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

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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, datawere 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[1] to be associated with the

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[1]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.[2]

Before selecting the Pembina River Basin as the area to be studied, the investigators[3] 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.

[2]George E. Spencer, "Value Orientations and the Adoption of Farm Practices", Unpublished Ph.D. dissertation, Cornell University, 1958.

[3]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.[4]

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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[4]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.[5] 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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[5]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[6] 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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[6]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.[7] "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."[8]

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 situatin. 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.[9] 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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[7]North Central Regional Publication op. cit., pp. 3-4.

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 (Unpublished paper December 1966).

[9]North Central Regional Publication, op. cit., p. 5.