which test "progressive" and "traditional" value orientations of the apple growers. In order to calculate the chi-square test of association between this variable and adoption, it would be necessary to have, for each apple grower, a total score for his "values placed on science and education" variable. For this reason, the arbitrarily assigned scores corresponding to his responses on the four items presented above were added up to give his total score for "values placed on science and education" variable. The actual lowest total score was found to be 2 points, while the highest was found to be 12 points. In calculating the chi-square test, the scores were trichotomized into "low," ranging from 2 to 5, "medium," ranging from 6 to 8, and "high," ranging from 9 to 12 points (Table 13).

The chi-square test of association revealed the existence of a significant association between value placed on science and education by apple growers and their adoption scores (Table 13). The amount of association between the two variables was (C=0.36). The direction

of the association was as expected, apple growers with "progressive" value orientations, as expressed by their

Table 13. Total score for values placed on science and education by adoption (N=100)

Total score for values placed on science and education	Percent	Mean adoption score
"Low"		
2-5	33.0	114.0
"Medium"		
6-8	45.0	132.6
"High"		
9-12	22.0	141.8

X^2=15.49; 4 d.f.; P< 0.05, C=0.36

high "values placed on science and education" score, were more prone to adopt recommended farm practices than those with a "traditional" value orientation, as measured by their low "values placed on science and education" score.

In order to find out the association between each individual item used in measuring values placed on science and education variable and adoption score, the following analysis was made.

Part 1 of Table 14 shows that 65 percent of the sample responded favorably to the open-ended question regarding the farm practices recommended by Michigan State University, while 24 percent were unfavorable to them. Eleven percent of the growers qualified their replies. Responses such as:

"they are conservative and not progressive," "they reach us late," "they are little behind," "they are too much for us, we can't use them," and "they are not practical" were given by the respondents and are classified as being not favorable to the practices recommended by the University. On the other hand, responses such as: "very good," "pretty good," "good," "fine," "generally accepted," and "basically sound" were given by the respondents and are classified as being favorable to the practices recommended by Michigan State University. "I do not know much about them," and "I weigh them and use my own judgment before I accept them," are examples of the qualified answers.

Table 14. Values placed on science and education items by adoption (N=100)

Question	Percent	Mean adoption score
1. What do you think about the farm practices recommended by Michigan State University?		
Gave favorable response	65.0	129.3
Qualified response	11.0	122.2
Gave unfavorable response	24.0	137.5
X^2=1.99; 2 d.f.; P>0.05; C=0.12		
2. Suppose you have heard about a new insecticide recommended by the county agent, but you have heard of no one who is trying it out, would you:		

Table 14 (cont.)

Try it out yourself	63.0	137.3
Wait until someone else had tried it out	36.0	118.9
Don't know	1.0	149.5

X^2=11.66; 2 d.f.; P< 0.05; C=0.33

3. Extension participation score*

"Low"		
0-10	16.0	111.4
11-20	37.0	124.9
"Medium"		
21-30	19.0	142.1
31-40	8.0	142.0
"High"		
41-50	9.0	140.6
51 and over	11.0	140.4

X^2=22.39; 4 d.f.; P<0.05; C=0.43

4. How much education do you think an apple grower needs to make a success of the apple growing business these days?**

College	29.0	142.6
High school	58.0	128.8
Grade school or less	4.0	107.0
Other	9.0	116.2

X^2=13.43; 4 d.f.; P<0.05; C=0.33

*Because the expected frequencies in the cells were less than 5, the minimum requirement for calculating chi-square, categories shown under this item were collapsed into "low" (0-20), "medium" (21-40), and "high" (41 and over) to facilitate statistical analysis.

**When calculating chi-square, the amount of education needed was dichotomized into "College" and "High school or less" since the expected frequencies in some of the cells were so small.

The adoption score (137.5) for those who responded unfavorably to the question was more than the score (129.3) for those who responded favorably to it. The findings show that there is no significant relationship between attitudes toward the farm practices recommended by Michigan State University and adoption of practices. This finding was quite contrary to what was expected. The relationship was in the hypothesized direction.

Confidence in the county agent as a source of scientific information was also considered, as stated above, as being an indication of having favorable attitudes toward science. Part 2 of Table 14 shows that those who were willing to try out a new insecticide recommended by the county agent for the first time had higher adoption scores than those who preferred to wait until someone else had tried it out. The chi-square test of association revealed a significant relationship between the two variables.

It is possible that the respondent is reacting as much (or more) to the agent himself than to acceptance of scientific information.

Part 3 of Table 14 reports the association between participation in Extension and adoption. As the table shows, there tends to be a significant relationship, at the 0.05 level, between the two variables. The major relationship is between participation scores of 0-10,

11-20, and 21 and over. The mean adoption scores for the four categories above 20 were virtually equal. The degree of relationship, expressed by the contingency coefficient, between participation in Extension and adoption was moderate (C=0.43).

Part 4 of Table 14 indicates that there is a positive relationship between the education thought to be needed in order to make a success in the apple business and adoption score. This relationship is significant at the 5 percent probability level.

Findings of three out of four items presented above, which were used to test values placed on science and education, confirm the research hypothesis that "progressive" apple growers tend to be high adopters while the "traditional" apple growers tend to be low adopters.

Summary and Conclusion:

The preceeding chapter on "progressive" and "traditional" value orientations as they relate to the adoption of the recommended practices can be summarized as follows:

1. The grower's attitudes toward change score was found to be significantly associated, at the 0.05 level, with adoption of farm practices. The degree of association was not high (C=0.20). The relationship between the two variables was in the hypotheiszed direction; the more favorable attitudes the grower exhibits toward

change, the higher his adoption score tends to be. Only two of the six items used to measure attitudes toward change were significantly associated with adoption when tested separately. The association between all these six items and adoption was in the hypothesized direction. Therefore, additional investigation is needed in these areas.

2. The grower's total score for self-rating of his adoption behavior was significantly associated with adoption. The degree of relationship was moderate (C=0.45). Both items used to measure this variable were significantly associated with adoption of recommended practices.

3. The grower's total attitude score toward credit and loans was significantly related to his adoption score. The higher his attitude score toward credit and loans, the higher his adoption, and the lower his attitude score, the lower his adoption appears to be. The degree of association, expressed by the contingency coefficient, between the two variables was C=0.39. Three of the four items used to measure attitudes toward credit and loans were associated significantly with adoption at the 0.05 level. The association between adoption and the fourth item, willingness to borrow in order to buy the needed fertilizer or spray materials, was in the expected direction, but it was not significant.

4. Values which the grower places on science and education were found to be significantly related to adoption. The higher the values' score which the grower places on sicnece and education, the higher his adoption score, and the lower his values' score, the lower his adoption tends to be. One of the four items, attitudes toward the farm practices recommended by Michigan State University, which were used to measure this variable was not significantly related to adoption score, while the other three were significantly associated with it.

The findings presented above show that all four variables included in the hypothesis were significantly associated with adoption of recommended practices. These findings support the research hypothesis that "progressive" apple growers tend to be high adopters, while "traditional" apple growers tend to be low adopters.

Six out of the total sixteen items used to measure the four variables were not significantly related to adoption.

CHAPTER V

"LOCAL" AND "COSMOPOLITAN" ORIENTATION AND ADOPTION OF PRACTICES

Hypothesis: On the whole, adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientation.

The concepts "local" and "cosmopolitan" orientations are based mainly on Merton's discussion of reference group theory and patterns of influence. Merton indicates that groups are composed of individuals who share a body of social norms and interact with each other according to established patterns.[1] Man usually orients himself to groups and to particular individuals in shaping his behavior and evaluations. Merton called such groups and individuals reference groups.[2]

Merton uses the terms "local" and "cosmopolitan" to distinguish between two types of influentials, namely local influentials and cosmopolitan influentials. Differences between the local and cosmopolitan influentials, says Merton, seem to stem from their differences in basic orientations toward the local community: orientations

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[1]Robert Merton, Social Theory and Social Structure, Glencoe: The Free Press, 1957, p. 285, and p. 290.

[2]Ibid., p. 283.

ranging from virtually exclusive concern with the local area to central concern with the great world outside.[3] According to Merton's discussion, the localite interests tend to be confined to the community in which he lives, he tends to be devoted to localism, he does not wish to move from his town, and he tends to belong to those organizations which are largely designed for "making contacts" and for establishing personal ties such as Masons, Elks, and other local service clubs such as the Rotary, Lions, and the Kiwanis.[4] The cosmopolitan, on the other hand, tends to be oriented to the world outside his community, and regards himself as an integral part of that world, he tends to be more mobile, and he tends to belong to those organizations and professional societies in which he can exercise his special skills and knowledge.[5]

Merton, as it has been shown above, distinguished between local and cosmopolitan influentials largely on the basis of their attachment to the local community, their orientation to groups inside or outside their communities, and their participation in certain types of voluntary organizations.

While Merton dealt with influentials, the present

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[3]Robert Merton, op. cit., p. 392.

[4]Ibid., pp. 394-398.

[5]Ibid., pp. 393-399.

study proceeds on the assumption that the concepts "local" and "cosmopolitan" are applicable not only to influentials, but that they can be applied to non-influentials as well. Therefore, farmers could be defined as being local or cosmopolitan depending on the degree of their attachment to their local communities, on their orientation to groups inside or outside their communities, and on their organizational behavior. For the purposes of this study, if an apple grower's orientation is toward his local community more than the world outside, he is said to be "local", while if his orientation is toward the world outside more than his local community, he is said to be "cosmopolitan." It is further assumed that local and cosmopolitan types of orientations tend to influence apple growers' behavior in regard to change. Lionberger, for example, states that "farmers exposed to many sources of information and having many contacts outside the immediate locality are more likely to be receptive to change than those who are restricted in the contacts."[6] The evidence presented by Lionberger indicates that "increasing receptivity frequently follows increased contact with people and ideas from beyond the community boundaries, practically when these contacts are directly related to the changes

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[6]Herbert F. Lionberger, Adoption of New Ideas and Practices, Ames: The Iowa State University Press, 1961, p. 16.

being advocated.[7]

Copp, although he did not explicitly use the terms, has dealt with other aspects of local and cosmopolitan, such as identification with local groups, formal social participation, membership in farm organizations, and membership in a cattle association. The evidence from his study indicates that high local-group identification is negatively associated with adoption.[8] In addition, it indicates that formal social participation, as measured by the number of formal organization memberships and the degree of activity in organizations, was highly associated with adoption.[9] Also, it has been found that membership in farm organizations was significantly associated with adoption, while membership in a cattle association was somewhat more highly associated.[10]

Wilkening,[11] found that participation in farm organizations and in vocational agricultural courses was significantly associated with the acceptance of improved practices.

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[7] Ibid.

[8] James H. Copp, Personal and Social Factors Associated with the Adoption of Recommended Practices Among Cattlemen, Manhattan: Kansas Agricultural Experiment Station, Technical Bulletin 832, September, 1956, pp. 22-23.

[9] Ibid., p. 14.

[10] Ibid., p. 15.

[11] Eugene A. Wilkening, Acceptance of Improved Farm Practices in Three Coastal Plain Counties, Raleigh: North Carolina Agricultural Experiment Station, Technical Bulletin 98, May, 1952, pp. 46-47.

Hoffer[12] also found that farmers who were members in one or more community organizations such as, the parent-teacher association, co-operative organization, farm bureau and similar organizations, in addition to the church, tend to follow recommended practices more than those who were members in the church alone.

While the studies presented above tap various aspects of local and cosmopolitan, this particular study will concern itself with only two aspects of local and cosmopolitan orientations. These two aspects are: (1) the type of farm organizations in which the growers participate, and (2) the growers' orientation to the world outside their local communities. Therefore, the present study regards apple growers with "local" and "cosmopolitan" orientations as having the following characteristics:

(1) An apple grower with a "cosmopolitan" orientation tends to have higher participation in state and national organizations, while an apple grower with a "local" orientation tends to have lower participation in state and national organizations and higher participation in local organizations. (See list of these organizations in Appendix II, Table 4).

(2) An apple grower with "cosmopolitan" orientation tends to have high attendance at organizational meetings held outside his county; while an apple grower with a "local" orientation tends to have low attendance at organizational meetings held outside his county.

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[12]Charles R. Hoffer, Acceptance of Approved Farming Practices Among Farmers of Dutch Descent, East Lansing: Michigan Agricultural Experiment Station Special Bulletin 316, June, 1942, p. 28.

Measurements and Findings:

(1) Organizational Participation. Each apple grower in the sample was asked to do the following:

1. Indicate the local, state, and national organizations or associations which he belonged to or took part in during the year of 1961.

2. Indicate the number of times he had attended their meetings during 1961.

3. Indicate whether or not he had paid dues during 1961.

4. Indicate whether or not he had been a member of any committee during the past two years.

5. Indicate whether or not he had served as a board member or as an officer during the past two years.

Following Merton's reasoning, as discussed above, the organizations which appear in Appendix II, Table 4 (A), were classified in the present study as being cosmopolitan. On the other hand, the organizations which appear in Appendix II, Table 4 (B), are regarded as being local.

A participation score for all organizations was then computed for each apple grower on the basis of his responses to the above five questions. The score was arrived at by giving:

0 point	If not a member, does not contribute, etc.
1 point	for member
2 points	for member who attends any meetings
3 points	for contributions or dues
4 points	for committee member past two years
5 points	for Board member or officer

Apple growers who have a high participation score in state and national organizations in comparison with local organizations are regarded as more "cosmopolitan" in their

orientation than those who have a low participation score in such state and national organizations.

Although the Farm Bureau and similar farm organizations are nation-wide organizations, they are classified as local, because the activities of the members are generally confined to their communities, their meetings are more likely to be held on a local basis, and their interests tend to be more general than the more specialized, professional organizations which are regarded as cosmopolitan. On the other hand, members in the latter organizations tend to have their meetings outside the local communities, and they tend to be more specialized in nature. In their meetings, members are more likely to become exposed to new ideas expressed by professional fruit growers and other technical specialists who are usually attending such meetings.

Although Table 15 presents the data in more detail, organizational particpation scores generally were trichotomized, for purposes of statistical analysis, into "low" (0-20), "medium" (21-40), and "high" (41-over).

Participation in farm organizations generally has been found to be positively associated with adoption in almost all the adoption studies which dealt with this factor. The present study tends to confirm this finding. Table 15 shows that participation in all types of organizations is significantly associated with adoption. The mean

adoption score increases as the grower's total participation score increases. The degree of relationship between organizational participation and adoption was moderate (C=0.46). The increase in the adoption scores is distinct for the first five total particpation score categories. The adoption scores for the last two categories (41-50 and 51 and over) are the same.

Table 15. Participation in all types of organizations by adoption (N=100)

Total participation score	Percent	Mean adoption score
"Low"		
0-10	17.0	107.7
11-20	15.0	117.5
"Medium"		
21-30	14.0	125.9
31-40	10.0	133.5
"High"		
41-50	16.0	144.5
51 and over	28.0	144.5

$X^2=27.32$; 4 d.f.; $P<0.05$; C=0.46

It was hoped that this study would be able to compare adoption with participation in two types or organizations, namely the organizations which are classified in this study as being cosmopolitan and those which are regarded as being local. However, it was found that organizational participation could be differentiated only on the basis of state and national organizations. Most of the participation

of the apple growers tended to be in the nonlocal, more specialized, and professional organizations, except for the Farm Bureau in which most of the apple growers participated. Since a comparison could not be made between local and nonlocal organizations, the comparison was made in terms of the degree of participation. Those who have a high participation score in state and national organizations are regarded as more "cosmopolitan" in their orientation than those who have a low participation score in such state and national organizations. When comparing the adoption scores of the two groups of growers, it is found that as the participation score increases the adoption score increases accordingly. See Table 16. The

Table 16. Participation in state and national organizations by adoption (N=100)

Total participation score	Percent	Mean adoption score
0-10	41.0	116.0
11-20	18.0	128.9
21-30	23.0	139.9
31 and over	18.0	152.8

$X^2=33.39$; 6 d.f.; $P<0.05$; $C=0.50$

association between participation score in state and national organizations and adoption was significant at the 0.05 level. The degree of association (C=0.50)

between the two variables was found to be moderate.

The results presented supports the research hypothesis that adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientations.

(2) Attendance of Organized Meetings Held Outside the County. Number of meetings attended outside the county during 1961, either in fruit or non-fruit organizations, was also used to test "local" and "cosmopolitan" orientations of apple growers. Each apple grower in the sample was asked to indicate whether or not he had attended any meetings which were held outside his county in 1961. The number of these meetings was added to find out whether the apple grower had a "local" or "cosmopolitan" type of orientation. If the apple grower's attendance outside of the community is high he is more likely to have a "cosmopolitan" orientation, while if such attendance is low he is more likely to have a "local" orientation.

It was found that 33 percent of the apple growers in the sample had not attended any organizational meetings held out of their counties during the past year, while 12 percent have attended 4 or more meetings held outside of their counties. See Table 17. The former group of apple growers has an adoption score of 114.9, while the latter group has an adoption score of 151.2. As was expected,

Table 17. Attendance at meetings out of county by adoption (N=100)

Number of meetings attended out of county	Percent	Mean adoption score
None	33.0	114.9
1	32.0	132.6
2*	16.0	139.5
3*	7.0	138.1
4 or more*	12.0	151.2

$X^2=16.35$; 4 d.f.; $P<0.05$; C=0.38

* Because the expected frequencies were so small, these categories were combined into one group, 2 meetings and over, when chi-square was computed.

the higher the number of organizational meetings attended outside of the county by the grower, the higher was his adoption score. On the other hand, the lower the number of meetings attended outside of the county, the lower was the adoption score. The relationship between the two variables was significant.

The findings support the research hypothesis that adoption of the farm practices tends to be higher for "cosmopolitan" than for "local" apple growers.

Summary and Conclusion:

Findings which are related to "local" and "cosmopolitan" value orientations can be summarized as follows:

1. It was found that the degree of participation

in state and national fruit organizations is significantly associated with adoption. The higher the organizational participation score maintained by the grower, the higher the adoption score was found to be. The relationship, expressed by chi-square test, was significant at the 0.05 probability level.

2. Attendance at organizational meetings held outside the grower's county was also related to adoption of the recommended farm practices. It was found that as the number of organizational meetings attended outside the county increased, the adoption score increased. The relationship was significant at the 0.05 level.

Since the above two variables were used to test "local" and "cosmopolitan" value orientations of the apple growers in this particular study, it is concluded that the above findings support the research hypothesis that on the whole, adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientation.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to analyze certain sociological factors related to the adoption of twenty-one recommended farm practices among Michigan apple growers. The study was limited to one commercial enterprise, namely apple growing. A sample of 100 apple growers were interviewed. They were selected randomly from nearly 2,900 apple growers located in nine major apple growing counties in the western part of the state of Michigan. These counties were selected by Horticultural Specialists in the Michigan Cooperative Extension Service as representing the major apple growing counties in the State. The proportion of interviews from each county was based on an estimate of the proportion of trees in the county to the total trees for all of the counties. On this basis, the proportion of the sample from each county was as follows: Berrien 25 percent, Kent-Ottawa 25 percent, Van Buren 20 percent, Oceana-Mason 15 percent, Allegan 10 percent, and Ionia-Montcalm 5 percent. In several instances the sample was drawn from 2 counties together, because the list of growers was maintained on a bi-county basis.

In the selection of the sample, in order to eliminate farmers who grew apples only as a minor sideline, the sample

included only those apple growers who met criterion number 1 plus number 2 or number 3 below.

1. The grower must have at least 10 acres or more of apples.
2. If he grows only apples, 50 percent or more of his total gross farm income must come from apples in order to be included. If it is less than 50 percent he will not be included in the sample.
3. If the grower has other fruits in addition to apples, he must receive 75 percent of his gross farm income from the sale of fruit, and 25 percent of his fruit income must come from the sale of apples.

The study dealt with the relationship between the adoption of recommended practices and three theoretical concepts, namely, (1) "opening" and "closing" culturally defined goals, (2) "progressive" and "traditional" value orientations, and (3) "local" and "cosmopolitan" orientations. Each of these phases of the study was treated as a separate unit. The following discussion summarizes the findings pertaining to each of these three major aspects of the study.

A. "Opening" and "Closing" Culturally Defined Goals and Adoption of Practices

The research hypothesis for this phase of the study states:

> Apple growers who see their culturally defined goals as "open or opening" tend to adopt recommended practices more readily than apple growers who see their culturally defined goals as "closed or closing".

Five variables were used to test the concept of "opening" and "closing" goals. The variables used to test the hypothesis and a summary of results are presented below.

1. Achievement Orientation. It was assumed in this study that growers with a high achievement orientation score would tend to see their goals as "open or opening", whereas those with a low achievement orientation score would be expected to see their goals as "closed or closing".

Six attitudinal items were used to measure achievement orientations which the apple growers have in regard to their apple growing business. An achievement orientation score for each apple grower was computed. This score was then compared with the adoption score. It was found that there was a significant relationship between achievement orientation scores and adoption scores. The relationship was in the expected direction. Therefore, the null hypothesis of no relationship between the independent and the dependent variables was rejected.

2. Attitudes Toward the Apple Business as an Occupation. It was believed that the grower whose attitudes toward apple growing as a whole were favorable would tend to have a more favorable attitude toward his own occupation

than one whose attitudes toward apple growing as a whole were unfavorable. The former was regarded as seeing his culturally defined goals as "open or opening", while the latter was thought to see them as "closed or closing".

It was found in this particular study that attitudes toward the apple business occupation were not significantly associated with adoption.

Attitudes toward the apple business occupation were measured by the use of three items. The relationship of these items to adoption is summarized below.

The desirability of apple growing as an occupation was not significantly related to adoption of practices. The association between the two variables was in the expected direction. The null hypothesis, therefore, is supported by this item.

The adoption behavior of those who would still choose apple growing if they were to start over again tended not to differ from the adoption behavior of those growers who would prefer to choose some other occupation. The chi-square test of association revealed no significant difference between the apple grower's choice and adoption score. Therefore, this item tends to support the null hypothesis.

There was no significant relationship between considering or not considering giving up apple growing and going

into some other occupation and adoption scores. This finding supports the null hypothesis of no relationship.

The above findings indicate that all three items which measure attitudes toward apple business occupation variable were not significantly associated with adoption. This data failed to confirm the research hypothesis.

3. Facilitation of the Social or Business Situation. It is believed that if the grower is in a social and business situation which frustrates his desire to become a successful apple grower, he would tend to see his goals as being "closed or closing". On the other hand, if the grower believed there were no such blocking factors, then he would tend to see his goals as being "open or opening".

There was no significant relationship between facilitation of the social or business situation, as measured by the presence of obstacles, and adoption. This supports the null hypothesis of no relationship.

4. Changes in the Farm Enterprise. It was assumed that if the grower's past and future changes on the farm were appropriate to the apple business situation, then his culturally defined goals would more likely be "open or opening", while if such changes were inappropriate to the apple business situation, then his goals would tend to be "closed or closing".

Changes in the farm enterprise variable was significantly associated with adoption scores. The chi-square

test of association for items used to measure this variable showed the following results:

Increasing the number of apple trees over the last five years was related significantly to adoption. Therefore, this finding does not support the null hypothesis.

Type of future changes planned in the apple business was related significantly to adoption. The adoption scores were higher for those who anticipated expansion or related changes than for those who anticipated reduction or related changes. For this reason the null hypothesis was rejected.

The above findings indicate that changes in the farm enterprise were significantly associated with adoption. This finding does not support the null hypothesis.

5. Time of Changes Planned. It is assumed here that the shorter the period of time in which an expansion of the enterprise is anticipated, the more open the goals. On the other hand, the shorter the period of time in which a reduction of the enterprise is anticipated, the more closed the goals.

The future time in which expansion and related changes are to take place was significantly related to adoption scores. The relationship was in the expected direction.

Time of reduction and related changes was not significantly associated with adoption scores. The degree of relationship between the two variables was moderate (C=0.51).

The association was in the hypothesized direction. Since the chi-square result was not significant, the null hypothesis could not be rejected. It should be noticed that only 15 cases were found in the reduction and related changes group. More cases are needed to reveal the expected results.

The two findings presented above indicate that "time of changes planned" variable only partially supports the null hypothesis.

The five variables discussed above are used in this study to test "open" and "closing" goals. The findings show that some variables confirm the research hypothesis while others do not. On the basis of these findings, one could conclude that there is no definite relationship between "open or opening" and "closed and closing" goals, as tested in this study, and adoption. The hypothesized direction was not strongly confirmed. Therefore, more investigation is needed in these areas.

B. "Progressive" and "Traditional" Value Orientations and Adoption of Practices

The research hypothesis related to the second aspect of this study stated:

> "Progressive" apple growers tend to be high adopters while "traditional" apple growers tend to be low adopters.

Four variables were used to test "progressive" and "traditional" value orientations of the apple growers.

The variables and the items used to measure them are presented below with the findings pertaining to each.

1. Attitudes Toward Change. It was assumed that if the grower had a favorable attitude toward change, he would tend to be more progressive. On the other hand, if he had an unfavorable attitude toward change, he would tend to be more traditional.

Six attitudinal items were used to measure the growers' attitudes toward change. An attitudes twoard change score for each apple grower was computed. The chi-square test of association was calculated to find out the association between total score for attitudes toward change and adoption. The test revealed the existence of a significant relationship between the two variables. Such a finding does not support the null hypothesis of no relationship. Only two of the items used to measure this variable were associated significantly with adoption, while four were not significantly associated with it.

2. Individual's Self-rating of his Adoption Behavior. As indicated earlier, apple growers who rated themselves as being among the first to adopt new ideas were considered to be "progressive". Those who rated themselves as being among the last apple growers to adopt new ideas were considered to be "traditional".

Growers' self-rating score of their adoption behavior was found to be significantly related to their actual

adoption scores. The two items which were used to measure this variable were also related significantly to adoption. Those who rated themselves on the scale as being among the first to adopt new practices tended to be high adopters, while those who rated themselves as being among the last to adopt new practices tended to be low adopters. The relationship was significant at the 0.05 probability level. The null hypothesis, therefore, is not supported by this item.

The reasons which each apple grower gave for rating himself as he did on the adoption scale were analyzed in terms of whether they tended to be progressive or traditional in nature. Those who gave reasons which were "progressive" in nature were found to have higher adoption scores than those who gave reasons which were traditional in nature. The relationship was significant at the 0.05 level.

The findings presented above tend to reject the null hypothesis of no relationship and support the research hypothesis.

3. Attitudes Toward Credit and Loans. It was assumed in this study that a favorable attitude toward credit and loans was progressive, while an unfavorable attitude was traditional. The total attitudes score toward credit and loans was significantly related to adoption

score. The items used to measure this variable and their findings are presented below.

Willingness to take on a mortgage in order to buy more land was significantly related to adoption. This item, therefore, does not support the null hypothesis of no relationship.

Borrowing in order to buy more planting stock was related significantly to adoption at the 0.05 probability level. The item, therefore, does not support the null hypothesis of no relationship.

Borrowing money in order to buy more farm machinery was significantly related to adoption. This item does not support the null hypothesis of no relationship.

The above findings indicate that the "attitudes toward credit and loans" variable which tests "progressive" and "traditional" value orientations of the apple growers was significantly related to adoption. The null hypothesis of no relationship was, therefore, rejected.

4. Values Placed on Science and Education. Apple growers who have favorable attitudes toward science and education are regarded as being progressive, while those who have unfavorable attitudes toward science and education are regarded as being traditional. A score for "values placed on science and education" variable was computed for each apple grower. Such scores were significantly related to adoption. The items used to measure this variable are presented below.

The way the growers felt about the farm practices recommended by Michigan State University had no significant association with their adoption scores. The null hypothesis of no relationship is supported by such finding.

Willingness to try out a new insecticide recommended by the county agent before someone else had tried it out was significantly related to adoption scores at the 0.05 level. This relationship tends to reject the null hypothesis of no relationship.

Participation in Extension activities and programs was found to be significantly associated with adoption scores. The higher the participation score in Extension programs and activities, the higher the adoption score appeared to be. The null hypothesis of no relationship is rejected.

The degree of education the grower felt was needed to make a success in the apple business was significantly related to adoption. The higher the education which he felt was needed, the higher his adoption score was found to be. Conversely, the lower the education which he felt was needed, the lower his adoption score was found to be. Therefore, the null hypothesis of no relationship is rejected.

Since the score for the "values placed on science and education" variable was significantly related to adoption, and since three out of four items presented above were found to be significantly associated with adoption,

there is a tendency to reject the null hypothesis of no relationship.

The four variables discussed above were used to test "progressive" and "traditional" value orientations of the apple growers. The findings show that all four variables were significantly related to adoption of recommended practices and thus tended to confirm the research hypothesis. Ten of the sixteen items used to measure the four variables were significantly related to adoption, while the remaining six items were not significantly related to it. This might suggest that, even though the hypothesis was supported by the four variables investigated, more adequate measures need to be developed to tap the variables more accurately.

C. "Local" and "Cosmopolitan" Orientation and Adoption of Practices.

The research hypothesis for this section of the study states:

> On the whole, adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientation than for those with "local" orientation.

Two variables were used to test "local" and "cosmopolitan" orientations of the apple growers.

1. Participation in State and National Organizations.

Apple growers with a high participation score in state and national organizations (as contrasted with local organizations) are regarded as more "cosmopolitan" in their orientation than those with a low participation score in

such organizations. While the total particpation score in all types of organizations was significantly related to adoption score, participation score in state and national organizations was also significantly related to adoption scores. This relationship rejects the null hypothesis of no relationship.

2. Attendance at Meetings out of County. It was assumed that apple growers who had a high attendance at organizational meetings outside of their communities were more likely to have a "cosmopolitan" orientation, while those who had a low attendance at these meetings were more likely to have a "local" orientation. The number of meetings attended outside the county was significantly related to adoption. The null hypothesis, therefore, is rejected.

The two variables discussed above tend to confirm the research hypothesis. The relationship between the variables and adoption of recommended practices was significant at the 0.05 probability level.

On the basis of the above findings we tend to reject the null hypothesis and accept the research hypothesis that, on the whole, adoption of the farm practices tends to be higher for apple growers with "cosmopolitan" orientations than for those with "local" orientations.

D. Limitations of the Study

Some of the major limitations of the study are discussed below.

It was found, from an economical point of view, that certain types of practices, which were treated in the original schedule, could not be applied to some orchards and the adoption of such practices by the grower seemed infeasable. For these reasons, only 21 practices were selected because of their applicability to every apple grower.

A second shortcoming is that the schedule which was used for the interview was long, being 37 pages. The interview could have been reduced in length with a more careful refinement and elimination of some extraneous materials.

Another shortcoming is concerned with categorizing the responses for certain types of questions. For example, the responses to the question which deals with attitudes toward the practices recommended by Michigan State University were categorized into "favorable," "unfavorable," and "qualified" responses. The difficulty stems from deciding whether or not, for example, one should consider responses such as "they reach us late" or "they are too much for us" as being "unfavorable responses." Also classifying a response such as "I weigh them and use my own judgment before

accepting them" under "qualified" might be debatable.

One statistical problem deals with combining categories when chi-squares were computed for some items. This was a result of the presence of small expected frequencies in some of the cells which forced us to collapse some categories.

Another limitation is the small number of attitudinal items which were used to test achievement orientation of the apple growers and their attitudes toward change. A larger number of items is needed in order to give more accurate results.

E. Suggestions for Further Research

Since no definite relationship was found to exist between "open" and "closed" goals and adoption of recommended farm practices, it is suggested that further research is needed in this area. It is also suggested that more reliable measures be used in order to bring about better results.

Another suggestion concerns the possibility of analyzing the relationship between the three major sets of concepts treated in this study, namely, "open" and "closed" goals, "progressive" and "traditional" value orientations, and "local" and "cosmopolitan" orientations. It is believed that these concepts could be inter-related. Therefore, more research is needed to pinpoint such relationship.

A final suggestion concerns conducting a study in which comparison could be made between apple growers and, for example, general farmers, dairy farmers, or vegetable growers, from the standpoint of their professional orientations, their conception toward specialization of their enterprises, their organizational participation patterns, and the effect of handling a large amount of money on their adoption behavior and joining of specialized organizations which have a direct relationship to their type of enterprises.

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APPENDICES

APPENDIX I

The Recommended Practices and the Numerical Value Given to Each

Practice No.	Numerical Value Given to Items		Page in Schedule
1		Type of ROOTSTOCKS used in the most recent planting. (Q.4)	4
	8	1 - Seedling (Standard)	
	10	2 - Clonal or (dwarf) i.e., Malling II or VII	
	0	3 - Other (Specify)	
2		Type of IMPLEMENTS used in the weed control practice when cultivation method is applied (on non-bearing or bearing orchards). (Q.C-1a)	6
	5	1 - Tree hoe (mechanical hoe)	
	1	2 - Hand hoe	
	2	3 - Other implements (Specify)	
3		CHEMICALS for weed control (on non-bearing or bearing orchards by using: (Q.C-1b)	6
	10	1 - Simazine 2 - Simazine and Amitrole 3 - Dalapon (dowpon) 4 - Diuron 5 - Diuron & Amitrole 6 - Other (Specify) (10 points for any chemical)	
	0	7 - Chemicals are not used	
4		EQUIPMENT used in applying chemicals for weed control (on non-bearing or bearing orchards). (Q.C-1c)	7
	5	1 - Hand sprayer	
	10	2 - Tractor power sprayer	
	0	3 - Other (Specify)	
5		DETERMINING nutrient needs (on non-bearing or bearing orchards) by using: (Q.3a)	7

Practice No.	Numerical Value Given to Items		Page in Schedule
	0	1 - Your own judgement	
	10	2 - Leaf analysis	
	2	3 - Soil test	
	0	4 - Other (Specify)	
6		Type of FERTILIZERS USED (on non-bearing or bearing orchards) (Q. 3b)	8
	2	1 - Manures	
	10	2 - Straight nitrogen, e.g., ammonium nitrate	
	5	3 - Complete fertilizer, e.g., (12-12-12)	
	1	4 - Foliar sprays	
	5 or 2*	5 - Other (Specify) * (NOTE: In item 5 (Other above), 5 points are given to the fertilizer which has 10 or above Nitrogen and 2 points to the fertilizer which has below 10 N.)	
7		APPLICATION of fertilizer (on non-bearing or bearing orchards) by using: (Q.3d)	8
	5	1 - Hand	
	10	2 - Orchard spreader	
	10	3 - Bulk spreader	
	2	4 - Sprays	
	*	5 - Other (Specify) * (NOTE: Give 10 points for item 5 above if any mechanical implement was used here. i.e., Broad caster of 8 foot drill.)	
8		METHODS and EQUIPMENTS used for controlling insects and diseases. (on non-bearing or bearing orchards) (Q.4a)	8
	2	1 - Regular high pressure equipment without air blast.	
		2 - Air blast equipment by using:	
	5	a. Dilute concentration	
	0	b. Concentrate sprays	

Practice No.	Numerical Value Given to Items		Page in Schedule
	8	3 - Dusting by using ground equipment	
	8	4 - Airplane dusting	
9		METHODS and EQUIPMENT used for mice control (on non-bearing or bearing orchards). (Q.5a)	9
	0	1 - Do not control for mice	
	5	2 - Hand method of application	
	10	3 - Mechanical method of application	
	3	4 - Spraying	
	3	5 - Airplane	
10		CHEMICALS used for mice control (on non-bearing or bearing orchards). (Q.5b)	9
	10	1 - Baits	
	5	2 - Sprays	
	2	3 - Other	
	0	4 - Not used (no mice control)	
11		The use of DORMANT SPRAYS on apples. (Q.7a)	9
	10	1 - Yes	
	0	2 - No	
12		The use of DELAYED DORMANT SPRAYS. (Q.7b)	9
	5	1 - Yes	
	0	2 - No	
13		The use of CHEMICAL THINNING (Q.8)	10
	10	1 - Yes	
	0	2 - No	
14		The use of STOP-DROP SPRAYS. (Q.9)	10
	10	1 - Yes	
	0	2 - No	

Practice No.	Numerical Value Given to Items		Page in Schedule
15		TYPE OF CONTAINERS used when harvesting apples. (Q. 10a)	10
	5	1 - Field crates	
	10	2 - Bulk boxes	
	0	3 - Other (Specify)	
16		PICKING DEVICES used (Q.10b)	10
	8	1 - Ladders	
	10	2 - Automatic lift equipment	
	0	3 - Other (Specify)	
17		MOVING FRUIT from the orchard. (Q.10c)	10
	8	1 - Orchard trailers	
	10	2 - Lift trucks	
	0	3 - Other (Specify)	
18		The use of certain fungicides (Captan) for better FRUIT FINISH on JONATHAN and/or GOLDEN DELICIOUS. (Q. 5-1)	19
	0	1 - No	
	10	2 - Yes	
19		TYPE of FARM RECORDS used. (Q.6-1)	22
	2	1 - Save slips and receipts (NOTE: loose sheets and check book are classified under this item also)	
	1	2 - Keep records on a calendar	
	10	3 - Use a record book, other than M.S.U. record book (NOTE: Ledger book is classified under this item)	
	10	4 - Use a college record book (M.S.U. Farm Income Tax Record)	
	10	5 - Other (Specify)--(for C.A.P. System only).	
20		Keeping Records for LABOR (Q.6-3)	22

Practice No.	Numerical Value Given to Items		Page in Schedule
	10	1 - Yes	
	0	2 - No	
21		Keeping SOCIAL SECURITY RECORDS for LABOR. (Q.6-4)	22
	10	1 - Yes	
	0	2 - No	

APPENDIX II

Table 1. Achievement orientation items by adoption (N=100)

Attitudinal Statements	Percent	Mean adoption score
1. Sometimes I feel that farming is a "dead end" operation without a future.		
Disagree	56.0	137.9
Uncertain	3.0	122.8
Agree	41.0	121.0
X^2=10.87; 2 d.f.; P< 0.05, C=0.30		
2. Sometimes I really don't know what apple growers like me are trying to accomplish.		
Disagree	10.0	130.5
Uncertain	24.0	137.4
Agree	66.0	125.4
X^2=10.28; 2 d.f.; P< 0.05, C=0.30		
3. Many times apple growing gets so confusing and demanding that I wonder where I am at.		
Disagree	45.0	140.4
Uncertain	5.0	115.5
Agree	50.0	123.1
X^2=10.60; 2 d.f.; P< 0.05, C=0.32		
4. Practically everything I try to do turns out well for me.		
Agree	38.0	141.1
Uncertain	24.0	132.4
Disagree	38.0	119.5
X^2=10.64; 2 d.f.; P< 0.05, C=0.32		

Table 1 (cont.)

Attitudinal Statements	Percent	Mean adoption score
5. I usually fail when I try something important.		
Disagree	52.0	140.0
Uncertain	28.0	130.2
Agree	20.0	106.0
X^2=26.37; 2 d.f.; P< 0.05, C=0.46		
6. The future looks very dismal.		
Disagree	83.0	133.8
Uncertain	9.0	117.3
Agree	8.0	114.5
X^2=7.04; 2.d.f.; P< 0.05, C=0.25		

Table 2. Attitudes toward change items by adoption (N=100)

Attitudinal statements	Percent	Mean adoption score
1. I like to try new things.		
Agree	79.0	135.6
Uncertain	12.0	117.8
Disagree	9.0	106.2
X^2=15.81; 2 d.f.; P<0.05; C=0.37		
2. The old ways of doing things are the best.		
Disagree	83.0	131.9
Uncertain	13.0	119.5
Agree	4.0	144.5
X^2=4.87; 2 d.f.; P>0.05; C=0.22		
3. Life would be boring without new experience.		
Agree	91.0	132.9
Uncertain	7.0	118.1
Disagree	2.0	119.5
X^2=3.23; 2 d.f.; P>0.05; C=0.18		
4. I like people who are willing to change.		
Agree	90.0	131.7
Uncertain	7.0	122.4
Disagree	3.0	122.8
X^2=1.52; 2 d.f.; P>0.05; C=0.10		

Table 2 (cont.)

Attitudinal statements	Percent	Mean adoption score
5. Most changes make things worse.		
Disagree	85.0	134.1
Uncertain	12.0	111.2
Agree	3.0	116.2
$X^2=7.71$; 2 d.f.; $P<0.05$; C=0.27		
6. The happiest people are those who do things the way their parents did.		
Disagree	96.0	131.3
Uncertain	3.0	116.2
Agree	1.0	129.0
$X^2=2.56$; 2 d.f.; $P>0.05$; C=0.18		

Table 3. Contact with certain county Extension personnel or programs

Type of Contact or participation in County Extension Program during 1961	County Program No. of times
1) The Agent visited your farm.	
2) You attended group meetings called by the Agent.	
3) You read circular letters or cards from the Agent.	
4) You read the Agent's column in newspaper.	
5) You visited the Agent's office.	
6) You obtained bulletins from the Agents (thru the mail at his office, or brought by agent).	
7) You had phone conversations with the Agent.	
8) You visited demonstration plots or attended other demonstrations.	
9) You participated in farm analysis conducted by the Agent for a group of farmers.	
10) You made an individual farm analysis with the Agent.	
11) You made a trip with the Agent.	
12) You attended farm tours in the county.	
13) You attended tours outside the county with the Agent or at his suggestion.	

Table 4. "Local" and "cosmopolitan" organizations

A. Cosmopolitan

1. Area Growers' Association
2. Processing Apple Growers' Association
3. Michigan State Horticulture Society
4. Dwarf Tree Association
5. Great Lakes Association
6. Michigan Association for Cherry Producers
7. American Palmalogical Association
8. New York Horticulture Society
9. Indiana Horticulture Society

B. Local

Farm Organizations:

1) Farm Bureau
2) Grange
3) Farmer's Union
4) Other (Specify)

_____

5) Coop: (Specify)

_____

_____

Extension: (Specify)

1) 4-H Leader
2) Adult Vo. Ag. Class
3) Other (Specify)

_____

_____

Church Organizations:

_____

_____

_____

Other Organizations:

1) Veteran's organization
2) Civic Clubs
3) Fraternal Orders
4) Patriotic groups
5) Social groups

6) PTA
7) Other (Specify)

_____
_____
_____

Public Offices: Past 2 years

1) School board
2) Township board
3) ASC Committee
4) S.C. District
5) PMA Committee
6) Township Extension Program
7) Other: (Specify)

_____
_____