

VALUE ORIENTATIONS AND THE ADOPTION OF NEW FARM  
PRACTICES: A STUDY OF FARMERS' ATTITUDES TOWARDS  
IRRIGATION IN SOUTHERN MANITOBA

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  
Acton Maxim Camejo  
May 1967



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This study is part of an Interdisciplinary Study of Water Resources and Water Utilization in Western Canada, conducted by the University of Manitoba, under the auspices of the Department of Energy, Mines and Natural Resources.

The general purpose of this study was to attempt to evaluate the attitudes of farm operators of the Pembina River Basin towards the adoption of new farm practices such as irrigation. The study consisted of two sections: (i) a study of the communication process in relation to the adoption of new recommended farm practices, (ii) a study of value orientations in relation to the adoption of new recommended farm practices.

This section of the study was primarily concerned with an investigation of the relationship between seven value orientations, seen as elements of attitude, and the adoption of new farm practices recommended by the Provincial Agricultural Representative. The value orientations investigated were Achievement, Rationality, Belief in Science, Innovation Proneness, Familism, Traditionalism, and Security. An investigation was also made of the relationship between age, level of living, gross farm income, and education on one hand, and the adoption of new farm practices on the other.

The population selected for study consisted of 339 farm operators of the municipalities of Stanley and Rhineland. A random sample consisting of eighty-five farm operators chosen from this population was successfully interviewed.

The findings reported were based on personal interviews with these farm operators.

By means of a schedule form, data were collected on value orientations, and the socio-economic factors of age, education, gross farm income and level of living. The schedule also included an index of adoption based on three innovations in farm practice recommended by the Provincial Agricultural Representative. These farm practices, namely, fertilization, use of chemicals, and surface tillage were identified as comparable to irrigation, on the basis of "improving production" criteria set forth by Professor E. Wilkening, and the suggestions of agricultural expert Dr. J. Campbell, Plant Science Department, University of Manitoba.

It was hypothesized at the beginning of the study that the value orientations of Belief in Science, Achievement, Rationality, and Innovation Proneness would be positively related to the adoption of new farm practices. Traditionalism, Familism, and Security were hypothesized as negatively related to the same practices.

The socio-economic factors of education, level of living and gross farm income were hypothesized as positively related to the adoption of new recommended farm practices, while age was hypothesized as negatively related.

By means of contingency tables the Chi-square, and Fisher tests were used to determine the statistical relationship between the variables as hypothesized in the study, at the

.05 level of significance. For those parts of the data where statistical tests of significance were not quite appropriate, descriptive statistics were used to fill out the explanation of the respective analyses.

For purposes of analysis the sample was classified into three age groups: (1) 27 to 36 years, (2) 37 to 46 years (3) 47 years and over. Two groups were set up in regard to education (1) respondents with Grade VI or less, (2) respondents having higher than Grade VI. In regard to income, three income groups were set up, (1) \$500 to \$3,000, (2) \$3,001 to \$5,500, (3) \$5501 and over.

Sewell's "Short Form of the Farm Family Socio-Economic Status Scale" was used to classify the sample into "high" level of living and "low" level of living groups. Finally the median of the distribution of scores on each value orientation scale was used as the distinguishing point for arranging the sample of farm operators into "more oriented" and "less oriented" groups in terms of any particular value orientation.

The relationship between age, education, level of living, and gross farm income on one hand, and the adoption of new farm practices on the other, was first analyzed. The results of the analysis indicated that education, and age were not significantly related to the adoption of new farm practices. On the other hand, a positive significant relationship was obtained between level of living; gross income, and

the dependent variable adoption of new farm practices.

An analysis of the relationship between the main independent variables value orientations, and the adoption of new farm practices was then carried out, holding gross farm income and level of living constant, in separate analyses.

The analysis yielded results of no significant relationship between achievement; familism, and the adoption of new farm practices. The absence of a statistical relationship, however, did not detract from the importance of achievement as a factor associated in some direct way to the adoption of new farm practices. The data also showed a consistent direction of positive association, unlike familism which relationship was confounded by the factors of level of living, and gross farm income.

A positive significant relationship was obtained between belief in science; rationality and the adoption of new farm practices in all cases. Innovation proneness was not significantly related except for the "high level of living" group. Traditionalism was not related except for the \$5,501 income group. Security, also, was only significantly related to the adoption of new farm practices in the \$5,501 income group. However, apart from a test of statistical significance, the consistent negative direction of association supports the importance of security as a factor that is associated in an inverse manner to the adoption of new farm practices.



On the basis of the findings four value orientations, namely rationality, belief in science, achievement, and security were considered important factors from the fact that these value orientations were shown in one way or another to be consistently associated with, or significantly related to the adoption of new farm practices.

The evidence of the findings showed that about fifty-four per cent of all "high adopters" of new farm practices were "more achievement-oriented"; about eighty per cent were "more rationality-oriented", and about sixty-six per cent were "more oriented" to belief in science. On the other hand seventy-eight per cent of all "low adopters" were "more security oriented". The sample consisted of sixty-two "high adopters", and twenty-three "low adopters."

It was concluded from the findings that a greater proportion of the farm operators tended to be "more oriented" to achievement, belief in science, and rationality which are positively associated with the adoption of the selected new farm practices. On this basis it is reasonable to expect that farm operators of the area in general will be most likely to have favourable attitudes towards those new farm practices such as irrigation.

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## CHAPTER I

### INTRODUCTION

The general purpose of this research study was to attempt to evaluate the attitudes of farmers, of the Pembina River Basin in Southern Manitoba, towards the adoption of new farm practices such as irrigation. The overall study was part of an Interdisciplinary Study of Water Resources and Water Utilization in Western Canada, conducted by the University of Manitoba, under the auspices of the Department of Energy, Mines and Natural Resources. The study consisted of two sections: (a) a study of the communication process as to the channels of communication, including opinion leaders and other influential sources, (b) a study of value orientations as related to the adoption of new recommended farm practices.

Essentially, this section of the study was concerned with an exploratory attempt to determine the relationship between certain value orientations, conceived of as components of attitudes, and the differential adoption of selected innovations in farm practices that were recommended by the Agricultural Representative of the study area.

The influence of social and economic factors which were shown in past studies<sup>1</sup> to be associated with the

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<sup>1</sup>Report of the Subcommittee for the Study of the Diffusion of Farm Practices, "How Farm People Accept New Ideas", North

adoption of new farm practices was also considered. Based on the fore-going considerations, the study attempted to determine what attitudes the farmers in the area would be likely to have towards an innovation in farm practice such as irrigation.

The general theory was that if the factors associated with adoption of innovations in farm practices could be identified, and their relative influence determined, a reasonably high degree of reliability and validity in predicting the predisposition of farmers to accept or reject selected innovations could be achieved.<sup>2</sup>

Before selecting the Pembina River Basin as the area to be studied, the investigators<sup>3</sup> completed a historical survey of irrigation in the Prairie regions. The literature revealed that irrigation became recognized as a national problem consequent upon the experience of the nineteen thirties, which forcefully demonstrated the effect of a shortage of water on crop yields, and income. Consequently, the Prairie Farm Rehabilitation Act was introduced in 1935 by

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Central Regional Publication No. 1, Agricultural Extension Service, Iowa State College.

<sup>2</sup>George E. Spencer, "Value Orientations and the Adoption of Farm Practices", Unpublished Ph.D. dissertation, Cornell University, 1958.

<sup>3</sup>Investigators in this study were Alexander Segall and Acton Camejo, who were responsible for collection of all data relevant to this study.



the Federal Government to cope with drought problems on the prairies.

One of the first major irrigation projects undertaken by the Prairie Farm Rehabilitation Administration was the St. Mary River Dam project, southwest of Lethbridge in Southern Alberta. It was worthy of note that investigations of the Prairie Farm Rehabilitation Administration were stimulated by strong petitions to the Federal Government from the farmers in the area, which circumstances led to the eventual implementation of the St. Mary Irrigation project.

The success of that irrigation project seemed unquestionable in terms of the security it had provided farmers in the area, and benefits which had accrued in equal measure not only to the land directly affected, but also to surrounding communities. Much of this success was attributed to the early Mormon settlers, whose zeal and enterprise were said to have set the stage for rapid progress in irrigation development in the area.<sup>4</sup>

In the nineteen forties, the Prairie Farm Rehabilitation Administration began investigating the possible development of the South Saskatchewan River Dam near Outlook in Central Saskatchewan. It was assumed on the basis of the investigations that the development of an irrigation project

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<sup>4</sup>St. Mary Irrigation Project -- Prairie Farm Administration, Pamphlet prepared by Canada Department of Agriculture, 1963.

in that area would contribute significantly to stabilization of agriculture. An agreement was subsequently signed between the Federal and Provincial Governments, and in 1959 construction of the South Saskatchewan Dam was officially started. However, a great deal of resistance to irrigation was demonstrated by some farmers, who petitioned the Provincial Government to be left out of the irrigation project. Some of the farmers argued that they would need subsidies to change their farming practices.<sup>5</sup> Despite the many protestations, irrigation was introduced in Saskatchewan. But an appraisal of irrigation in terms of success or failure has not yet been determined.

There was no evidence of any irrigation project as such in Manitoba. But the need for irrigation in Southern Manitoba was clearly stressed in three reports which dealt with the problem: Arthur D. Little Incorporated Report to the Manitoba Government in 1959; Report of the Work Group for the Committee on Manitoba's Economic Future in June 1962; International Joint Commission's Report of August 1, 1962. The last two of these reports proposed an irrigation scheme for the Pembina River Basin.

It might be concluded from the foregoing evidence that differential attitudes towards the adoption of irrigation were expressed by farmers of two of the prairie

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<sup>5</sup>Editorial entitled "Controversy in Water Dam - The South Saskatchewan", Financial Post, (November 9, 1952), p. 15.

regions in question. These differences in response to irrigation as a new farming practice raised many questions which were recognized as being germane to the problem of technological innovation in the field of agriculture. Such questions as: Why do some farmers adopt scientific procedure in farming while others do not?; Why do some farmers adopt more new practices than do their neighbours, who would seemingly gain equally from the advantages of applying scientific agriculture?; and so on.

Although the answers to the questions which might be posed were not immediately apparent, it was suggested that the concept of adoption as a process could serve in the quest for some of these answers. This concept of adoption was outlined by Beal and Rogers and Bohlen<sup>6</sup> who had shown that a clearly defined pattern was followed by persons in adopting a new idea or practice. Adoption was said to take place in four stages: awareness, interest, trial, and adoption. At the initial stage the individual would learn of the existence of the idea or practice but would have little detailed knowledge about it. Then he would develop further interest in the idea and seek more information about it and consider its general merits. With more information about the idea the

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<sup>6</sup>G. M. Beal & E. M. Rogers, and J. M. Bohlen, "Validity of the Concept of Stages in the Adoption Process, Rural Sociology, XXIV, (1957), pp. 307-320.

individual might try out the idea or practice. The final stage would be that of acceptance leading to continued use of the practice if the individual was satisfied with results.<sup>7</sup> "At each of the four steps named, awareness, interest, trial and adoption an evaluation takes place. Whether or not the succeeding steps in the process will be taken depends upon whether each evaluation is favourable to the new idea."<sup>8</sup>

On this basis, if the farmers of the study area had to adopt any new farming practice they would have to go through the stages in the adoption process, while evaluating the new practice at each stage in terms of their own situation. That is they would weigh its economic aspects in terms of land, labour, capital and returns. They would also appraise it in relation to values other than economic, i.e., their personal preferences in enterprises and activities, family resources, family goals and interests, and its effect upon their relationships with their neighbours and friends.<sup>9</sup> This would be true for irrigation as a new farming practice as it would have been true for any new farming practice they had adopted in the past.

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<sup>7</sup>North Central Regional Publication op. cit., pp. 3-4.

<sup>8</sup>W. B. Whale, "Adoption and Diffusion Concepts as Bases for Establishing Community Development Programme Areas", University of Saskatchewan, Saskatoon. (Unpublished paper December 1966).

<sup>9</sup>North Central Regional Publication, op. cit., p. 5.

Evaluation is a key determinant in the adoption process and is defined, according to Kluckhohn, "as the individual's active behaviour in terms of his value orientations."<sup>10</sup> For example, in a situation where the individual had to make a choice between means objects, his value orientations might commit him to certain norms that would guide him in his choices.<sup>11</sup>

It was shown in past studies that certain value orientations: rationality;<sup>12</sup> belief in science and achievement;<sup>13</sup> innovation proneness<sup>14</sup> were positively associated with adoption, while others: security, and traditionalism;<sup>15</sup> familism<sup>16</sup> were negatively associated with adoption of farm

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<sup>10</sup>Talcott Parsons and Edward A. Shils (eds.), Toward a General Theory of Social Action (New York: Harper & Row, 1951), p. 412.

<sup>11</sup>Ibid., p. 59.

<sup>12</sup>Alfred A. Dean and Paul C. Marsh, "Some Factors Related to Rationality in Decision Making Among Farm Operators", Rural Sociology, XXIII (March 1958). pp. 122-125.

<sup>13</sup>Charles Ramsey, Robert Polson & George Spencer, "Values and the Adoption of Practices", Rural Sociology, XXVI (March 1959), pp. 35-47.

<sup>14</sup>Murray Straus, A Technique for Measuring Values in Rural Life, Institute of Agricultural Sciences, State College of Washington, 1958.

<sup>15</sup>Charles Ramsey et. al., op. cit., pp. 35-47.

<sup>16</sup>Frederick Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices", Rural Sociology, XXI, (March, 1956), pp. 284-292.

practices. The presence of these value orientations among farmers in the study area and their relationship to the adoption of selected innovations in farm practices, comparable to irrigation, were explored and likely attitudes towards irrigation inferred.

Finally, it was assumed that farmers in the area had passed the "awareness stage" in terms of the adoption of irrigation. This assumption was substantiated by the evidence found in the files of two local newspapers' offices, which served the entire Southern Manitoba area. Past publications of the two newspapers revealed that sixteen articles dealing with proposed irrigation for the Pembina River area had been published between February 1964 and March 1966. It was worthy of note that one of the publications - May 19, 1965, was an announcement of a Public Hearing to be held in the area by the International Joint Commission - Pembina River Development Committee to hear views on irrigation. In addition Radio Station CFAM in Altona, Manitoba had carried several broadcasts on irrigation during the two year period 1964-1965.

## CHAPTER II

### BACKGROUND TO THE RESEARCH STUDY

#### The Problem: Its Importance for Manitoba.

The need for irrigation, particularly in the Pembina River Basin area, was continually emphasized. The gravity of the situation was discussed in the reports of Arthur D. Little Incorporated; Work Group for the Committee on Manitoba's Economic Future, and International Joint Commission. These reports dealt with aspects of Water Resources and Utilization in Manitoba, and irrigation proved to be one of the major issues which engaged attention.

In 1957 the Manitoba Government requested Arthur D. Little Incorporated, economic consultants, to investigate the technical and economic feasibility of providing a water supply system for the Lower Red River Valley of Manitoba.<sup>1</sup> A survey team of Arthur D. Little Incorporated accompanied by a member of the Department of Industry and Commerce visited the region in May 1957. They held discussions with industrial, agricultural, and community leaders in the district, which were followed by consultations with officials of the Federal and Provincial Governments. A careful examination of the official and other reports on the region and its resources,

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<sup>1</sup>This area is referred to in later reports as the Pembina River Basin area or Morden-Winkler area.

was then made. 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. It was suggested that further agricultural advance on which the economy of the area depended, was dependent upon the growth of agricultural processing industries 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 concluded in the report that the provision of potable water might be followed by the establishment of a certain number of additional agricultural processing plants, but that the area's full agricultural potential would be achieved only if additional irrigation water were also made available.

A Work Group for the Committee on Manitoba's Economic



Future, in June 1962, reviewed the water situation in Manitoba. They designated three specific areas in Manitoba which were in need of immediate improvement. In order of priority, the first area named was South Central Manitoba, where the water supply was recognized as essentially inadequate for an expanding economy. It was pointed out that water had to be hauled in trucks during dry summers, and such circumstances had put a ceiling on the economic growth of the area.

The Work Group proposed an irrigation project for this area. The Winkler-Morden Irrigation Scheme, as it was called, was designed for development of irrigation in the Pembina River Watershed over an area of 20,000 acres by 1970 at an estimated cost of \$1,400,000.

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., technical investigations and studies necessary to enable the 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 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 the amount of rainfall during the growing season. It was felt, therefore, that the development of irrigation in this area would eliminate the risks which were associated with marginal and variable rainfall, thereby increasing crop yields, and hence would encourage more efficient and more profitable farm production.

The Commission proposed an irrigation project, which would take in 38,000 acres, of which 26,000 acres were arable. The irrigated acreage, it was pointed out, would be sufficiently large to create opportunity for expansion of associated enterprises for processing agricultural products, and the irrigation benefits would spread to improve and stabilize the economy of the wide surrounding areas.

It was evident from the conclusions of the foregoing reports that the Pembina River Basin area is faced with a problem of inadequate supply of irrigation water which might enable it to withstand any occurrences of dry seasons that could drastically affect both crop yields and income.

#### Sociological Significance of the Present Study

It was important to note that based on the observations and recommendations of the Arthur D. Little Incorporated Report as well as the report by the Work Group on

Water Resources for the Committee on Manitoba's 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 dry land 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<sup>2</sup> 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 were considered, in the reports previously mentioned. The fourth condition however, which was the desire by local people to change their cropping practices, was not thoroughly studied. Once the feasibility of irrigation based on the first three conditions were met, the ultimate adoption of irrigation

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<sup>2</sup> Pamphlet prepared by Water Control and Conservation Branch, Manitoba, 1963.

would rest on the willingness of the local people to accept change in their farming practices.

The adoption of new farming practices might be considered as one area of study within the broader field of technological change. E. A. Wilkening<sup>3</sup> described this specific aspect as being of particular interest to sociologists, since it was a type of technological change which was still highly influenced by the social relationships and cultural content of rural life. While the techniques of farming served economic ends, it had been shown that economic behaviour could not be fully understood apart from certain non-economic considerations. The decisions made by the farmer in his daily operations and his willingness to accept innovations were influenced in varying degrees by his social relations, and by his ideological system. 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."<sup>4</sup>

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<sup>3</sup>Eugene A. Wilkening, "A Sociopsychological Approach to the Study of the Acceptance of Innovation in Farming," Rural Sociology, XV, (December, 1950), p. 352.

<sup>4</sup>Charles R. Hoffer and Dale Stangland - "Farmers Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing", Rural Sociology, XXIII (June 1958). p. 120

In the light of the preceding argument, if the introduction of irrigation, as a new farm practice, is being contemplated for the Pembina River Basin area, it will be important to consider not only the technical and economic aspects of irrigation, but also what attitudes the farmers in the area will be likely to have towards adoption of a new farm practice in general. From past studies<sup>5</sup> on the adoption of innovations in farming it has been shown that attitudes of farmers, as shaped by the total socio-cultural configuration of which they are an integral part, will play an important role in influencing the farmers' decisions, to adopt or not to adopt specific new farm practices. In one study<sup>6</sup> in particular irrigation was a new practice.

The present study is significant in that its purpose is to investigate for the first time what attitudes farmers in the Pembina River Basin area will be likely to have towards the adoption of new farm practices.

#### General Description of the Area

The area with which this study was concerned is generally known as the Pembina River Basin (Figure 1). It lies in the south-central portion of the Province of Manitoba. The irrigation scheme proposed for this area is generally

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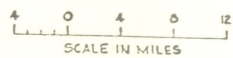
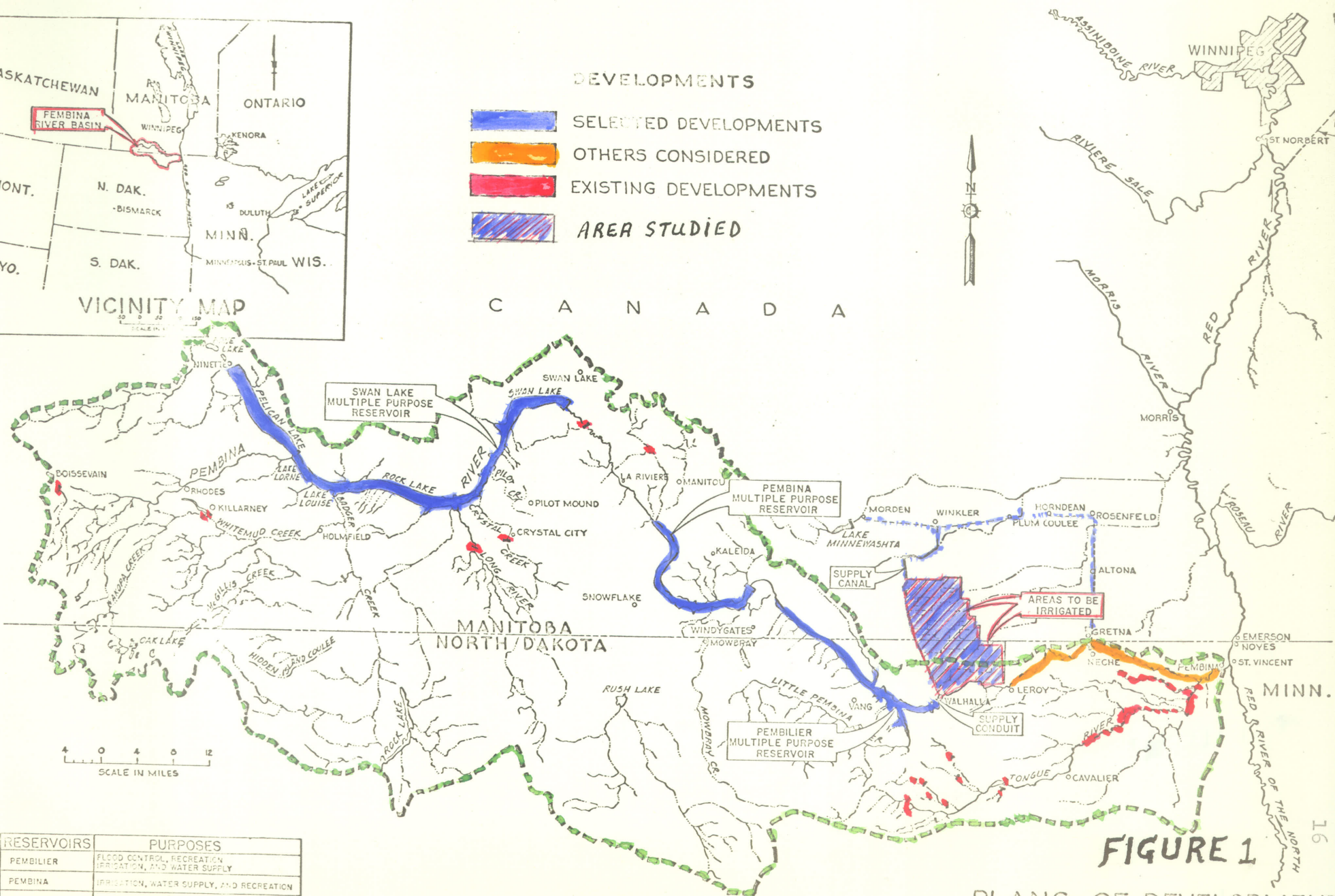
<sup>5</sup>Hoffer and Stangland loc. cit. Wilkening loc. cit., Lionberger loc. cit., Ramsey, Polson and Spencer, loc. cit., Straus loc. cit., Dean and Marsh loc. cit.

<sup>6</sup>J. Tully, E. A. Wilkening and H. A. Presser, "Factors in Decision-Making in Farming Problems". Human Relations XXVII (August, 1964) pp. 295-320.



DEVELOPMENTS

- SELECTED DEVELOPMENTS
- OTHERS CONSIDERED
- EXISTING DEVELOPMENTS
- AREA STUDIED



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

FIGURE 1

PLANS OF DEVELOPMENT  
PEMBINA RIVER BASIN  
INTERNATIONAL PEMBINA RIVER ENGINEERING BOARD

UNITED STATES

referred to as the Morden-Winkler Irrigation Project.

The general tract of land 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. 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 lies within the municipalities of Stanley and Rhineland.

According to the 1961 Agricultural Census of Canada, the municipality of Stanley contained 838 farms, with a total population on all farms of 4,076; the municipality of Rhineland contained 1,012 farms, with a total population of 4,820. Recent data indicated a continued trend toward more diversified and intensive farming in this region. The expanding vegetable growing and row crop industries were seen as important sources of supply for the canneries in the towns of Morden and Winkler, and a subsequent decrease in wheat acreage was accompanied by a greater emphasis on the growing of such row crops as sugar beets and other vegetables which might readily be adapted to an irrigation system of farming.<sup>7</sup>

#### The People of the Area

The people in the project area and the farm and urban

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<sup>7</sup>Economic Annalist, Economics Division: Dept. of Agriculture, Ottawa XX, (June 1950), pp. 55-60.

communities adjacent to it 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 the area between 1920 and 1930 the Mennonite communities gained a dominant position in the southern part of the region. It was illustrated in E. K. Francis' In Search of Utopia, that in 1941 ninety-four per cent of the population of the municipality of Rhineland and seventy-eight per cent of Stanley was of Mennonite faith. Francis further stated that until 1945-46 at least, group coherence was still strong and showed no signs of serious or permanent disorganization. The Mennonites, he suggested, had remained the least urbanized of all ethnic groups in Manitoba and strove to perpetuate their deep seated agrarian tradition. "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 sub-system, functioning to some extent independently of Manitoba's society at large."<sup>8</sup> The Mennonite group according to Francis had succeeded in maintaining a high level of social and cultural homogeneity based on strong family ties and social interac-

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<sup>8</sup>E. K. Francis, In Search of Utopia, D. W. Friesen & Sons Ltd., Altona, Manitoba, 1955, p. 2.



tion between kinship members. The family had remained the foundation and nucleus of the Mennonite group and the strength of the social system was maintained by family reunions and frequent visits among relatives. The relatively insular framework and social isolation of the Mennonite community resulted in the people becoming "More homogeneous ethnically than they had been twenty years earlier."<sup>9</sup> This social organization, based on primary group relations, Francis pointed out, was governed by a common value system. Francis noted that although they adhered strongly to traditional institutions and values, the Mennonite group, according to all available evidence was not opposed to the adoption of improved methods in farming. They seemed to display a "readiness to adapt themselves to production for capitalistic markets and to technological progress."<sup>10</sup> The report submitted to the International Joint Commission concluded in this connection that the farm operators and their families had 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 needed skills.

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<sup>9</sup>Ibid., p. 276.

<sup>10</sup>Ibid., p. 111.

## CHAPTER III

### REVIEW OF THE LITERATURE FROM RELATED RESEARCH STUDIES

#### The Nature of Adoption of New Farming Practices

In a number of studies which have dealt with the adoption of farm practices, general consensus seemed evident on the assumption that the adoption of specific farm practices consisted of a series of mental and physical operations, which occurred over a period of time. These were said to occur within a particular setting which included biophysical, economic, social, cultural and psychological factors.

E. A. Wilkening and others<sup>1</sup> in a study of an irrigation district in Northern Victoria suggested that changes in farming practices i.e., adoption of new farming practices could be divided into two types (a) Those that are a response to deteriorating situations on the farm, (b) Those that are a response to opportunities for improvement in farming practice provided by new knowledge, changes in economic conditions, e.g., changes in demand for farm produce, or changes in the aspirations or needs of the farmer and his family. The adoption of different types of practices, Wilkening stated, were affected by different factors. Thus the rate

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<sup>1</sup>Ivan Tully, E. A. Wilkening and H. A. Presser, "Factors in Decision-making in Farming Problems", Human Relations, Vol. XVII, (August, 1964), pp. 296-297.

of acceptance of a practice was determined in part by the net effect of the adoption of the practice upon factors such as production, income and convenience. This in turn was affected by the specific circumstances of the farm and how they were perceived by the operator. Wilkening argued further that certain types of practices had greater economic consequences than others. Thus while economic considerations were important for most types of practices, other considerations including convenience, relationship with other persons, and attitudes toward specific operations and products, assumed equal importance.<sup>2</sup>

Based on his assumption of a two-fold classification of adoption of new farm practices, Wilkening suggested that practices may be adopted for enhancement of certain goals, as well as the solution of farm problems. Contrary to the commonly held notion that farmers who adopt one improved practice also adopt others, it was demonstrated in a study conducted by Wilkening and others that the adoption of one type of practice is largely independent of the adoption of other types of practices. The pattern of association in the adoption of specific practices, according to Wilkening, suggested that practices might be grouped into two general

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<sup>2</sup>E. A. Wilkening, Joan Tully and Hartly Presser "Communication of Recommended Farm Practices Among Dairy Farmers of Northern Victoria", Rural Sociology, XXVII (March 1962), pp. 143-144.

types: (1) resource maintenance practices, (2) profit-maximizing practices geared to improving output of given resources. Wilkening found that some farmers were primarily concerned with practices which contributed to improvement of resources or profit maximization, while others were primarily concerned with maintenance of their resources. It was noted that while both types of practices contributed toward efficient production, the immediate goals of the farmers were different in that those concerned with maintenance had a security type of orientation, whereas those concerned with improvement of resources, such as improvement in irrigation, had a goal of increasing production. Wilkening argued that the failure of a farmer to adopt recommended practices in some cases, might be the result not of a lack of understanding of their consequences for his own situation, but of a lack of coincidence of the farmer's goals with the perceived consequences of the recommended practice. Therefore an understanding of the farmer's willingness to adopt certain practices will require a knowledge, not only of the farmer's ability to recognize and understand the potential outcome of adoption, but also of the goals and values of the farmer.

Irrigation in this study was viewed, in terms of Wilkening's two-fold classification, as belonging to the group of profit maximizing practices which were concerned with improvement of resources and oriented towards increasing production. This aspect of "increasing production" was

seen, in a report<sup>3</sup> to the International Joint Commission on the economic appraisal of irrigation benefits to the study area, as one of the major assets of irrigation.

#### Sociological Factors and Adoption of New Farm Practices

Much evidence showed that while the farm enterprise was essentially an economic one, much more than purely economic incentives were involved in the actions taken by the farmer. In a study by Charles R. Hoffer and Dale Stangland<sup>4</sup> it was shown that approved practices were tested and proved to be remunerative, but failure to adopt these approved practices indicated that the profit motive was not sufficiently effective as a motivating influence for adoption. What seemed necessary the authors argued, was a more complete understanding of responses to new practices which must be considered and studied as a function of the farmer's total life situation including such aspects as economic status, social position and characteristic work orientations.

In another study by E. A. Wilkening, Joan Tully and H. A. Presser<sup>5</sup> it was pointed out that contact with agricultural officials and participation in groups, did not

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<sup>3</sup>Joint Investigation for Development of Water Resources of the Pembina River Basin", Manitoba and North Dakota, Vol. III, Appendix F - "Irrigation". December 1964.

<sup>4</sup>Charles R. Hoffer and Dale Stangland, op. cit., pp. 112-113.

<sup>5</sup>E. A. Wilkening, op. cit., pp. 143-144.

necessarily lead to the adoption of new practices. Because groups differed in norms affecting change, and therefore it was important to take into account indications of certain value orientations.

The importance of socio-cultural factors in the adoption of new farming practices was stressed by H. F. Lionberger.<sup>6</sup> He stated that farm practice improvement was affected by all the factors which conditioned the diffusion of culture traits. These factors, he suggested, were psychological, social and cultural in nature. Many of these psychological, social and cultural factors enter into decision making in the adoption process and could only be discovered and evaluated in the context of the total socio-cultural configuration of which they were a part. These factors, he argued, were group determined and therefore their influence must be assessed in terms of the group's situation. New practices, according to Lionberger, like all innovations, were accepted primarily on the basis of their utility and compatibility within the existing culture. Since these factors affecting adoption were group determined, he argued, it was in the group that their influence must be assessed. He saw the problem of adoption of new farm practices as one of analyzing the social

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<sup>6</sup>Herbert F. Lionberger "Diffusion of Farm and Home Information as an Area of Sociological Research", Rural Sociology XXVII, (June 1952) pp. 132-140.

structure and the value construct in which people live and make decisions.

In Anne Willen Van Den Ban's study<sup>7</sup> it was demonstrated that the social organization and isolation of locality groups were major factors influencing the adoption of new farm practices. A case study was made of low adoption and high adoption townships to investigate reasons for the differences in the rate of adoption of new farm practices. It was shown that in the low adoption township where farmers were of Calvinistic Dutch origin, the low rate of adoption seemed to have resulted primarily from the greater isolation and stronger social control characteristic of the Dutch, and their unwillingness to undertake risk which was always involved in the adoption of new farm practices.

In another study Harold A. Pedersen<sup>8</sup> dealt with the adoption of recommended practices by two ethnic groups. The two groups constituted what Pedersen called culture cores for the respective ethnic groups. That is the members of the particular ethnic group constituted a high percentage in the given geographical area. The evidence of the study showed that the cultural adjustments of one ethnic group facilitated

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<sup>7</sup>Anne Willen Van Den Ban, "Locality Group Differences in the Adoption of New Farm Practices", Rural Sociology, Vol. XXV (September, 1960) pp. 307-320.

<sup>8</sup>H. A. Pedersen, "Cultural Differences in the Acceptance of Recommended Practices," Rural Sociology, Vol. XVI (1951), pp. 37-49.

the introduction of new ideas, whereas the adjustments of the other acted as barriers to the adoption of recommended practices by tending to perpetuate the "status quo".

The preceding studies demonstrated the significance of socio-cultural factors in influencing the adoption of new farming practices. In addition other studies in particular stressed the influence of attitudes and values in the adoption of new farm practices which were of particular importance to the present study. C. R. Hoffer and Dale Stangland,<sup>9</sup> in their study investigated the reasons for use or non-use of approved farm practices. One of the major questions which concerned them was whether the attitudes of the farmer were the principal determining factors in the adoption of new farm practices or whether some other circumstance such as a unique condition on the farm might have been the reason. It was found that if a farmer was efficient, had initiative, and was progressive, he was likely to adopt approved practices. On the other hand, if he tended to be conservative and valued security highly, he would postpone the adoption of a practice or possibly never adopt it. It was concluded in the study that even if soil and other characteristics of the farm were considered to be favourable, the attitudes and values of the farmer seemed to be the determining influence

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<sup>9</sup>C. R. Hoffer and Dale Stangland, op. cit., p. 114.



in the adoption of a practice.

In another study by Charles E. Ramsey, Robert Polson, and George Spencer<sup>10</sup> which proved most relevant to this study, twelve value orientations were tested for their relationship to practice adoption. Value orientations, it was pointed out, were believed to influence the process of adoption. "In the diffusion process, values may serve as factors which foster rapid diffusion, as in the case of a high value on science, or they serve as barriers to the diffusion process, as in the case of traditionalism."<sup>11</sup>

The value orientations tested were chosen on the basis of their logical relationship to decision making and social change. Thus they were seen to enter into the explanation of adoption of farm practices. These value orientations were: achievement; belief in science; efficiency and practicality; external conformity; material comfort; progress; familism; farming as a way of life; belief in hard work; individualism; security; traditionalism.<sup>12</sup>

It was hypothesized at the beginning of the study that six value orientations were positively related to adoption of farm practices: achievement; belief in science;

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<sup>10</sup>Charles E. Ramsey, Robert A. Polson, and George E. Spencer, "Values and the Adoption of Practices", Rural Sociology, Vol. XXIV, (March 1959), pp. 35-47.

<sup>11</sup>Ibid., pp. 34-35.

<sup>12</sup>Ibid., pp. 35-36.

efficiency and practicality; external conformity; material comfort; and a belief in progress. Six value orientations were hypothesized as being negatively related to adoption of farm practices: familism, farming as a way of life, hard work, individualism, security and traditionalism. Of the original twelve value orientations seen as factors in decisions relating to changes in agricultural practices, five of the twelve value orientations tested: achievement, belief in science, material comfort, security and traditionalism, were found to be significantly related to adoption of a specific farm practice. Achievement, belief in science, and material comfort were positively associated with adoption of a lime-practice. Traditionalism and security were found to be negatively associated with adoption of the same practice.

Although in the preceding study the value orientation of familism was shown to be not associated with adoption of farm practices, Fliegel,<sup>13</sup> in his study, found that familism was negatively associated with adoption of farm practices. The contradiction in results, Fliegel suggested, arose from a difference in the operational definition of the term, which varied considerably between studies. It was thought, however,

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<sup>13</sup>Frederick Fliegel C. "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices", Rural Sociology (March, 1956), pp. 284-292.

in view of the emphasis placed on family relationships in the Mennonite Community, as indicated by the literature,<sup>14</sup> that the relationship between familism and adoption of new farm practices should be investigated.

In a study by Alfred Dean, Herbert Aurbach and C. Paul Marsh<sup>15</sup> rationality was seen as one of the important aspects of decision-making criteria and was proved to be significantly related to the adoption of farm practices. The authors argued that in farm management, "if one postulated that the primary objective of such management decision-making was economic gain, it was clear that the criteria by which decisions were being made varied dramatically in terms of their probable efficacy to this end."<sup>16</sup> Rationality was defined in an economic context as "the use of deliberation, planning and the best available sources of information and advice in arriving at decisions as a means of achieving maximum economic ends."<sup>17</sup> It was pointed out that one of the questions which confronted the farmer was whether to

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<sup>14</sup>E. K. Francis, op. cit., p. 276.

<sup>15</sup>Alfred Dean, Herbert Aurbach and C. Paul Marsh "Some Factors Related to Rationality in Decision Making Among Farm Operators", Rural Sociology, XXIII (March 1958) pp. 121-135

<sup>16</sup>Ibid., p. 122.

<sup>17</sup>Ibid., p. 123.

adopt or not to adopt", to which he could respond with some variable degree of rationality. The study showed that people with high rationality scores tended to utilize more authoritative sources of information in decision-making. They used and valued deliberation and kept more complete records. They also tended to give specific and economically judicious justification for action. Those people with low scores showed opposite tendencies. It was argued that if it were assumed that the adoption of recommended farm practices was a rational act, then it might be hypothesized that adopters tend generally to be more rational than non-adopters.

A study of further interest was done by Murray Straus,<sup>18</sup> who investigated social and psychological factors related to success in the development of new irrigated farms in the Columbia Basin. The basic design of the study was to compare a group of high success operators and their families with a group of low success families who had started farming the same year and with about the same amount of capital. Straus suggested that there was an infinite range of value orientations which affected a family's chances for success in the new land settlement. But he arbitrarily selected four value orientations which he considered to be most important, namely economic motivation, innovation proneness, rural life preference,

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<sup>18</sup>Murray Straus, Matching Farms and Families in the Columbia Basin Project, Pullman: Washington, Agricultural Experiment Station Bulletin 588, 1958.

and primary group preference. He found that the largest differences in favour of the high success group were in innovation proneness and economic motivation. This suggested that these variables were important values in the lives of high success operators and had facilitated the acceptance of change, which was indicated by successful settlement in a new farming area.

From the preceding studies it might be concluded that although farming was recognized as an essentially economic endeavour, the adoption of recommended farm practices was considerably influenced by sociological factors. The most general but significant considerations which emerged from these studies were those concerning socio-cultural and social psychological factors; values and attitudes, which were seen to be significantly associated with adoption of recommended farm practices. Although Pedersen<sup>19</sup> and Van den Ban<sup>20</sup> both emphasized ethnic background as the prime factor that influenced adoption of farm practices, they were in fact concerned with the study of values of those ethnic groups to try to determine to what extent those values acted as barriers to, or facilitated adoption of recommended farm practices.

In addition to the preceding studies which emphasized socio-cultural factors in relation to adoption of farm practices, other studies<sup>21</sup> showed that the socio-economic factors

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<sup>19</sup>H. Pedersen, loc. cit.

<sup>20</sup>A. Van den Ban, loc. cit.

<sup>21</sup>Neal Gross, "Differential Characteristics of Acceptors and

of education, income, level of living were positively associated with the adoption of farm practices. The association of age with adoption was not definitely established, although several studies<sup>22</sup> reported that age was negatively associated with adoption of certain practices while no significant association of age with adoption occurred for other practices.

The limitation which seemed to be evident in most of the studies which emphasized attitudes and values as factors which had influenced the adoption of farm practices was the failure of the authors to deal conceptually in any detail with the nature of the two phenomena. This omission led to some conceptual obscurity. In some studies the concepts were used interchangeably in others they were treated as separate phenomena but often tended to overlap conceptually.

Straus recognized this shortcoming but explained his position: "The term 'attitude'" he admitted, "was used in naming the test because it was believed to be more easily understood by respondents. "Attitude" and "value" are sometimes used interchangeably in the literature and overlap conceptually".<sup>23</sup> Charles Hoffer and Dale Stangland reported

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Non-Acceptors of an Approved Technological Practice", Rural Sociology XIV (June, 1949).

<sup>22</sup>The Rural Sociological Society, Sociological Research on the Diffusion and Adoption of New Farm Practices, A Report of the Subcommittee on the Diffusion and the Adoption of Farm Practices (Lexington: University of Kentucky, June 1952), p. 3.

<sup>23</sup>Murray Straus, A Technique for Measuring Values in Rural Life, (Wash. Agr. Exp. Sta. Bul., 29), p. 2.

in their study that: "attitudes and beliefs of farmers regarding the various practices considered in the study were indicated by comments the farmer made when the interview occurred".<sup>24</sup> The question which could arise here is: "Are not beliefs an intrinsic part of attitudes"? Ramsey, Polson, and Spencer recognized<sup>25</sup> the difficulty of studying attitudes and values, and were thus more consistent conceptually with their study of value orientations.

A solution to such a limitation was well stated by Marion Levy, Jr., "If two terms are to be used to denote different phenomena (or different aspects of phenomena), scientific method requires that the test of difference be clearly stated, and if they are to denote the same thing, in the interest of clarity it might be well to dispense with one or other of the terms."<sup>26</sup>

A study<sup>27</sup> by Merton W. Stancliff, Department of Anthropology and Sociology, on value orientations among three ethnic groups was also consulted. Although the study was not pertinent to the question of adoption of new farm practices, its theoretical orientation was of positive value in regard to consideration of the concept of value orientation.

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<sup>24</sup>C. Hoffer and D. Stangland, op. cit., p. 114.

<sup>25</sup>Ramsey, Spencer, and Polson, loc. cit.

<sup>26</sup>Marion Levy, Jr., The Structure of Society, (Princeton, New Jersey: University Press, 1952), p. 145.

<sup>27</sup>Report by Merton W. Stancliff on A Comparative Study of Value Orientations Among Three Ethnic Groups Living in the Province of Manitoba. Inter-Departmental Committee for Agricultural Rehabilitation and Development Act, University of Manitoba, March, 1965.

## CHAPTER IV

### THEORETICAL FRAMEWORK

A review of the theory which was applied to the problem of evaluating the likely attitudes of farmers of the Pembina River Basin area towards the adoption of new farm practices such as irrigation, the hypotheses to be tested, and definition of terms will now be presented.

#### 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".<sup>1</sup> Recent research studies have indicated that the postulation of the adoption process, in terms of stages was empirically valid.<sup>2</sup> The conceptualization of adoption as a process was supported by the idea that the acceptance of technological change usually takes some time. Five stages in the process and the type of behavior generally assigned to each, might be briefly described as follows:

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<sup>1</sup> Subcommittee for the Study of Diffusion of Farm Practices, loc. cit.

<sup>2</sup> Five Stages discussed in George Beal and Eve Rogers and Joe Bohlem, "Validity of the Concept of Stages in Adoptive Process." Rural Sociology, Vol. XXIV (1957) pp. 307-320.



1. Awareness - At this stage the individual learns of the existence of the new idea or practice, but lacks details concerning it.
2. Interest Information - At this stage the individual is motivated by his curiosity and interest seeks additional, more detailed information about the new idea or practice by relating it to other experiences and other phenomena which are part of his environment.
3. 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 no to try it.
4. Trial - At this stage the individual actually applies the 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.
5. Adoption - The individual now uses the new practice on a full scale, incorporating it into his way of farming.

Wilkening<sup>3</sup> in a study of the role of communicating agents in the adoption of new techniques in farming, also conceived of adoption as a process. However he presented a modification of the "five stage process" of adoption in a model consisting of three stages namely, awareness; decision-making; action.

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<sup>3</sup>E. A. Wilkening, "Roles of Communicating Agents in Technological Change, "Social Forces, Vol. XXXIV (March 1956) pp. 361-367.

These three stages implied inclusion of the five stages outlined earlier as constituting the adoption process developed by the committee of rural sociologists.

For the purposes of the present study Wilkening's "three stage" conception of the adoption process was adopted. It was thought that the stages of awareness, decision-making, and action as posited by Wilkening were simpler than the "five stages" without loss of rigour for this study, and thus more applicable to empirical investigation of the present study.

#### A Theory of Attitude

Historically attitudes have been regarded by both sociologists and psychologists, in one way or another, as tendencies to act with regard to some specifiable entity.<sup>4</sup> Several meanings, however, have been associated with the term attitude when used in different studies. As a result

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<sup>4</sup>Theodore Newcomb - "Attitude", A Dictionary of the Social Sciences, New York: Free Press, 1964, pp. 40-41.

some inconsistency in the use of the concept was evident, and according to Stuart W. Cook and Claire Seltiz,<sup>5</sup> this led to many discrepancies in the assessment of attitudes. These authors suggested in a discussion of the different approaches to the study of attitudes that two of the several conceptions which were held of attitudes were (1) that attitude could be equated with behavior, in which case attitude was merely a descriptive term summarizing observed consistencies in behavior and (2) that attitude was an underlying disposition including statements of beliefs and feelings about an object or class of objects. The authors stated a preference for the latter meaning. It was reasoned that the regularities in social behavior seemed to suggest relatively stable underlying dispositions. It was further argued that a dispositional concept had wider predictive value. The authors stated that:

"a dispositional concept has by its very nature, a wider range of situational relevance -- including projectability into relatively novel situations -- than a simple descriptive concept equating attitude with behavior in specified situations."<sup>6</sup>

Rosenberg<sup>7</sup> in his discussion of attitude organization

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<sup>5</sup>Stuart Cook, and Claire Seltiz "A Multiple-Indicator Approach to Attitude Measurement", Psychological Bulletin Vol. LXII No. 1, (July 1964) pp. 36-37.

<sup>6</sup>Ibid., p. 37.

<sup>7</sup>Milton J. Rosenberg and Carl G. Hovland, Attitude Organization and Change, New Haven: Yale University Press, 1960, p. I.

also conceived of attitude as a predisposition to respond in a particular way toward a specified class of objects. He suggested, in addition, that because attitudes were conceived as predispositions, they were not directly observable or measurable, but rather were inferred from interrelated affective and cognitive responses of individuals to the attitude object. The author concluded that overt behavior, verbal or non verbal, is guided by underlying affective and cognitive responses.<sup>8</sup> The affective responses include feelings, desirable or undesirable, that the individual has toward the attitude object. The cognitive responses include beliefs, perceptions, and concepts about the relations between the object and important values of the individual. The classes of affective and cognitive responses, Rosenberg pointed out, are abstractions or constructs and are typically manifested in verbal statements which are measurable. Attitudes then, can be evaluated by making inferences from these verbal statements.

#### The Relation of Value Orientation to Attitude

Kluckhohn in his discussion of values and value-orientations indicated that "value implies a code or a standard which has some persistence through time, or, more

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<sup>8</sup>Ibid., p. 15.

broadly put, which organizes a system of action."<sup>9</sup> Value orientations, he posited, are general and organized value notions which include both normative and existential assumptions. In the individual or group's conception of their life situation both affective-cognitive elements (value) and strictly cognitive elements (orientation) are interwoven. These elements operate together to influence behavior. Kluckhohn formally defined value orientation as:

"a generalized and organized conception, influencing behavior, of nature, of man's place in it, of man's relation to man, and of the desirable and nondesirable as they may relate to man-environment and interhuman relations."<sup>10</sup>

Value orientations are seen as constructs and are manifested in verbalizations which are measurable in the form of statements. According to Kluckhohn "Verbalizability is a necessary test of value."<sup>11</sup>

If the concept of attitude presented as a "disposition" and Kluckhohn's explanation of value orientation were compared, the salient point which emerges is that in both cases behavior is seen as being influenced by underlying affective and cognitive elements which are in fact constructs. These elements are manifested in verbal statements from which

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<sup>9</sup>Clyde Kluckhohn, "Values and Value-Orientations in the Theory of Action: An Exploration in Definition and Classification". Chapter 2. Part IV in Talcott Parsons and Edward H. Shils (eds.) Toward a General Theory of Action, Cambridge, Massachusetts: Harvard University Press, 1959, p. 395.

<sup>10</sup>Ibid., p. 411.

<sup>11</sup>Ibid., p. 397.

attitudes are inferred. It is notable that Kluckhohn has merely combined the affective and cognitive elements into a single concept namely, value orientation.

The definition of attitude, as a predisposition to respond which is inferred from indications of an individual's beliefs, feelings, and action orientation toward an attitude object, was accepted for the purpose of this study. Value orientations are thus seen as indicators of the elements from which attitudes are inferred.

#### Discussion and Statement of Hypotheses

In any approach to a study of the adoption of new farm practices certain assumptions about farming in general must be made. The most basic assumption is that farming is essentially an economic enterprise. Also, the adoption of new farm practices is expected to increase production of agricultural produce. In a modern western economy such as that which obtains in Manitoba, it is evident that the farm enterprise should not be viewed within the context of subsistence agriculture, but rather from the standpoint of surplus production for realization of profits. The farmer, therefore, in order to maximize his gains must seek out and use the best possible methods if he wants to be efficient and stay in business.

The adoption of innovations in farm practice will undoubtedly involve a consideration of economic factors such as risk-taking, outlay of capital and increased labour

costs. Nevertheless, past studies have indicated that while the economic motive is important it is not sufficient to explain the farmer's responses to innovations. For a complete understanding of the farmer's responses to innovations in farm practice it is realized from the evidence of research studies that innovations must be studied as a function of the larger behavior complexes of the farmer. The adoption of new farm practices is said to involve a series of mental and physical operations, which occur over time. These operations occur within a particular setting which includes economic, social, cultural and psychological factors.

The process of adoption begins as soon as the farmer becomes aware of the existence of any new practice. The next phase is decision-making when he begins to evaluate the practice in terms of his entire life situation. In the phase of decision-making, value orientations are seen as significant factors which will influence the farmer's behavior. This is based on the assumption that evaluation<sup>12</sup> is the key determinant in the decision-making phase, and is conceived theoretically as active behavior in terms of one's value orientations.

In this study, data collected indicated that farmers in the area of study were already aware of irrigation, and

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<sup>12</sup>Ibid., p. 412.

were thus identified as being at the decision-making phase in the adoption process. It was assumed that social, psychological, cultural, and economic factors which were positively or negatively related to the adoption of new farm practices comparable to irrigation, would logically influence farmers' decisions in regard to irrigation.

Significant factors which were assumed to operate in guiding the farmers' behavior at the decision-making phase are value orientations. It has been indicated in the literature of past studies<sup>13</sup> that certain value orientations such as traditionalism, and security may act as barriers to change in general, while others such as rationality and belief in science tend to facilitate change. From the evidence of research studies in the adoption of new farm practices, value orientations of belief in science, rationality, innovation proneness and achievement have been consistently shown to be positively associated with the adoption of innovations in farm practice. Traditionalism, familism, and security proved to be inversely related to the adoption of innovations.

In view of the evident relationship of these value orientations to decision-making, social and technological change, it was decided to apply the following hypotheses to this study, making use of these value orientations.

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<sup>13</sup>Report of the Subcommittee of the Rural Sociological Society on the Diffusion and Adoption of Farm Practices, Sociological Research on the Diffusion of New Farm Practices, Kentucky Agricultural Experimental Station, University of Kentucky, Lexington, Kentucky, June 1952, p. 2.



Hypotheses:

1. The more achievement-oriented farmer is more likely to adopt new recommended farm practices than the less oriented farmer.
2. The more rationality-oriented farmer is more likely to adopt new recommended farm practices than the less oriented farmer.
3. The more his orientation toward "belief in science", the more the farmer is likely to adopt new recommended farm practices.
4. The more the "innovation proneness" of the farmer, the more likely will he adopt new recommended farm practices.
5. The more the farmer is oriented toward "familism", the less likely will he adopt new recommended farm practices.
6. The more tradition-oriented the farmer, the less likely will he adopt new recommended farm practices.
7. The more security-oriented the farmer, the less likely will he adopt new recommended farm practices.

It was assumed also that factors other than value orientations could be associated with, and thus could influence the adoption of new farm practices. Past studies<sup>14</sup> commonly indicated that social and economic factors such as age, formal education, farm income, and level of living were associated, in one way or another, to the adoption of new farm practices.

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<sup>14</sup>Ibid., p. 5-6.

It was felt in this study that the level of education might be positively associated with the adoption of new farm practices, since modern technological devices are usually accompanied by literature which demands an appropriate level of education of persons wishing to use them. Also, it was felt that age might be a factor which was negatively associated with new farm practices since it was expected that older farmers might be less willing to give up their old methods in farming for new methods which might involve learning new skills. Since the adoption of new farm practices are supposed to contribute toward increased farm production, as demonstrated by research in agriculture, it was assumed that farm income, and level of living would be positively associated with adoption of the new farm practices under observation.

On this basis and the indications of past studies, it was hypothesized that:

1. The higher the level of education, the more likely will the farmer adopt new recommended farm practices.
2. The older the farmer, the less likely will he adopt new recommended farm practices.
3. The higher his level of living, the more likely will the farmer adopt new recommended farm practices.
4. The higher his income, the more likely will the farmer adopt new recommended farm practices.

### Discussion of Specific Value Orientations Adapted to This Study

The specific value orientations used in this study were selected from and defined operationally according to their use in previous studies.<sup>15</sup> The authors of these studies assumed that value orientations were logically related to decision making and social change. The results of the studies showed that certain value orientations were significantly related to the adoption of new farm practices. These value orientations were: achievement; belief in science; rationality; innovation proneness; familism; security; traditionalism.

Achievement:<sup>16</sup> The value orientation toward achievement places a high importance upon choosing those alternatives which will result in a high status position, bring self-respect, and respect and envy from others. Achievement in farming was represented by higher status gained through commercial farming. It was assumed that the adoption of new farm practices, the gaining of knowledge, and the critical evaluation of each practice in terms of economic advantage would be means toward achievement. The more achievement-oriented farmers, therefore, were expected to be more inclined to know about, critically evaluate, and adopt new farm practices.

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<sup>15</sup>The studies which served as the basis for selection of value orientations were: Charles Ramsey, Robert Polson, and George Spencer, loc. cit.; Alfred Dean, Herbert Aubarch, and Paul Marsh, loc. cit.; Murray Straus, loc. cit.; Frederick Fliegel, loc. cit.

<sup>16</sup>Charles Ramsey, Robert Polson, and George Spencer, op. cit., p. 39.

Belief in Science:<sup>17</sup> The value orientation on science is one in which the determination of alternatives is based upon consequences predicted by systematic research and by "experts". The farm operator oriented toward science would consider keeping up with new farming methods and education in agricultural colleges as the best way to meet the problems in farming. He also would consult experts and books as sources of information in solving family problems.

Rationality:<sup>18</sup> The value orientation on rationality refers to economic rationality in which high importance is placed on the deliberation, planning, and the best available sources of information and advice in arriving at decisions as a means of achieving maximum economic ends. Farmers oriented toward rationality would be more inclined to adopt new farm practices.

Innovation Proneness:<sup>19</sup> The value orientation on innovation proneness is the display of an interest in and desire to seek out changes in farming technique and to introduce such changes in farm operation when practical. Thus the more "innovation prone" farmer would be more inclined to adopt new farm practices.

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<sup>17</sup>Ibid., p. 39.

<sup>18</sup>Alfred Dean, Herbert Aurbach, and Paul Marsh, "Some Factors Related to Rationality in Decision Making Among Farm Operators," Rural Sociology, XXIII (March 1958) p. 123.

<sup>19</sup>Murray Straus, Matching Farms and Families in the Columbia Basin Project: Pullman: Washington, Agricultural Experimental Station Bul. 588, 1958.

Familism:<sup>20</sup> The value orientations on familism is indicated by the placing of great importance on the concentration of effort by the farm family toward achievement of group as opposed to individual ends. The family oriented farmer would refer decision on farming matters to the family-group. And old family habits in farming might act as barriers to adoption of new farm practices.

Security:<sup>21</sup> The value orientation on security is the use of assured and predictable criteria in decision making, with as little risk as possible in selecting a course of action. The security-oriented farmer would try to stay out of debt. He would believe in being among the last to adopt change. He would be oriented toward policies which would help the farmer in bad times. He would teach his children to save their money and to set goals low enough to avoid getting hurt. The more security-oriented farmer was less likely, therefore, to adopt new farm practices.

Traditionalism:<sup>22</sup> The value orientation toward traditionalism is an adoption of precedence as the criterion in decision

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<sup>20</sup>Frederick Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices", Rural Sociology, XXII (March, 1957) pp. 287-288.

<sup>21</sup>C. Ramsey, R. Polson, and G. Spencer op. cit., pp. 44-45.

<sup>22</sup>Ibid., p. 44-45.

making and is the antithesis of social change. The tradition-oriented farmer would look to older farmers for ideas and to methods he and his father had used. In solving family problems, the traditional farmer would look to the minister for help rather than to "scientific experts". Thus tradition-oriented farmers would be less likely to adopt new farm practices.

### Definition of Terms

Farm Operator:- was defined according to the 1961 Canada Agriculture Census as the person (i.e. male in this study) who is directly responsible for the agricultural operations of the farm, whether as owner, tenant, or hired manager.

Recommended Farm Practice:- a method or technique in farming which was specifically recommended by an official agricultural agency.

Irrigation:- was defined according to the 1961 Canada Agriculture Census as water applied to land by artificial means.

## CHAPTER V

### RESEARCH PROCEDURE

This section of the thesis is concerned with an explanation of the techniques which were utilized for the collection and analysis of the data of the study.

The main foci of this section of the study were (1) exploration of the relationship between specific value orientations and the adoption of selected new farm practices, comparable to irrigation, which were recommended by the Provincial agricultural representative of the study area. (2) exploration of the relationship between social and economic variables, age, education, level of living, farm income, and the same new farm practices.

#### The Universe and Sample

The universe of farmers for the research study consisted of all active farm operators in the area designated for a proposed irrigation project. The area included range 3 West, townships 1 and 2 of the Municipality of Rhineland, and range 4 West, townships 1 and 2 of the Municipality of Stanley. (Figure 2, p. 50). The total population of farm operators in the study area, according to most recent voters' lists for both municipalities, was 339.

For the purposes of this study a random sample of thirty-three per cent of farm operators, that is 113, was drawn proportionate as to the distribution of the universe

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# LOCATION OF FARM OPERATORS INTERVIEWED

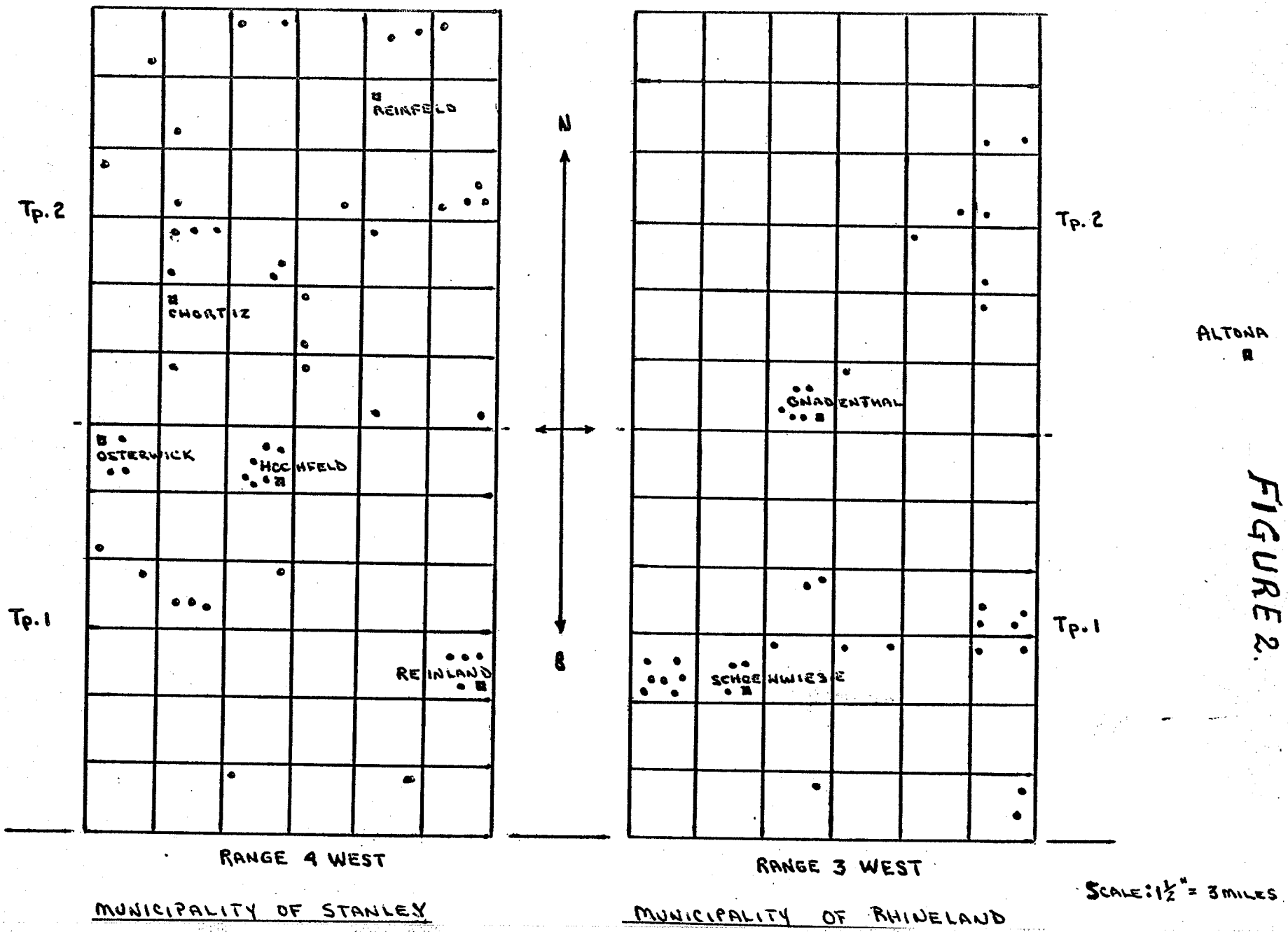


FIGURE 2.



of farm operators in both municipalities. (See Table 1). Of the original 113 farm operators comprising the sample, eighty-five farm operators, all members of the Mennonite ethnic group, were successfully interviewed. This sample was considered adequate.

TABLE 1

DISTRIBUTION OF UNIVERSE AND RANDOM SAMPLE OF FARM OPERATORS IN THE MUNICIPALITIES OF STANLEY AND RHINELAND, ORIGINALLY SELECTED, AND SUCCESSFULLY INTERVIEWED

Farm Operators	Municipality of Stanley		Municipality of Rhineland		Total	
	No.	%	No.	%	No.	%
Universe	191	56.3	148	43.7	339	100
Original Sample Drawn	64	56.6	49	43.4	113	100
Successfully Interviewed	48	56.5	37	43.5	85	100

The reduction of the original sample resulted from the cropping up of several limiting factors in the course of field interviewing. For example, some farmers had moved and could not be located, others had stopped farming, and three farmers selected had died. In addition, there were three or four refusals due not to the unwillingness of the respondents to be interviewed, but to their inability to communicate because of the difference in language. Some of

the farmers in the study area spoke only Low German.

### Collection of Data

The preliminary data for the background of the study were gathered from the records of both the Federal and Provincial Governments. Reports of the International Joint Commission, the Reconnaissance Study conducted by the Canada Department of Agricultural Economics in the study area in 1962, and the Canada Agriculture Census of 1961, with other documents were important sources of information for the study.

Field data were obtained by means of a combined interview schedule (See Appendix A) designed to cover both sections of the study.

Data on the adoption of new farm practices were obtained by using a list of six innovations in farm practice (See Appendix B), provided by the Provincial agricultural representative who had been working in the area for the past fifteen or more years. From this list, four practices, namely, crop rotation, fertilization, use of chemicals, and surface tillage were categorized, according to Wilkening's classification, as profit-maximizing practices geared primarily to improving output of given resources, and not merely to maintenance of those resources. In this context these farm practices were assumed to be comparable to irrigation as appraised by the economic report on irrigation to the International Joint Commission.

The four farm practices selected were reduced to three after consultation<sup>1</sup> with Dr. J. Campbell, Plant Science Department, University of Manitoba. He suggested that three of the four farm practices selected, namely, fertilization, use of chemicals, and surface tillage were closely related. He agreed that these practices were comparable to irrigation in that they are farm practices primarily geared to improving production and requiring sizeable outlays in capital, use of farm machinery and hired labour at times.

The data used as a basis for determining the farmers' stage in the adoption process in regard to the adoption of irrigation were obtained from the files of the two local newspapers which served the entire Southern Manitoba area. Together the two newspapers had a weekly circulation of approximately 4,000 subscribers. A review of the newspapers' files revealed that sixteen articles dealing with the proposed irrigation project had been published between February, 1964 and March, 1966. It was noteworthy that the publication of May 19, 1965 carried an announcement of a Public Hearing to be held in the area by the International Joint Commission - Pembina River Development Committee for the purpose of

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<sup>1</sup>On December 6, 1966 an hour long discussion was held with Dr. J. Campbell in trying to arrive at a justification for selection of innovations in farm practice. The previous selection of new farm practices was made on the basis of discussions with other agricultural specialists such as the Provincial agricultural representative.

hearing public views on the question of irrigation. In addition, Radio Station CFAM in Altona, Manitoba had carried three or four broadcasts on irrigation during the two year period 1964 to 1966. On the basis of the foregoing information and conversations with local residents, it was assumed that the majority of farm operators had reached an "awareness stage" regarding irrigation. This assumption was supported by replies of the farmers in the sample to general questions on irrigation which were posed in the course of interview probing.

#### Discussion of Instruments Used

The instruments employed to measure value orientations were adopted from four studies in which the validity and reliability of these instruments were established.

The value orientations of belief in science, achievement, security and traditionalism were measured by scales designed by Robert Polson, Charles Ramsey and George Spencer.<sup>2</sup> From page seven to page eleven of the interview schedule (see Appendix A), each of the answers to a particular question was noted to identify the particular value orientation it was supposed to indicate. For instance, question 43, item A, applied to traditionalism; item B, applied to a belief in science. By going through the various questions, as instructed

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<sup>2</sup>Charles Ramsey, Robert A. Polson and George E. Spencer, "Values and the Adoption of Practices", Rural Sociology XXIV (March, 1959) pp. 35-47.

by Professor Polson, a list of the scale items for each value orientation was made, from which the scales utilized were derived. Any value orientation was elicited by forced choice between items reflecting various value orientations. Items representing any value orientation were scattered, according to the authors, so that "it was possible to answer the questions in such a way that any two value orientations could be correlated perfectly negative, perfectly positive, or not related at all."<sup>3</sup> An illustrative question is question 48 (Appendix A):

In solving the present problems in Canada concerning farmers, where do you think the government could best direct its attention.

- \_\_\_\_\_ a. More money for research on farming methods  
(Belief in Science)
- \_\_\_\_\_ b. Leave the farmer more free to make his own way  
(Individualism)
- \_\_\_\_\_ c. More money for research in economics (Belief in  
Science)
- \_\_\_\_\_ d. Set up more security measures to help the farmer  
in bad years (Security).

The ranges of the scales were as follows:

1. Scale values on belief in science ranged from zero to ten points;
2. Achievement ranged from zero to ten points;
3. Traditionalism ranged from zero to eight points;

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<sup>3</sup>Ibid., p. 38.

4. Security ranged from zero to seven points.

An Index of Familism designed by Frederick Fliegel<sup>4</sup> was used to measure familism. Seven items were used as indicators of this value orientation. These were:

1. Operator feels that his child should take over the farm.
2. Operator feels that parents ought to encourage children to go into farming or some particular occupation.
3. Part or all of the farm was inherited from parents.
4. All of farm labour is provided by family.
5. Family visits relatives more than non relatives.
6. Education for children is ranked low.
7. Security is ranked high.

Scale values on familism ranged from zero to seven points.

The value orientation of rationality was measured by using Alfred Dean, Herbert A. Aurbach and C. Paul Marsh's "Rationality Index";<sup>5</sup> (See Appendix A, questions 28 to 36). The index consisted of nine questions with coded responses to each question. Five of these questions were open-ended, and four were of the forced-choice variety. Scale values on rationality ranged from zero to twenty-seven points.

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<sup>4</sup>Frederick C. Fliegel "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices", Rural Sociology XXI (March, 1956) pp. 287-288.

<sup>5</sup>Alfred Dean, Herbert A. Aurbach, and C. Paul Marsh "Some Factors Related to Rationality in Decision Making", Rural Sociology XXIII (June 1958), pp. 122-125.

The Straus Rural Attitude Profile (see Appendix A, questions 59 to 70), was employed to measure the value orientation of innovation proneness. The variables measured by the Rural Attitudes Profile, Straus claimed, could be regarded as "alternative goals or value orientations which structure the decision process."<sup>6</sup>

The forced-choice technique, as used in the Rural Attitudes Profile, consisted of twelve sets of four phrases called "tetrads". Each of the four variables, which the profile was designed to measure, namely innovation proneness, rural life preference, primary group preference, and economic motivation was represented by a phrase in the tetrad. Each respondent was asked to choose from each tetrad the one phrase which was most like himself and the one phrase which was least like himself. The scale of innovation proneness ranged from -12 to +12.

Level of Living: Sewell's "Short Form of the Farm Family Socio-Economic Status Scale"<sup>7</sup> was used to determine level of living. The scale consisted of fourteen items all of which were applicable to the farmer population in the study area.

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<sup>6</sup>Murray A. Straus, A Technique for Measuring Values in Rural Life, Technical Bulletin 29, Washington Agricultural Experiment Stations, State College of Washington, August, 1959, p. 1.

<sup>7</sup>William H. Sewell, "A Short Form of the Farm Family Socio-Economic Status Scale", Rural Sociology, VIII (1943), pp. 161-170.

The items include construction of house, room-person ratio, lighting facilities, water piped into house, power washer, refrigerator, radio, telephone, automobile, attendance of farmer and wife at church. These items are weighted accordingly, and the scale values range from two to eighty-six points (see Appendix A).

#### Method of Analysis

For purposes of analysis an index of adoption of recommended innovations in farm practice was constructed using the three farm practices, namely, fertilization, use of chemicals, and surface tillage identified as being comparable to irrigation. The adoption of all three farm practices was arbitrarily used as an indication of "high" adoption, while the adoption of less than all three practices indicated "low" adoption.

The median<sup>8</sup> of the distribution of scores on each value orientation scale was used as the distinguishing point for arranging the sample of farm operators into "more oriented" and "less oriented" groups in terms of any value orientation. Respondents with scores at or above the median were classified as "more oriented" in terms of the particular

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<sup>8</sup>The median was chosen as the basis for ranking respondents "more" or "less", "high" or "low", because it is the most appropriate statistic for describing the central tendency when dealing with ordinal data. This point is discussed in Sidney Siegel's Nonparametric Statistics: For the Behavioral Sciences, New York: McGraw-Hill Book Co., Inc. p. 25.



value orientation, those respondents with scores below the median were classified as "less oriented."

The median score was also used to categorize the sample in terms of level of living. Respondents scoring at or above the median of the distribution of level of living scores were categorized as having a "high" level of living, while scores below the median represented a "low" level of living.

Age: The sample of farm operators was divided into three age groups:

- (1) 27 to 36 years
- (2) 37 to 46 years
- (3) 47 years and over.

The age range was from 27 to 72 years.

Education: The level of education in the sample ranged from no education to Grade XII. The respondents were classified into two groups:

- (1) those with Grade VI or less
- (2) those having higher than Grade VI

Farm Income: The gross farm incomes of farmers in the sample ranged from 500 dollars to 40,000 dollars. Because of the wide range, four income groups were set up using intervals of 2,500 dollars. However, the four groups were contracted to three groups for convenience of analysis. The three groups were as follows:

- (1) 500 to 3,000 dollars
- (2) 3,001 to 5,500 dollars
- (3) 5,501 dollars and over.

The median income for the sample was 4,765 dollars to the nearest dollar.

The Chi-square test was used to determine the statistical relationship between the variables, as hypothesized in the study, at the .05 level of significance. Contingency tables were used appropriately. In cases where  $N$  the number of respondents was between twenty and forty, and the smallest expected frequency in the contingency table was less than five, the Fisher test was employed.

For those parts of the data where inductive statistics were not adequate for analysis, descriptive statistics were used to fill out the explanation of the respective analyses.

## CHAPTER VI

### PRESENTATION OF RESULTS AND RELATED DISCUSSION

The first part of this chapter will be an analysis of the relationships between four socio-economic variables, namely, farm income, level of living, education, and age on one hand, and the adoption of new farm practices on the other.

It was hypothesized in this study that the level of living, farm income, and the level of education of farm operators would be positively associated with the adoption of new farm practices, while age would be negatively associated. The relationships between these socio-economic variables and adoption were first investigated so that they could be used as control variables if necessary, when establishing relationships between the main independent variables value orientations, and the dependent variable adoption of new farm practices.

The second part of the chapter will be an analysis of the relationships between the main independent variables, achievement, belief in science, rationality, innovation proneness, familism, traditionalism, security and the dependent variable adoption of new farm practices, using as controls those socio-economic variables which were found to be significantly associated with the adoption of new farm practices.

Relationships Between Socio-Economic Variables and the  
Adoption of New Farm Practices

The chi-square test was used to analyze the relationships between the variables, age, education, level of living, farm income, and the adoption of new farm practices. The null hypothesis of no difference was tested at the .05 level of significance for each relationship. Table II is a summary of these tests. In cases where no significant statistical relationship was found, an attempt to explain the nature of association was made using descriptive statistics. The details are in Table III to VI.

TABLE II

CHI-SQUARE RELATIONSHIPS BETWEEN SOCIO-ECONOMIC VARIABLES  
AND ADOPTION OF NEW FARM PRACTICES

Variables	P	D/F
Age	> .05	2
Education	> .05	1
Level of Living	< .05	2
Gross Farm Income	< .05	1

Table II shows that two of the four variables namely, age and education were not significantly related to the adoption of new farm practices. The null hypothesis could not be rejected at the .05 level of significance. The other

variables, level of living, and farm income were found to be positively related to adoption of new farm practices. The null hypothesis was rejected at the .05 level of significance. The details of the analysis of the relationship between each of the socio-economic variables, and the adoption of new farm practices will now be presented.

Age: Table III shows that there was no significant difference between "high adopters" and "low adopters" in the proportions in which they fell in each age group. This suggested that the variance in adoption of new farm practices was independent of the age of farm operators. The hypothesis that age was negatively associated with adoption of new farm practices was therefore not supported. By way of interest, it was observed that a greater percentage of "high" adopters tended to cluster in the age group "thirty-seven to forty-six years".

TABLE III

RELATIONSHIP BETWEEN AGE AND THE ADOPTION OF NEW FARM PRACTICES  
FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Age						Total	
	27-36 yrs.		37-46 yrs.		47 yrs. plus		No.	%
	No.	%	No.	%	No.	%		
High	16	73	21	84	25	78	62	73
Low	6	27	4	16	13	22	23	27
Total	22	100	25	100	38	100	85	100

$$X^2 = 2.7 \quad df = 2$$

$$P > .05$$

Education: Table IV indicates that level of education of farm operators is not significantly related to the adoption of new recommended farm practices. The hypothesis that level of education of farm operators is positively related to adoption of new farm practices was not supported by the results of a test of significance. However, the evidence in Table IV suggests that whatever association does exist, is positive in direction between the variables. That is the percentage of farm operators having Grade VII and over is greater than those having Grade (0-VI) among "high adoption" farm operators.

TABLE IV

RELATIONSHIP BETWEEN LEVEL OF EDUCATION AND ADOPTION OF NEW FARM PRACTICES FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Education				Total	
	Grade (0-VI)		Grade VII and Over		No.	%
	No.	%	No.	%		
High	36	65	26	87	62	73
Low	19	35	4	13	23	27
Total	55	100	30	100	85	100

$$\chi^2 = 3.41 \quad df = 1$$

$$P > .05$$

Level of Living: A significant positive relationship was obtained between level of living and the adoption of new recommended farm practices. Table V shows that a higher

proportion of farm operators with a "high" level of living as contrasted with farm operators with a "low" level of living showed evidence of "high" adoption. The hypothesis that level of living is positively related to the adoption of new farm practices was supported. On the basis of this relationship level of living was used as a control variable in the analysis of the relationships between the independent variables value orientations, and the dependent variable adoption of new farm practices.

TABLE V

RELATIONSHIP BETWEEN LEVEL OF LIVING AND ADOPTION OF NEW FARM PRACTICES FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living		Total
	<u>High</u>	<u>Low</u>	
High	37	25	62
Low	7	16	23
Total	44	41	85

$$\chi^2 = 4.6 \quad df = 1$$

$$P < .05$$

Gross Farm Income: A positive relationship was obtained between gross farm income and the adoption of new recommended farm practices, significant at the .05 level. The hypothesis that farm income is positively related to the adoption of new farm practices was supported, by the results of the

relationship as presented in Table VI. Gross farm income was also used as a control variable in determining the relationships between value orientations and the adoption of new farm practices.

TABLE VI

RELATIONSHIP BETWEEN FARM INCOME AND ADOPTION OF NEW FARM PRACTICES FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income			Total
	\$500-\$3001	\$3001-\$5500	\$5501 and Over	
High	16	14	32	62
Low	15	3	5	23
Total	31	17	37	85

$$\chi^2 = 13.7 \quad df = 2$$

$$P < .05$$

Relationships Between Value Orientations and the Adoption of New Farm Practices.

The Chi-square, and Fisher tests<sup>1</sup> were used appropriately to determine the relationships between the independent

<sup>1</sup>It will be recalled that when using two by two contingency tables for the analysis of relationships, if N the number of respondents is between 20 and 40 and the smallest expected frequency is less than 5, the Fisher test replaces the Chi-square test. See S. Siegel op. cit., p. 110; and Hubert Blalock, Social Statistics, (New York: McGraw-Hill Book Co., 1960), pp. 224-225.



variables achievement, rationality, belief in science, innovation proneness, familism, traditionalism, security and the dependent variable adoption of new recommended farm practices. The five per cent probability level was used for determining level of significance in all tests. For cases where there was no statistical significant relationship descriptive statistics were used to fill out an explanation of the data.<sup>2</sup>

Since the variables level of living, and gross farm income were found to be positively related to the adoption of new farm practices these variables were controlled when determining the relationships between value orientations, and the adoption of new recommended farm practices.

Hypothesis I: The "more achievement-oriented" farmers are more likely to adopt new recommended farm practices, than less oriented farmers.

The chi-square, and Fisher tests were used to determine the relationship between achievement and the adoption of new farm practices in order to test the hypothesis above.

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<sup>2</sup>Although the .05 level was accepted for this study as the point for determining significant relationships it should not preclude other interpretation of the evidence which might help us to understand the practical implications of the data. This point is discussed by J. K. Skipper, A. L. Guenther and G. Nass, "The Sacredness of .05: A note Concerning the Uses of Statistical Levels of Significance in Social Science". The American Sociologist, Vol. 2 (February, 1967) pp. 16-18. Percentages will therefore be used in order to try to make some useful statement about the evidence from the data.

The variables level of living, and gross farm income were held constant.

Table VII indicates that achievement was not significantly related to the adoption of new farm practices, holding level of living constant.

Although the relationship between achievement and the adoption of new recommended farm practices was not statistically significant, a further examination of the data revealed the existence of a positive direction of an

TABLE VII

RELATIONSHIP BETWEEN ACHIEVEMENT AND ADOPTION OF NEW FARM PRACTICES WITH LEVEL OF LIVING HELD CONSTANT, FOR FARM OPERATORS OF THE PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living								Total	
	Low				High					
	More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
High	14	64	10	53	22	96	16	76	62	73
Low	8	36	9	47	1	4	5	23	23	27
Total	22	100	19	100	23	100	21	100	85	100

$$\chi^2 = .17 \quad df = 1$$

$$P > .05$$

$$\text{Fisher test} - P = .06$$

$$P > .05$$

association between the two variables.

Table VII shows that at both levels of living a greater percentage of "more achievement-oriented" farmers

are "high" adopters than less oriented farmers. Also a greater percentage of "less achievement-oriented" farmers are "low" adopters than more oriented farmers.

Table VIII shows the results of the relationship between achievement and the adoption of new farm practices, holding gross farm income constant. A chi-square analysis of the relationship between the independent and dependent variables in the lowest income group, and the Fisher test applied to the higher income groups revealed that there was no significant relationship between achievement and the adoption of new recommended farm practices. The data also revealed that the direction of association between achievement and the adoption of new farm practices was positive.

Table VIII indicates that at each level of income there is a greater percentage of "more achievement oriented" farm operators who show evidence of "high" adoption than less oriented farm operators. As well, there is a greater percentage of "less achievement-oriented" farm operators who show evidence of "low" adoption than more oriented farm operators. This pattern of relationship suggests by its direction a positive association between achievement and adoption of new farm practices, holding gross farm income constant.

Thus, it can be concluded that although the hypothesis, that the "more achievement-oriented" farm operators are more likely to adopt new recommended farm practices than less

TABLE VIII

RELATIONSHIP BETWEEN ACHIEVEMENT AND THE ADOPTION OF NEW FARM PRACTICES WITH GROSS FARM  
INCOME HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income												Total	
	\$500 - \$3000				\$3001-\$5500				\$5501 and over					
	More Oriented		Less Oriented		More Oriented		Less Oriented		More Oriented		Less Oriented			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
High	8	57	8	47	9	90	5	71	16	94	16	80	62	73
Low	6	43	9	53	1	10	2	29	1	6	4	20	23	27
Total	14	100	17	100	10	100	7	100	17	100	20	100	85	100
	$\chi^2 = .04$ $df = 1$				Fisher test $P = .3$				Fisher Test $P = .2$					
	$P > .05$				$P > .05$				$P > .05$					

oriented, is not confirmed by a test of statistical significance, there is evidence that direction of the association between achievement and adoption of new farm practices is positive, holding both level of living and gross farm income constant. This evidence gives support to the Hypothesis I, and a basis for considering achievement as an important factor in the adoption of new farm practices.

Hypothesis II: The more rationality-oriented farmers are more likely to adopt new recommended farm practices than less oriented farmers.

The Fisher test was used to analyze the relationship between the independent variable rationality, and the dependent variable adoption of new recommended farm practices, holding level of living and gross farm income constant.

Table IX illustrates a significant positive relationship obtained between rationality and the adoption of new recommended farm practices at the .05 level of significance, holding level of living constant.

The results of this test support Hypothesis II.

A significant positive relationship was established, at the .05 level of significance between rationality and the adoption of new farm practices by using the Fisher test, holding gross farm income constant. Table X shows the results which support the hypothesis that farm operators who are "more rationality-oriented" are more likely to adopt new recommended farm practices than "less rationality-oriented" farm operators.

TABLE IX  
RELATIONSHIP BETWEEN RATIONALITY AND THE ADOPTION OF NEW FARM  
PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR FARM OPERATORS  
OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living				Total
	Low		High		
	Rationality				
	More Oriented	Less Oriented	More Oriented	Less Oriented	
High	17	7	33	5	62
Low	2	15	1	5	23
Total	19	22	34	10	85
Fisher test	P = .002		Fisher test		P = .01
	P < .05				P < .05

Hypothesis III: Farmers more oriented toward Belief in science are more likely to adopt new farm practices, than less oriented farmers.

Table XI indicates the results of the relationship between belief in science and the adoption of new recommended farm practices, holding level of living constant. A positive significant relationship was found between the independent and dependent variables. This evidence supports the Hypothesis III.

Table XII shows the results of the relationship between belief in science and the adoption of new recommended

TABLE X

RELATIONSHIP BETWEEN RATIONALITY AND THE ADOPTION OF NEW FARM PRACTICES WITH GROSS  
 FARM INCOME HELD CONSTANT FOR FARM OPERATORS OF PEMBINA  
 RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income						Total
	\$500 - \$3000		\$3001 - \$5500		\$5501 and Over		
	Rationality						
	More Oriented	Less Oriented	More Oriented	Less Oriented	More Oriented	Less Oriented	
High	11	5	10	4	29	3	62
Low	2	13	0	3	2	3	23
Total	13	18	10	7	31	6	85
	Fisher test P = .02		Fisher test P = .03		Fisher test P = .02		
	P < .05		P < .05		P < .05		

farm practices, holding gross farm income constant. At all income levels a positive relationship was established between the independent variable belief in science and dependent variable adoption of new farm practices, at the .05 level of significance. The results of this analysis also supports the Hypothesis III.

TABLE XI

RELATIONSHIP BETWEEN BELIEF IN SCIENCE AND THE ADOPTION OF NEW FARM PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living				Total
	Low		High		
	Belief in Science				
	More Oriented	Less Oriented	More Oriented	Less Oriented	
High	13	11	28	10	62
Low	4	13	11	5	23
Total	17	24	29	15	85
	Fisher test P = .03		Fisher test P = .01		
	P < .05		P < .05		

Hypothesis IV: Farmers who are more innovation prone are more likely to adopt new recommended farm practices, than less innovation prone farmers.



TABLE XII

RELATIONSHIP BETWEEN BELIEF IN SCIENCE AND THE ADOPTION OF NEW FARM PRACTICES  
WITH GROSS FARM INCOME HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income						Total
	\$500 - \$3000		\$3001 - \$5500		\$5501 and Over		
	Belief in Science						
	More Oriented	Less Oriented	More Oriented	Less Oriented	More Oriented	Less Oriented	
High	10	6	7	7	25	7	62
Low	3	12	0	3	1	4	23
Total	13	18	7	10	26	11	85
	Fisher test P = .02 P < .05		Fisher test P = .04 P < .05		Fisher test P = .02 P < .05		

An investigation of the relationship between innovation proneness and the adoption of new recommended farm practices revealed that holding level of living constant, the relationship was not significant in the "low level of living" group. The null hypothesis of no difference could not be rejected at the .05 level of significance when the chi-square test was applied to determine the relationship between the

TABLE XIII

RELATIONSHIP BETWEEN INNOVATION PRONENESS AND THE ADOPTION OF NEW FARM PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR THE FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living								Total		
	Low				High						
	More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%	
	No.	%	No.	%	No.	%	No.	%			
High	14	58	10	58	31	99	7	58	62	73	
Low	10	42	7	42	1	1	5	42	23	27	
Total	24	100	17	100	32	100	12	100	85	100	
$\chi^2 = .08$		df = 1		Fisher test				P = .004			
P > .05						P < .05					

independent and dependent variables. In the "high" level of living group, however, innovation proneness proved to be positively related to the adoption of new recommended farm practices,

significant at the .05 level. Table XIII presents the results.

Further examination of the data revealed that there was definitely no relationship between innovation proneness and the adoption of new farm practices in the "low level of living" group. That is the percentages of "more oriented" and "less oriented" farm operators were the same for both "high" and "low" levels of adoption (See Table XIII).

An analysis of the relationship between the independent variable innovation proneness, and dependent variable adoption of new recommended farm practices, holding gross farm income constant is presented in Table XIV. The results show that there was no significant relationship between the independent and dependent variables. But a closer examination of the data suggests some positive association between the variables for all income groups. Table XIV shows appreciable differences between the percentages of "more innovation prone" and "less innovation prone" farm operators at both levels of adoption. This is particularly evident at the lower levels of income.

Hypothesis V: Farmers more oriented toward Familism are less likely to adopt new recommended farm practices than less oriented farmers.

No significant relationship was obtained between familism and the adoption of new recommended farm practices, holding level of living constant. Table XV presents the

TABLE XIV

RELATIONSHIP BETWEEN INNOVATION PRONENESS AND THE ADOPTION OF NEW FARM PRACTICES  
 WITH GROSS FARM INCOME HELD CONSTANT FOR FARM OPERATORS OF PEMBINA  
 RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income										Total		
	\$500 - \$3000				\$3001 - \$5500				\$5501 and over				
	Innovation Proneness												
	More Oriented		Less Oriented		More Oriented		Less Oriented		More Oriented			Less Oriented	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
High	8	62	8	44	8	100	6	67	24	89	8	80	62
Low	5	38	10	56	0	0	3	33	3	11	2	20	23
Total	13	100	18	100	8	100	9	100	27	100	10	100	85
	$\chi^2 = .20$ df = 1				Fisher test P = .12				Fisher test P = .30				
	P > .05				P > .05				P > .05				

results of the analysis. A conflicting association was revealed from further examination of the data. The direction of negative association between familism and adoption of new farm practices was evident for the "high" level of living group, while for the "low" level of living group the direction of the association between familism and adoption of new farm practices was positive. Table XV shows a higher percentage of "less oriented" farm operators show "high" adoption than "more oriented farmers". For the "low" level of income group the percentage of "more oriented farm operators" is larger than "less oriented" farm operators showing "high" adoption.

Familism was likewise not significantly associated with the adoption of new recommended farm practices, holding gross farm income constant. Table XVI presents the results of the analysis of this relationship. The data showed, however, that there was existence of an association positive in direction in the lowest and highest income groups, and negative in the middle income group.

These inconsistencies suggest that the factors of gross farm income, and level of living are confounding in some way the relationship between familism and the adoption of new farm practices.<sup>3</sup>

Hypothesis VI: The more tradition-oriented farmers are less likely to adopt new recommended farm practices than the less oriented farmers.

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<sup>3</sup>Explanation of this condition is attempted on page 96.

TABLE XVI

RELATIONSHIP BETWEEN FAMILISM AND THE ADOPTION OF NEW FARM PRACTICES WITH GROSS FARM INCOME HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income												Total
	\$500 - \$3000				\$3001 - \$5500				\$5501 and over				
	Familism												
	More Oriented		Less Orineted		More Oriented		Less Oriented		More Oriented		Less Oriented		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
High	13	54	3	43	12	80	2	100	19	91	13	81	62
Low	11	46	4	57	3	20	0	0	2	9	3	19	23
Total	24	100	7	100	15	100	2	100	21	100	16	100	85
	Fisher test P = .21				Fisher test P = .12				Fisher test P = .08				
	P > .05				P > .05				P > .05				

TABLE XV  
 RELATIONSHIP BETWEEN FAMILISM AND THE ADOPTION OF NEW FARM  
 PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR FARM OPER-  
 ATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living								Total	
	Low				High					
	Familiism									
	More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
High	18	62	6	50	27	62	11	100	62	73
Low	11	38	6	50	6	18	0	0	23	27
Total	29	100	12	100	33	100	11	100	85	100
$\chi^2 = .04$ df = 1					Fisher test P = .32					
P > .05					P > .05					

Table XVIII presents the results of the relationship between traditionalism and the adoption of new recommended farm practices, holding level of living constant. No significant relationship was obtained between the two variables. Further indications of the data are that an association, negative in direction, exists between the variables in the "high" level of living group. Table XVII shows that a greater percentage of "less oriented" farm operators than "more oriented" farmers adopted all three practices. In the "low level of living" group the converse of the preceding association is evident.

TABLE XVII

RELATIONSHIP BETWEEN TRADITIONALISM AND ADOPTION OF NEW FARM PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living								Total	
	Low				High					
	Traditionalism									
	More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%
No.	%	No.	%	No.	%	No.	%	No.	%	
High	19	61	5	50	22	82	16	94	62	73
Low	12	39	5	50	5	18	1	6	23	27
Total	31 (100)		10 (100)		27 (100)		17 (100)		85 (100)	
	$\chi^2 = .21$				Fisher test P = .19					
	P > .05				P > .05					

Table XVIII shows the results of the relationship between traditionalism and the adoption of new recommended farm practices, holding gross farm income constant. A significant negative relationship was established for the group earning a farm income of \$5501 or more. No significant statistical relationship was obtained for the lower income groups. However, the evidence reveals that the direction of the association between traditionalism and the adoption of new recommended farm practices is generally negative. Table XVIII shows at each level of income the percentages of "less" tradition-oriented farm operators with "high"



TABLE XVIII

RELATIONSHIP BETWEEN TRADITIONALISM AND THE ADOPTION OF NEW FARM PRACTICES  
WITH GROSS FARM INCOME HELD CONSTANT FOR PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income										Total		
	\$500 - \$3000				\$3001 - \$5500				\$5501 and over				
	Traditionalism												
	More Oriented		Less Oriented		More Oriented		Less Oriented		More Oriented		Less Oriented		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
High	12	50	4	57	11	79	3	100	11	69	21	100	62
Low	12	50	3	43	3	21	0	0	5	31	0	0	23
Total	24	100	7	100	14	100	3	100	16	100	21	100	85
	Fisher test P = .31				Fisher test P = .53				Fisher test P = .01				
	P > .05				P > .05				P < .05				

adoption scores are greater than the "more tradition-oriented" farmers. Also the percentages of "more tradition-oriented" farmers with "low" adoption scores are greater than the "less tradition-oriented" farm operators.

Hypothesis VII: The "more security-oriented" farmers are less likely to adopt new recommended farm practices than "less security-oriented" farmers.

The final relationship investigated was that between security and the adoption of new recommended farm practices, holding level of living, and gross farm income constant.

Table XIX presents the results of the relationship between security, and the adoption of new farm practices, holding level of living constant. No significant statistical relationship was obtained.

The data in Table XIX however show evidence of a negative association between security and the adoption of new farm practices. The percentages of "less security-oriented" farm operators are greater than "more security-oriented" farm operators among those who have "high" adoption scores. The percentage of "more security-oriented" farmers is greater than "less oriented" farm operators among those who indicated "low" adoption.

The results of the relationship between security and the adoption of new recommended farm practices, holding gross farm income constant, are presented in Table XX.

TABLE XIX

RELATIONSHIP BETWEEN SECURITY AND THE ADOPTION OF NEW FARM PRACTICES WITH LEVEL OF LIVING HELD CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Level of Living								Total	
	Low				High					
	More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%
High	14	52	10	71	29	85	9	90	62	73
Low	13	48	4	29	5	15	1	10	23	27
Total	27	100	14	100	34	100	10	100	85	100
	Fisher test P = .26				Fisher test P = .39					
	P > .05				P > .05					

A significant negative relationship between the variables was obtained for the group with a farm income of 5,501 dollars or over. No significant statistical relationship was found for the lower income groups. Nevertheless, further examination of the data revealed an association between security and the adoption of new farm practices which is negative in direction. At all income levels there is a greater percentage of "less security-oriented" farm operators than "more-oriented" who show evidence of "high" adoption. Also, a smaller percentage of "less security-oriented" farm

TABLE XX

RELATIONSHIP BETWEEN SECURITY AND THE ADOPTION OF NEW FARM PRACTICES HOLDING GROSS  
FARM INCOME CONSTANT FOR FARM OPERATORS OF PEMBINA RIVER BASIN

Adoption of New Farm Practices	Gross Farm Income												Total	
	\$500 - \$3000				\$3001 - \$5500				\$5501 and Over					
	More Oriented		Less Oriented		More Oriented		Less Oriented		More Oriented		Less Oriented		No.	%
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
High	11	50	5	56	10	77	4	100	20	85	12	86	26	73
Low	11	50	4	44	3	23	0	0	3	15	2	14	23	27
Total	22	100	9	100	13	100	4	100	23	100	14	100	85	100
	Fisher test		P = .29		Fisher test P = .42				Fisher test P = .02					
			P > .05		P > .05				P < .05					

operators than "more-oriented" have adopted less than three practices.

The evidence from examination of the relationship between security and the adoption of new recommended farm practices, holding level of living and gross farm income constant, suggests in support of the hypothesis, that the "less security-oriented" farmers are more likely to adopt new farm practices than the "more oriented" farm operators.

The next chapter will be a presentation of a summary and conclusions of the study.

## CHAPTER VII

### SUMMARY AND CONCLUSIONS

In this era of rapid technological change, the study of the adoption of technological innovations in farming has received increased attention. In North America a great deal of research in regard to adoption of new farm practices has been conducted in the United States of America.<sup>1</sup> In Canada, studies of this nature have been almost non-existent. A recent study<sup>2</sup> done in Saskatchewan has been one attempt to deal with this important aspect of farming operations.

It has been recognized in the existing literature that the adoption of innovations in farm practice is not an instantaneous action of the farmer. It involves a series of mental and physical processes, which occur over a period of time, within a particular setting including economic, social, cultural and psychological factors. It is also notable that the farmer responds differently to specific types of practices. We can thus observe a pattern in his adoption of specific practices which is influenced by

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<sup>1</sup>The Rural Sociological Society, Sociological Research on the Diffusion and the Adoption of New Practices, University of Kentucky, Lexington, June, 1952.

<sup>2</sup>Frank O. Leuthold, Communication and Diffusion of Improved Farm Practices in Two Northern Saskatchewan Farm Communities, Saskatoon: Canadian Centre for Community Studies, 1966.

the farmer's conception of the particular type of farm practice in relation to his life situation, including his goals, attitudes, and values.

The general purpose of the joint-study of which this is a part was to attempt to evaluate the likely attitudes of farm operators in the Pembina River Basin towards the adoption of new farm practices such as irrigation.

More specifically this section of the study was concerned with an investigation of the relationship between certain value orientations and the adoption of new farm practices recommended by the Provincial agricultural representative of the study area. Also, the relationship between adoption of the same farm practices, and age, education, level of living, and gross farm income was investigated.

The sample of farm operators studied were all members of the Mennonite ethnic group which forms, to use Pedersen's<sup>3</sup> term, a culture core in the study area. A consideration of the ethnic factor was thus established. Pedersen, and Van den Ban suggested in their studies<sup>4</sup> that social controls of certain ethnic groups acted as barriers to or facilitated

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<sup>3</sup>Harold Pedersen "Cultural Differences in the Acceptance of Recommended Practices" Rural Sociology, Vol. XXVI (March, 1951) pp. 37-49.

<sup>4</sup>Anne Van Den Ban "Locality Differences in the Adoption of New Farming Practices" Rural Sociology Vol., XXIII (September 1960) pp. 307-320.

adoption of new farm practices. Group sanction was often required for adoption of any new farming practice.

Past literature<sup>5</sup> has described the Mennonite ethnic group as maintaining a high level of social and cultural homogeneity based on strong family ties and social interaction among kinship members. It was also suggested that the group exercises a good deal of social control over the daily lives of its members. It was expected therefore, that primary group relations might influence the adoption of new farm practices.

Contrary to expectations based on the literature, investigation<sup>6</sup> of the association between primary group ties and the adoption of new farm practices yielded results of no significant association. Moreover, the direction of the association between primary group relations and the adoption of new farm practices tended to be negative. The finding of no significant association was supported by the non-significant relationship found between familism and the adoption of new recommended farm practices.

The impact of social change seems evident from the findings of the previously mentioned investigation, which indicated as well that in the process of adoption, the Mennonite farm operator consulted friends and neighbours about

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<sup>5</sup>E. K. Francis, In Search of Utopia, Altona, Manitoba: D.W. Friesen and Sons Ltd., 1955.

<sup>6</sup>This investigation formed part of the study, and is presented by Mr. Alexander Segall in the section on "Communication Process and the Adoption of New Farm Practices". (Unpublished Master's Thesis): University of Manitoba, 1967.



information related to new farm practices, but decision making as to whether to adopt or not to adopt a new farm practice did not rely on group sanction. The adoption of new farm practices tended to take place on an essentially individualistic basis.

#### Socio-economic Factors Associated with Adoption of New Farm Practices.

By use of contingency tables, the chi-square test was employed to determine the relationship between age, education, level of living, gross farm income, and the adoption of new farm practices.

An analysis of the relationship between age and the adoption of new farm practices yielded results of no significant relationship. The data indicated that farm operators in the 37 to 46 age group showed a tendency toward higher adoption of new farm practices than the other age groups. The hypothesis of negative association between age and the adoption of new recommended farm practices did not hold true for this population of farmers.

The results of the relationship between education and the adoption of new farm practices indicated no statistically significant association. However, further inspection of the data revealed an association in a positive direction between education and the adoption of new recommended farm practices. The evidence suggested further that formal education did not seem to have much connection with the

the adoption of new recommended farm practices. The median level of education for farm operators in the sample was Grade VI, and about sixty per cent of the sixty-two farm operators identified as "high" adopters had between no education and Grade VI. More than sixty per cent of the farm operators expressed the belief that "high school is enough education for a practical man like a farmer."<sup>7</sup> This can be interpreted to mean that formal education is not greatly stressed by the average farm operator.

Gross farm income, and level of living, according to expectations were positively and significantly associated with the adoption of new recommended farm practices. These variables were further used as control variables in establishing the relationship between the specific value orientations studied, and the adoption of new recommended farm practices.

#### Value Orientations Associated with Adoption of New Farm Practices

The Chi-square and Fisher tests were employed to determine the relationship between value orientations of Achievement; Rationality; Belief in Science; Innovation Proneness; Familism; Traditionalism; Security, and the adoption of new farm practices, holding gross farm income and level of living constant in separate analyses.

The relationship between achievement and the adoption of new farm practices was not statistically significant,

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<sup>7</sup>See Appendix A, Question 67.

holding level of living and gross farm income constant. The evidence however, revealed a positive direction of association between achievement and the adoption of new farm practices, in all cases. About fifty-five per cent of "high adopters" were "more achievement oriented." This suggests that "more achievement-oriented" farmers tend to adopt more new recommended farm practices than "less oriented" farm operators. It can be expected therefore that "more achievement-oriented" farmers will likely have more favourable attitudes towards new farm practices.

A positive significant relationship was established between rationality and the adoption of new farm practices, holding level of living, and gross farm income constant, in separate analyses. The relationship was significant in all cases, indicating that rationality was an important factor in the adoption of new farm practices irrespective of level of living or gross farm income of the farm operator. The evidence confirmed the hypothesis that the "more rationality-oriented" farm operators are more likely to adopt new recommended farm practices than "less oriented" farm operators. It was indicated that about eighty per cent of the "high adopters" in the sample of farm operators were "more rationality-oriented". On this basis it can be inferred that "more rationality-oriented" farm operators can be expected to have favourable attitudes toward new farm practices such as those studied.

The analysis of the relationship between belief in science, and the adoption of new farm practices yielded results of a positive significant association, holding constant gross farm income and level of living in separate analyses. The hypothesis was confirmed that farm operators "more oriented" to a belief in science were more likely to adopt new recommended farm practices than "less oriented" farm operators. More than sixty-six per cent of the sample of farm operators identified as "high adopters" were "more oriented" toward a belief in science. Farmers who are "more oriented" toward belief in science can thus be expected to have favourable attitudes to new recommended farm practices such as those studied.

The relationship between innovation proneness and the adoption of new recommended farm practices was not statistically significant, except for the "high" level of living group. Gross farm income and level of living were held constant in separate analyses.

The data indicated further, that with gross farm income held constant the direction of association between innovation proneness and the adoption of new farm practices tended to be positive. This evidence lends support to the assumption that farm operators who are "more" innovation-prone tend to adopt more new recommended farm practices than those "less" innovation-prone. With level of living held constant, however, the association is less consistent. For

the "low" level of living group there was neither a positive nor negative association between innovation proneness and the adoption of new farm practices. On the other hand the association for the "high" level of living group is positive and significant.

A probable explanation might rest, the present author suggests, on the proposition that the desire to seek out changes in farm practice which is indicated by innovation proneness might be a function of the incentive to change. The incentive to change might be given by change agents such as agricultural representatives and commercial agencies. On the basis of the foregoing proposition the author suspects that the association in question might be explained by an observation made in the Saskatchewan study,<sup>8</sup> which might be applicable to this study. It was suggested that change agents seem to interact more with farm operators with a high level of living who are as much like them as possible. The result being that "the clientele of the change agent often becomes those people who need changing the least."<sup>9</sup> It is highly probable therefore, that other factors operate in influencing the relationship between innovation proneness and the adoption of new farm practices.

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<sup>8</sup>Frank O. Leuthold, loc. cit.

<sup>9</sup>Ibid., p. 164.

Investigation of the relationship between familism and the adoption of new recommended farm practices revealed no significant association between these variables, holding constant level of living and gross farm income, in separate analyses. Further inspection of the data indicated inconsistencies in the direction of the association. The association was negative in direction for the "high" level of living group, and positive for the "low" level of living group. For the \$500 to \$3,000 income group the association was positive in direction; negative for the \$3,001 to \$5,500 group, and positive for the \$5,501 and over income group. The association between familism and the adoption of new farm practices seem to be confounded by the variables level of living, and gross farm income. It is probable, as was found in a study of farm families in Wisconsin,<sup>10</sup> that there is less joint involvement in decisions on farm operations among families with high incomes and high levels of living.

Due to the numerous inconsistencies in the nature of the association between familism and the adoption of new farm practices, it is not reasonable to infer any general trends of any particular attitude. It seems evident that attitudes that might be inferred from the relationship between familism and the adoption of new farm practices vary according to level of living or gross farm income.

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<sup>10</sup>Donald E. Johnson and E. A. Wilkening, Five Years of Farm and Home Development in Wisconsin, Research Bulletin 228, Agricultural Experiment Station: University of Wisconsin, Madison, June 1961.

The analysis of the relationship between tradition-  
alism and the adoption of new recommended farm practices  
showed results of no statistical significance, except for the  
\$5,501 and over income group. Level of living, and gross  
farm income were held constant in separate analyses. The  
data also reveal an association, which is negative in direc-  
tion for all income groups. When level of living was held  
constant, the direction of association proved to be inconsis-  
tent. The association was positive in nature for the "low"  
level of living group, and negative for the "high" level of  
living group.

It was noteworthy that about eighty-two per cent of  
the farm operators identified as "low adopters" were "more  
oriented" to tradition. Thus, the "more tradition-oriented"  
farm operators are likely to have less favourable attitudes  
towards the adoption of new farm practices such as those  
selected for study.

The final investigation was the relationship between  
security and the adoption of new farm practices, holding  
constant gross farm income and level of living in separate  
analyses.

A significant negative association was found for the  
\$5,501 and over income group, when gross farm income was  
held constant. No significant statistical association was  
established when level of living was held constant. However,  
in all cases, controlling for gross farm income, and level

of living, the direction of the association between security and the adoption of new recommended farm practices was consistently negative. The hypothesis of negative relationship was not confirmed by statistical significance, but the consistent direction of the association lends support to it.

It is notable that seventy-eight per cent of the farm operators identified as "low adopters" were also "more oriented" to security. Thus one can expect the "more security-oriented" farm operators to have less favourable attitudes towards the adoption of new farm practices such as those studied.

#### Conclusions and Implications

The present study supports the realization that the farm operator is subject to multiple influences which are at work in the process of adoption of new recommended farm practices. It is difficult to isolate all the factors, thus the factors studied are merely some of the important personal and social characteristics of the farm operator which are significant factors for the adoption of new recommended farm practices. Because of the exploratory nature of the study, the conclusions derived are tentative.

From the present findings it might be concluded that age and education are not important factors for the adoption of new farm practices and therefore lack predictive value. The factors of gross farm income and level of living are important, and significant factors for the adoption of new farm practices.



The value orientations of achievement, belief in science, rationality, and security are consistently associated with the adoption of new farm practices in the direction hypothesized, when the influences of gross farm income and level of living are controlled. These value orientations are important and significant for decision-making and thus possess predictive value for the adoption of new recommended farm practices. Innovation proneness and traditionalism seem to enter into decisions in changing farm practices, but they seem to be only important for different level of living, and different income groups.

Familism seems to be the value orientation of least predictive value. Its association with the adoption of new farm practices is markedly confounded by level of living and farm income. It is probable that the measure of familism does not encompass a wide enough interpretation of the influence of family factors on the adoption of new farm practices. Perhaps a comparative study of the attitudes of families with different levels of living, and farm income might be more meaningful.

On the basis of the present evidence, four value orientations, namely, achievement, belief in science, rationality, and security stand out as important factors for decision-making in the adoption of new recommended farm practices. These value orientations proved, in support of established generalizations to be either significantly or consistently

associated, in one way or another, with the adoption of the new farm practices selected for study; irrespective of level of living, or farm income. In addition, the evidence reveals that a greater proportion of farm operators tend to be "more oriented" to achievement, belief in science, and rationality which factors are all positively associated with the adoption of new recommended farm practices.

On this basis it can be concluded that generally one can expect that farm operators of the Pembina River Basin will most likely have favourable attitudes towards new farm practices such as irrigation.

The implications of the findings for practical purposes rest on the fact that some factors, such as those of education, level of living, farm income, and age can be easily recognized by agents of change. Others such as the value orientations of this study are more subtle, but in some cases may be basic causes for differential adoption. By knowing what to expect, agents of change might be better able to appraise the situation by being aware of the probable limitations of introducing innovations.

B I B L I O G R A P H Y

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A P P E N D I C E S

## APPENDIX A

Respondent Number \_\_\_\_\_

## SECTION I

Sewell's Farm Family Socio Economic Status Scale  
(Weighted Scores in Parentheses)

1. Ethnic Status \_\_\_\_\_ 2. Age \_\_\_\_\_
3. Farm operator attends Church: Yes (5) No (2)
4. Wife attends Church: Yes (5) No (2)
5. Farm Operator's Education:  
Grades Completed: 0 - 7 (3) 8 (5) 9-11 (6) 12 (7) 13 and up. (8)
6. Wife's Education:  
Grades Completed: 0 - 7 (2) 8 (4) 9-11 (6) 12 (7) 13 and up. (8)
7. Major crop grown \_\_\_\_\_
8. Gross annual income \_\_\_\_\_ Size of Farm \_\_\_\_\_
9. Construction of house:  
Brick, stucco, etc., or painted frame (5)  
Unpainted frame or other (3)
10. Room-person ratio:  
Number of rooms    ÷    Number of persons \_\_\_\_\_  
Ratio = Below 1.00 (3) 1.00-1.99 (5) 2.00 and up (7)
11. Lighting facilities:  
Electric (8) Gas, Mantle, or Pressure (6) Oil lamps, other or none (3)
12. Water piped into house: Yes (8) No (4)
13. Power Washer: Yes (6) No (3)
14. Refrigerator: Mechanical (8) Ice (6) Other or None (3)

15. Radio: Yes (6) No (3)
16. Telephone: Yes (6) No (3)
17. Automobile: (other than truck) Yes (5) No (2)
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? \_\_\_\_\_
20. Do you receive the local weekly newspaper at your home?  
Yes (6) No (3)
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

23. 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 \_\_\_\_\_

24. 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 \_\_\_\_\_
- b. Friends, neighbors, relatives \_\_\_\_\_
- c. Agricultural officials, i.e. ag. rep. \_\_\_\_\_
- d. Local dealers and salesmen \_\_\_\_\_
- e. Other sources \_\_\_\_\_

25. 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 \_\_\_\_\_
- b. Friends, neighbors, relatives \_\_\_\_\_
- c. Agricultural officials, i.e. ag. rep. \_\_\_\_\_
- d. Local dealers and salesmen \_\_\_\_\_
- e. Other sources \_\_\_\_\_

26. 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 \_\_\_\_\_
- b. Friends, neighbors, relatives \_\_\_\_\_
- c. Agricultural officials, i.e., ag. rep. \_\_\_\_\_
- d. Local dealers and salesmen \_\_\_\_\_
- e. Other sources \_\_\_\_\_

27. 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 \_\_\_\_\_

RATIONALITY INDEX

SECTION III

28. 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., salesmen)

\_\_\_\_\_ according to information gained through mass media

1. \_\_\_\_\_ 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

29. Have you had any of your fields soil tested in the last five years?

3. \_\_\_\_\_yes

1. \_\_\_\_\_no

Y. \_\_\_\_\_not codable, ambiguous

30. 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.

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

31. 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

32. 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
1. \_\_\_\_\_ don't know or none (uses memory)
- Y. \_\_\_\_\_ not codable, no response

33. 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

34. 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



35. The difference between the successful farmer and the non-successful 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

36. 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.

3. \_\_\_\_\_ disagree  
 1. \_\_\_\_\_ agree  
 \_\_\_\_\_ don't know  
 Y. \_\_\_\_\_ no response

#### INDEX OF FAMILISM

37. If you had to retire from farming would you want your child or children to take over the farm? Yes \_\_\_\_\_ No \_\_\_\_\_

38. In raising children do you feel that parents should encourage their children to go into farming or some particular occupation? Yes \_\_\_\_\_ No \_\_\_\_\_

39. Did you inherit part or all of farm from your parents?

All or part \_\_\_\_\_ None \_\_\_\_\_

40. Is all farm labour provided by your family? Yes \_\_\_\_\_

No \_\_\_\_\_

41. Whom do you visit most often? relatives \_\_\_\_\_

Friends \_\_\_\_\_

VALUE ORIENTATION INDICES

42. In farming, the successful farmer is one who
- a. \_\_\_\_\_ stays out of debt (security)
  - b. \_\_\_\_\_ sticks to farming even during bad times  
(farming as a way of life)
  - c. \_\_\_\_\_ makes the most profit (achievement)
  - d. \_\_\_\_\_ is highly respected by other farmers  
(achievement)
43. In being a successful farmer, where should one look for the best ideas
- a. \_\_\_\_\_ from older farmers (traditionalism)
  - b. \_\_\_\_\_ county agent (belief in science)
  - c. \_\_\_\_\_ tried and true methods in your own life  
(traditionalism)
  - d. \_\_\_\_\_ trying new things yourself to see what works best. (belief in science)
44. In being a successful farmer, which do you think is most important
- a. \_\_\_\_\_ education in an agricultural college (belief in science)
  - b. \_\_\_\_\_ keeping up with new farming methods (belief in science)
  - c. \_\_\_\_\_ working hard (hard work)
  - d. \_\_\_\_\_ do the best you can with what you have without going into debt (security)
45. In being a successful farmer, what is most important
- a. \_\_\_\_\_ keeping records (efficiency and practicality)
  - b. \_\_\_\_\_ staying with practices you have always used  
(traditionalism)

- c. \_\_\_\_\_ weigh each practice against the profit it gives you (efficiency and practicality)
- d. \_\_\_\_\_ working hard (hard work)
46. In being a successful farmer, where should one get his ideas?
- a. \_\_\_\_\_ from neighbors around you
- b. \_\_\_\_\_ from what your father found successful (traditionalism)
- c. \_\_\_\_\_ from what farmers are doing the country over.
- d. \_\_\_\_\_ from what you have always done (traditionalism)
47. 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 (individualism)
- b. \_\_\_\_\_ to be among the last to change (security)
- c. \_\_\_\_\_ to change as soon as most of your neighbours have changed.
- d. \_\_\_\_\_ to change if your neighbors say it is a good practice (conformity)
48. In solving the present problems in Canada concerning farmers, where do you think the government could best direct its attention
- a. \_\_\_\_\_ more money for research on farming methods (belief in science)
- b. \_\_\_\_\_ leave the farmer more freedom to make his own way (individualism)
- c. \_\_\_\_\_ more money for research in economics (belief in science)
- d. \_\_\_\_\_ set up more security measures to help the farmers during bad years. (security).

49. If you were forced to leave farming and look for another job, which of the following would you consider most important.

- a. \_\_\_\_\_ the pay (achievement)
- b. \_\_\_\_\_ opportunity for advancement (achievement)
- c. \_\_\_\_\_ permanence of the job (security)
- d. \_\_\_\_\_ how much you enjoyed the work

50. In being a member of a farm organization which is most important

- a. \_\_\_\_\_ being a formal leader (achievement)
- b. \_\_\_\_\_ being a hard working member
- c. \_\_\_\_\_ attending every meeting unless ill (hard work)
- d. \_\_\_\_\_ working behind the scenes to get what you think is right (achievement)

51. In raising children, which is the most important place to get facts.

- a. \_\_\_\_\_ child psychologist (belief in science)
- b. \_\_\_\_\_ minister (traditionalism)
- c. \_\_\_\_\_ books (belief in science)
- d. \_\_\_\_\_ your own parents (familism)

52. In raising children, which of the following is most important to encourage them in?

- a. \_\_\_\_\_ to get a college degree (achievement)
- b. \_\_\_\_\_ to take advantage of every opportunity (achievement)
- c. \_\_\_\_\_ to save their money (security)

53. In raising children, which is the most important thing to teach them.
- \_\_\_\_\_ to be practical (efficiency)
  - \_\_\_\_\_ to keep ties with their parents (familism)
  - \_\_\_\_\_ to work hard
54. In raising children, which of the following is most important to teach them?
- \_\_\_\_\_ strict obedience (familism)
  - \_\_\_\_\_ individual initiative (achievement)
  - \_\_\_\_\_ to ask questions whenever curious (achievement)
  - \_\_\_\_\_ the advantages of living on a farm
55. For any friend who is having marriage troubles, where do you think is generally the best place for him to go?
- \_\_\_\_\_ marriage counsellor (belief in science)
  - \_\_\_\_\_ minister (traditionalism)
  - \_\_\_\_\_ another friend (traditionalism)
  - \_\_\_\_\_ social worker (belief in science)
56. If you got \$2,000 as a gift which of the following would you most like to do?
- \_\_\_\_\_ buy modern kitchen appliances (material comfort)
  - \_\_\_\_\_ take a vacation
  - \_\_\_\_\_ put it in the bank for a rainy day (security)
  - \_\_\_\_\_ buy labor saving devices for your work (material comfort)

57. Suppose this amount were \$64,000, which would you most like to do?
- \_\_\_\_\_ buy a real good farm and start over
  - \_\_\_\_\_ pay off all debts and invest the remainder (security)
  - \_\_\_\_\_ build a new house with all modern conveniences (Material comfort)
  - \_\_\_\_\_ buy a moder house and go into semi-retirement (material comfort)
58. In deciding whether something is right or wrong, which is most important?
- \_\_\_\_\_ seeking whether your neighbors are actually doing it (conformity)
  - \_\_\_\_\_ talking with your neighbors to see what they think (conformity)
  - \_\_\_\_\_ talking with your family to see what they think (familism)
  - \_\_\_\_\_ deciding entirely on your own (individualism)
59. In deciding who to vote for, which do you think is more important
- \_\_\_\_\_ talking it over with your neighbors (conformity)
  - \_\_\_\_\_ talking it over with your family (familism)
  - \_\_\_\_\_ going along with public opinion generally
  - \_\_\_\_\_ following the dictates of your own conscience. (individualism)

STRAUS RURAL ATTITUDE PROFILE

SECTION IV

- |  | <u>Most</u> | <u>Least</u> |
|--|-------------|--------------|
| 60. feels that farmers have to work too many hours | ( )         | ( )          |

	<u>Most</u>	<u>Least</u>
feels that a family should do things together	( )	( )
sees little value in a farmer studying agriculture in school	( )	( )
is a good farm business manager	( )	( )
61. 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 \$3000 a year and be free of debt than make \$5000 a year and be in debt	( )	( )
62. farming gives him a sense of achievement	( )	( )
usually discusses farming plans with his wife	( )	( )
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	( )	( )
63. 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	( )	( )

	<u>Most</u>	<u>Least</u>
64. 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	( )	( )
65. 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	( )	( )
66. likes the exercise in the open air and sunshine involved in farming	( )	( )
gets enjoyment out of learning new ways of doing things	( )	( )
all he wants from his farm is to make a reasonable living for the family	( )	( )
doesn't really like to exchange work with neighbours	( )	( )
67. 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	( )	( )



	<u>Most</u>	<u>Least</u>
68. 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	( )	( )
69. gets great enjoyment out of working with plants or animals	( )	( )
listens to farm programs to get new ideans 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	( )	( )
70. 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	( )	( )
71. 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 B

<u>FARMING PRACTICE</u>	<u>YEAR RECOMMENDED</u>
Planned Crop Rotation.....	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 SERVICEOffice 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.