

THE COMMUNICATION PROCESS AND THE ADOPTION
OF NEW FARMING PRACTICES: A STUDY OF THE
ATTITUDES OF FARM OPERATORS IN SOUTHERN
MANITOBA TOWARDS IRRIGATION

A Thesis
Presented to
the Faculty of Graduate Studies and Research
The University of Manitoba

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Alexander Segall
April, 1967



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The general purpose of this research project was to attempt to evaluate the attitudes of farm operators in the Pembina River Basin of Southern Manitoba, towards the adoption of innovations in farming technique. Through an understanding of the influence exerted by certain sociological and social psychological factors on the adoption of new farming practices in general, it was hoped that a reasonably high degree of reliability could be achieved in predicting the predisposition of farm operators in this area to adopt selected agricultural innovations, such as irrigation. An exploratory attempt was made to investigate the effect of various factors, such as; the differential utilization of the existing channels of communication, and the role played by informal opinion leaders and primary reference groups upon the farm operators' adoption behavior.

By means of an interview schedule information was obtained in regard to: (a) Innovation Proneness; (b) Recommended Farm Practices Adopted; (c) Exposure to Mass Media; and (d) Primary Group Preference for 85 Mennonite farm operators in the Southern Manitoba farming community. Additional information was also obtained in regard to a number of selected social factors including age, education and socio-economic status. By means of contingency tables the four major variables were interrelated and a Chi Square analysis was applied to determine the existence of a relationship. A Chi Square analysis was also applied to test the relation-

ship of all three social factors to each of the major variables. The five per cent level of confidence was selected as the minimum for the determination of significance in all cases.

The only significant relationships revealed by the statistical analysis were: (1) the relationship between age and Primary Group Preference; and (2) the relationship between Exposure to Mass Media and Innovation Proneness. The results indicate that the older farm operators feel very strongly bound to the Mennonite farming community. The data also indicate that there is a significant relationship between the number of farm magazines read, the number of farm broadcasts viewed, and the farm operators' willingness to adopt new farming practices.

The study failed to disclose a significant relationship between the strength of primary reference group ties and the willingness of the farm operators to adopt new farming practices. The fact that the farm operator's primary group memberships failed to influence his willingness to adopt agricultural innovations, appears to reflect the changes which have occurred in the normative structure of the Mennonite community. There has been a general decline, over the years, in the application of restrictive social and cultural sanctions to the adoption of new farming practices, and the attitude of the Southern Manitoba Mennonite farm operators toward the adoption of agricultural innovations may be described, at present, as

moderately favorable. In conclusion, all of the available evidence indicates that the farm operators in the Pembina River Basin of Southern Manitoba are not opposed to the adoption of new farming practices, and would be willing to adopt future agricultural innovations, such as irrigation, if properly promoted.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.....	1
II. RESEARCH PROBLEM	
(1) Prairie Irrigation	
A. Alberta and Saskatchewan.....	4
B. Manitoba.....	6
-i- Background of Proposed Irrigation Project	
-ii- General Description of the Area	
- Location and Extent	
- The People	
(2) Sociological Significance of the Study.....	14
III. THEORETICAL FRAMEWORK	
(1) Theory and Definitions.....	17
(2) Objectives of the Study.....	27
A. Channels of Communication	
B. Informal Opinion Leaders	
C. Primary Reference Groups	
(3) Statement of Hypotheses.....	40
IV. METHOD AND PROCEDURES	
A. Design of the Study.....	43
B. Population and Sample.....	44
C. Collection of Data and Instruments of Measurement.....	46
D. Method of Analysis.....	49

CHAPTER	PAGE
V. PRESENTATION OF RESULTS AND RELATED DISCUSSION	
A. Channels of Communication.....	51
B. Informal Opinion Leaders.....	59
C. Primary Reference Groups.....	69
D. A Further Consideration of the Data...	72
VI. SUMMARY AND CONCLUSIONS.....	78
BIBLIOGRAPHY.....	91
APPENDIX A.....	97
APPENDIX B.....	99
APPENDIX C.....	101
APPENDIX D.....	116
APPENDIX E.....	124
APPENDIX F.....	128

LIST OF TABLES

TABLE		PAGE
I.	Distribution of the sample in the Southern Manitoba Mennonite farming community.....	45
II.	Extent to which the mass media are utilized by the farm operators.....	53
III.	Extent to which the farm operators consulted the local Agricultural Representative during the last year.....	54
IV.	Extent to which the farm operators consulted the local commercial dealers and salesmen during the last year.....	54
V.	The communicating agents utilized as sources of information by the farm operators during each of the three stages in the process of adopting recommended farm practices in the past.....	57
VI.	General comparison of the informal opinion leaders and the over-all sample of farm operators.....	62
VII.	Extent to which the farm operators adopted recommended farm practices in the past.....	65
VIII.	Innovation Proneness levels of the farm operators.....	65
IX.	Primary Group Preference levels of the farm operators.....	70
X.	Relationship between age and Primary Group Preference.....	75
XI.	Relationship between Exposure to Mass Media and Innovation Proneness.....	76

LIST OF FIGURES

FIGURE	PAGE
1. Comparison of the general five stage adoption process and Wilkening's three stage adoption process.....	20
2. Schematic representation of the channels of communication in the Southern Manitoba Mennonite farming community.....	26
3. The roles of reference individuals and primary reference groups in the informal personal channel of communication.....	30

CHAPTER I

INTRODUCTION

The general purpose of this research project was to attempt to evaluate the attitudes of farm operators in the Pembina River Basin of Southern Manitoba, towards the adoption of innovations in farming technique. Through an understanding of the influence exerted by certain sociological and social psychological factors on the adoption of new farming practices in general, it was hoped that a reasonably high degree of reliability could be achieved in predicting the predisposition of farm operators in this area to adopt selected agricultural innovations, such as irrigation. The research project, entitled "A Study of Farmers' Attitudes Towards Irrigation" embodied two distinct, although closely interrelated approaches.¹ One section of the study² was concerned with an exploratory attempt to determine the relationship of certain value orientations (i.e. economic rationality, tradition, achievement, and familism) to the differential adoption of selected innovations in farm

¹All phases of the research project were conducted in close collaboration with Acton Camejo, Department of Anthropology and Sociology, University of Manitoba.

²See - Acton Camejo - "Value Orientations and the Adoption of New Farming Practices: A Study of the Attitudes of Farm Operators in Southern Manitoba Towards Irrigation", Unpublished Master's thesis, University of Manitoba, 1967.

practices, that were recommended in the past by the Agricultural Representative of the area. This section of the study is concerned primarily with an analysis of two interrelated aspects of the communication process within the project area; (1) the diffusion of information at the present time, pertaining to agricultural innovations, and (2) past patterns of communication behavior in regard to the adoption of specific recommended farm practices. An exploratory attempt was made to investigate the effect of various factors, such as; the differential utilization of the existing channels of communication, and the role played by informal opinion leaders and primary reference groups upon the farm operators' adoption behavior. The combined studies described above, formed but one portion of a much larger research undertaking entitled "An Interdisciplinary Study of Water Resources and Water Utilization in Western Canada", being conducted at the University of Manitoba, under the auspices of the Department of Energy, Mines and Natural Resources, Government of Canada.

It is important to note here, that the study did not consider type of irrigation, which was seen essentially as a technical question beyond the scope of this present study. Irrigation was viewed rather, as an innovation in farm practice, within the broader context of technological change. Hence, an understanding of the social factors which influenced past adoption behavior in regard to selected agricultural innovations was sought, in order to arrive at an assessment

of the likelihood of the adoption of a new farming practice, such as irrigation. Through this perspective it was hoped that the study would contribute to an understanding of the social factors which must be considered, if future agricultural innovations are to be successfully implemented in the study area, as well as in other farming areas in general.

CHAPTER II

RESEARCH PROBLEM

(1) Prairie Irrigation

A. Alberta and Saskatchewan -

A review of the literature pertaining to irrigation projects in Western Canada revealed regional differences in the farmers' attitudes and willingness to accept a system of irrigation farming. The experience of prolonged drought during the 1930's demonstrated forcefully the effect of a shortage of water on crop yields and income. Irrigation, thus, became recognized as a national problem. Consequently, the Prairie Farm Rehabilitation Act was introduced in 1935, by the Federal Government, to cope with drought problems on the prairies. One of the first major irrigation projects undertaken by the P.F.R.A. was the St. Mary River Dam project, south west of Lethbridge in Southern Alberta. It is important to note that receipt of strong petitions by the Federal Government from farmers in the area was instrumental in activating the investigations by the P.F.R.A., which led to the eventual implementation of the St. Mary Irrigation Project. To date, all principal water storage and supply works outlined in the plans of the project have been constructed. In spite of many setbacks suffered by the St. Mary Irrigation Project during its development, irrigation has been of unquestionable value in terms of the security it has provided

farmers in the area, and benefits which have accrued in equal measure not only to the land directly affected, but also to surrounding communities, the province, and the nation as a whole. "For this success, credit must go to the early Mormon settlers. Their zeal and enterprise, as well as their knowledge and experience in irrigation brought from Utah, set the stage for rapid progress in irrigation development within the area."³

In the 1940's, the P.F.R.A. began investigating the possible development of the South Saskatchewan River Dam, near Outlook in central Saskatchewan. It was assumed that the development of an irrigation project in this area would contribute significantly to the stabilization of agriculture. Despite some expressed opposition to the project, an agreement was signed between the federal and provincial governments, and in 1959, construction of the South Saskatchewan River Dam was officially started. Resistance came from a number of diehard dryland farmers in the area, who petitioned the government to be left out of the irrigation project. Farmers opposing irrigation stated that they would need subsidies to change their present farming practices. Thus, the successful implementation of the South Saskatchewan River project has been hindered by the negative attitudes of these

³ "St. Mary Irrigation Project - P.F.R.A." - pamphlet prepared by the Canada Department of Agriculture, 1963.

farmers towards the proposed irrigation system in the area. On the other hand, it was demonstrated that the St. Mary River Dam project proved successful in terms of irrigation, due mainly to the favorable attitudes and cooperation of the farmers involved. It is evident, therefore, that the attitudes of farmers played a significant role in determining the ultimate success of proposed irrigation schemes in the provinces of Alberta and Saskatchewan.

B. Manitoba -

(i) Background of Proposed Irrigation Project

At present, no irrigation project, as such, exists in Manitoba, although the need for irrigation in the Pembina River Basin was stressed by both the Arthur D. Little Incorporated Report, submitted to the Manitoba government in 1959, and the report submitted to the International Joint Commission by the International Pembina River Engineering Board in 1964. In 1957, the Manitoba government requested Arthur D. Little Inc., economic consultants, to investigate the technical and economic feasibility of providing a water supply system for the Lower Red River Valley of Manitoba. A survey team of Arthur D. Little Inc., accompanied by a member of the Department of Industry and Commerce visited the region in May 1957. Discussions with industrial, agricultural, and community leaders in the district were followed by consultations with officials of the Federal and Provincial governments. A careful examination was made of the official

reports on the region and its resources. The survey team arrived at the conclusion that agricultural and industrial development of the region was being retarded by the absence of adequate supplies of water for irrigational, industrial and domestic use. It was stressed that the soils of the western portion of the region would reach their maximum level of productivity only if they were provided with a substantially increased supply of irrigation water.

The consultants saw immense economic possibilities in this area. A wide range of manufacturing possibilities were envisaged when the economic potential of the area was explored, but these depended on adequate supplies of water. Further agricultural advance, on which the economy of the area depended, was dependent upon the growth of industries for the processing of agricultural products and the provision of irrigation water, particularly in the western portion of the valley. The analysis of economic development prospects of the region led to the conclusion that there was a need for both potable and irrigation water, and that comparatively limited benefits would follow from the provision of water for only one of these purposes. It was suggested in the report, that the provision of potable water might be followed by the establishment of a certain number of additional plants for the processing of agricultural products, but that the full agricultural potential of the area would be achieved only if additional irrigation water were also made available.

When the present water situation in Manitoba was reviewed by a Work Group for the Committee on Manitoba's Economic Future (June 1962), three specific areas were designated where immediate improvement was needed. The first area is South Central Manitoba (Winkler, Altona), where the water supply is not adequate. The natural water supply for South Central Manitoba, originating primarily from small creeks coming out of the escarpment, plus local wells, is gradually becoming insufficient for the expanding economy of the area, and during dry summers, water has to be hauled by truck. Such circumstances put a ceiling on the economic growth of the area. Based on their study of water resources in Manitoba, the Work Group proposed the following irrigation project for this area:

Winkler-Morden Irrigation Scheme: Pembina River

Watershed Development

Irrigation layout for 20,000 acres (1970)

Budget - \$1,400,000⁴

In August 1962, the International Joint Commission instructed the International Pembina River Engineering Board which it established on April 3, 1962, to carry out, through appropriate agencies in Canada and the U. S. A., the technical investigations and studies necessary to enable the

⁴Report by Work Group on - Water Resources - for Committee on Manitoba's Economic Future, June 1962, p. 101.

Commission to prepare and submit a report and recommendations to the Governments of Canada and the U. S. A., on the development of water resources of the Pembina River Basin. The International Joint Commission was requested to determine what plan or plans of cooperative development of the water resources of the Pembina River Basin would be practicable, economically feasible, and to the mutual advantage of the two countries, having in mind: (a) domestic water supply and sanitation; (b) control of floods; (c) irrigation; (d) any other beneficial use. It was pointed out in the commission's report that the economy of the general area of the two countries was almost entirely dependent upon agriculture, and the success of agriculture was directly related to timely occurrence of, and amount of rainfall during the growing season. Annual precipitation averages 18 inches but growing season rainfall was scarcely more than 13 inches. Therefore it seemed evident that with a requirement of 20 inches for full producing, if ideally distributed, irrigation would be beneficial every season.

The farming risks associated with marginal and variable rainfall have strongly influenced crop selection and farm practices. Irrigation, according to the report submitted to the International Joint Commission, would increase crop yields in virtually all years, thus eliminating wide variations of crop yields and encourage more efficient and more profitable farm production. The irrigated acreage would be

sufficiently large to create opportunity for expansion of associated agricultural processing enterprises, and the irrigation benefits would inevitably spread to improve and stabilize the economy of wide surrounding areas. Irrigation was seen as a major component in the multiple purpose development of the Pembina River Basin which would contribute to the future economic growth of the area. Thus it has been established from the three reports discussed, that irrigation in this area is a necessary condition for increased agricultural output and consequent industrial growth.

(ii) General Description of the Area

The area with which this study was concerned lies in the south central portion of the Province of Manitoba, and is known as the Pembina River Basin. The irrigation scheme proposed for this area is generally referred to as the Morden-Winkler Irrigation Project. The tract of land concerned is located east of the Pembina Escarpment, bordered on the south by the International Boundary and by a line between Morden and Winkler on the north.⁵ All of the area lies within fifteen miles of the proposed Pembilier Reservoir on the Pembina River. The gross area is about 38,000 acres, of which about 26,000 acres are arable. The entire irrigable area, as designated by the International Joint Commission

⁵See Appendix A - Map 1.

lies within the municipalities of Stanley and Rhineland. According to the 1961 Agricultural Census of Canada, the municipality of Stanley contains 838 farms, with a total population on all farms of 4,076; the municipality of Rhineland contains 1,012 farms, with a total farm population of 4,820. Recent data indicate a continued trend toward more diversified and intensive farming in this region. The expanding vegetable growing and row crop industries are seen as important sources of supply for the canneries in the towns of Morden and Winkler. A subsequent decrease in wheat acreage has been accompanied by a greater emphasis on the growing of such row crops as sugar beets, and other vegetables which might be readily adapted to an irrigation system of farming.

The people in the project area and the adjacent farm and urban communities are now, and have been since the area was first settled in 1872, almost entirely members of the Mennonite ethnic group. Many early settlers, particularly in the Rhineland municipality were of the Mennonite faith and of German and Dutch origin. As a result of the migration pattern in this area between 1920 and 1930, the Mennonite communities gained a dominant position in the southern part of the region. It was illustrated by E. K. Francis' In Search of Utopia, that in 1941, 94 per cent of the population of the municipality of Rhineland and 78 per cent of the population of the municipality of Stanley were of Mennonite faith.⁶ Certain characteristics of the project

⁶E. K. Francis - In Search of Utopia, (Altona, Manitoba: D. W. Friesen and Sons Ltd., 1955), p. 221.

area appear to be related to the presence of this Mennonite group. These area characteristics which are likely to be of importance in project establishment and development and affect cost structure of engineering schemes are: (a) small present size of farms; (b) extremely fragmented land ownership and (c) a combination of village and isolated farm residence in the project area. About one half of the farm operators live in villages, and one half live on separated individual farmsteads. E. K. Francis has described the Mennonite village organization as the solidaristic type of settlement, which fosters interaction on a face-to-face level, mutual cooperation, and strong social coherence.

The Mennonites have remained one of the least urbanized of all ethnic groups in Manitoba and strive to perpetuate their deep seated agrarian tradition. In describing the Mennonite community of the 1940's, Francis stated that "while firmly interwoven in the web of the larger society, the Mennonite group in Manitoba is not only well defined socially as to its personnel, but has preserved a high degree of inner coherence. It is a social and cultural subsystem functioning to some extent independently of Manitoba's society at large".⁷ Francis further stated that until 1945-46, at least, group coherence was still strong and showed no signs of serious or permanent disorganization. The Mennonite group has succeeded

⁷Ibid., p. 2.

in maintaining a relatively high level of social and cultural homogeneity based on strong family ties and social interaction between kinship members. The family has remained the foundation and nucleus of the Mennonite group and the strength of the social system has been maintained by family reunions and frequent visits among relatives. This social organization, based on primary group relations, is governed by a common value system which is enforced by various social controls.

Francis also recognized that as the result of the impact of social change, an ethnic group may develop into a "more complex, heterogeneous, secularized and individualized system without necessarily losing its identity and specific character."⁸ The principal aim of the early Mennonite immigrants was to safeguard their social heritage by founding, after the traditional pattern, territorial communities of their own, from which all outside influence would be banned. Although they failed in their attempt to prevent participation of their members in the larger societal system and to maintain the insular framework and social isolation of the traditional Mennonite community, they have remained a distinct ethnic group. This Southern Manitoba Mennonite community is characterized by a number of attributes including; ecological concentration, certain folkways and differentiating traits (i.e. a folk dialect), and a consciousness of kind and of

⁸E. K. Francis - "The Russian Mennonites: From Religious to Ethnic Group", American Journal of Sociology", 54:102, 1948.

common descent. However, at the same time, their specific political, economic and educational institutions have been replaced by those prevailing in the over-all Canadian society.

It is interesting to note that although they have adhered strongly, over the years, to certain traditional institutions and values, the Mennonite group, according to all available evidence is not opposed to the adoption of new farming practices. They seem to display "a readiness to adapt themselves to production for capitalistic markets and to technological progress".⁹ Although these farm operators appear to be interested in increasing production, they place a high value on human endeavour and have resisted certain changes which might affect the structure of the family and group, as a whole. The report submitted to the International Joint Commission concluded that the farm operators and their families have shown a willingness to engage in the more demanding production operations of row and vegetable crops, as well as a willingness to acquire and apply the needed new skills.

(2) Sociological Significance of the Study

Based on the observations and recommendations of the Arthur D. Little Inc. report, as well as the report by the Work Group on Water Resources for the Committee on Manitoba's

⁹ Francis, op. cit., p. 111.

Economic Future, detailed studies were conducted at the request of the International Joint Commission in regard to: (a) water studies - irrigation water requirements, reservoir operations; (b) land studies - topography, soil classification; (c) irrigation works - main supply canal, lateral distribution system; (d) economic studies - annual cost per acre for irrigation, an estimation of farm returns in the future under (1) a system of dryland farming (2) a system of irrigation farming, with flood irrigation practices predominating, and an estimation of indirect and public benefits of the irrigation development.

In a pamphlet entitled Water For Tomorrow, issued in 1963 by the Water Control and Conservation Branch of the provincial government, the statement was made that "Successful irrigation requires a cheap water source, suitable land, processing facilities, and desire by local people to change their cropping practices." The first three conditions have been considered, as indicated by the studies mentioned above. The fourth condition, which is the desire by local people to change their cropping practices has not been thoroughly investigated. Once the feasibility of the irrigation project based on the first three conditions has been established, the ultimate success of the project will rest on the willingness of the local people to accept change in their farming practices. The acceptance of new farming practices may be considered as one area of study within the broader field of technological change. E. A. Wilkening in an article entitled "A Sociopsychological Approach to the Study of the Acceptance

of Innovation in Farming",¹⁰ describes this specific aspect as being of particular interest to sociologists, since it is a type of technological change which is still highly influenced by the social relationships and cultural content of rural life.

While the techniques of farming serve economic ends it has been shown that economic behavior cannot be fully understood apart from certain noneconomic considerations. The decisions made by the farmer in his daily operations and his willingness to accept innovations are influenced in varying degrees by his social relations, and by his ideological system, i.e. attitudes. In a study done by Charles R. Hoffer and Dale Stangland, it was concluded that "assuming that the soil and other characteristics of the farm were favourable and that the type of farming made a practice feasible and profitable, the attitudes and values of the farmer himself seem to be the determining influence in the adoption of the practice."^{10a} The significance of this study is indicated, therefore, by the important role which the attitudes of farmers, as shaped by the total socio-cultural configuration of which they are an integral part, will play in determining the adoption of new farming practices in general, as well as the eventual success or failure of the proposed irrigation scheme.

¹⁰E. A. Wilkening "A Sociopsychological Approach to the Study of the Acceptance of Innovation in Farming", Rural Sociology, 15:352, 1950.

^{10a}Charles R. Hoffer and Dale Stangland - "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing", Rural Sociology, 23:120, 1958.

CHAPTER III

THEORETICAL FRAMEWORK

(1) Theory and Definitions

A. The Adoption Process

Rural sociologists have postulated a five stage adoption process through which they believe an individual passes as he adopts a new idea or practice. This adoption process was outlined in a report by the Subcommittee for the Study of the Diffusion of Farm Practices, entitled "How Farm People Accept New Ideas."¹¹ Recent research studies (reviewed in the report cited above), have indicated that the postulation of the adoption process, in terms of stages, is empirically valid. The conceptualization of adoption as a process is supported, by the idea that the acceptance of technological change occurs over a period of time. The five stages and the type of behavior generally assigned to each may be briefly described as follows:

(i) Awareness -- At this stage, the individual learns of the existence of the new idea or practice but lacks details concerning it.

(ii) Interest-Information -- At this stage the individual, motivated by curiosity and interest, seeks additional

¹¹Report by the Subcommittee for the Study of the Diffusion of Farm Practices, "How Farm People Accept New Ideas", 'Ames, Iowa: Iowa State College, 1955), p. 4.

more detailed information about the new idea or practice. He interprets the new idea or practice by relating it to other experiences and other phenomena which are part of his environment.

(iii) Evaluation-Application-Decision -- The individual is concerned, at this stage, with applying the new idea or practice to his present or anticipated future situation. The relative advantages of the new idea or practice over other alternatives are considered, and a decision is made as to whether or not to try it.

(iv) Trial -- At this stage, the individual actually applies the new idea or practice, on a small scale, in order to validate its workability on his own farm. Here he is concerned with how to apply the practice; in amounts, time and conditions for application.

(v) Adoption -- The individual now uses the new practice on a full scale, incorporating it into his way of farming.

Adoption has also been conceptualized, in a somewhat more refined manner, as a process consisting of three stages. The three stages in the adoption process, as formulated by E. A. Wilkening are: (1) awareness; (2) decision-making; and (3) action.¹² As illustrated in Figure 1 these three stages encompass the five stages in the adoption process described above. Wilkening's first stage may be

¹²E. A. Wilkening "Roles of Communicating Agents in Technological Change", Social Forces, 34:361, 1954-56.

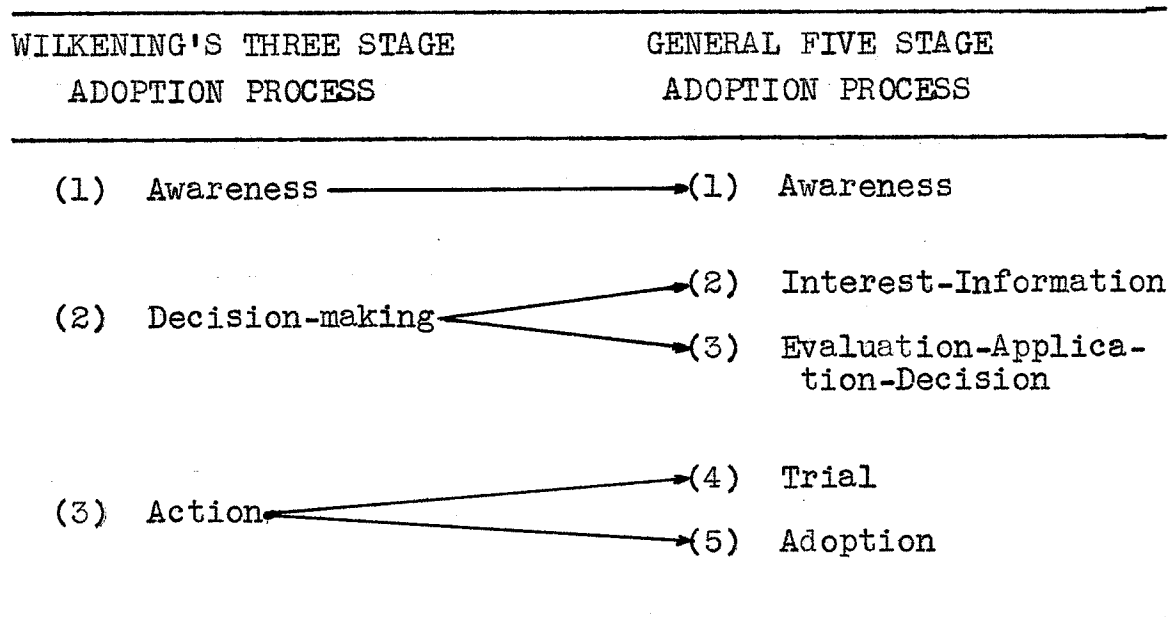
equated to the awareness stage of the five stage process. His decision-making stage embodies both the interest-information and evaluation-application-decision stages. The final stage, which is the action stage, corresponds to the combined trial and adoption stages. It is rather interesting to note that there is a striking similarity between Wilkening's three stage adoption process and the process of attitude change postulated by Kurt Lewin. According to Lewin, the process of attitude change involves three stages: (1) planning; (2) fact-finding; and (3) execution.¹³ The stages developed in both of these conceptual schemes are, in fact, parallel in many respects.

For the purposes of the present study, adoption was conceptualized as a process consisting of three stages, as formulated by Wilkening. As described above, this latter conceptualization of the adoption process embodies all of the aspects of adoption behavior included in the five stage process, in addition to possessing the virtue of parsimony. Wilkening's conceptual framework also offers a clearer distinction (than the five stage process) between the different types of behavior generally assigned to each of the stages in the adoption process. Therefore, it may be concluded that Wilkening's three stage adoption process not only offers greater conceptual clarity, but also may be more readily utilized in empirical investigations of human behavior.

¹³Kurt Lewin "Group Decision and Social Change", in E. E. Maccoby, T. M. Newcomb and E. L. Hartley (eds.) Readings in Social Psychology. (New York: Henry Holt and Company, 1958) p. 197.

FIGURE 1

STAGES IN THE ADOPTION PROCESS

B. The Unit of Adoption

The general tendency of past research has been to treat the individual as the unit of adoption which, according to E. Katz,¹⁴ is in some cases misleading, if the adoption process is to be understood completely. He argues that if a system of stages, such as 'awareness', 'interest', 'evaluation', 'trial' and 'adoption' is posited at the individual level, these stages appear to be functional requisites for any kind of decision, and therefore they

¹⁴E. Katz - "Notes on the Unit of Adoption in Diffusion Research", Sociological Inquiry, 32:3, 1962.

must be considered in decision-making at the social level. Depending on the nature of the new practice a specific type of adoption unit may be 'required'. It is important to note that while some new practices require individual decision, others require both group decision and sanction. The unit of adoption may vary not only according to the requirements of the practice, but also in terms of what is 'prescribed' by the social system. For example, the norms of a group may favor one type of adopting unit over another. "On an informal basis there are certain subcultures and certain situations where a marked preference for joint action - even though an innovation does not require it - is implied in the behavior of individuals. When innovation seems to go against the group norms; when there is an element of risk; when conformity is an important value - there is a tendency to prefer to adopt in the company of others."¹⁵

C. Attitude Organization and Measurement

The concept of attitude is a hypothetical construct which is not directly observable or measurable, but instead is inferred from individual behavior in particular situations. Behavior includes not only actions toward the attitude object but also self-reports of beliefs, feelings and action orientations toward the attitude object. A

¹⁵Ibid., p. 7.

review of a number of definitions of the concept of attitude seems to reveal a general acceptance of the affective and cognitive components of attitude.¹⁶ M. J. Rosenberg in his Theory of Affective-Cognitive Consistency¹⁷ describes attitudes as consisting of three components; cognitive, affective and behavioral.

(a) Cognitive Component - consists of cognitions i.e. perceptions, concepts and beliefs, about the attitude object, and beliefs about the relations between the object and other important values of the person. These attitude cognitions are described by Rosenberg, as being instrumentally related to the individual's values.

(b) Affective Component - consists of the positive or negative feeling i.e. evaluative response, that the individual has toward the attitude object.

(c) Behavioral Component - is a predisposition to act, which is governed by the affective and cognitive components. According to Rosenberg, these components co-vary in close relation to each other. A stable attitude is determined by the affective and cognitive components being in a consistent or balanced state.

¹⁶Bert F. Green - "Attitude Measurement", in G. Lindzey (ed.) Handbook of Social Psychology, (Cambridge, Mass.: Addison-Wesley Publishing Co. Inc., 1954), p. 335.

¹⁷M. J. Rosenberg - "Cognitive, Affective, and Behavioral Components of Attitudes", in M. J. Rosenberg, et. al. Attitude Organization and Change, (New Haven: Yale University Press, 1960), p. 1.

A. L. Edwards refers to attitudes as factors influencing or determining behavior.¹⁸ The types of response that are commonly used as indices of attitude fall into three major categories: cognitive; affective and behavioral. Cook and Selltiz in an article entitled "A Multiple-Indicator Approach to Attitude Measurement", conclude that "all definitions of attitude include beliefs, feelings and overt behavior as indicators of attitude".¹⁹ An understanding of the components of attitudes is generally ascertained through verbal statements of belief and affect, as well as statements concerning behavior. Verbal behavior, according to Edwards, provides, under many circumstances, a more accurate indication of the attitudes of individuals than observations of their non-verbal behavior. Studies of attitude measurement, relying on verbal statements, have established a basis for developing quantitative indices of attitudes.

D. Definition of Other Concepts

Farm Operator - defined according to the 1961 Agricultural Census of Canada as the person (male) who is directly responsible for the agricultural operations of the farm, whether as owner, tenant, or hired manager.

¹⁸A. L. Edwards - Techniques of Attitude Scale Construction (New York: Appleton-Century-Crofts, Inc., 1957).

¹⁹S. W. Cook and C. Selltiz - "A Multiple-Indicator Approach to Attitude Measurement", Psychological Bulletin, 62:36, 1964.

Recommended Farm Practice - a method or technique in farming, which has been specifically recommended by an official agricultural agency i.e. the provincial Agricultural Representative's office.

Irrigation - defined according to the 1961 Agricultural Census of Canada as water applied to land by artificial means. It is worthy of note that the study did not consider type of irrigation, which was seen essentially as a technical question beyond the scope of this present study. Rather, irrigation was viewed as a new farming practice within the broader context of technological change in the field of agriculture.

Innovation Proneness - defined by Murray A. Straus²⁰ as the degree to which individuals display an interest in and a desire to seek out changes in farming technique and to introduce such changes in their own operation when practical.

Diffusion - process by which information pertaining to innovations is transmitted or disseminated from the source of origin to the ultimate users.

Channels of Communication - system through which information is diffused, comprised of two major channels and a number of communicating agents including:

²⁰Murray A. Straus - "A Technique for Measuring Values in Rural Life", (Technical Bulletin 29, State College of Washington, August, 1959, p. 8).

- (1) Impersonal Channel - characterized by one-way communication.

Mass Media - newspapers, magazines, bulletins, radio and television broadcasts

- (2) Personal Channel - characterized by two-way communication.

Agency - agricultural agencies, such as the Provincial Agricultural Representative and the P.F.R.A. office.

Commercial - dealers and salesmen

Informal - intimate associates such as friends, neighbors and relatives.

²¹

Two-Step Flow of Communications - an hypothesis which states that information flows not only directly from the mass media to the general public, but also indirectly from the mass media to certain key persons in the communications structure, and from these opinion leaders to other less active individuals in the community.

Informal Opinion Leaders - those individuals who occupy influential positions in the communication structure of the community, i.e. those who are frequently sought as sources of information. Operationally, informal opinion leaders have been defined in this study, as those farm operators listed by two or more farm operators as a source of information about one or more new farming practices.

²¹Presented schematically in Figure 2.

FIGURE 2

CHANNELS OF COMMUNICATION

COMMUNICATING AGENTS

(1) MASS MEDIA

- Newspapers, Farm Magazines,
Radio and T.V. Farm Broad-
casts.

(2) AGENCY

- Agricultural Representative

(3) COMMERCIAL

- Dealers and Salesmen

(4) INFORMAL

- Friends, Neighbors and
Relatives

IMPERSONAL CHANNEL

PERSONAL CHANNEL

GENERAL

FARM

POPULATION

Innovators - a general finding of past research studies is that all persons do not adopt a new technological practice at the same point in time. On the basis of the time of adoption, innovators have been defined as the very first farm operators to adopt a new farming practice.

Primary Reference Group - a small, relatively durable group, characterized by personal, face-to-face contacts, which the individual takes as a frame of reference for self-evaluation and attitude formation. For example, friend, neighbor and kinship groups.

(2) Objectives of the Study

This study investigated the relationship between: the differential utilization of the existing channels of communication, the role of informal opinion leaders, and the influence of primary reference groups -- and the willingness of farm operators to adopt new farming practices, in the predominantly Mennonite municipalities of Stanley and Rhineland, in Southern Manitoba. The study focused primarily upon two interrelated aspects of the communication process within the Mennonite community:

(1) the diffusion of information, at the present time, about agricultural innovations and; (2) past patterns of communication behavior in regard to the adoption of recommended farm practices. In an article entitled "Predicting

Innovativeness",²² Everett M. Rogers and A. Eugene Havens conclude that a definite relationship exists between such variables as: (a) communication behavior, (i.e. the communicating agents utilized by farm operators as sources of information pertaining to agricultural innovations); (b) opinion leadership, and (c) community norms (as reflected by the normative function of primary reference groups)-and innovativeness.

Rogers and Havens further state that:

(1) It is possible to utilize these variables in a study to predict the adoption of an innovation, for a population of individuals, in which the outcome is not yet known; and

(2) There is also some support for the proposition that the same variables play an important role in explaining adoption behavior in different areas of the country and for different types of farming practices.

A. Channels of Communication

Personal influence is defined by Rogers and Beal as "those communications contacts which involve direct face-to-face exchange between the communicator and communicatee."²³

²²Everett M. Rogers and A. Eugene Havens "Predicting Innovativeness", Sociological Inquiry, 32:34, 1962.

²³Everett M. Rogers and George M. Beal "The Importance of Personal Influence in the Adoption of Technological Change", Social Forces, 36:329, 1956-58.

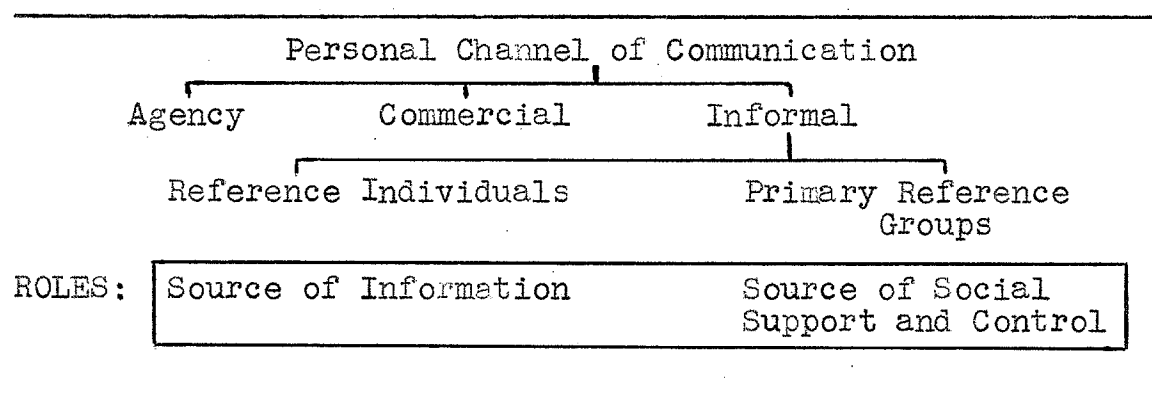
The individuals who interact generally have similar values, a common level of discourse and are important referents to each other. According to Rogers and Beal, findings from past research studies indicate that personal influence is important in a wide range of decision-making situations. Although the mass media are able to arouse the interest of farmers in a new farming practice, actual adoption of the practice can often be induced only through the personal influence of other farmers. "Awareness of, and the general soundness of an innovation may be obtained from an impersonal source, but its suitability for the potential adopter and the effect upon his personal relationships is most likely to be determined by personal communication with persons who are aware of his situation and who are involved in these relationships."²⁴ Therefore, the sanction of a new farming practice is most likely to be sought from friends, neighbors and relatives, or others with whom the farmer has continuing relationships. There is a tendency for neighborhood patterns of association to localize the exchange of farm information on a person-to-person basis and the frequency and primary nature of interaction among farmers seems to indicate that a great deal of farming information is communicated through this informal, personal channel. "Studies have shown that farm people rely heavily on

²⁴Wilkening, op. cit., p. 367.

intimate associates as sources of farm information and for advice in matters of doubt."²⁵ It has been shown, that not only is information communicated, but the direction (i.e. positive or negative) and intensity of the group's feeling toward the new practice is also communicated, through interpersonal relations. Thus, interpersonal relations (as illustrated in Figure 3) perform a major role in the diffusion of farm information, as well as in the evaluation of new farming practices.

FIGURE 3

THE ROLES OF REFERENCE INDIVIDUALS AND PRIMARY REFERENCE GROUPS IN THE INFORMAL PERSONAL CHANNEL OF COMMUNICATION



The widespread adoption of a new farming practice requires that adequate relevant information be effectively transmitted to the farm population involved. Before an

²⁵H. F. Lionberger and E. Hassinger "Neighborhoods as a Factor in the Diffusion of Farm Information in a Northeast Missouri Farming Community", Rural Sociology, 19:337, 1954.

individual farm operator can be expected to adopt a new farming practice, he must first be provided with a substantial amount of information pertaining to the specific new farming technique or innovation. Therefore, exposure to, or contact with the various available sources of information is directly related to the adoption of a new farming practice. Information about technological changes in farming is transmitted by a number of communicating agents. The communication of farm information is a primary function of some i.e. farm broadcasts, and a secondary function of others i.e. friends, relatives and neighbors. Communicating agents also operate differently, in that some are impersonal in nature, while others provide personal contact.

When adoption is viewed as a process, occurring in stages, over a period of time, different kinds of information are likely to be needed at each stage. According to a number of studies,²⁶ the selection of information sources varies as farmers move from one stage to another in the adoption process. For example, the mass media play an important role in providing the farmer with 'first information' at the awareness stage. During the decision-making stage, when the farm operator is evaluating the new farming practice,

²⁶Included in this list of studies are: Wilkening, op. cit., p. 361-7; Rogers and Beal, op. cit., p. 329; Robert G. Mason "The Use of Information Sources in the Process of Adoption", Rural Sociology, 29:40, 1964 and James H. Copp, Maurice L. Sill and E. J. Brown - "The Functioning of Farmers' Characteristics in Relation to Contact with Media and Practice Adoption", Rural Sociology, 23:146, 1958.

other farmers are generally utilized as the major source of information. E. A. Wilkening²⁷ describes three types of information, which are usually obtained at the different stages in the adoption process: (1) hearing about the change (awareness stage); (2) information of help in deciding whether to try out the change (decision-making stage); and (3) instructions in how to put the change into effect (action stage). The communication of information at the various stages, therefore, plays an integral part in the adoption process.

In regard to channels of communication, then, this study will attempt to determine:

(1) What channels and communicating agents exist in the project area, as well as how (i.e. extent) and by whom they are used; and

(2) The role played by the different types of communicating agents, as sources of information in the process of adopting new farming practices. An attempt will be made to determine the extent to which the various sources of information are utilized by the farm operators, during each of the three stages in the adoption process.

B. Informal Opinion Leaders

"Recent trends in the study of leadership strongly emphasize that leadership is not so much a trait which some

²⁷Wilkening, op. cit., p. 361-7.

people possess and others do not, but rather that it is a response of individuals reacting together to the situation in which they find themselves."²⁸ Opinion leadership, therefore, may be described as a function of the group, rather than as a trait which some people have and others do not. E. Katz suggests that "an opinion leader can best be thought of as a group member playing a key communications role."²⁹ Informal opinion leaders are, in a certain sense, the most closely conforming group members, upholding whatever norms and values are central to their group. "A number of studies suggest that perhaps the most important relationship between an emergent leader and the group that he leads is the leader's subservience to the norms of his group".³⁰ Informal opinion leaders closely resemble the people whom they influence and typically are members of the same primary groups of family, friends and co-workers. There are three generally recognized characteristics of opinion leaders: (1) they personify certain values. As previously mentioned, informal opinion leaders often represent the values and attitudes of the group more closely than anyone else; (2) they are competent. Opinion leaders tend to exceed the general public

²⁸E. Katz and Paul Lazarsfeld Personal Influence (Glencoe, Illinois: The Free Press, 1955), p. 99.

²⁹Ibid., p. 33.

³⁰Ibid., p. 101.

in exposure to mass media and hence possess more expert knowledge and a higher level of competence than others in the community; and (3) they have a strategic social location. Informal opinion leaders occupy a position in the communication structure which affords them a wider range of contacts, both within and beyond the local community.

E. A. Wilkening found in a North Carolina community, that the farm operators, to whom other farmers went for advice on farm matters, were not far ahead of the 'average' farmer of the community in the adoption of new farming practices. He suggests that these 'informal leaders' reflect the traditional local values and therefore are unlikely "to accept a new idea unless it supports the existing social and cultural system, or unless it is likely to meet with group approval."³¹ H. F. Lionberger³² attempted to determine whether the informal leaders, in the northeast Missouri farming community which he studied, possessed characteristics which distinguished them from other farm operators in the community. According to Lionberger, not only the personal characteristics of informal leaders, pertinent to farm practice adoption but also the basic differences between communities in regard to cultural factors both require defining.

³¹E. A. Wilkening "Informal Leaders and Innovators in Farm Practices", Rural Sociology, 17:272, 1952.

³²H. F. Lionberger "Some Characteristics of Farm Operators Sought as Sources of Farm Information in a Missouri Community", Rural Sociology, 18:327, 1953.

He states that ideally, these cultural factors should be determined by multiple analysis of a social psychological nature. In his study, Lionberger found that the adoption behavior of leaders differed from that described above by Wilkening. Lionberger reports that the informal leaders were far ahead of the average for the community, in regard to the adoption of new farming practices. However, Lionberger cautions that these apparently conflicting results should be interpreted not only in terms of differences in personal characteristics, but also in terms of the existing social and cultural systems within the communities studied. He acknowledges that "it is conceivable that, under conditions where people are more bound by tradition than was the case in the community studied, local influentials may possess characteristics less favorable to technological changes in farming."³³ Thus the adoption behavior of informal opinion leaders, in regard to changes in farm practices, appears to reflect the attitude of the majority of farmers in the community toward adoption of new farming practices.

The two-step flow hypothesis, as formulated by Elihu Katz³⁴ consists of three parts: (a) the impact of personal influence; (b) the flow of personal influence; and (c) opinion leaders and the mass media. Opinion leaders often form a link between outside media and the smaller communication system in which they play an influential role.

³³Ibid., p. 338.

³⁴Katz and Lazarsfeld, op. cit., p. 309.

The relay function of interpersonal relations, as fulfilled by the informal opinion leaders, enables information originating in the mass media to reach the otherwise unexposed segment of the general farm population. Therefore, information flows not only directly from the mass media to the general farming population, but also indirectly through relay individuals. The original communication may become salient after it has been reinforced by an informal opinion leader. It is also important to note that more than two steps may sometimes be involved. A chain of interpersonal links, rather than a single link may connect the original source of information with its eventual recipients. Based upon the conclusions of a number of studies,³⁵ the hypothesized two-step flow of communications may be accepted as valid and may also be applied in an investigation of the diffusion of information about technological changes in the field of agriculture. One of the conclusions reached by the Subcommittee for the Study of the Diffusion of Farm Practices is that "one of the functions of leaders among farm people is to diffuse new ideas and practices. It is their task to expedite the process of getting ideas from their sources of origin to those who can use them."^{35a}

³⁵E. Katz: "The Two-Step Flow of Communication", in W. Schramm (ed.) Mass Communications. (Urbana: University of Illinois Press, 1960), p. 346.

^{35a}Report by the Subcommittee for the Study of the Diffusion of Farm Practices; "How Farm People Accept New Ideas". (Ames, Iowa: Iowa State College, 1955), p. 11.

In regard to opinion leaders and their role in the relaying of farm information, this study will attempt to:

- (1) Establish whether the two-step flow of communications exists in this specific project area;
- (2) Investigate the extent to which the behavior of informal opinion leaders, in regard to the adoption of new farming practices, is dependent upon the general level of innovation proneness within the community; and
- (3) Determine whether informal opinion leaders are not only more exposed to mass media, but also whether they readily make use of this information pertaining to new farm practices. For example, are those farmers designated as opinion leaders in the Mennonite community also innovators?

C. Primary Reference Groups

"Findings seem to support the thesis that, in a community characterized by certain approved attitudes, the individual's attitude development is a function of the way in which he relates himself both to the total membership group and to one or more reference groups."³⁶ Reference groups provide the individual with a measure of social reality, as well as shared standards of judgment and exert a direct influence upon the formation of attitudes held by

³⁶T. M. Newcomb "Attitude Development as a Function of Reference Groups", in E. E. Maccoby, T. M. Newcomb and E. L. Hartley (eds.) Readings in Social Psychology. (New York: Henry Holt and Company, 1958), p. 275.

individual group members. Reference groups generally fulfill one or both of two main functions; (1) normative function --i.e. they set and enforce standards of conduct and belief, and (2) comparison function -- i.e. they serve as a comparison point against which persons may compare themselves and others. Reference groups, by offering support for certain individual attitudes, often also play a role in the communication process. For example, the social support offered by reference groups often takes the form of a frame of reference or a context within which a specific communication may be received and interpreted. Thus, an individual group member will more readily accept communications that advocate a similar position to that held by his reference group(s). It has been shown,³⁷ that farm operators not only adopt many of the attitudes and expectations of their reference groups (i.e. neighbor, kin and friendship groups), but also evaluate new farming practices within this context.

Interaction between a number of persons, over an extended period of time, leads to the development of mutual expectations and norms, governing individual behavior. Individual action cannot be thoroughly analyzed apart from these norms and expectations. In order to understand fully individual behavior, the norms of the social system in

³⁷C. Paul Marsh and A. Lee Coleman "The Relation of Neighborhood of Residence to Adoption of Recommended Farm Practices", Rural Sociology, 19:385, 1954.

which the individual interacts must be taken into account. A study by Young and Coleman³⁸ indicated that insofar as farming neighborhoods are social systems, they have their own norms, which may be important factors in the adoption of recommended farm practices by local farm operators. It is important to note that the norms in certain communities may be more favorable to the acceptance of agricultural innovations than those in other communities.

Wilkening³⁹ states that the importance of primary group ties among neighbors and kin groups in the traditional rural community is common knowledge. He further states that these ties are strongest where there is greatest cultural isolation of the community. A study by Marsh and Coleman⁴⁰ provided evidence to support the hypothesis that the adoption of new farming practices is in part a function of the farm operator's primary group memberships. The extent of this influence presumably depends on the closeness (i.e. strength) of the farm operator's ties to these groups and

³⁸James N. Young and A. Lee Coleman "Neighborhood Norms and the Adoption of Farm Practices", Rural Sociology, 24:372, 1959.

³⁹E. A. Wilkening "A Sociopsychological Approach to the Study of the Acceptance of Innovations in Farming", Rural Sociology, 15:357, 1950.

⁴⁰C. Paul Marsh and A. Lee Coleman "The Relation of Kinship, Exchanging Work, and Visiting to the Adoption of Recommended Farm Practices", Rural Sociology, 19:291, 1954.

on the extent to which farm practices are group sanctioned. As discussed earlier, the social structure of the Mennonite community is based largely on primary group relations, and the Mennonite normative structure appears to exert a definite influence upon the adoption of agricultural innovations.

Therefore, the study will focus upon the extent to which individual behavior, in regard to the adoption of new farming practices, reflects the general level of innovation proneness in the community and an attempt will be made to:

Measure the strength of primary reference group ties in the Mennonite community and investigate the relationship between the strength of primary group ties and the willingness of farm operators to adopt new farming practices.

(3) Statement of Hypotheses

The hypotheses used to guide the analysis in this study will now be stated under the following three headings: (A) Channels of Communication; (B) Informal Opinion Leaders; and (C) Primary Reference Groups. In each case the source of the hypothesis and the rationale for its formulation will be stated briefly.

A. Channels of Communication This study was guided by the following hypotheses, concerning channels of communication and stages in the adoption process:

- (1) At the awareness stage, the impersonal channel of communication (i.e. the mass media) will play a more important role than the personal channel of communication;
- (2) At the decision-making stage, the informal personal channel (i.e. friends, neighbors and relatives) will play a more important role than either the agency and commercial

personal channels, or the impersonal channel of communication;

(3) At the action stage, the commercial personal channel (i.e. dealers and salesmen) will play a more important role than either the informal and agency personal channels, or the impersonal channel of communication.

These hypotheses have been tested previously by a number of rural sociologists including: E. A. Wilkening, Everett M. Rogers and George M. Beal, and the findings of their research have been summarized in a report by the Subcommittee for the Study of the Diffusion of Farm Practices entitled, "How Farm People Accept New Ideas", (Ames, Iowa: Iowa State College, 1955). An attempt will be made in the present study to re-test these previously established hypotheses, in the Southern Manitoba farming community.

B. Informal Opinion Leaders In regard to the adoption behavior of informal opinion leaders, the study was guided by the following hypotheses:

(4) In areas of high adoption, where the norms favor the adoption of innovations, the farm operators, from whom other farmers frequently obtain farming information (i.e. informal opinion leaders), will have significantly higher adoption rates than farmers in general; but in areas of low adoption (i.e. negative attitude), the adoption rates, of those farmers designated as informal opinion leaders, will be similar to the adoption rates of farmers in general.

(5) If the farm operators in a community place a high value on innovation (i.e. in a high adoption area), they will go to innovators for information pertaining to new farming practices; but on the other hand, if the farm operators are resistant to

agricultural innovations (i.e. in a low adoption area), the informal opinion leaders, who are consulted as sources of information, are unlikely to be innovators.

The test of these hypotheses should help shed more light on a somewhat unclear area approached by E. A. Wilkening and H. F. Lionberger from slightly different points of view (see discussion on page 34). These hypotheses were formulated on the basis of the theoretical development in the present study derived from the existing literature, plus tentative hypotheses (in need of further testing) postulated by C. Paul Marsh and A. Lee Coleman (American Journal of Sociology, 61:588, 1955-56).

C. Primary Reference Groups Finally, in regard to the influence of primary reference group ties, the study was guided by the following hypothesis:

(6) Those farm operators who have strong primary reference group ties will be less willing than the farm operators, who have weak primary reference group ties, to adopt new farming practices in general, and specifically those farm practices recommended by a local formally organized agricultural agency, such as the Provincial Agricultural Representative.

Studies by C. Paul Marsh and A. Lee Coleman (see discussion on pages 38 and 39) provided evidence to support the hypothesis that the adoption of new farming practices is in part a function of the farm operator's primary group memberships. The information gained from this past research, plus E.K. Francis' description of the Mennonite community in Manitoba provided the basis for the formulation of Hypothesis 6. The test of this hypothesis should contribute to a greater understanding of the relationship between the strength of primary group ties and the willingness of farm operators to adopt new farming practices.

CHAPTER IV

METHOD AND PROCEDURES

A. Design of the Study

The study was essentially exploratory and descriptive in nature. The channels of communication through which information is presently disseminated were investigated, as well as the specific sources of information utilized by the farm operators as they progressed through the stages in the process of adopting past recommended farming practices. The study concentrated primarily upon the influence exerted through the informal, personal channel of communication by friends, neighbors and relatives upon the willingness of farmers in the area to adopt new farming practices. Interpersonal relations were analyzed in terms of: (a) reference individuals and (b) primary reference groups. An attempt was made to investigate the role played by informal opinion leaders, as influential sources of information, in the communication process, within the Mennonite community. Furthermore, the study investigated the influence of social control and support, as indicated by the strength of primary reference group ties, upon the farm operators' willingness to adopt new farming practices.

As previously stated, adoption was viewed as a process, comprised of three stages; awareness, decision-making and

action. A review of the files of the two local newspapers, which serve the entire Southern Manitoba area, with a combined weekly circulation of approximately 4,000 subscribers, revealed that sixteen articles dealing with the proposed irrigation project had been published between February, 1964 and March, 1966. It is worthy of note that one of the publications, on May 19, 1965 was an announcement of a public hearing, to be held in the area by the International Joint Commission - Pembina River Development. Radio station CFAM in Altona, Manitoba has also carried three or four broadcasts on irrigation during the last two year period. On the basis of this information, as well as that acquired through a limited number of conversations with local residents, it was assumed that the majority of farm operators in the area had reached the awareness stage in the process of adopting irrigation. This assumption has since been confirmed by the field research.

B. Population and Sample

The irrigable area, as designated in the map drawn up by the International Pembina River Engineering Board, includes: Rural Municipality of Stanley -- range 4 West, townships 1 and 2; and Rural Municipality of Rhineland -- range 3 West, townships 1 and 2.⁴¹ A list of 339 farm

⁴¹See Appendix A - Map 2.

operators was drawn from the most recent voter's lists for both municipalities. This figure represented the total farm operator population in the irrigable area, and is distributed by municipality as follows: Rural Municipality of Stanley -- 191 farm operators (56% of the total farm operator population); and Rural Municipality of Rhineland -- 148 farm operators (44% of the total farm operator population). For the purposes of this study it was decided to select a sample size of 33 per cent of the total farm operator population. A proportionate random sample of 113 farm operators was then drawn (as illustrated below in Table I).

TABLE I
DISTRIBUTION OF THE SAMPLE

Municipality		Farm Operators	
		<u>Drawn in Sample</u>	<u>Interviewed</u>
Stanley	56% of 113 =	64	48
Rhineland	44% of 113 =	49	37
Total 100%		113	85

As the result of a number of problems encountered in collecting the data, such as: deaths, changes in address, inability to locate the farm operators, as well as a few incomplete interviews, the number of respondents successfully interviewed was reduced to 85 farm operators. In

other words, 25 per cent of the total farm operator population in the project area was interviewed.

C. Collection of Data and Instruments of Measurement

The preliminary data were drawn from both federal and provincial government records, such as: the report submitted to the International Joint Commission, a reconnaissance study conducted by the Canada Department of Agricultural Economics, the 1961 Canadian Agricultural Census, as well as other documents, journals and newspaper files. Additional data were collected through the administration of personal interviews by the author and Acton Camejo, during the months of August and September (1966). The main instrument utilized in this study was the Straus Rural Attitudes Profile, developed in 1956 by Murray A. Straus at Washington State University, for a study of social factors related to the successful settlement of a new irrigation project. Further information was also ascertained through the use of a number of scales and questions designed to measure: (a) socio-economic status (using the short form of the Sewell Scale); and (b) the extent to which the various communicating agents were utilized by the farm operators, as sources of information, during each of the three stages in the adoption of past recommended farming practices.

An Index of Exposure to Mass Media was calculated for each of the farm operators interviewed. This index included three aspects: (a) whether the farm operator

received the local weekly newspaper; (b) the number of farm broadcasts (both radio and television) listened to and viewed each week; and (c) the number of farm magazines to which the farm operator subscribed. Each of the items included in the index was assigned a weight and the range of scores was from 0 to 7.

The method employed in this study of designating informal opinion leaders through sociometric choice has been described by Robert G. Mason,⁴² as the most reliable way of measuring personal influence i.e. one's ability to affect the attitudes and behavior of others. As previously described, the leadership role is in part, a function of the situation. Thus, one might envisage a number of different individuals fulfilling the role of opinion leadership, depending upon the nature of the agricultural innovation. Therefore, an attempt was made in this study to locate those informal opinion leaders in the community, who play an important role as frequently sought sources of information, in regard to new farming practices in general.⁴³

The strength of primary reference group ties was indicated by the respondent's score on the Primary Group Preference Scale of the Straus Rural Attitudes Profile, as

⁴²Robert G. Mason "The Use of Information Sources in the Process of Adoption", Rural Sociology, 29:40, 1964.

⁴³See Appendix C -- Interview Schedule - Section III.

well as by the number of responses to the effect that the farm operator had consulted friends, neighbors and relatives in the decision-making stage of the adoption process. The willingness of the respondents in the selected sample to adopt new farming practices was measured through: (1) a scale of Innovation Proneness (Straus Rural Attitudes Profile),⁴⁴ which indicates a general desire to seek out changes in farming technique; and (2) an Index of Recommended Farm Practices Adopted. The list of farm practices, which were recommended to farm operators in the study area, within the last fifteen years, was provided by the Provincial Agricultural Representative in Altona, Manitoba.⁴⁵ Four of the recommended practices; planned crop rotation, land fertilization, use of chemicals and surface tillage, which may be grouped with irrigation, according to E. A. Wilkenning's classification,⁴⁶ as profit maximizing practices geared to improving output of given resources, were utilized in a Farm Practice Adoption scale. The respondent's score on this index may be interpreted as an indication of his willingness to adopt specific farm practices recommended by

⁴⁴The range of the scores on each of the scales in the Straus Rural Attitudes Profile is from - 12 to +12.

⁴⁵See Appendix B.

⁴⁶E. A. Wilkenning, Joan Tully and Hartley Presser "Communication and Acceptance of Recommended Farm Practices Among Dairy Farmers of Northern Victoria", Rural Sociology, 27:116, 1962.

the local agricultural agency. Thus, the study attempted to evaluate the attitudes of farm operators, in this Southern Manitoba Mennonite community, toward innovations in farming technique through a combination of two measures; (a) verbal statements indicating a general desire to adopt new farm practices, and (b) demonstrated behavior i.e. the number of recommended farm practices adopted in the past.

D. Method of Analysis

In terms of the statistical analysis, four major variables were considered: Exposure to Mass Media, Primary Group Preference, Recommended Farm Practices Adopted and Innovation Proneness. By means of contingency tables the four variables were interrelated and a Chi Square analysis was applied to determine the existence of a relationship. The five per cent level of confidence was selected as the minimum for the determination of significance in all cases. The variance in three of the above variables (Exposure to Mass Media, Primary Group Preference and Innovation Proneness) resulting from certain selected social factors i.e. age, education and socio-economic status was also investigated. Furthermore, a Chi Square analysis was applied to test the relationship of all three social factors to each of the major variables. The tables showing the results of this analysis are included in the Appendix. The tables in Appendix E illustrate the results of the analysis testing

for relationships between the selected social factors and the major variables. The tables in Appendix F illustrate the results of the analysis testing for inter-relationships between the major variables: Exposure to Mass Media, Innovation Proneness, Primary Group Preference and Recommended Farm Practices Adopted.

CHAPTER V

PRESENTATION OF RESULTS AND RELATED DISCUSSION

A. Channels of Communication

In regard to the channels of communication and the communicating agents which exist in this Southern Manitoba farming community, the study revealed that the area is served by a number of these, which provide information about agricultural innovations, including:

Impersonal Channels of Communication

1. Mass Media - radio (the area is served by a number of outside stations, as well as a local Altona station, CFAM), television (the area is served by stations CBWT, CJAY, and KCND), newspapers (the farm operators in the study area receive the Winnipeg newspapers, as well as two papers published locally in Winkler and Morden), farm magazines (on the average the farm operators receive three farm magazines i.e. Family Herald, Country Guide and Free Press Weekly).

Personal Channels of Communication

2. Agency - the area is served by two Provincial Agricultural Representatives: one located in Altona for the Municipality of Rhineland; and the other in Morden for the Municipality of Stanley, as well as a P.F.R.A. representative in Morden. The P.F.R.A. office was established in this area quite recently (i.e. approximately June, 1965).

3. Commercial - a number of implement dealers, grain elevator operators and approximately three local seed companies provide the farm operators with information about agricultural innovations.

4. Informal - friends, neighbors and relatives play a vital role as an influential source of information in the communication process.

Although the farm operators in the study area have equal access to the various communicating agents cited above, it was found that the extent to which these sources of information are utilized by the farmers varies considerably. Table II indicates that 91 per cent of the farm operators receive the local newspaper. The number of farm magazines to which the farm operators subscribe, ranges from 0 to 6, with the average (median) farmer receiving three farm magazines. Very few farm operators receive no magazines at all, whereas 60 per cent receive between 1 - 3 farm magazines. The vast majority of the farm operators (76 farmers or 87 per cent) listen to and view between 1 and 6 farm broadcasts (both radio and television), per week. It is worthy of note that there is apparently a seasonal variation in this last type of communication behavior. The majority of the farm operators stated that they have more free time and consequently watch and listen to more farm broadcasts during the winter months. The study also revealed that the majority of farm operators in this Southern Manitoba Mennonite community very

TABLE II

EXTENT TO WHICH MASS MEDIA UTILIZED
BY FARM OPERATORS

A. <u>Local Newspaper</u>		
	Farm Operators	
	<u>No.</u>	<u>%</u>
Receive Local Newspaper	77***	(91)
Do Not Receive Local Newspaper	8	(9)
Total	85	(100)
B. <u>Farm Magazines</u>		
Number of Farm Magazines to which Farm Operators Subscribe	Farm Operators	
	<u>No.</u>	<u>%</u>
0	10	(12)
1 - 3	51*	(60)
4 - 6	24**	(28)
over 6	0	(0)
Total	85	(100)
C. <u>Farm Broadcasts</u> (Radio and T.V.)		
Number of Farm Broadcasts Listened to and Viewed Per Week	Farm Operators	
	<u>No.</u>	<u>%</u>
0	9	(11)
1 - 3	39	(46)
4 - 6	35***	(41)
over 6	2	(2)
Total	85	(100)

-- Each * indicates the location of an informal opinion leader.

TABLE III

CONTACT WITH LOCAL AGRICULTURAL REPRESENTATIVE

Number of Times Consulted During the Last Year	Farm Operators	
	<u>No.</u>	<u>%</u>
Never (0 times)	56	(66)
Very Little (1-2 times)	19	(22)
Some (3-8 times)	8**	(10)
Quite a Lot (over 8 times)	2*	(2)
Total	85	(100)

TABLE IV

CONTACT WITH LOCAL COMMERCIAL DEALERS AND SALESMEN

Number of Times Consulted During the Last Year	Farm Operators	
	<u>No.</u>	<u>%</u>
Never (0 times)	31	(36)
Very Little (1-2 times)	23	(27)
Some (3-8 times)	15	(18)
Quite a Lot (over 8 times)	16***	(19)
Total	85	(100)

-- Each * indicates the location of an informal opinion leader.

seldom discuss farming matters with the local Agricultural Representative. For example, 66 per cent of the farmers interviewed, stated that they had never consulted the Agricultural Representative at all during the last year. Furthermore, only 2 per cent of the farm operators consulted the Agricultural Representative on a fairly frequent basis. The local commercial dealers and salesmen were consulted a little more frequently, although it was found that 36 per cent of the farm operators stated that they had not discussed farming matters with any of the local dealers and salesmen during the last year. On the basis of the preceding data, it becomes readily apparent that all the communicating agents which exist in the study area are not being utilized to the fullest extent possible.

The findings of this study, in regard to the various communicating agents utilized as sources of information by the farm operators during the stages in the adoption process, generally tend to support the results of previous research on this topic.⁴⁷ It was found that the sources of information utilized, varied as the farm operators moved from one stage to another in the process of adopting recommended farm practices in the past.^{47a} As expected, the mass media played an

⁴⁷ Report by the Subcommittee for the Study of the Diffusion of Farm Practices, "How Farm People Accept New Ideas", (Ames, Iowa: Iowa State College, 1955), p. 4.

^{47a} The questions employed in this study were specifically designed to measure the source of information utilized by the farm operators at each of the three stages in the adoption process. See Appendix C, page 104, - notations indicate the relationship between questions 1, 2 and 3, and the three stages in the adoption process.

important role in providing the farmers with 'first information' at the awareness stage (see Table IV). However, it is important to note that the mass media failed to play the most important role at the awareness stage, as hypothesized. The most frequently cited source of information about new ideas or practices in farming, at the awareness stage, was friends, neighbors and relatives (37 per cent). It was also found that the Agricultural Representative, as well as the local commercial dealers and salesmen played a limited role, as sources of information, at the first stage of the adoption process.

During the second stage in the adoption process (i.e. decision-making), when the farm operators were evaluating the new farming practices, other local farmers were utilized as the major source of information (by 44 per cent). Therefore, it appears that although the mass media were able to arouse the interest of many farmers in these new farming practices, actual adoption of the practices was induced primarily through the personal influence of other farmers (i.e. friends, neighbors and relatives). It is also important to note that the data indicate that friends, neighbors and relatives play a relatively influential role at all three stages in the adoption process. In the final or action stage, information in regard to how to put the change into effect was transmitted primarily by the local commercial dealers and salesmen. Fifty-four per cent of the farm

operators cited commercial dealers and salesmen as the source of information utilized at the action stage, in the adoption of recommended farm practices in the past. The Agricultural Representative appears to have played a rather limited role, as a source of information, at all three stages in the adoption process.

TABLE V

COMMUNICATING AGENTS UTILIZED AS SOURCES OF INFORMATION BY FARM OPERATORS DURING EACH OF THE THREE STAGES IN THE PROCESS OF ADOPTING RECOMMENDED FARM PRACTICES IN THE PAST

Communicating Agents	Adoption Process					
	Stage 1 Awareness		Stage 2 Decision Making		Stage 3 Action	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Mass Media	26*	(31)	7	(8)	6	(7)
Friends, Neighbors and Relatives	31	(37)	37	(44)	17	(20)
Agricultural Representative	12*	(14)	13***	(15)	10*	(12)
Commercial Dealers and Salesmen	14	(16)	22	(26)	46*	(54)
Other	2*	(2)	6	(7)	6*	(7)
Total	85	(100)	85	(100)	85	(100)

-- Each * indicates the location of an informal opinion leader.

On the basis of the data presented, the hypotheses may be accepted that:

HYPOTHESIS 2: The informal personal channel of communication (i.e. friends, neighbors and relatives) plays a more important role, as a source of information, than either the agency and commercial personal channels or the impersonal channel, at the decision-making stage in the adoption process; and

HYPOTHESIS 3: The commercial personal channel (i.e. dealers and salesmen) plays a more important role than either the informal and agency personal channels, or the impersonal channel, at the action stage in the adoption process.

However, the data presented in the present study fail to support the hypothesis that the impersonal channel of communication (i.e. mass media) plays a more important role than the personal channel, at the awareness stage. As previously stated, the impersonal channel, although an influential source of information at this stage, was surpassed by the influence exerted through the informal personal channel by friends, neighbors and relatives. This latter evidence offers support for the hypothesis that a two-step flow of communications exists in this Southern Manitoba farming community. That is, information pertaining to agricultural innovations flows, not only directly from the mass media to the general public, but also indirectly from the mass media

to certain key persons in the communication structure, and from these relay individuals to the general farming population.

Additional questions should have been included in the interview schedule, in order to determine if, in fact, this relay function is fulfilled by the informal opinion leaders in the community. Although the general farming population is influenced to a certain extent by informal opinion leaders and these opinion leaders tend to exceed the general public in exposure to mass media, it is not possible on the basis of the information collected to reach a definite conclusion regarding the role of informal opinion leaders in the two-step flow of communications. However, in view of the small number of farm operators who cited the mass media as the source of information utilized at each of the stages in the adoption process, it is evident that the flow of information about technological innovations in the field of agriculture is being mediated through interpersonal relations i.e. friends, neighbors and relatives, as well as the Agricultural Representative to a limited extent, and commercial dealers and salesmen.

B. Informal Opinion Leaders

As previously stated, an attempt was made in the present study to locate those informal opinion leaders in the Mennonite community, who play an important role as frequently sought sources of information pertaining to new farming practices in general. Informal opinion leaders were designated on the

basis of sociometric choice and it was found that only three local farmers met the rather stringent criteria utilized in this study. That is, only three farm operators were cited by two or more other farmers as a source of information about one or more new farming practice. The small number of designated opinion leaders places certain limitations upon the type of analysis possible, as well as the basis for generalizations arising from the results of this study.

According to the existing literature, informal opinion leaders tend to resemble the people whom they influence in a number of respects. For example, H. F. Lionberger⁴⁸ concluded, that the leaders in the community he studied, differed little from other farm operators with respect to age and education. Furthermore, a generally recognized characteristic of opinion leaders is that they personify certain group values. However, it is also important to note that opinion leadership is associated with a number of distinctive personal characteristics including; size of farm operation and level of farm income. Lionberger also reported that the leaders, in the Missouri community he studied, operated distinctively larger farms, and received a gross farm income which was well above the average for the community. Frank

⁴⁸H. F. Lionberger "Some Characteristics of Farm Operators Sought as Sources of Farm Information in a Missouri Community", Rural Sociology, 18:327, 1953.

O. Leuthold, in a study of the communication process in two Saskatchewan farming communities, reports similar findings, in regard to the distinctive characteristics of the farm operators, designated as opinion leaders.⁴⁹

Within the limitation stated above, it may be concluded that the results of the present study support the findings of past research in this area. Table VI illustrates that those individuals designated as informal opinion leaders resemble the local farm operators in terms of age and education. It is important to note that the educational level attained by the informal opinion leaders exceeds, but not to a very great extent, the educational level of the farm operators in general. According to the data collected⁵⁰ primary group ties are valued quite highly by the Mennonite farming community. For example, the average farmer feels that a family should do things together, usually discusses farming plans with his wife, and likes to visit with his friends, neighbors and relatives. Table VI illustrates that this group value is upheld by the informal opinion leaders. In the present study it was also found that the informal opinion leaders

⁴⁹Frank O. Leuthold "Communication and Diffusion of Improved Farm Practices in Two Northern Saskatchewan Farm Communities", (Saskatoon, Saskatchewan: Canadian Center for Community Studies, 1966).

⁵⁰See Appendix D - Table 3D - 75 per cent of the farm operators scored 'High' on a scale of Primary Group Preference. By definition, on each of the scales considered in this study, 'High' refers to those scores which are equal to, or greater than the median, while 'Low' refers to those scores which fall below the median.

possess a number of distinctive characteristics. For example, they far exceed the average for the Mennonite farming community, in regard to the size of farm operation and gross annual income (See Table VI).

TABLE VI
GENERAL COMPARISON OF INFORMAL OPINION LEADERS AND FARM
OPERATOR SAMPLE

	Informal Opinion Leaders	Farm Operators (median scores)
Age	44, 42, 42	46
Education (grades completed)	9-11, 6, 8	6
Size of Farm (acres)	640, 640, 455	250
Gross Annual Income	\$18,000, \$18,000 \$40,000	\$5,000
Recommended Farm Practices Adopted	4, 3, 4	4
Innovation Proneness	+5, +8, +10	+2
Primary Group Preference	+5, +3, +5	+4
Exposure to Mass Media	4, 5, 5	4
Number of respon- dents	= 3	= 85

Another generally recognized characteristic of informal opinion leaders, substantiated by the present study, is that

opinion leaders tend to exceed the general public in exposure to mass media.⁵¹ Other important differences were also revealed, in regard to certain aspects of the communication behavior demonstrated by all three opinion leaders. For example, the opinion leaders consulted both the Agricultural Representative and the local commercial dealers and salesmen much more frequently throughout the last year than did the local farm operators in general.⁵² In regard to the communicating agents utilized as sources of information by the opinion leaders during the stages in the process of adopting recommended farming practices in the past, only one distinctive pattern emerged. At the decision-making stage in the adoption process all three opinion leaders cited the Agricultural Representative as the most frequently utilized source of information.⁵³ In other words, in the past, when deciding whether to try out recommended new farming practices on their own farms, the informal opinion leaders consulted the local Agricultural Representative for further information. This is a rather significant finding, in view of the fact that the majority of the farm operators received this type of information from other local farmers i.e. friends, neighbors and relatives.

⁵¹See Table VI and Also Table II, page 53.

⁵²See Tables II and IV, page 54.

⁵³See Table V, page 57.

It is also interesting to note that although the majority of the farm operators do not discuss farming matters with the local Agricultural Representative, they obtain a certain amount of information about new farming practices from the informal opinion leaders, who in turn rely primarily upon the Agricultural Representative in making their own decisions.

The hypothesis which guided this section of the study was:

HYPOTHESIS 4: In areas of high adoption, where the norms favor the adoption of innovations, the farm operators, from whom other farmers frequently obtain farming information (i.e. informal opinion leaders), will have significantly higher adoption rates than farmers in general; but in areas of low adoption (i.e. negative attitude), the adoption rates of those designated as informal opinion leaders will be similar to the adoption rates of farmers in general.

As described in Chapter IV, the willingness of the farm operators in the selected sample to adopt new farming practices was measured through: (1) a scale of Innovation Proneness, which indicates a general desire to seek out changes in farming technique; and (2) an index of Recommended Farm Practices Adopted. On the basis of the fact that 52 farm operators or 61 per cent scored 'High' on the index of Recommended Farm Practices Adopted, and 48 farm operators or 56 per cent scored 'High' on the scale of Innovation Proneness (as illustrated in Tables VII and VIII), it may be

TABLE VII

EXTENT TO WHICH FARM OPERATORS ADOPTED RECOMMENDED FARM
PRACTICES IN THE PAST

Recommended Farm Practices Adopted	Farm Operators	
	<u>No.</u>	<u>%</u>
High	52	(61)
Low	33	(39)
Total	85	(100)

TABLE VIII

INNOVATION PRONENESS LEVELS OF FARM
OPERATORS

Innovation Proneness	Farm Operators	
	<u>No.</u>	<u>%</u>
High	48	(56)
Low	37	(44)
Total	85	(100)

concluded that the norms in this Southern Manitoba farming community favor the adoption of agricultural innovations.

The median score for the farm operators, on the Innovation Proneness scale was + 2. This measure indicates that the farm operators possess a favorable attitude toward the adoption of new farming practices. However, it should be noted that although the attitude is positive in direction, it is rather low in terms of magnitude (i.e. a low degree of favorableness). Within the terms of reference of the present study, this Southern Manitoba farming community may be viewed as an area of high adoption (i.e. positive attitude). Therefore, according to the hypothesis postulated, those farm operators designated as informal opinion leaders should have significantly higher adoption rates than the farm operators in general. As previously stated, the adoption rate of the farm operators was evaluated through: (a) verbal statements indicating a general desire to adopt new farming practices; and (b) demonstrated behavior i.e. the number of recommended farm practices adopted in the past. Table VI illustrates that all three of the opinion leaders substantially exceeded the median for the community, on the scale of Innovation Proneness, thus supporting the hypothesis. However, the fact that the scores of the opinion leaders on the index of Recommended Farm Practices Adopted (as illustrated in Table VI), cluster around the group median should not be construed as inconsistent with the finding stated above. This result

is due instead, to the instrument utilized to assess demonstrated behavior, in regard to the adoption of recommended farm practices in the past. The fact that the list of recommended farm practices (as provided by the Provincial Agricultural Representative in Altona, Manitoba) contained only four practices, placed a limitation upon the highest score attainable by any farm operator. In order to investigate thoroughly the differences in the adoption behavior of opinion leaders, as compared to the general farm operator population, a more comprehensive list of practices should have been employed in the study. Evidence indicates that these informal opinion leaders are not only more favorably predisposed toward the adoption of new farming practices, but also are indeed independently adopting agricultural innovations, other than those recommended by the local Agricultural Representative. A good illustration of this point is the fact that one of the farm operators, designated as an informal opinion leader, has already implemented a system of sprinkler irrigation on his own farm.

As the result of a further shortcoming of the list of recommended farm practices utilized in this study, it was not possible to categorize the farm operators on the basis of the time of adoption. For example, the Agricultural Representative indicated that he had first recommended land fertilization to the local farmers in 1956. The informal opinion leaders all employ this practice on their farms,

and stated that they had adopted this farming practice in 1951, 1958 and 1948. In view of the fact that two of the farm operators had been using the practice before 1956, it is impossible to categorize them as innovators, with respect to the year the practice was first recommended by the Agricultural Representative. Similar findings were discovered, in regard to the other practices included in the list of recommended farm practices. It appears as though, at the time the Agricultural Representative first recommended each of the farm practices considered in this study, it was in fact no longer truly an agricultural innovation for some of the local farm operators. These farm operators learned about the new farming practices from other local farmers and incorporated the practices into their own farming operation, before the Agricultural Representative began his program of active promotion. Therefore, in order to categorize successfully the farm operators, on the basis of the time of adoption (i.e. as innovators, early adopters, laggards, and so on), the farming practice under consideration must not have existed in the area, before it was officially introduced by the agricultural agency. Despite the stated limitations of this measure, the farm operators' scores on this index of Recommended Farm Practices Adopted, may still be interpreted as an indication of their willingness to adopt new farming practices.

C. Primary Reference Groups

Past research studies⁵⁴ have provided evidence that the adoption of new farming practices is, in part, a function of the farm operator's primary group memberships. The extent of this influence depends on the strength of the farm operator's ties to these groups and on the extent to which farm practices are group sanctioned. As discussed earlier, the social structure of the Mennonite community is based largely on primary group relations, and the Mennonite normative structure, according to the existing literature,⁵⁵ appeared to exert a definite restrictive influence upon the adoption of agricultural innovations. Therefore, this section of the study was guided by the following hypothesis:

HYPOTHESIS 6: Those farm operators who have strong primary reference group ties will be less willing, than the farm operators who have weak ties, to adopt new farming practices in general, and specifically those farm practices recommended by a local formally organized agricultural agency, such as the Provincial Agricultural Representative.

In the present study, the strength of primary reference

⁵⁴C. Paul Marsh and A. Lee Coleman "The Relation of Kinship, Exchanging Work, and Visiting to the Adoption of Recommended Farm Practices", Rural Sociology, 19:291, 1954.

⁵⁵E. K. Francis In Search of Utopia. (Altona, Manitoba: D. W. Friesen and Sons Ltd., 1955).

group ties was measured through the farm operators' scores on a scale of Primary Group Preference, as well as by the extent to which the farm operators relied upon primary reference groups (i.e. neighbor, kin and friendship groups) during the decision-making stage in the process of adopting recommended farm practices in the past. As illustrated in Table IX, 64 farm operators (75 per cent) scored 'High' on the scale of Primary Group Preference. The median score for the farm operators on this scale was +4 (See Table VI), indicating a positive attitude, with a relatively high degree of favorableness toward the maintenance of close primary group relations.⁵⁶

TABLE IX
PRIMARY GROUP PREFERENCE LEVELS OF FARM
OPERATORS

Primary Group Preference	Farm Operators	
	<u>No.</u>	<u>%</u>
High	64	(75)
Low	21	(25)
Total	85	(100)

⁵⁶The conclusion of this study, that primary group ties are valued quite highly by the Mennonite farming community, is supported by the finding in the related study conducted by Acton Camejo, that the majority of the farm operators also scored 'High' on an index of Familism.

Furthermore, as previously stated, during the decision-making stage in the adoption process, the majority of the farm operators, when evaluating new farming practices, sought further information from their friends, neighbors and relatives. It was also noted, that primary reference groups appear to have played an important role at all three stages in the adoption process. The preceding data clearly illustrate the fact that primary group relations still play a vital role in the social organization of the Mennonite community.

A Chi Square analysis was applied to test the relationship between the strength of primary group ties and the willingness of the farm operators, in the Mennonite community, to adopt new farming practices. In accordance with the hypothesis postulated, it was expected that the closer a farm operator was tied to the Mennonite community (as indicated by his primary reference group ties), the less willing he would be to adopt new farming practices readily. However, the statistical analysis failed to reveal a significant relationship between either, Primary Group Preference and Innovation Proneness, or Primary Group Preference and Recommended Farm Practices Adopted.⁵⁷ In fact, many of the farm operators scored highly on all

⁵⁷ See Appendix F - Tables 3F and 4F.

three of the scales, indicating that the strength of their primary group ties did not influence their willingness to adopt agricultural innovations. The fact that the data fail to support the hypothesis postulated, may be accounted for in part, by the changes which have occurred over the years, in the normative structure of the Mennonite community. Although the social organization of the Mennonite farming community is still based largely on primary group relations, there appears to have been a general decline in the application of restrictive social and cultural sanctions to the adoption of new farming practices. The changing nature of the Mennonite normative structure will be discussed more fully in Chapter VI.

D. A Further Consideration of the Data

The variance in three of the major variables (Exposure to Mass Media, Primary Group Preference and Innovation Prone-ness), resulting from certain selected social factors i.e. age, education and socio-economic status was investigated.

The scores of the farm operators, on the index of Exposure to Mass Media, were almost evenly distributed i.e. 51 per cent scored 'High' and 49 per cent scored 'Low'.⁵⁸ When compared by age, the data indicated that a greater percentage of the young farmers (i.e. those under 45 years of age), scored 'High' on this index than did the older age group of farm operators. When compared by education and

⁵⁸See Appendix D - Table 1D.

level of living, it was also found that the farm operators with higher education (i.e. more than 7 years of schooling), and those with high socio-economic status, scored considerably higher on the index of Exposure to Mass Media, than did the low education and low socio-economic groups of farm operators.

On the scale of Innovation Proneness, 56 per cent of the farm operators in the sample interviewed, scored 'High', while the remaining 44 per cent scored 'Low'.⁵⁹ There was little variation in this pattern, when age was varied i.e. 55 per cent of the young farm operators and 58 per cent of the older farm operators scored 'High' on the Innovation Proneness scale. However, when the level of education and socio-economic status were varied, noticeable differences became apparent. For example, 70 per cent of the high education group scored 'High' whereas only 49 per cent of the low education group scored 'High', on the scale of Innovation Proneness. A similar pattern was noted for the high, as opposed to the low socio-economic status farm operators. On the basis of the preceding data, it may be concluded that a greater percentage of the better educated farm operators, and those farm operators with higher socio-economic status, scored highly on the Innovation Proneness scale.

As indicated previously, the vast majority of the

⁵⁹See Appendix D - Table 2D.

farm operators (i.e. 75 per cent) scored 'High' on the scale of Primary Group Preference, whereas only 25 per cent scored 'Low'.⁶⁰ Differences in the level of socio-economic status failed to produce noticeable variation in this trend i.e. 80 per cent of the high socio-economic status group and 71 per cent of the low socio-economic status group of farm operators scored 'High' on the scale of Primary Group Preference. However, the level of education attained, and the age of the farm operators, produced substantial differences in the distribution of scores on this scale. For example, 82 per cent of the low education group (as opposed to 63 per cent of the high education group), and 86 per cent of the older farm operators (as opposed to 64 per cent of the young farmers) scored 'High' on the scale of Primary Group Preference. As indicated above, a greater percentage of the older farm operators (i.e. those over 46 years of age), and the farm operators with less than 7 years of schooling scored highly on the measure of primary group ties.

A Chi Square analysis was applied to test the relationship of all three social factors to each of the major variables described above. The only significant relationship revealed by the statistical analysis, was that between age and Primary Group Preference (as illustrated in Table X). The results indicate that the older farm operators scored

⁶⁰See Appendix D - Table 3D.

consistently higher, than the young farm operators, on the scale of Primary Group Preference.

TABLE X
RELATIONSHIP BETWEEN AGE AND PRIMARY GROUP PREFERENCE

AGE	Primary Group Preference		
	High	Low	Total
Young	27	15	42
Old	37	6	43
Total	64	21	85
$\chi^2 = 4.28$			
$P < .05$			

Furthermore, a Chi Square analysis was applied to test for inter-relationships between the major variables; Exposure to Mass Media, Innovation Proneness, Primary Group Preference and Recommended Farm Practices Adopted. One significant relationship was found i.e. the relationship between Exposure to Mass Media and Innovation Proneness (as illustrated in Table XI). The data indicate that there is a significant relationship between the number of farm magazines read, the number of farm broadcasts viewed, and the farm operators' willingness to adopt new farming practices. It is reasonable to expect that, if the scale of Innovation Proneness does,

TABLE XI
RELATIONSHIP BETWEEN EXPOSURE TO MASS MEDIA AND INNOVATION
PRONENESS

Exposure to Mass Media	<u>Innovation Proneness</u>		
	High	Low	Total
High	32	11	43
Low	16	26	42
Total	48	37	85
$\chi^2 = 9.95$			
$P < .05$			

in fact measure the degree to which the farm operators display an interest in and a desire to seek out new ideas and practices in farming techniques, the farm operators who score 'High' on the Innovation Proneness scale should also score 'High' on the index of Exposure to Mass Media.

As previously stated, the statistical analysis failed to reveal a significant relationship between Primary Group Preference and either Recommended Farm Practices Adopted or Innovation Proneness. Due to the finding that age and Primary Group Preference are significantly⁶¹ related, the

⁶¹It will be recalled that the five per cent level of confidence was selected as the minimum for the determination of significance in all cases.

relationship between Primary Group Preference and Innovation Proneness was further analyzed, with the age factor controlled.⁶² However, despite the fact that the older farm operators have stronger primary group ties, the relationship between Primary Group Preference and Innovation Proneness still did not prove to be significant. Thus, it may be concluded, that even though the older farm operators feel strongly bound to the Mennonite community, they do not appear to be opposed to the adoption of new farming practices.

⁶² See Appendix F - Tables 5F and 6F

CHAPTER VI

SUMMARY AND CONCLUSIONS

An exploratory attempt was made in this study, to investigate the effect of various factors, such as: the differential utilization of the existing channels of communication, and the role played by informal opinion leaders and primary reference groups upon the adoption behavior of farm operators, in the Pembina River Basin of Southern Manitoba. The analysis focused primarily upon two inter-related aspects of the communication process: (1) the diffusion of information, at the present time, pertaining to agricultural innovations; and (2) past patterns of communication behavior, in regard to the adoption of specific recommended farm practices. Through an understanding of the influence exerted by these sociological and social psychological factors on the adoption of new farming practices in general, it was hoped that a reasonably high degree of reliability could be achieved in predicting the willingness of the farm operators, in this Southern Manitoba Mennonite farming community, to adopt selected agricultural innovations, such as irrigation.

The channels of communication through which information is presently disseminated were investigated, as well as the specific communicating agents utilized by the farm operators

as they progressed through the stages, in the process of adopting recommended farming practices in the past. In regard to the channels and communicating agents which exist in this Southern Manitoba farming community, the study revealed that the area is served by a number of different sources of information about agricultural innovations including: (1) Impersonal channel i.e. mass media - radio, television, newspapers and farm magazines; and (2) Personal channel i.e. intimate associates, such as friends, neighbors, and relatives, as well as agricultural agencies and commercial dealers and salesmen. Although the area is served by a wide range of communicating agents, it was found that the extent to which these various sources of information are utilized by the farm operators, varies considerably. The mass media are utilized fairly extensively, as indicated by the fact that the 'average' farm operator receives the local newspaper, as well as three farm magazines, and listens to approximately three farm broadcasts (both radio and television), each week. The majority of the farm operators stated that they have more free time, and consequently watch and listen to more farm broadcasts during the winter months. In the summer, they are limited to a few farm programs and market reports, broadcast either early in the morning or at lunch time. Thus it is evident that the greatest potential radio and television farm audience exists during the winter months.

The study also revealed that the majority of the farm operators in this Southern Manitoba Mennonite community very seldom discuss farming matters with the local Agricultural Representative. For example, 88 per cent of the farmers interviewed, stated that they had only consulted the local Agricultural Representative between 0 and 2 times, during the last year. The local commercial dealers and salesmen were consulted a little more frequently, although it was found that 36 per cent of the farm operators stated that they had not discussed farming matters with any of the local dealers and salesmen, during the last year. On the basis of the preceding data, it may be concluded that most of the communicating agents which exist in this area are not being utilized to the fullest extent possible.

It is worthy of note that, in a study of the diffusion of improved farm practices, in two northern Saskatchewan farm communities, similar findings were reported.⁶³ For example, it was found in the Saskatchewan study, that approximately 75 per cent of the farm operators, in both of the communities, had only consulted an Agricultural Representative between 0 and 3 times, during the two year

⁶³Frank O. Leuthold "Communication and Diffusion of Improved Farm Practices in Two Northern Saskatchewan Farm Communities", (Saskatoon, Saskatchewan: Canadian Centre for Community Studies, 1966), p. 74.

period prior to the survey. Therefore, the rather limited contact of the farm operators in Southern Manitoba with the local Agricultural Representative does not appear to represent a unique situation. Apparently, the Agricultural Representatives in both the Manitoba and Saskatchewan communities studied, generally play a less active role than other media, in the diffusion of new farm ideas. "Rather than promoting locally untried innovations, Agricultural Representatives have been more active in formulating programs which advocate the acceptance of well-proven ideas that have already received some minimum level of acceptance in their districts."⁶⁴ In view of the potential of this agricultural agency, as a vital source of farming information, future studies might therefore, investigate the possible means available for expanding the personal contact of the Agricultural Representative with the surrounding farm population.

It will be recalled, that in the present study, adoption was viewed as a process, comprised of three stages; awareness, decision-making and action. The findings of this study, in regard to the various communicating agents utilized as sources of information by the farm operators, during the stages in the adoption process, generally tend to support the results of previous studies. It was found that the sources of information utilized, varied as the farm operators moved from

⁶⁴Ibid., p. 156.

one stage to another in the process of adopting recommended farm practices in the past. As expected, at the awareness stage in the adoption process, the mass media played an important role, (although not the most important role as hypothesized) by providing the farm operators with the 'first information' about new farm practices. Farm magazines and farm broadcasts were apparently able to create an awareness, on the part of many of the local farmers, of the existence of certain new farm practices. Although the mass media seldom convince farmers to accept new farming practices, farm magazines and broadcasts succeed in stimulating sufficient interest, so that many of the farm operators seek additional information. In support of the existing literature, it was found that: (a) during the decision-making stage, in the adoption process, when the farm operators were evaluating the new practices, other local farmers (i.e. friends, neighbors and relatives) were utilized as the major source of information; and (b) during the final or action stage, information in regard to how to put the change into effect was transmitted primarily by the local commercial dealers and salesmen.

The major conclusion to be drawn from the preceding findings is that different kinds of information are required, at each of the stages in the adoption process. Therefore, in promoting an agricultural innovation, such as irrigation, an attempt should first be made to determine the position (i.e. stage) of the potential adopters, in respect to the new farming

practice. The results of this study indicate that the majority of the farm operators in the Southern Manitoba Mennonite community are presently located at various points along the continuum between the awareness and decision-making stages, in the process of adopting irrigation. Farm broadcasts, for example, must now go beyond merely informing the farmers of the existence of the practice, but should be aimed at supplying the type of information required by farm decision makers (i.e. more detailed information). Radio station CFAM, in Altona, Manitoba expressed an interest in devoting more farm broadcasts to the topic of irrigation, if sufficient information was made available. In view of the importance of personal influence at the decision -making stage, future broadcasts (both radio and television) might present discussions, involving not only government officials, but also local informal opinion leaders (i.e. highly credible sources). Furthermore, in order to demonstrate the benefits of irrigation farming, public meetings could be arranged, at which time, films of successfully irrigated farming lands, such as Southern Alberta, could be shown. This would not only provide the farmers with further information, but also might stimulate discussions at the informal level.

Many of the past diffusion and adoption studies have failed to investigate the role of farm dealers in the communication of new farm ideas. The results of this study indicate that commercial dealers and salesmen played a vital

role, as a source of information, during the adoption of new farming practices in the past. The findings suggest that implement dealers, grain elevator operators, and feed salesmen are often key persons, to whom many farmers go for detailed information about new farming practices. Therefore, this commercial personal channel of communication should be more closely studied, as it offers one further means by which information about agricultural innovations, such as irrigation, might be effectively transmitted.

According to the findings of this study, farmer-to-farmer interaction, still provides the major channel, through which new farming ideas are communicated, within the rural community. During each of the stages, in the process of adopting recommended farm practices in the past, the farm operators received a great deal of their information, through the informal communication network within the Mennonite community. As previously stated, the mass media, although an influential source of information at the awareness stage, was surpassed by the influence exerted through the informal personal channel, by primary reference group members. In view of the finding that a small percentage of the farm operators received their information directly from the mass media, at each of the stages in the process of adopting recommended farm practices in the past, it may be concluded that the flow of information about agricultural innovations is definitely being mediated through interpersonal

relations (i.e. by friends, neighbors and relatives, as well as by the Agricultural Representative and the commercial dealers and salesmen to a limited extent). This finding strongly suggests that a two-step flow of communications does, in fact, exist in the Southern Manitoba farming community. That is, information pertaining to agricultural innovations flows not only directly from the mass media to the general public, but also indirectly from the mass media to certain key persons in the communication structure, and from these relay individuals to the general farming population. Quite often, not only information, but also the group's feeling toward the new farming practice is communicated through interpersonal relations. Therefore, an attempt should be made to investigate more thoroughly, the role of the two-step flow of communications in the diffusion of information about technological changes in the field of agriculture. Future studies should concentrate upon locating the individuals who fulfill this relay function in the communication process, and investigate the possibility of utilizing this vital communication link in the diffusion of information about agricultural innovations, such as irrigation.

Despite the small number of informal opinion leaders identified in the Mennonite farming community, the results of this study generally support the findings of past research on opinion leadership. For example, it was found that the informal opinion leaders resemble the people whom

they influence in a number of respects (i.e. age and education), and personify certain group values (i.e. primary group preference). Furthermore, the results of this study indicate that opinion leadership is associated with a number of distinctive characteristics including: size of farm operation and level of farm income. The informal opinion leaders far exceeded the average for the Mennonite community, in regard to the size of farm operation and gross annual income. It was also found that the informal opinion leaders exceed the general farm public, in exposure to mass media and contact with the local Agricultural Representative. This finding is supported by the conclusion in the Saskatchewan communication study, "that those people who use the Agricultural Representative are large-scale farm operators with a high level of living."⁶⁵

One further significant finding was that all three of the opinion leaders substantially exceeded the median for the community on the Innovation Proneness scale. The farm operators, who are frequently consulted as a source of information, displayed a high degree of willingness to adopt new farming practices. The attitude of these informal opinion leaders toward the adoption of new farming practices, as well as the fact that they utilize the available communicating agents much more frequently than the majority of the

⁶⁵Leuthold, op. cit., p. 164.

farm operators, indicates the importance of the role they play in the communication process. Informal opinion leaders may prove instrumental in introducing new farm ideas and practices into the Mennonite farming community. It should be noted that the local informal opinion leader, who is presently employing a system of sprinkler irrigation on his farm, may exert an important influence, through the informal personal channel of communication, upon the attitude of the surrounding farm operators toward the adoption of irrigation. Further consideration should, therefore, be devoted to the role of informal opinion leaders in the communication process, and their potential influence upon the adoption behavior of surrounding farm operators.

As indicated previously, the majority of the farm operators are strongly bound to the Mennonite farming community. The farm operators not only scored highly on a measure of primary reference group ties, but also relied quite extensively upon primary group relations, as a source of information during the process of adopting recommended farm practices in the past. However, the study failed to disclose a significant relationship between the strength of primary group ties and the willingness of the farm operators to adopt new farming practices. The fact that the farm operator's primary group memberships failed to influence his willingness to adopt agricultural innovations, appears to reflect the changes which have occurred in the normative

structure of the Mennonite community. In describing the Mennonite community in Southern Manitoba in the late 1940's, E. K. Francis stated that the Mennonite social organization, based on primary group relations, was governed by a common value system which left few alternatives in one's everyday conduct, and was enforced by strict social controls.⁶⁶ According to Francis, Mennonite mores insisted on "a frugal mode of life", and social controls were applied to the adoption of agricultural innovations in general, and specifically to such areas as: installment buying, the purchase of land, livestock and machinery on credit, and to the over-expansion of individual holdings. Evidence indicates that there has been a general decline, over the years, in the application of restrictive social and cultural sanctions to the adoption of new farming practices, and the Mennonite farming community in Southern Manitoba appears to have developed into what E. K. Francis terms a "more complex, heterogeneous, secularized and individualized system."⁶⁷ In view of the fact that the norms now favor the adoption of new farming practices, it is no longer reasonable to expect an inverse relationship to exist between the strength of the farm operator's primary

⁶⁶E. K. Francis In Search of Utopia. (Altona, Manitoba: D. W. Friesen and Sons Ltd., 1955).

⁶⁷E. K. Francis "The Russian Mennonites: From Religious to Ethnic Group", American Journal of Sociology, 54:102, 1948.

group ties and his innovativeness.

On the basis of the findings of this study, it may be concluded that the farm operators in the Pembina River Basin of Southern Manitoba possess a favorable attitude toward the adoption of innovations in farming technique. They have been receptive to past recommended farm practices and display a positive attitude toward the adoption of new farming practices, in general. However, it should be noted that although their attitude is positive in direction, it is rather low in terms of magnitude (i.e. there is a low degree of favorableness). The attitude of the farm operators toward the adoption of agricultural innovations may thus be described as moderately favorable. In conclusion, all of the available evidence indicates that the farm operators in the Pembina River Basin of Southern Manitoba are not opposed to the adoption of new farming practices, and would be willing to adopt future agricultural innovations, such as irrigation, if properly promoted.

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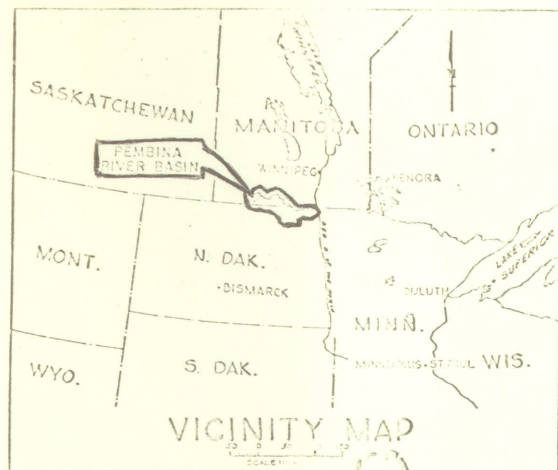
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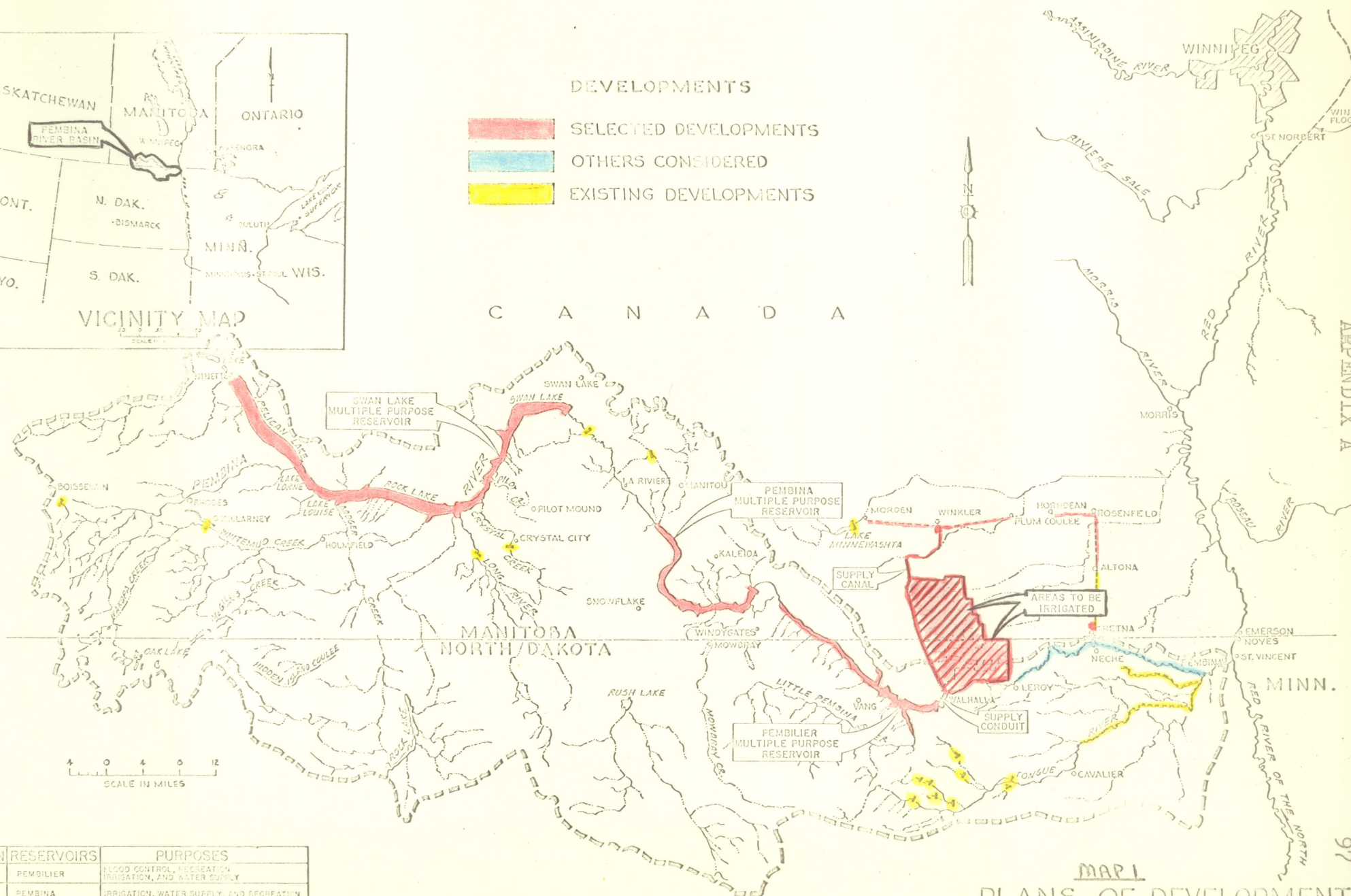
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A P P E N D I C E S



DEVELOPMENTS

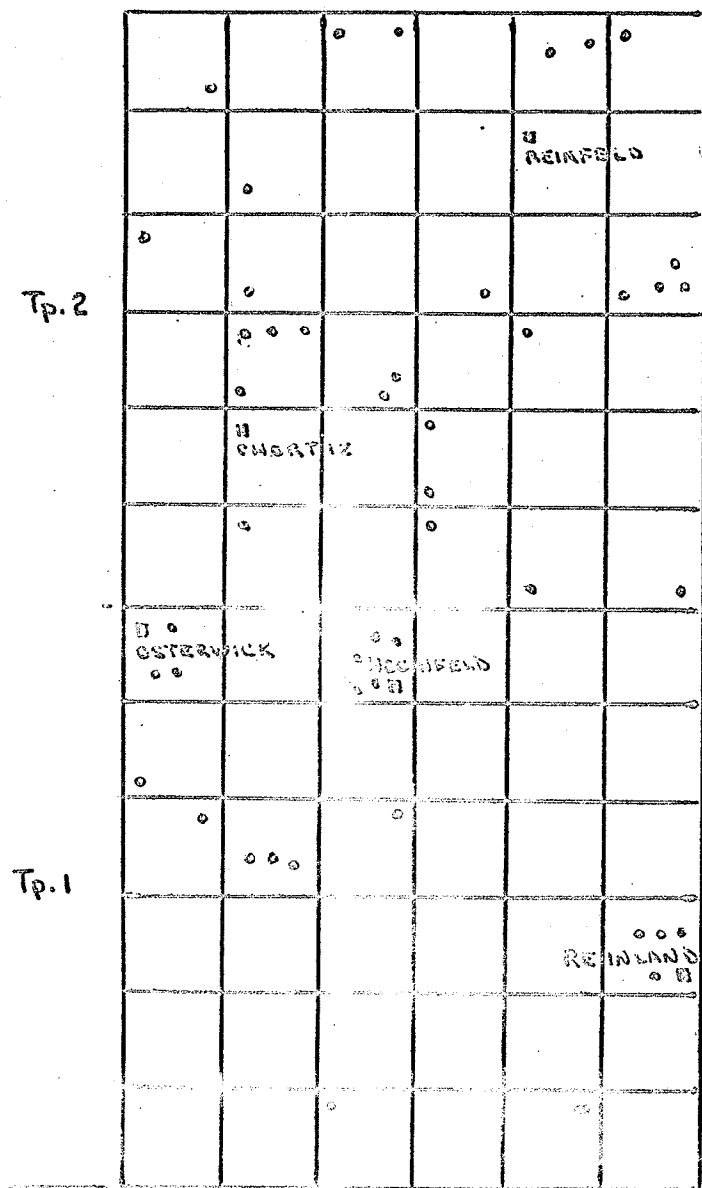
- SELECTED DEVELOPMENTS
- OTHERS CONSIDERED
- EXISTING DEVELOPMENTS



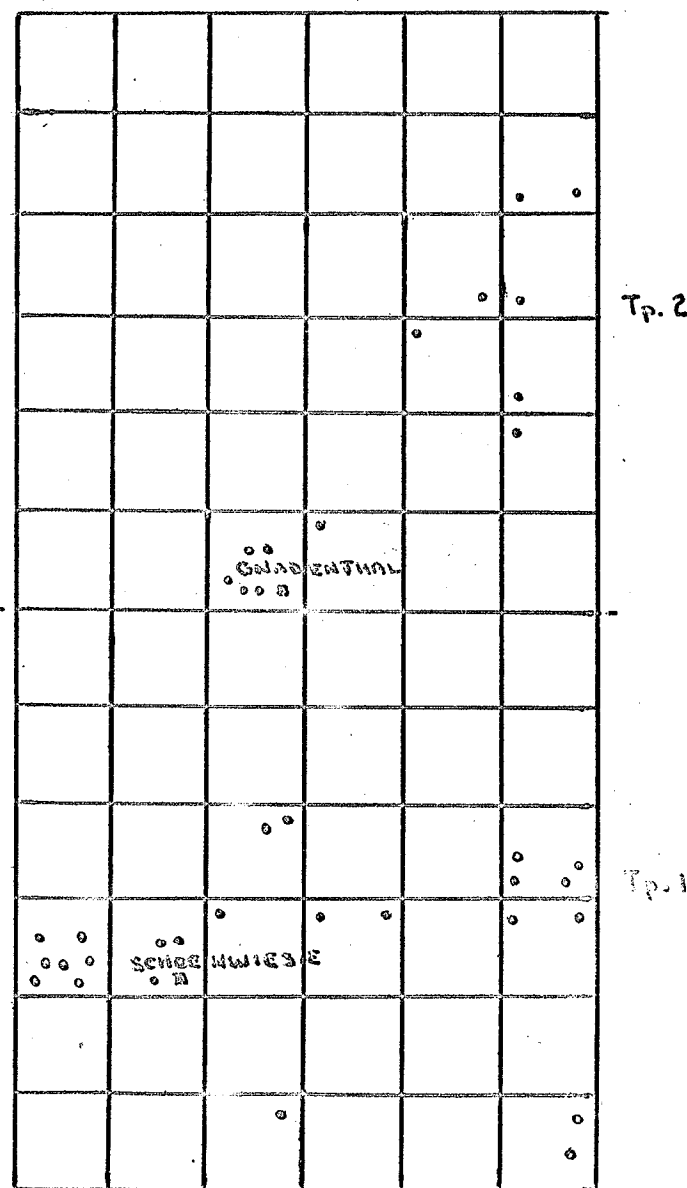
PLAN	RESERVOIRS	PURPOSES
1	PEMBILIER	FLOOD CONTROL, RECREATION, IRRIGATION, AND WATER SUPPLY
2	PEMBINA	IRRIGATION, WATER SUPPLY, AND RECREATION
3	PEMBILIER	FLOOD CONTROL AND RECREATION
4	SWAN LAKE	IRRIGATION, WATER SUPPLY AND RECREATION
5	PEMBILIER	FLOOD CONTROL, RECREATION AND

MAP I PLANS OF DEVELOPMENT PEMBINA RIVER BASIN

INTERNATIONAL PEMBINA RIVER ENGINEERING BOARD

LOCATION OF FARM OPERATORS INTERVIEWED

RANGE 4 WEST

MUNICIPALITY OF STANLEY

RANGE 3 WEST

MUNICIPALITY OF RHINELANDSCALE: $1\frac{1}{2}" = 3 \text{ MILES}$ MAP 2

APPENDIX B

LIST OF RECOMMENDED FARM PRACTICES

<u>FARMING PRACTICES</u>	<u>YEAR RECOMMENDED</u>
Planned Crop Rotation or Crop Sequence	1952
Forage Crop Production	1951
Land Fertilization	1956
Use of Chemical Herbicides	1958
Surface Tillage	1951
Field Shelterbelt Planting	1959



PROVINCE OF MANITOBA

DEPARTMENT OF AGRICULTURE AND CONSERVATION

EXTENSION SERVICE

Office of the
AGRICULTURAL REPRESENTATIVEBox 418, Altona, Man.
September 30, 1966.

Mr. Alexander Segall
Department of Anthropology and Sociology
University of Manitoba
Winnipeg 19, Man.

Dear Mr. Segall,

With reference to your letter of September 28th, I herewith return the questionnaire submitted, with some annotations.

You will note that I have added the Field Shelterbelt Planting programme to your list, and have pointed out that I did not initiate the use of chemical herbicides, I merely actively promoted this latter project as this means of weed control became more generally accepted and as the types of chemicals proliferated.

I would like you to understand that the Forage Crop Production programme was initiated slightly before the promotion to planned crop sequence or crop rotation as I found that it is absolutely essential that these two programmes be closely integrated for satisfactory efficiency.

Trusting this is of some assistance to you in your studies.

Yours sincerely,

Edward T. Howe P. Ag.
Agricultural Representative

ETH/ss
Enc. 1.

APPENDIX C

"A Study of the Attitudes of Farm Operators in
Southern Manitoba Towards Irrigation"

INTERVIEW SCHEDULE

(The interview schedule contains the questions utilized in the combined studies conducted by Acton Camejo and Alexander Segall).

Respondent Number_____

SECTION I - Sewell Socio-Economic Status Scale and Contact with Communicating Agents.

1. Ethnic Status _____ 2. Age _____
3. Farm operator attends Church: Yes () No ()
4. Wife attends Church: Yes () No ()
5. Farm Operator's Education:
Grades Completed: 0 - 7 8 9-11 12 13 and up.
() () () () ()
6. Wife's Education:
Grades Completed: 0 - 7 8 9-11 12 13 and up.
() () () () ()
7. Major crop grown _____ Size of Farm _____
8. Gross annual income _____ Cultivated
Area _____
9. Construction of house:
Brick, stucco, etc., or painted frame ()
Unpainted frame or other ()
10. Room-person ratio:
Number of rooms _____ Number of persons _____
11. Lighting facilities:
Electric Gas, Mantle, or Pressure Oil lamps, other or none
() () ()
12. Water piped into house: Yes () No ().
13. Power Washer: Yes () No ().
14. Refrigerator: Mechanical Ice Other or None
() () ()
15. Radio: Yes () NO ()
16. Telephone: Yes () No ()
17. Automobile: (other than truck) Yes () No ().
18. How many farm broadcasts do you listen to each week?
(Both radio and T.V.)
None (); 1 - 3 (); 4 - 6 (); over 6 ().
19. How many farm magazines or bulletins do you subscribe to?

(2.)

20. Do you receive the local weekly newspaper at your home?
Yes () No ()

21. During the last year how many times did you discuss farming matters with the local Ag. Rep.?

Never_____

Very Little (1-2 meetings)_____

Some (3-8 meetings)_____

Quite a lot (over 8 meetings)_____

22. During the last year how many times did you discuss farming matters with local commercial dealers and salesmen?

Never_____

Very Little (1-2 meetings)_____

Some (3-8 meetings)_____

Quite a lot (over 8 meetings)_____

SECTION II - Recommended Farm Practices Adopted.

1. Could you please tell me how many of the following farming practices you are now using on your own farm?

Approximate year adopted

Planned crop rotation_____

Land fertilization_____

Use of chemicals
-Herbicides_____

Surface tillage_____

None of the above_____

SECTION III - Communicating Agents and the Adoption Process

1. Where or from whom did (do) you usually first hear about new ideas or practices in farming such as planned crop rotation, land fertilization, use of chemicals, surface tillage, etc.?
- a. Mass media_____ (Awareness Stage)
 - b. Friends, neighbors, relatives_____
 - c. Agricultural officials, i.e. ag. rep._____
 - d. Local dealers and salesmen_____
 - e. Other sources_____
2. After you first heard (hear) about these (some) new ideas or practices, where or from whom did (do) you get information that helped (helps) you decide whether to try it out on your farm?
- a. Mass media_____ (Decision-making Stage)
 - b. Friends, neighbors, relatives_____
 - c. Agricultural officials, i.e. ag. rep._____
 - d. Local dealers and salesmen_____
 - e. Other sources_____
3. Once (if) you decided (decide) to try out these (some) new ideas or practices, where or from whom did (do) you get most help on how much material to use, when to use it, how to go about it, etc.?
- a. Mass media_____ (Action Stage)
 - b. Friends, neighbors, relatives_____
 - c. Agricultural officials, i.e., ag. rep._____
 - d. Local dealers and salesmen_____
 - e. Other sources_____
4. Could you please tell me the name and address of one local farm operator, from whom you have received 'most information' about one or more new farming practice.
- Name_____
- Address_____

(4.)

SECTION III- Rationality Index

1. How did you decide how much fertilizer to apply to your crops last year?
 3. ☐ according to soil test
 - ☐ followed the general recommendations of government authorities and/or professionals
 - ☐ according to careful observation in trial-and-error-like procedures of a fairly scientific nature; critical observation, recording of data, etc.
 2. ☐ on the basis of general knowledge or experience (general, vague)
 - ☐ followed the recommendations or practices of family, relatives, or other farmers
 - ☐ from recommendations of commercial interests (other than those from mass media; e.g., salesman)
 - ☐ according to information gained through mass media
 3. ☐ don't know
 - ☐ always used same amount or same as last year, etc.
 - ☐ used what he had on hand.
 - Y. ☐ used what landlord sent
 - ☐ not codable, ambiguous
-
2. Have you had any of your fields soil tested in the last five years?
 3. ☐ yes
 1. ☐ no, don't know
 - Y. ☐ not codable, ambiguous
-
3. How do you decide how much ☐ to plant?
 3. ☐ plants what is needed to feed livestock
 - ☐ plants according to market conditions
 - ☐ for soil conservation practices, rotation, etc.

(5.)

2. _____ plants according to government regulations
_____ plants according to general needs.
1. _____ always plants same amount
_____ don't know
- Y. _____ decided by landlord or other factors beyond his control
_____ not codable, ambiguous
4. Why did you plant this variety(ies) instead of some others?
3. _____ followed recommendations of government authorities or professionals
_____ chose to meet specific problems (e.g., disease, climate)
_____ according to his conception of the market (e.g., "companies want it" or "it earns more money")
_____ to experiment with a new variety
2. _____ recommendations of relatives, neighbors, and other farmers
_____ followed recommendations of commercial interests
1. _____ don't know
- Y. _____ decided by landlord or other factors beyond his control
_____ not codable, ambiguous
5. What kinds of written records do you keep and what things do you keep them on?
3. _____ farm books
_____ ledgers or other records
_____ production records
_____ records of expenditures and income
2. _____ receipts, checks
_____ bills and/or sales

(6.)

1. ☐ don't know or none (uses memory)
Y. ☐ not codable, no response
6. How do you use these written records?
3. ☐ to estimate profits and loss of entire farming operation
☐ input analysis of specific enterprises
☐ to aid in the improvement of practices
2. ☐ to figure income tax and/or social security
1. ☐ don't know
Y. ☐ not codable, ambiguous
7. Have you ever tried to figure out on paper what your profit was from any major crop or livestock enterprise on your farm?
3. ☐ yes
1. ☐ no
☐ don't know
Y. ☐ not codable, ambiguous
8. The difference between the successful farmer and the nonsuccessful one is more in how hard they work than in how much time they spend in planning their farming operations.
3. ☐ disagree
1. ☐ agree
☐ don't know
Y. ☐ no response
9. Farmers really don't have to think a great deal about what they are going to do on their farms since this is largely decided for them by their land and by what kind of farming their neighbors do.

(7.)

3. _____disagree
1. _____agree
_____don't know
Y. _____no response

SECTION V - Index of Familism

1. If you had to retire from farming would you want your child or children to take over the farm? Yes_____ No_____
2. In raising children do you feel that parents should encourage their children to go into farming or some particular occupation?
Yes_____ No_____
3. Did you inherit part or all of farm from your parents?
All or part_____ None_____
4. Is all farm labour provided by your family? Yes_____ No_____
5. Whom do you visit most often? relatives_____or friends_____

SECTION VI - Value Orientations

1. In farming, the successful farmer is one who
 - a. _____stays out of debt
 - b. _____sticks to farming even during bad times
 - c. _____makes the most profit
 - d. _____is highly respected by other farmers
2. In being a successful farmer, where should one look for the best ideas
 - a. _____from older farmers

- b. _____ county agent
 - c. _____ tried and true methods in your own life
 - d. _____ trying new things yourself to see what works best.
3. In being a successful farmer, which do you ~~th~~ think is most important
- a. _____ education in an agricultural college
 - b. _____ keeping up with new farming methods
 - c. _____ working hard
 - d. _____ do the best you can with what you have without going into debt.
4. In being a successful farmer, what is most important
- a. _____ keeping records
 - b. _____ staying with practices you have always used
 - c. _____ weigh each practice against the profit it gives you
 - d. _____ working hard
5. In being a successful farmer, where should one get his ideas?
- a. _____ from neighbors around you
 - b. _____ from what your father found successful
 - c. _____ from what farmers are doing the country over
 - d. _____ from what you have always done
6. In deciding whether to change a farming practice it is most important
- a. _____ to be among the first to change if it is a good practice
 - b. _____ to be among the last to change
 - c. _____ to change as soon as most of your neighbors have changed
 - d. _____ to change if your neighbors say it is a good practice

(9.)

7. In solving the present problems in Canada concerning farmers, where do you think the government could best direct its attention
- _____ more money for research on farming methods
 - _____ leave the farmer more freedom to make his own way
 - _____ more money for research in economics
 - _____ set up more security measures to help the farmer during bad years.
8. If you were forced to leave farming and look for another job, which of the following would you consider most important.
- _____ the pay
 - _____ opportunity for advancement
 - _____ permanence of the job
 - _____ how much you enjoyed the work.
9. In being a member of a farm organization which is most important
- _____ being a formal leader
 - _____ being a hard working member
 - _____ attending every meeting unless ill
 - _____ working behind the scenes to get what you think is right.
10. In raising children, which is the most important place to get facts
- _____ child psychologist
 - _____ minister
 - _____ books
 - _____ your own parents.
11. In raising children, which of the following is most important to encourage them in?
- _____ to get a college degree
 - _____ to take advantage of every opportunity
 - _____ to save their money

12. In raising children, which is the most important thing to teach them
- a. _____ to be practical
 - b. _____ to keep ties with their parents
 - c. _____ to work hard
13. In raising children, which of the following is most important to teach them?
- a. _____ strict obedience
 - b. _____ individual initiative
 - c. _____ to ask questions whenever curious
 - d. _____ the advantages of living on a farm
14. For any friend who is having marriage troubles, where do you think is generally the best place for him to go
- a. _____ marriage counsellor
 - b. _____ minister
 - c. _____ another friend
 - d. _____ social worker
15. If you got \$2,000 as a gift which of the following would you most like to do?
- a. _____ buy modern kitchen appliances
 - b. _____ take a vacation
 - c. _____ put it in the bank for a rainy day
 - d. _____ buy labor saving devices for your work
16. Suppose this amount were \$64,000, which would you most like to do?
- a. _____ buy a real good farm and start over
 - b. _____ pay off all debts and invest the remainder
 - c. _____ build a new house with all modern conveniences
 - d. _____ buy a modern house and go into semi-retirement

(11.)

17. In deciding whether something is right or wrong, which is most important?
- _____ seeking whether your neighbors are actually doing it
 - _____ talking with your neighbors to see what they think
 - _____ talking with your family to see what they think
 - _____ deciding entirely on your own.
18. In deciding who to vote for, which do you think is more important
- _____ talking it over with your neighbors
 - _____ talking it over with your family
 - _____ going along with public opinion generally
 - _____ following the dictates of your own conscience.

SECTION VII - Straus Rural Attitudes Profile

	<u>Most</u>	<u>Least</u>
1. feels that farmers have to work too many hours	()	()
feels that a family should do things together	()	()
sees little value in a farmer studying agriculture in school	()	()
is a good farm business manager	()	()
2. new discoveries and changes in farming methods interest him greatly	()	()
dislikes being tied down to chores or irrigating	()	()
likes the fact that farming gives the whole family a chance to help earn the family living	()	()
would rather make \$3,000 a year and be free of debt than make \$5,000 a year and be in debt	()	()
3. farming gives him a sense of achievement	()	()
usually discusses farming plans with his wife	()	()

(12)

	<u>Most</u>	<u>Least</u>
believes the old idea that anyone who is ambitious and works hard can get ahead is no longer true	()	()
usually waits to see what results the neighbours get before trying out a new farm practice or seed variety	()	()
1. feels that a farmer has to keep learning and trying new things to stay on top	()	()
finds most articles in farm magazines impractical	()	()
feels that the city gives people more new and interesting experiences than does living in the country	()	()
feels that working together with friends and neighbours is the key to success	()	()
2. farm life puts too many restrictions on his social activities	()	()
has a hard time finding people of similar interests in the country	()	()
attends field days and farm meetings whenever possible	()	()
believes that the ideal farm is one on which all the work can be done by the farmer and his family	()	()
3. thinks it is wrong to charge interest when money is loaned to family members	()	()
has tried out several new farm practices in the last few years	()	()
independence or being your own boss is what he most likes about farming	()	()
good neighbors are one of his biggest assets	()	()
4. likes the exercise in the open air and sunshine involved in farming	()	()
gets enjoyment out of learning new ways of doing things	()	()

(13)

	<u>Most</u>	<u>Least</u>
all he wants from his farm is to make a reasonable living for the family	()	()
doesn't really like to exchange work with neighbours	()	()
3. security and permanence are what he most wants out of farming	()	()
gets little pleasure out of visiting neighbors	()	()
farming offers a challenge to him	()	()
believes that the traditional ways are the best ways of doing things	()	()
9. thinks high school is enough education for a practical man like a farmer	()	()
finds that one of the greatest helps in farming is to keep good records	()	()
tries to participate actively in community activities	()	()
living in a city would give him the opportunity for new and interesting experiences	()	()
10. gets great enjoyment out of working with plants or animals	()	()
listens to farm programs to get new ideas and keep up on farming methods	()	()
hates to borrow money even when he knows it is necessary to run the farm properly	()	()
knows only a small proportion of his relatives well	()	()
11. seldom makes an annual donation to his church	()	()
would have more fun living in a city than on a farm	()	()
keeps up to date on the latest farming methods	()	()
would rather exchange work with a neighbor than hire things done	()	()

(14.)

MostLeast

2. seldom discusses farming plans or buying farm equipment with his wife

()

()

maximum profit is more important to him than improving the land

()

()

has gotten a number of good ideas from farm magazines

()

()

likes to watch things grow

()

()

APPENDIX D

Tables Representing Variance in Major Variables;
Exposure to Mass Media, Innovation Proneness and
Primary Group Preference Resulting From Selected
Social Factors; Age, Education and Socio-Economic
Status

TABLE 1D
 EXPOSURE TO MASS MEDIA

Exposure to Mass Media	Farm Operators (Sample)	
	<u>No.</u>	<u>%</u>
High	43	(51)
Low	42	(49)
Total	85	(100)

Exposure to Mass Media	Young Farm Operators (27-45 years)	
	<u>No.</u>	<u>%</u>
High	24	(57)
Low	18	(43)
Total	42	(100)

Exposure to Mass Media		Old Farm Operators (46-73 Years)	
		<u>No.</u>	<u>%</u>
High		19	(44)
Low		24	(56)
Total		43	(100)

Exposure to Mass Media		Low Education Farm Operators (Grades 0-6)	
		<u>No.</u>	<u>%</u>
High		26	(47)
Low		29	(53)
Total		55	(100)

Exposure to Mass Media		High Education Farm Operators (Grades 7-12)	
		<u>No.</u>	<u>%</u>
High		17	(57)
Low		13	(43)
Total		30	(100)

Exposure to Mass Media	Low Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	17	(41)
Low	24	(59)
Total	41	(100)

Exposure to Mass Media	High Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	26	(59)
Low	18	(41)
Total	44	(100)

TABLE 2D
INNOVATION PRONENESS

Innovation Proneness	Farm Operators (Sample)	
	<u>No.</u>	<u>%</u>
High	48	(56)
Low	37	(44)
Total	85	(100)

Innovation Proneness	Young Farm Operators (27-45 years)	
	<u>No.</u>	<u>%</u>
High	23	(55)
Low	19	(45)
Total	42	(100)

Innovation Proneness	Old Farm Operators (46-73 Years)	
	<u>No.</u>	<u>%</u>
High	25	(58)
Low	18	(42)
Total	43	(100)

Innovation Proneness	Low Education Farm Operators (Grades 0-6)	
	<u>No.</u>	<u>%</u>
High	27	(49)
Low	28	(51)
Total	55	(100)

Innovation Proneness	High Education Farm Operators (Grades 7-12)	
	<u>No.</u>	<u>%</u>
High	21	(70)
Low	9	(30)
Total	30	(100)

Innovation Proneness	Low Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	20	(49)
Low	21	(51)
Total	41	(100)

Innovation Proneness	High Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	28	(64)
Low	16	(36)
Total	44	(100)

TABLE 3D

PRIMARY GROUP PREFERENCE

Primary Group Preference	Farm Operators (Sample)	
	<u>No.</u>	<u>%</u>
High	64	(75)
Low	21	(25)
Total	85	(100)

Primary Group Preference	Young Farm Operators (27-45 years)	
	<u>No.</u>	<u>%</u>
High	27	(64)
Low	15	(36)
Total	42	(100)

Primary Group Preference	Old Farm Operators (46-73 years)	
	<u>No.</u>	<u>%</u>
High	37	(86)
Low	6	(14)
Total	43	(100)

Primary Preference Group	Low Education Farm Operators (Grades 0-6)	
	<u>No.</u>	<u>%</u>
High	45	(82)
Low	10	(18)
Total	55	(100)

Primary Group Preference	High Education Farm Operators (Grades 7-12)	
	<u>No.</u>	<u>%</u>
High	19	(63)
Low	11	(37)
Total	30	(100)

Primary Group Preference	Low Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	29	(71)
Low	12	(29)
Total	41	(100)

Primary Group Preference	High Socio-Economic Status Farm Operators	
	<u>No.</u>	<u>%</u>
High	35	(80)
Low	9	(20)
Total	44	(100)

APPENDIX E

Tables Representing Relationships Between Age,
Education, and Socio-Economic Status and Major
Variables; Exposure to Mass Media, Innovation
Proneness and Primary Group Preference

TABLE 1E

RELATIONSHIP BETWEEN AGE AND EXPOSURE TO MASS MEDIA

Age	Exposure to Mass Media		
	High	Low	Total
Young	24	18	42
Old	19	24	43
Total	43	42	85

$\chi^2 = .95$
 $P > .05$

TABLE 2E

RELATIONSHIP BETWEEN EDUCATION AND EXPOSURE TO MASS MEDIA

Education	Exposure to Mass Media		
	High	Low	Total
High	17	13	30
Low	26	29	55
Total	43	42	85

$\chi^2 = .35$
 $P > .05$

TABLE 3E
RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND EXPOSURE TO
MASS MEDIA

Socio-Economic Status	Exposure to Mass Media		
	High	Low	Total
High	26	18	44
Low	17	24	41
Total	43	42	85
$\chi^2 = 1.97$			
$P > .05$			

TABLE 4E
RELATIONSHIP BETWEEN AGE AND INNOVATION PRONENESS

Age	Innovation Proneness		
	High	Low	Total
Young	23	19	42
Old	25	18	43
Total	48	37	85
$\chi^2 = .008$			
$P > .05$			

TABLE 5E

RELATIONSHIP BETWEEN EDUCATION AND INNOVATION PRONENESS

Education	Innovation Proneness		
	High	Low	Total
High	21	9	30
Low	27	28	55
Total	48	37	85
$\chi^2 = 2.64$			
$P > .05$			

TABLE 6E

RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND INNOVATION PRONENESS

Socio-Economic Status	Innovation Proneness		
	High	Low	Total
High	28	16	44
Low	20	21	41
Total	48	37	85
$\chi^2 = 1.34$			
$P > .05$			

TABLE 7E

RELATIONSHIP BETWEEN EDUCATION AND PRIMARY GROUP PREFERENCE

Education	Primary Group Preference		
	High	Low	Total
High	19	11	30
Low	45	10	55
Total	64	21	85
$\chi^2 = 2.63$			
$P > .05$			

TABLE 8E

RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND PRIMARY GROUP PREFERENCE

Socio-Economic Status	Primary Group Preference		
	High	low	Total
High	35	9	44
Low	29	12	41
Total	64	21	85
$\chi^2 = .47$			
$P > .05$			

APPENDIX F

Tables Representing the Analysis Testing for
Inter-Relationships Between the Major Variables;
Exposure to Mass Media, Innovation Proneness,
Primary Group Preference and Recommended Farm
Practices Adopted

TABLE 1F

RELATIONSHIP BETWEEN RECOMMENDED FARM PRACTICES ADOPTED AND
 INNOVATION PRONENESS

Recommended Farm Practices Adopted	Innovation Proneness		
	High	Low	Total
High	33	19	52
Low	15	18	33
Total	48	37	85
$\chi^2 = 1.97$			
$P > .05$			

TABLE 2F

RELATIONSHIP BETWEEN EXPOSURE TO MASS MEDIA AND RECOMMENDED
FARM PRACTICES ADOPTED

Exposure to Mass Media	Recommended Farm Practices Adopted		
	High	Low	Total
High	30	13	43
Low	22	20	42
Total	52	33	85
$\chi^2 = 2.01$			
$P > .05$			

TABLE 3F

RELATIONSHIP BETWEEN PRIMARY GROUP PREFERENCE AND RECOMMENDED
FARM PRACTICES ADOPTED

Primary Group Preference	Recommended Farm Practices Adopted		
	High	Low	Total
High	38	26	64
Low	14	7	21
Total	52	33	85
$\chi^2 = .11$			
$P > .05$			

TABLE 4F

RELATIONSHIP BETWEEN PRIMARY GROUP PREFERENCE AND INNOVATION
PRONENESS

Primary Group Preference	Innovation Proneness		
	High	Low	Total
High	35	29	64
Low	13	8	21
Total	48	37	85
$\chi^2 = .10$			
$P > .05$			

TABLE 5F

RELATIONSHIP BETWEEN PRIMARY GROUP PREFERENCE AND INNOVATION
PRONENESS FOR YOUNG FARMERS

Primary Group Preference	Innovation Proneness		
	High	Low	Total
High	15	12	27
Low	8	7	15
Total	23	19	42
$\chi^2 = .034$			
$P > .05$			

TABLE 6F

RELATIONSHIP BETWEEN PRIMARY GROUP PREFERENCE AND INNOVATION
PRONENESS FOR OLD FARMERS

Primary Group Preference	Innovation Proneness		
	High	Low	Total
High	20	17	37
Low	5	1	6
Total	25	18	43
$\chi^2 = .79$			
$P > .05$			