RISK ATTITUDES, VALUES, INSURANCE PRACTICES AND THEIR CONTRIBUTION TO FARM BUSINESS DEVELOPMENT

A Thesis

Presented to

The Faculty of Graduate Studies and Research

University of Manitoba

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

Gerard Achille Therrien

May 1968

ABSTRACT

RISK ATTITUDES VALUES, INSURANCE PRACTICES

AND

THEIR CONTRIBUTION TO FARM BUSINESS DEVELOPMENT

by

Gerard Achille Therrien

Farming is subject to a host of uncertainties which could seriously affect the financial progress of the firm. The responsibility of providing adequate financial security lies mainly with the farmer. While insurance schemes are necessary for protecting the family and the firm, a proper balance between risk taking and accurate management are essential for a progressive industry.

It was anticipated that the proper use of formal and informal insurance schemes, based on individual financial assets and preferences for risk, would provide the proper environment for rapid financial progress. In this study, 59 selected farms with 5 years of accurate financial records and other pertinent information were used for the study.

The objectives kept in mind throughout the disertation were:

(1) to determine the extent of risk and farmers' reaction to risk.

(2) to assess farmers' formal and informal insurance schemes and their opinions of specific insurance plans.

(3) to determine the optimum protection level for each risk

situation in the light of particular financial circumstances and for risk.

(4) to consider risk taking attitudes and actions relative to financial progress, adequate size, income level and growth rate.

(5) to examine how conditions and/or attitudes toward risk situations affect efficient use of resources.

(6) to consider farmers' reaction toward uncertainty in view of related goals and values.

The major findings of the study were:

(1) Judged by the criteria developed in the study, farmers were inadequately protected against certain risks. While they had adequate insurance on buildings, machinery and equipment, and household contents, their protection against major frauds, adverse judgment of law and the loss of income of a key person was insufficient. This was especially true in 1961. Evidence and opinions tended to indicate that farmers had a more precise assessment of tangible risks such as fire than on intangible risks such as premature death, disability, fraud and liability.

(2) Influences external to the business rather than sound decisions, based on risk assessment, served as guides for protecting the business against risk.

(3) While younger farmers had more aggressive risk taking attitudes than older ones, they did not differ significantly in value orientations and income aspirations.

(4) That appropriate attitudes on risk, values and income levels are conducive to rapid financial progress.

In summary, it was concluded that there is a definite need for more accurate assessment of risks. This must, however, be accompanied with aggressive risk taking attitudes, if the firm is to achieve rapid financial progress.

ACKNOWLEDGMENTS

I would like to take this opportunity to thank all the people who have assisted me in so many ways in the completion of this thesis.

First, I would like to present this work to my wife, Jeanne, and son, Jacques, who have so patiently waited for the completion of this project. I thank Jeanne for typing the first scribbling and notes of the original work and proof-reading the final draft.

Special thanks go to Professors P.G. Harkins, R.E. Capel and chairman G.E. Ackerman who have read the entire draft and offered timely and helpful assistance. My most sincere appreciations are directed to G.E. Ackerman whose supervision, advice, and valuable information have made this study possible. Special thanks go to his wife Caroline and family who have so amiably kept company with my family on the "Pondorosa" during the field survey.

I am also very grateful to the Manitoba Department of Agriculture for providing me with the financial assistance and time for completing the study and carrying out the field survey.

My most sincere appreciation go to the charter members of the Western Manitoba Farm Business Association who gave of their time to provide the necessary information. It is my hope that the results of this study will be valuable to them.

Finally, I would like to thank Jim Ross and Neil Longmuir who have provided technical assistance on drawing the diagrams and to Mrs. Helen Smith who has typed the two final drafts.

TABLE OF CONTENTS

CHAPTER PAGE

CHAPTER PAGE

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

IMPORTANCE OF THE STUDY

Agriculture is subject to a host of uncertainties. As a business, it is susceptible to social and economic uncertainties. As a way of life, it has to deal with personal uncertainties arising from death or impairment of health through sickness and accident. Because of its unique dependence on weather conditions, it is influenced by the vagaries of nature. Furthermore, while most hazards are predictable in aggregate, to the individual farm they must be considered as highly unpredictable.

The responsibility of providing sufficient security, in our democratic society, is left almost entirely to each individual. Because of his relative freedom of action, he has to make the decisions that will provide him with enough economic security to fulfill his needs and meet his objectives. In our society economic security is measured by profit, loss, assets, net worth, equity, or other measures of financial success.

Farm business managers must constantly search for ways of improving economic decisions. Resources must be directed toward the attainment of present and future goals. To accomplish these ends the farm business must continuously strive to use its available resources as efficiently as possible so as to maximize production and minimize costs.

The farm family also plans its future and manages its affairs so as to attain its goals and avoid severe economic losses. The responsibility of guaranteeing economic security rests heavily upon the breadwinner. Most providers are able to fulfill this responsibility while they are

living and healthy enough to work. However, it is doubtful whether many families would have enough economic resources and insurance to maintain their present standard of living and attain their present objectives were the chief provider to die prematurely.

In agriculture the problem of economic security is further complicated by the close interrelationship of the firm and household. The most common type of farm organization in Canada is the family farm. It is apparent that the goals of the family and the firm must be considered together. While it is very often assumed that a firm is mainly profit oriented, the interrelation of the family and the firm in agriculture requires that this objective be modified in order to maximize satisfaction of the family. Maximization of satisfaction of the family then becomes the goal and main motivational force behind the farm producing unit. At times, the firm's economic security and progress is placed in jeopardy for the family's satisfaction and economic security.

Because of the complex nature of farming, the competing interest of the firm and the household and because of uncertainty farmers can only plan for a brief period of time. The success of a business will depend to a large extent on a farmer's anticipation of the farm business which is influenced by past experience, knowledge, predisposition to act in a certain direction and expectation of the future. If a farmer anticipates a poor crop year and allocates resources accordingly, resources will be underutilized and income that could have been realized will have been lost if conditions made for an excellent crop year. On the other hand, if conditions make for a poor crop year but the farmer anticipates and plans for

a bumper crop year then his expenses will have been much higher than necessary. It is for this reason that resources are often inefficiently used.

Two of the most serious problems in the farm industry have been fluctuation in yields and fluctuations in prices of farm products. In Manitoba,[1] as early as 1812, when the first Selkirk settlers arrived, farmers suffered unexpected disasters year after year from early frosts, grasshoppers, mice, etc. which destroyed their crops. Since then farmers have experienced many crop losses due to hail, drought, flooding, grasshoppers, and other causes. Unexpected flooding in 1826 forced some early settlers to leave their farms and migrate to the United States. In the last 20 years, many farmers along the Red and Assiniboine rivers have had to move to higher land to escape flooding. In 1950 and as recent as 1966 serious flooding along the main rivers caused considerable damage to buildings and reduced livestock production, adding to the cost of production and waterlogging much of the land so that crop production was seriously affected. Periodically the Western farmer is reminded of the dry years. The 1930's stand out vividly in the minds of many old timers as a disasterous drought era with extremely low yields accompanied by give away prices. As recent as 1961, drought lowered yields to the lowest level since the 1930's. Because of these uncertainties, Manitoba farmers need accurate risk evaluation and appropriate protection programs to minimize their losses.

---

[1] Strange, H.G.L., A Short History of Prairie Agriculture, Winnipeg: Searle Grain Company Ltd., 1954.

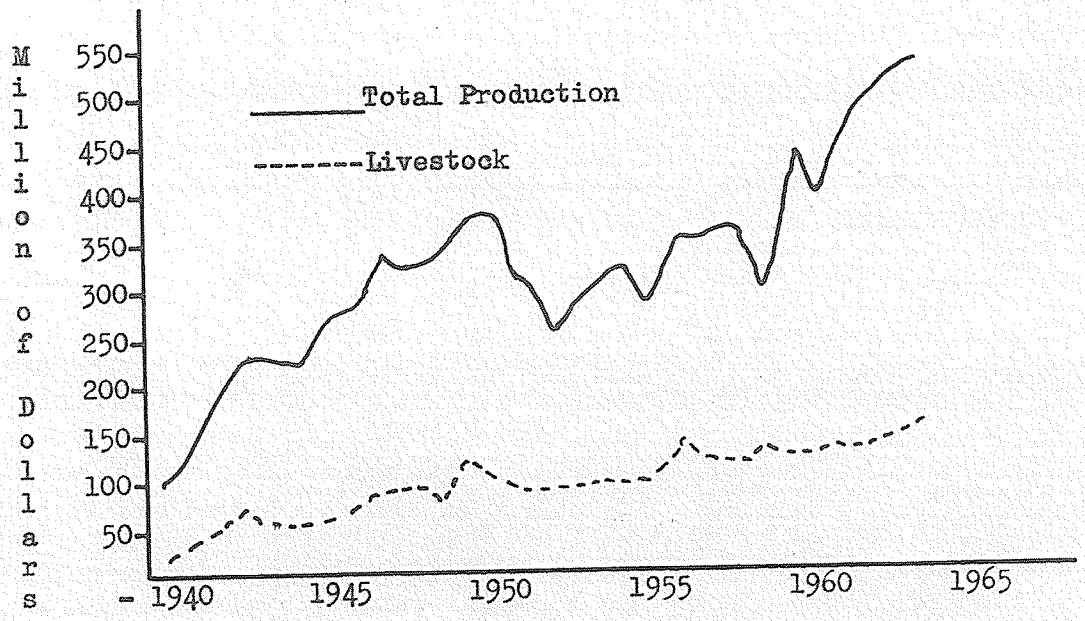
Price fluctuations have added to the wide fluctuations in yield. Normally price is influenced by supply and demand. Yet, low prices have been known to occur when production was extremely low. For example, some of the lowest wheat prices in Western Canada have occurred at a time when production was at its lowest level such as during the depression years. Price and yield variations have caused wide fluctuations in production value in Manitoba even in the most recent period, as may be viewed in figure 1.

The need for stabilizing income from adverse effects of weather, natural causes, and price fluctuations has without question been one of the most serious problems facing Manitoba farmers since the opening of the West. This problem will be accentuated as agriculture becomes more intensive and more capitalized.

FIGURE 1

Total Production Value and Livestock in Manitoba

1940 - 1965



Source: Manitoba Farm Outlook 1967, Manitoba Dept. of Agriculture and Conservation.

Agriculture has changed drastically in the last century from a completely integrated high labor input way of life to more specialized intensive capital input business. One hundred years ago each farm had to provide most of its inputs for survival and production. From this modest beginning a more specialized unit developed which depends more and more on other industries and other farms for its inputs. As shown in table 1 the inputs increased from 8% to 22%, accompanied by a reduction in labor of 63% to 35% of total inputs -- evidence of a structural change of the farm unit.

TABLE 1

DISTRIBUTION OF INPUT GROUPS, 1935 to 1963

(Per cent of total inputs based on constant dollar data with 1958 base weights)

Period	Labor	Real Estate	Machinery & Equipment	Purchased Feed and Seed	Fertilizer and Lime	Misc.
1935-39	63	21	8	3	-	5
1940-44	58	20	11	5	1	5
1945-49	53	19	14	7	1	6
1950-54	45	21	20	6	1	7
1955-59	39	23	21	8	2	7
1960-63	35	24	22	8	2	9

Source: Dawson, J., Changes in Agriculture to 1970. Economic Council of Canada Staff Study No. 11, 1964.

As the resource mix shifts toward a capital intensive agriculture with more borrowed capital, farms become more susceptible to uncertainty and adverse farm income experiences. With higher fixed costs and the countervailing pressures for lowering per unit cost, farms are forced to become larger to spread over more production units such as acres and animals. In an article written by A.G. Ball,[2] he projected that if the present upward trend of larger farms continued at 24% over a ten year period, that the average farm in Manitoba would increase from 338 acres in 1951 and 419 acres in 1961 to 520 acres in 1981. If this forecast is realized, the demand for capital will increase significantly and the industry will shift from a relatively self-supporting capital industry to a higher borrowing industry. As farm units become larger and expansive users of borrowed capital, they become more vulnerable to adverse conditions of risk and uncertainty.

If the farm decision makers are over conservative in their attitudes, it is doubtful whether the agricultural industry will be able to make the progress that is economically warranted. In a study carried out by Carr, he found that farmers had a strong preference for self-financing.

> On many of the numerous small farms, self-financing was imposed by the lack of income to repay borrowed capital. On many farms, both large and small, self-financing was preferred because of the operator's desire for the independence of owning his farm fully, his fear of debt or other related reasons. [3]

---

[2] Ball, A.G., The Economic Opportunities. Proceedings 1966 Workshop "Meeting the Needs of Tomorrow's Commercial Farmers", Winnipeg, Manitoba Agricultural Economics Association.

[3] Carr, D.W., a quote taken from Dawson, J., Changes in Agriculture to 1970. Staff study No. 11. Economic Council of Canada, 1964.

If farm families are to progress from relatively small units to larger more specialized commercial farms, better risk management planning and different risk attitudes are essential for progressive financial success. Risk management is an integral part of farm management, primarily because of its unique role in providing enough economic security for the unpredictable and unforeseeable. Assets must be protected from natural hazards, fire, burglary, theft, and many other hazards. Income from crops must be guaranteed in one way or another, livestock must be protected from disease, sickness, weather, and multiple hazards, and the business and the family must be safeguarded from premature death and disability. In other words, for rapid financial progress the firm must assume risk, yet, it must have enough economic security to meet the unforeseen.

Objectives

The objective of this study is to examine risk, attitudes to risk in farm investment and farm practices, value orientations, insurance programs and their influence on financial success.

Specifically, the objectives are:

1) to determine the extent of risk and farmers' reaction to risk.

2) to assess farmers' formal and informal insurance schemes and their opinions toward specific insurance schemes.

3) to determine the optimum protection level for particular risk situations in the light of particular financial circumstances and preference for risk.

4) to consider risk taking attitudes and actions relative to financial progress, adequate size, income level and growth rate.

5) to consider how conditions and/or attitudes toward risk situations affect efficient resource allocation.

6) to consider farmers' reaction toward uncertainty in view of related goals and values.

These objectives will be examined as they relate to the hypotheses, derived from the problematic situation.

Problematic situation

Farming today requires adequate protection against uncertainty and risk situations. Farmers on the one hand, heavily discount and cautiously weigh each new decision; while at the same time many pressures have evolved for larger farms, use of more borrowed capital, adoption of new farm practices, economies of scale etc., all of which stress the importance of risk taking in investment and farm practices. These two opposing ideas appear to run counter to one another. Yet, very few attempts have been made to examine the need for adequate insurance and the need for risk taking as an integral part of farm business.

Farmers and insurance agents may not examine the problem in the same way. Insurance agents may view the farmer as a prospect for a quick sale, spending very little time examining the farmers entire business needs. Farmers are very sceptical about insurance agents and salesmen in general and avoid giving them the proper information for complete analysis. Thus, farmers may at times buy insurance that they do not require while at the same time go without essential insurance policies.

Another problem that arises with insurance is that insurance is sold piecemeal. Some fire insurance companies sell only fire insurance and

extended coverage, but not hail, others sell only fire, extended coverage and crop hail insurance. All-risk crop insurance is sold only by the province. Most life insurance companies sell only life insurance, accident and sickness, annuities and health insurance. As individual insurance companies promote only their own products, few provide to the farmer and his family a complete analysis of his insurance needs. There are indications, if we may generalize from studies done on the general public, that farmers are inadequately insured and receive improper advice.[4]

Many farmers lack the proper training for evaluating their insurance needs. Though insurance agents are well versed in certain aspects of insurance, few have sufficient knowledge to understand all insurance policies plus all the hazards faced by the farm business and his family, and to advise properly. Farmers have so little information on insurance alternatives that they can not easily decide whether they require additional insurance. This lack of knowledge either makes them postpone their decisions to buy additional insurance or forces them into a quick decision.

While adequate protection is of absolute necessity, it is also necessary for farmers to take some risks. Without an adequate method for evaluating insurance needs and risk situations it is very difficult to determine which risk to retain and which to insure. It is necessary to

---

[4] Consumer Reports. New York: Consumers Union of U.S. Inc. issues of January, February and March, 1967.

devise methods to help farmers evaluate their insurance needs, which will provide the necessary climate for successful financial progress.

Hypotheses

Five Hypotheses were advanced:

1) That farmers are underprotected in regards to every class of risk.

2) That farmers' assessment of risk is more precise in areas of tangible assets and risks than in the less obvious kinds of risk.

3) That influences external to the business serve as guides for protecting the business from risk.

4) That risk attitudes, income aspirations and values of younger farmers differ from those of older farmers.

5) That such attitudes constitute restrictions or stimuli of primary importance to the financial success of the farm business.

CHAPTER 11

RISK DEFINED AND CLASSIFIED

If it were possible to foresee exactly what the future holds, there would be no grounds for economic uncertainty and no need for insurance schemes. Because of adverse effects of risks, methods for managing risks and protecting against loss have been developed. Since no one knows exactly what the future holds, everyone has to be a risk manager not by choice, but by necessity.[1]

Uncertainty arises because of incomplete knowledge of the future. Plans in agriculture must be made at a point in time for a product which will be forthcoming in the future. Under uncertain knowledge the entrepreneur is faced with decisions and planning about his farm and the allocation of resources based on future expectations. It was Knight's book Risk, Uncertainty and Profit[2] which first focussed attention on the knowledge possessed by managers at various stages in the decision making process. Knight was also very explicit in distinguishing between the two basic degrees of knowledge which would give rise to conditions of risk and uncertainty.

Since then, many definitions on risk and uncertainty have been

---

[1] Williams, C.A. Jr., and Heins, R.M. Risk, Management and Insurance, Toronto: McGraw-Hill Co., 1964.

[2] Knight, F.H., Risk, Uncertainty and Profit. New York: Houghton Mifflon Company, 1921.

developed. Some economists like Hicks,[3] Hardy[4] and D. Gale Johnson[5] make no distinction between the two terms, others find a clear cut distinction between risk and uncertainty, while most entrepreneurs refer to outcomes which lead to losses as risk.

Under these circumstances it is imperative that we have a clear understanding of these terms. Defining risk is not an easy task, as is evidenced from the numerous definitions and large amount of literature on the subject. Consequently, the most suitable way for distinguishing between risk and uncertainty is to briefly examine some of the literature on the subject and to group risks in general categories.

PART I -

Risk and Uncertainty Defined

Risk may be defined as an outcome which is measurable in an empirical and quantitative sense, while uncertainty as an outcome which cannot be established in an empirical or quantitative sense.[6] In this definition of risk, it is not essential that each outcome for each particular item be predictable. It is only necessary that the probability of outcome or loss be established for a large number of cases or observations.

---

[3] Hicks, J.R., Value and Capital, Clarendon Press, Oxford, 1939.

[4] Hardy, C.O., Risk and Risk Bearing, University of Chicago Press, 1923.

[5] Johnson, D. Gale, Forward Prices for Agriculture Chicago: The University of Chicago Press, 1947.

[6] Heady, E.O., Economics of Agricultural Production and Resource Use, Englewood Cliffs, N.J.: Prentice-Hall Inc. 1952, pp. 440-443.

Empirical probabilities of outcome can be established by either one of two methods: through "a priori" calculation or from statistical analysis of past experience. The "a priori" of outcome can be known beforehand. For example, it is not necessary that a large continuous number of calves be born before establishing that the chance of obtaining a bull or a heifer is one-half. However, in statistical analysis, probability can be established only if the sample of observation is large enough, the observations are repeated often in the population, and the observations are independently and randomly distributed. Insurance companies can predict fire losses and similar outcomes with a high degree of certainty so that the phenomena under classification can be classed as risk. Thus, the greatest distinction between the two terms is that risk is insurable while uncertainty is not.[7] For example, it is impossible for the farmer to predict whether his house will burn down, to him it is uncertain. However, to the insurance company it is predictable (to estimate the probability), and it is possible to estimate in aggregate the exact loss. Thus, to the insurance company it is a risk and is predictable in aggregate, while to the individual it is uncertainty and is unpredictable even in aggregate as his case is unique and he owns only one house.

In uncertainty, the probability of an outcome cannot be established in an empirical or a quantitative sense. Uncertainty is always present when knowledge is imperfect and the parameter cannot

---

[7] Ibid., pp440-443.

be established (i.e. the mean, the variance of the outcome). Uncertainty is entirely subjective in nature in that it refers to anticipation of the future and is arrived at by estimation and judgment, or by formulating an image of the future.[8]

In Risk, Uncertainty and Profit, Professor Knight arrives at the distinction between risk and uncertainty by relaxing the assumption of perfect knowledge -- an attribute of static economics as usually stated. It became apparent to him that managers are involved in decision making in dynamic conditions where change and knowledge of the future is imperfect. Managers arrive at their decisions by establishing the probability distribution of expected events. Within the dynamic situation, he found it necessary to distinguish between situations in which knowledge of probability distribution is complete enough to set up insurance schemes (risk) and situations in which knowledge is not complete enough to set up insurance schemes (uncertainty).

> The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation a priori or from statistics of past experience), while in the case of uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique. The best example of uncertainty is in connection with the exercise of judgment or the formation of those opinions as to the future course of events which opinions (and not scientific knowledge) actually guide most of our conduct. Now if the distribution of the different possible outcomes in a group of instances is known, it is possible to get rid of any real uncertainty by the expedient of grouping or "consolidating" instances.

Hardy, however, took exception to Knight's interpretation of risk and uncertainty.

---

[8] Knight, F.H. op. cit. p. 233.

> It appears probable that the cases of statistical probability and the cases of true uncertainty are essentially alike differing only in the amount of information we happen to have at hand to deal with them, the length of time necessary to accumulate a line of cases big enough to establish a statistical frequency and the fineness of the classification we are using.[9]

Willet's distinction between risk and uncertainty is more a difference between objective and subjective aspects of apparent variability in the course of natural events. Whatever effect risk may have on economic activity is brought about through psychological influence of uncertainty. The fundamental facts of human nature on which the doctrine of risk is based are that in economic affairs uncertainty is in general a disagreeable state of mind and that the disagreeableness increases as the uncertainty increases.[10]

Johnson, on the other hand, recognizes five different knowledge situations in which the manager finds himself with respect to a given problem.[11]

The five situations can be grouped into states of knowledge (a) subjective uncertainty, (b) subjective risk situation and (c) subjective certainty. A further classification can be made of the subjective uncertainty situations: (1) the inactive situation, in which available information is inadequate for a decision concerning a

---

[9] Hardy, C.O., Risk and Risk Bearing. University of Chicago Press, 1923.

[10] Willet, A.H., The Economic Theory of Risk and Insurance, University of Pensylvania Press, 1951. p. 29.

[11] Johnson, C.L. and Haver, C.B., Decision Making Principles in Farm Management, Lexington: Kentucky Agricultural Statistics Bulletin No. 593. University of Kentucky, 1953.

contemplated action and in which the cost of acquiring more information exceeds its value; (2) the learning situation, in which available information is inadequate for decision and in which the value of acquiring knowledge exceeds its costs; (3) the forced action situation, in which available information is inadequate but in which action is forced by outside circumstances. In subjective risk situations, the manager does not see the probable results of a contemplated action perfectly but sufficiently enough to decide whether to act or not to act; and accept the consequences of the decision and action. It is usually in such situations that managers buy insurance, set up safety margins, use reserves and discount and use other formal and informal insurance means of bearing the risk. In subjective certainty situations, knowledge is nearly complete enough for managers to act as though they had perfect knowledge. In these situations, managers do not set up safety margins discount results or maintain reserves in case of trouble. The decision may be either to act or not to act.

Williams, G.A. Jr. and Heins, R.M. define risk as an "objective doubt concerning the outcome in a given situation. It is the doubt a person would have concerning the future outcome even if he knew all the possible outcomes and their probability[12] or chance of occurrence".[13] Under this approach risk is the doubt of outcome which remains in spite

---

[12] Probability is the relative likehood that the outcome will occur. If the probability is 0 the loss will not occur; if the probability is 1, the loss will occur. The closer the probability is to 0 or 1 the more certain one knows the outcome.

[13] Williams, G.A. Jr., op. cit. p. 5.

of a person's knowledge of the possible losses and their probabilities of risk. This risk can be measured by the variation of the possible results. If a loss is certain to occur, the chance of loss is one but the risk is 0. Uncertainty

> is the subjective doubt concerning the outcome during a given period. Uncertainty is the doubt which exists whether or not one knows all the possible outcomes and the probability of their occurrence. Risk is the same to all persons under a given set of circumstances: uncertainty varies among persons and depends upon the information at their disposal and their ability to use this information to estimate the risk.[14]

The manager in planning for the future is faced with uncertainty in addition to risk elements where variation in outcome is substantial. For example, crop yield variability or instability may be classed both as risk and uncertainty depending on the situation. Under perfect knowledge about the future, the farmer is faced with instability of yield which is risk where the parameters are established. Yet, each individual entrepreneur may have his own degree of belief in the outcome which is uncertainty and is subjectively determined uncertainty. The key difference being that in one case it is measurable and predictable while in the second it varies with each individual.

An outcome which is a risk to one person may be an uncertainty to another. For example, the probability of a house burning down, to a farmer, is unpredictable, while to the insurance company it is a risk which in aggregate can be predicted with some degree of certainty.

Basically then risk is objectively measurable while uncertainty is the psychological response of an individual toward risk. Risk is a

---

[14] Ibid

combination of hazards and is measured by objective probability; while uncertainty is measured by a subjective degree of belief.[15] In view of these definitions on risk and uncertainty, this study will use the two terms synonymously and use risk whenever references are made to these two conditions, leaving it to the reader to remember the real differences.

RISK CLASSIFIED

Risks may be identified and classified by their causes, their effects, their nature, their sources or other suitable dimensions. The appropriate method depends greatly on the purpose of the classification. In this study, the most appropriate method appears to be one based on type of risk.

Conditions giving rise to uncertainty about the future are the sources of risk in the business. These sources may be classified as dynamic (speculative) or static (pure).

Dynamic sources of risk are caused by change which can either create profits or losses. Dynamic risks are ambivalent and can be referred to as speculative. Static risks are concerned with losses caused by the irregular forces of nature or the mistakes or misdeeds of human beings. Static risks can only bring loss and are referred to as pure risk. A similar classification was used by Willet[16] and

---

[15] Pfeffer, I., Insurance and Economic Theory. Published for the S.S. Huebner Foundation for Insurance Education, Homewood, Illinois: Richard Irwin Inc., 1956.

[16] Willet op. cit.

Mehr and Hedges[17] to classify risk.

Dynamic or (Speculative) Sources of Risk.

Dynamic (speculative) risk exists when there is a chance of gain as well as a chance of loss. A business operating in a dynamic situation is subject to change and uncertainty. Management, being a function of human resources, is responsible for coordinating and supervising the resources of the firm. Management exists because decisions must be made in an atmosphere of risk and uncertainty. If action took place within a static, perfect knowledge situation, outcomes can be known with certainty. However, as the firm operates with less than perfect knowledge; there is indeed a need and function for management in the formulation of expectations of alternative courses of action. Costs must be established; market demand must be anticipated and many other decisions must be made. Furthermore, many changes can happen to upset these expectations--strikes may arise, surpluses may be produced, thus lowering price, machine repair costs may rise, fertilizer may increase in price, government tax policy may increase cost of materials, and changes in popular tastes, technology, new inventions, may create new problems which will thus require new decisions.

Agricultural property may also be destroyed or damaged by intentional acts of man. Farm property is as subject to damages from wars, riots, vandalism, arson, attempted theft, civil commotions or

---

[17] Mehr, R.I., and Hedges, B.A., Risk Management in Business Enterprise, Homewood, Illinois: Richard D. Irwin Inc., 1963, p. 474.

other civil actions as are other industrial properties. During a war farm property may be damaged by bombs, grenades, and plane debris. Thus, changes in the behaviour of the political, social, or economic environment are dynamic sources of risk--and are called dynamic .

Management Decisions

Change is inevitable. As the manager is operating in the presence of change, he must continually formulate new policies with respect to production, marketing, finances and personnel. In his role as farm manager he must make decisions as to what to produce, how much to produce, how large an inventory to carry, what marketing channel to use, how to finance, how and where to recruit hired labor, what pay schedule to adopt, how to maintain healthy relationship with other businesses, to name but a few. The exact source of management risk is not that decisions must be made, but that decisions must be made without all the necessary knowledge.

Management risk will be discussed under three main categories: a) marketing risks b) production risks and c) financial risks.

Marketing risks

Marketing risk arises not so much from change itself but from the inability to predict either the extent or time of these changes.

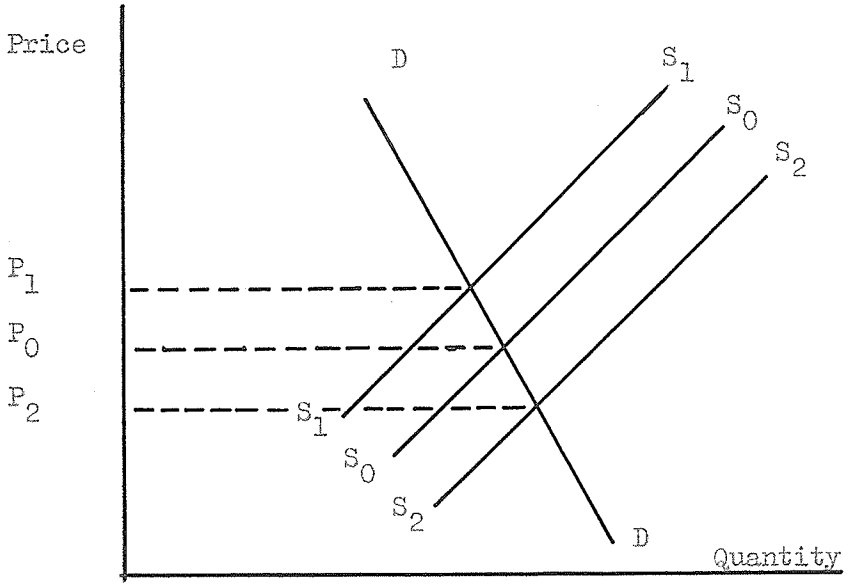
Marketing risks are those elements which make it uncertain as to whether the production can be sold at a price high enough to yield a fair return on investment. The time period between production commitments and the ultimate sale of the product is one of the most important elements in eliminating uncertainty in the market. More specifically,

marketing risks consist of factors that influence either the monetary or the real demand for the goods or services involved. For example, general price levels may suddenly decline after a high equipment or building investment has been made, making it impossible to dispose of the crop or livestock at a profit, and, perhaps, requiring disposal at a loss. New innovations can render stocks of merchandise obsolete. For example, evergreen Christmas trees have declined in demand mainly because of the innovation of Christmas trees made from plastic material.

Probably the greatest cause of price fluctuation in agricultural products arises from their relative inelasticity of demand and supply in a given period. In the short run, the demand for agricultural products remains fairly stable, however, the supply of agricultural products tends to vary from season to season depending largely on weather conditions. With seasonal variations in supply, prices become uncertain. A partial crop failure due to drought or other causes, while the demand remains fairly constant, will push prices up. A bumper crop, on the other hand, will force the price down.

FIGURE 2

Supply and Demand of Farm Products in Short Run



This can be illustrated by figure 2. Let us assume that prices are not restricted by government programs and that the anticipated price is P_0 and the demand is DD, while the average supply is S_0 S_0. If the farmer experiences a bumper crop his supply will increase S_2 S_2. Demand is relatively inelastic in the short run. Prices will drop to P_2 showing a decrease in price of P_0 and P_2. On the other hand, if farmers experience decrease in crop due to drought, the price will increase to P_1.

While inelasticity of demand is responsible for uncertainty of prices of agricultural products in the short run, the inelasticity of supply is likely to cause the greatest amount of uncertainty in the long run. Because of the waiting period necessary for production, a farmer cannot readily adjust his production and organisation as quickly as the market dictates. Christmas trees take 10 years to grow to maturity. Cattle mature and produce only after three years. Thus, the crucial questions for the manager becomes: Will the anticipated demand be realized? or Will changes occur drawing prices down to a low level, making it unprofitable?

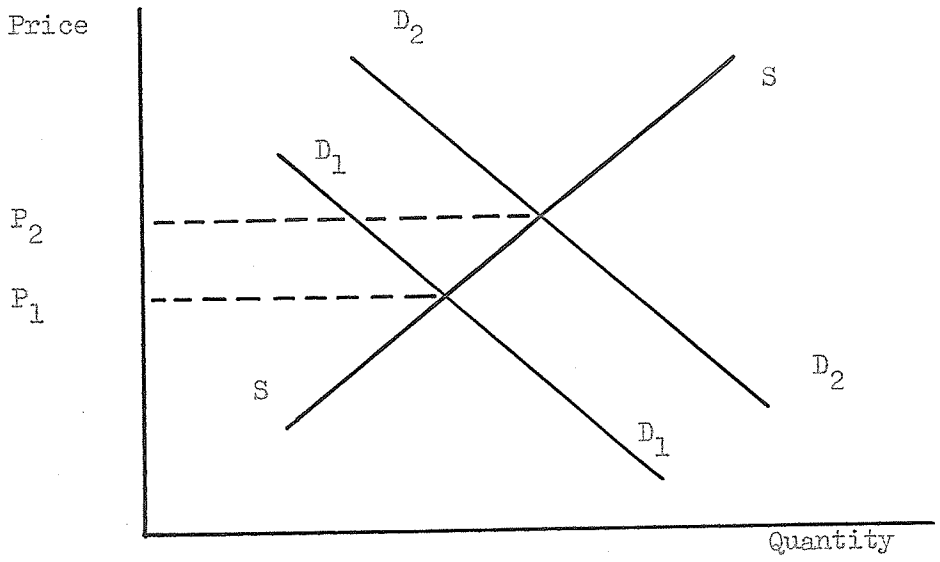
> The very nature of farm enterprise, therefore, demands that the farmer must plan ahead, trusting to stability of demand for his aggregated commodities and prepared to lose upon individual contributions. But planning ahead involves considerable risks since the anticipated demand may not occur through various reasons, upsetting the farmer's production plan. Once the plan is started and is fairly advanced, the farmer cannot immediately discontinue or retrace. Meanwhile he stands to bear the losses incurred in planning the expansion.[18]

---

[18] Ray, K.R., Principles and Practices of Agricultural Insurance. Sankar Ghosh Lane, Calcutta: Bookland Private Ltd., 1958.

FIGURE 3

Supply and Demand of Farm Products in Long Run



As shown in Figure 3, farmers may anticipate price P_2 at the present market situation and plan accordingly. However, innovations or changes may occur reducing the demand for the product to D_1 D_1, reducing anticipated prices to P_1 making it unprofitable.

Production Risks

The operator must also make decisions involving production and personnel management. Production risk is primarily concerned with allocation of resources, labor, and technology. Risks in production are mostly those involved in making decisions on resource allocation, cost of materials, labor supply, use of technological changes, use of untried processes and new inventions. As most commercial farmers are interested in learning more about existing production techniques and substituting new techniques whenever possible, they are always facing the risk of unrealized profits.

Production innovations to increase yields and reduce costs may also differ greatly from those anticipated when planning the production program.[19] While a farmer may be interested in substituting new techniques, new equipment and machinery, new varieties, new species, to produce at a lower cost, production yield may differ greatly from those anticipated in the planning stage of the production program, making it highly unprofitable. The farmer is also interested in understanding price trend of raw materials. For example, a farmer may ask himself whether he should purchase his fertilizer in the fall or in the spring. Will fertilizer increase in price or decrease in price? Will there be sufficient supplies? The farmer must find the best answers to similar types of questions by whatever means he has available, but since he has to make those decisions under dynamic situations he is never certain whether he is right or wrong.

Perhaps one of the most important factors causing the greatest amount of instability and uncertainty in agriculture is the rapid change in technology and innovation. Imperfect knowledge of the future makes long term investment such as farm buildings and even intermediate investment such as machinery a rather risky proposition. For example, farmland of the prairie provinces is dotted with horse barns which stand as monuments of the pioneer days of production. These horse barns can only be converted with difficulty to to-day's modern methods of farming. Thus, emphasis must be given to new investments, new buildings, new methods and new technology so that they will not become obsolete before they have been fully utilized.

---

[19] Johnson, op. cit.

The introduction of new machinery, new investment, and techniques may not only render farmers' previous investments obsolete, but may require additional organizational changes. The introduction of the combine, is an example of this risk. This innovation made many changes; it required additional capital, rendered the old threshing machine valueless, and it created new problems in farm organization requiring less labor but more labor skills. The replacement of horses by tractors also created new problems rendering the horse barn obsolete, requiring additional capital, fuel, grease, better trained labor and eventually a complete reorganization of farm production methods.

New materials, and new innovations may either be highly successful, unsuccessful or even detrimental to the business and to the public at large. Many new chemicals, fungicides, and various other drugs have been shown to be detrimental to human health and the health of animals. Dieldrin and aldrin, two very reliable and rather inexpensive grasshopper insecticides, have been shown to be extremely hazardous to human health. These two products were banned as grasshopper control in Manitoba in 1965. The premature and improper use of a new wild oat chemical on a large scale was also shown to be very costly to some farmers in Manitoba, in 1950. The use of some herbicides to control weeds in fields and shelterbelts is a further example of an unsuccessful innovation.

Risk in personnel administration involves questions dealing with employees of the farm.[20] Changes in the relationship between employer

---

[20] Nielson, J., Structural Changes in Commercial Agriculture, "Managerial Requirements of Farm Firms, 1980 Proceedings of a Conference held in Chicago, Ill., CAED Report 24. p. 68.

and employee can have a tremendous impact (favorable and unfavorable) on the farm business. The operator is challenged to make efficient use of labor resources, while at the same time maintain good employer-employee relationship. He must answer some of these questions. What salary and fringe benefits are required to maintain good relationship and increase productivity? What reaction will the employee have to managerial decisions? Is he honest? Can he be trusted? Managers must face personalities and human behavioural changes which are very difficult to predict and are usually identified as personnel risks or part of production risks.

The manager in making production decisions must be able to answer some of these questions. How fast will these changes occur? What changes will occur? To what extent will they affect the production? Will these new developments prove successful? These are a few questions which must be answered by the producer before implementing decisions.

Financial Risks.

In the management of a farm the financial function of a farmer is the raising and administering of funds. Probably one of the greatest hazards facing the agricultural industry and the farm today is forecasting needs of the farm. Inadequate capital is frequently a cause of business failure. There should be sufficient capital to operate the farm and take advantage of economies of scale. When the manager over extends the use of credit relative to his ability to service the debt, there is also the risk of financial insolvency.

In arriving at a balanced level of financial need many questions have to be answered. What is the proper balance between the use of short

term, intermediate term and long term credit? What is the proper equity-asset ratio? Should more credit be used to expand the business? Will production income arrive in time to meet payment commitments? What criteria should be used to borrow additional credit? What level of investment is necessary to maintain a level of income sufficient to provide the family with a reasonable level of living? These and many more decisions, based on criteria and personal experience, have to be made by the farmer, to make the business successful.

The problem of adequate farm size is a controversial issue in agricultural economics. Criteria such as acreages, investment, production have been used to define adequate size of family farms. In a study carried out by Walker "gross volume product" and "improved acreage" appeared to be the most sensible measures of farm size. Cost economies were very substantial on farms that produced a volume of output up to $10,000. per year. The reduction in unit cost continued up to the point where approximately $30,000. worth of crop product had been produced. "The optimum size of farm in terms of volume of output is therefore the farm firm that can produce about $34,000. worth of crop product. This optimum size farm consists of 883 improved acres".[21] He further remarked that many farms in Manitoba could benefit greatly from expansion to take advantage of economies of scale. However, farmers were reluctant to make changes because of subjective risk and uncertainties. This condition was further aggravated "by the fact farmers are

---

[21] Walker, H.V., Economics of Farm Size in the Carman Area of Manitoba, Unpublished Ph. D. Thesis, University of Manitoba, Department of Agricultural Economics, 1964. pp. 167-168.

interested in providing their own capital and labor.[22] Though economies of scale do exist in agriculture for certain farms it must be remembered that, this study was carried out in Carman and may have some limitation in application in other areas of Manitoba or on other farms. It is the individual farmer's responsibility to determine the optimum size. A young farmer is also faced with income instability, where it is essential that he survive the first few years in order to be in business in the long run.[23] For survival the operator requires a safe equity asset ratio which is different for each farm and depends on a combination of many different factors (i.e. management ability, available resources, source of credit, etc.). The fact that so many financial decisions have to be based on past experience with an eye on the future, it is evident that financial risk is extremely difficult and far from certain.

Social and Political Changes

Changes in the social philosophy or political influences of a group may affect the business markedly. Some help farm production while others interfere. To the extent that businesses are influenced by local, provincial, national and international changes, they are faced with political and social changes.

Farmers are subject to important government restrictions in making decisions. In the interest of public welfare, governments place limitations and prohibitions on the freedom of individual action. For instance, farmers are told that they have to produce a certain quality

---

[22] Ibid p. 173.

[23] Heady, op. cit. p. 475.

of product (for example milk with a specified maximum number of bacterias) and that they cannot do certain things (for example, use certain herbicides). Furthermore, some regulations are not always clear and change from time to time adding to the confusion and potential liability.

Government assistance has long been demanded by farmers to countervail in the market place. In the past farmers had overwhelming political influence and prestige, which gave them the programs that they wanted. However, as the population becomes more urbanized their political power diminishes. Many of the government assistance programs have been aimed at preserving the family farm, with subsidies and sympathetic programs.

The question that plaques the farm population is: Will the increasing urbanized population (labour and consumers) be willing to support a program aimed at preserving the status quo and helping a select group?

Political change or development can also cause a reduction of business profits by bringing about either a decrease in operating income or an increase in operating costs. Government increases in taxes on material goods, minimum wage laws, safety regulations, public health hazards acts, gas tax regulations, and government competition for durable goods during the war, are examples of government developments and changes that have influenced production costs.

As farmers are faced with these uncertainties, they are faced with political risks.

The introduction of a new product with the expectation that it will meet a need or create a new demand is probably one of the most characteristic features of modern industrial life. Large amounts of funds are invested by industries to develop new products or utilize present products. Progress by innovation is risky. Yet this progress in innovation can influence farm production considerably by making use of waste products which could not have previously been used or by replacing products which were formerly produced on the farm.

Static (Pure) Sources of Risk

Static risks are those which are inseparable from any form of economic activity. They will be present in stationary society as much as in one that is either progressive or retrogressive. They are involved in the possibilities of loss as a result of the forces of nature, or the actions of the carelessness or criminality of human beings. It should not be interpreted that by static we mean perfect knowledge of the future, because risk involves the possibility of a divergence between the expected and actually realized courses of events. Every divergence will result in a change in either capital, investment or other disturbances and so change the static adjustment. However, static risks would continue to exist even in a society that experiences no change in political, social or economic environments.

To the firm, one of the major sources of static risk is the risk of physical property loss or damage to property. Property risks exist when property in which the family or firm has a financial interest may be destroyed, damaged, reduced in value or lost.

Property may be physically destroyed, damaged or impaired by many natural causes; (water, earthquake, lightning) or by careless and criminal acts of human beings (arson, theft, etc). Mehr and Hedges recognized five main classes of static risks;[24]

1) Physical damage to assets.

2) Loss of possession by fraud or criminal action.

3) Loss of ownership through an adverse judgment of law.

4) Loss of income resulting from damage to property of others.

5) Loss of net income resulting from death, or disability to operator, or other persons directly or indirectly associated and/or influencing the business (other members of the family).

In this study, we make use of the above classification of static risks, to stratify farm business risks. The fourth type of risk was not discussed primarily because of its minor role in the study. It must be recognized, however, that it may be as destructive as other risks when it occurs.

Physical Damage to Assets

Farm Business Assets subject to static risks may be classified as: 1) real property, 2) tangible personal property and 3) intangible property. These assets may be damaged, destroyed, or lost, either by natural hazards, or by unintentional acts of man, or by intentional acts of man.

Real estate property, buildings and other tangible goods are subject to destruction or damages by nature. Buildings might be burned down by lightning. Water may cause soil erosion and depletion of soil

---

[24] Mehr and Hedges op. cit. p. 60.

fertility. Insects and other pests may destroy or damage grain, buildings or equipment. Windstorms, tornadoes, or earthquakes may damage and destroy property.

Risk of destruction of property by natural hazards fall into two categories (a) physical hazards and (b) biological hazards. Property risks due to physical hazards comprise perils of nature through weather or other meteorological causes such as hail, windstorm, drought, excess moisture including flood and innundation, excessive heat, natural fire, and lightning, untimely rain, frost and freezing, and late spring or fall. The hazards of the weather are not new on the prairie provinces. Many floods have been experienced in the Red River Valley,[25] as far back as the time of the Selkirk settlers. In fact agricultures' main characteristic has been its dependence on weather and its variability in yield.

Variability in farm production is also caused by biological factors such as diseases, rust, smut, contagious diseases, infectious diseases, illness, insect damage, mold, and rodents. The destruction of crops and livestock by biological factors are also well known throughout the prairies. Many cattle had to be destroyed due to tuberculosis in the 1950's or the outbreaks of rabies in Manitoba in 1963 or the wheat rust epidemic in 1954 where crop yields were reduced considerably. Natural hazards are a continuous threat to farming and have caused considerable hardship to agriculturalists throughout the prairie provinces.

---

25 Strange, H.G.L., A Short History of Prairie Agriculture, Winnipeg: Searle Grain Company Ltd., 1954.

Farmers are more concerned about weather than any other risk. They continually speak about weather, rain or heat.[26] They continually try to protect themselves against any possible losses due to weather uncertainties by buying larger equipment, by constructing buildings and insulating buildings to fight the cold or to protect against the blazing sun.

Farm property may also be destroyed, or damaged by unintentional acts of man. Man may also cause property damage by being negligent in his operation. An example of negligence would be carelessness in repairing the brakes on a motor vehicle which may lead to accidents and property damage. Small tools (i.e. wrenches, pliers) may also be lost by leaving them lie anywhere, cattle may be lost by faulty fences, erosion may occur by improper use of soil management. These and many others are examples of risk occurring by involuntary actions of man but are potential sources of loss.

Agricultural property may be destroyed or damaged by intentional acts of man. Farm property is as subject to damage from human nature as any other industrial property, i.e. by bombs, shells, grenades, riots, vandalism, arson, attempted theft, and civil commotions.

Loss of possession by Fraud or Criminal Violence

An individual may obtain possession of property of others by

---

[26] This was especially noticeable when the interview was conducted. At the time of the interview it was fairly dry and farmers were concerned about extra moisture. The personal experience of the author as an agricultural representative may also attest to the importance that farmers attach to weather.

illegal means such as burglary, robbery, embezzlement, forgery, misappropriation, willful abstraction, willful misapplication, swindling etc.. Agricultural property is not immune from theft or burglary. Farm property such as tools, equipment or fuel are exposed to theft by outsiders or from farm help and represent a loss to the farm unit. Robbery - the act or practice of robbing somebody else's possession by violence or by intimidation may occur in farming. Farm property is also exposed to burglary and is subject to neighbours and communities losses. Farm homes are usually a fair distance from one another, making them easily accessible to burglary and theft. Embezzlement is fairly easy in agriculture (for example, if a farmer hires custom workers to spread herbicide, it is very easy to steal herbicide rather than spread it on the field). Forgery, the act of forging, fabricating or producing falsely, may occur in agriculture. The crime of falsely and fraudulently making or altering a writing or instrument which if genuine would be of some legal effect upon the rights of others. For example, writing a false cheque by a person other than the owner, without authorization. Misappropriation, the act of intentionally misapplying property for a certain person or use, may occur in farming. Though it can more easily happen on larger sized farms, and on corporate farms, it may also occur when farm help or another member of the family is assigned a certain responsibility. By intentionally missallocating resources a destruction or a loss may be caused to the farm firm. Willful abstraction is the voluntary act of withdrawing or stubbornly refusing to listen to reason. For example burning stubble on a slope knowing fully that the steep slope

will erode if left bare. This will reduce fertility and eventually production. Swindling is the act or process of obtaining money or property from one by fraud or deceit. Dishonest persons, businessmen, hired help, can by dishonest acts or by trickery induce the farmer to part with some valuable object. The farm business is continually exposed to fraudulent and criminal violence by people associated with farming which may cause direct losses to the property and which would increase production cost or reduce profits.

Loss of Ownership through an Adverse Judgment of Law

Business firms may be held legally responsible for damages, or destruction of property belonging to other people, cuased by their negligence, either by the owners themselves, their employees or their property. Under certain conditions, the person causing the loss may be held financially responsible by law to compensate and restitute the loss.

According to Heins and Williams a person or firm is exposed to two kinds of liabilities[27] civil and criminal. In criminal action the actual legal procedure is begun by the crown or the law enforcing officer on behalf of the society. Criminal liability is usually clearly defined by statute or administrative rule. In civil liability the statute, administrative rules, and prior court decisions announce the rights of the parties as opposed to each other. Civil liability action is normally taken by one party against another party for the wrongs alleged. Without question, a farmer is exposed to the

---

[27] Williams, G.A. Jr. and Heins, R.M., op. cit. p. 14.

possibility of liability and casualty claims arising from numerous sources.

Here are a few examples of the most common sources of liability loss; (customers may be injured on the farm, members of the public may be injured by a farm vehicle), the products sold may be defective or contaminated by various sources, causing bodily injury and disease, employees may be injured or disabled, and killed, a visitor may be injured on the premises by an animal or by other objects, breach of contracts may occur, and other people's property may be destroyed, and damaged.

Penalties consist of indemnity for the loss or punitive damages imposed by the court, restitution of property, or loss, injunctive relief precluding future conduct or action, court expenses, and even possession of property. "To the victim of a liability suit, the loss is just as real as though the assets used to pay the damages and other costs were destroyed by fire or were lost by theft".[28] In farming, while the probability is small, the size of loss may be large and requiring the farmer's entire savings to satisfy a judgment from a liability claim.

Loss of Net Income Resulting from Death or Disability of Key Persons

The loss of a key manager, employee or owner by sickness or by death may affect a firm as severely as the loss of a physical asset. It must be recognized that continuous health and life is an uncertainty.

---

[28] Mehr and Hedges op. cit. p. 10.

Death may occur suddenly and prematurely. Disability by sickness, disease or accident may impair the services of an important person, resulting in higher production costs or lower production.

The untimely death of a key person may cause serious losses to the business and family. It may occur at a time when the firm is heavily mortgaged and requires continuous management for success. It may occur when the firm depends on the right decision for success. It may also occur when the family depends heavily on one person's income for necessities and economic security. As the firm is faced with higher cost of production, through improper decisions, unsure tenure, and change in management, resulting from premature death, it is faced with this risk.

Disability, whether permanent or temporary, may cause serious hardship to the family and the firm. It is not uncommon to hear that a farmer had to quit farming for reasons of health. In such circumstances it may be as serious as premature death through high medical costs and improper management, and long delays in decisions. Furthermore, as temporary sickness or disability causes delays and extra expenses, especially when it occurs at critical periods such as harvest, and seeding, farms are exposed to this risk.

CHAPTER III

RISK MANAGEMENT

Management is responsible for coordinating and supervising the resources of the firm in a dynamic environment. It is within this dynamic system that the manager must formulate his expectations of the future for alternative courses of action. Without uncertainty there would be no place for management in the coordinating sense, except for establishing initial plans. Under perfect knowledge, a variable input would be utilized (in the case of one output with one variable input) until output maximized profit. Equilibrium would be reached at the point where:

$$MC_x = P_x = MVP$$

When knowledge of the future is uncertain, management must function continuously. Decision making under these conditions is related to, dependent on, and in turn influences the managerial processes of observing and analyzing. As uncertainty increases, the number of decisions which must be made by management also increases. The greater the number of decisions, the less perfect they become because the supporting knowledge upon which they are based become less perfect. Under these circumstances, the manager must decide upon a plan of action which will maximize his utility. His decision to use formal and informal insurance schemes[1] will depend to a large extent on his utility preference for risk relative to security and expectations in regards to future events or future opportunities. As a farmer is faced with uncertainty, he must choose among alternatives that differ in their degree of risk. For

---

[1] Both types of insurance schemes are basically the same. Both have costs. Premium payments in the case of formal insurance and loss of income (opportunity cost) in the case of informal insurance.

example, a farmer who buys fire insurance on his barn is accepting a certain loss (the insurance premium) in preference to the combination of a small chance of a large loss (barn) and a large chance of no loss. In this case, he is choosing a certainty in preference to uncertainty. A farmer who buys a lottery ticket is subjecting himself to a large chance of losing a small amount (the price of the ticket) plus a small chance of winning a large amount (the prize) in preference to avoiding both risks. He is choosing uncertainty in preference to certainty. The major economic decisions of a farm manager in which risk plays an important role concerns the use of variable inputs to maximize his satisfaction. Friedman and Savage[2] explain this concept in terms of maximization of utility (indifference curves). Under the conditions on which the indifference curve analysis is based, very little extra effort is required to reach numerical utility (choosing among alternatives involving risk) to maximize expected satisfaction values.

> In choosing among alternatives open to it, whether or not these alternatives involve risk [a farmer] a consumer unit behaves as if (a) it had a consistent set of preferences; (b) the preferences could be completely described by a function attaching a numerical value -- to be designated "utility" -- to alternatives each of which is regarded as certain; (c) its objective were to make its expected utility as large as possible [3]

To explain this reaction to uncertainty they developed a theory of insurance and a theory of gambling.

It was assumed that total utility was a function of money income

---

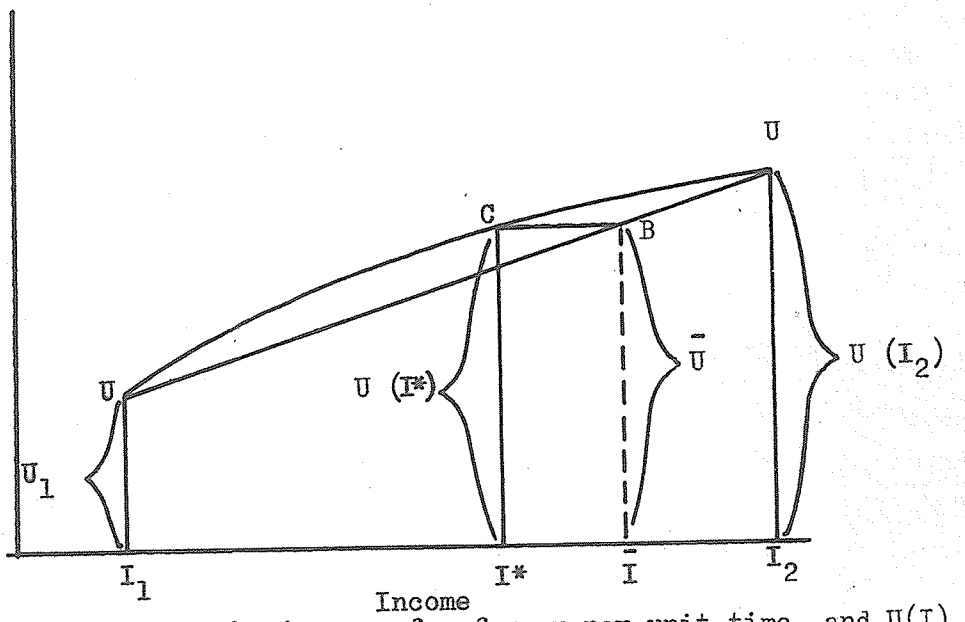
[2] Friedman, M. and Savage, L.J. The Utility Analysis of Choices Involving Risk, Chicago: The University of Chicago Press, "The Journal of Political Economy". Vol. LVI 1948 pp. 279-304.

[3] Ibid. p. 287.

alone. When an entrepreneur insures, he exchanges a risk situation for a certainty situation.[4] Before insuring, the individual normally runs a chance (p) of incurring a loss as well as a chance (1-p) of not incurring a loss. He is retaining his present income earning power I_2 (Figure 4). After insuring, the entrepreneur is certain that he will possess some earning power I* which is ordinarily less than I_2. This new earning power must have more utility to the person taking insurance than the average of the two possible outcomes in the uninsured situation. This implies that losses become increasingly important as they increase in size.

FIGURE 4

Utility Choise Analysis for Risk Preference



If I represent the income of a farmer per unit time, and U(I) the utility attached to that income if it is regarded as certain. Let us measure the utility of a given income earning power on the vertical axis and the income earning situation on the horizontal axis:

---

4 Some interpretations taken from Bradford, L.A. and Johnson, G.L., Farm Management Analysis. New York: John Wiley & Sons Inc., 1953. pp. 403-410

where,

I_2 = uninsured income position if no loss occurs

I_1 = uninsured income position if a loss occurs

$\bar{I}$ = average dollar of I_2 and I_1, weighted according to the probability of loss to gain, in the following proportion

$$\frac{1-p}{p} \left(\text{i.e. } \frac{\bar{I}-I_1}{I_2-\bar{I}} = \frac{1-p}{p} \right)$$

$$= p(I_1) + (1-p) I_2$$

The utility curve UU is the utility derived from each income. The distance $U(I_2)$ measures the utility of I_2 and $U(I_1)$ the utility of I_1

The chance of a loss = p

The chance of no loss = 1-p

Then the average utility of uninsured situation is:

$$\bar{U} = p \cdot U(I_1) + (1-p) \cdot U(I_2)$$

weighted by the probabilities of their occurrences.

To insure, the utility of I* must be greater than the average utility I

Thus, to insure, $UI^* > \bar{U}$

If $UI^* < \bar{U}$, then the individual will prefer not to insure. In this case he will refuse insurance.

When $UI^* = \bar{U}$, he will be indifferent.

Thus, it may be inferred that losses have increasing marginal disutility as they increase in size.

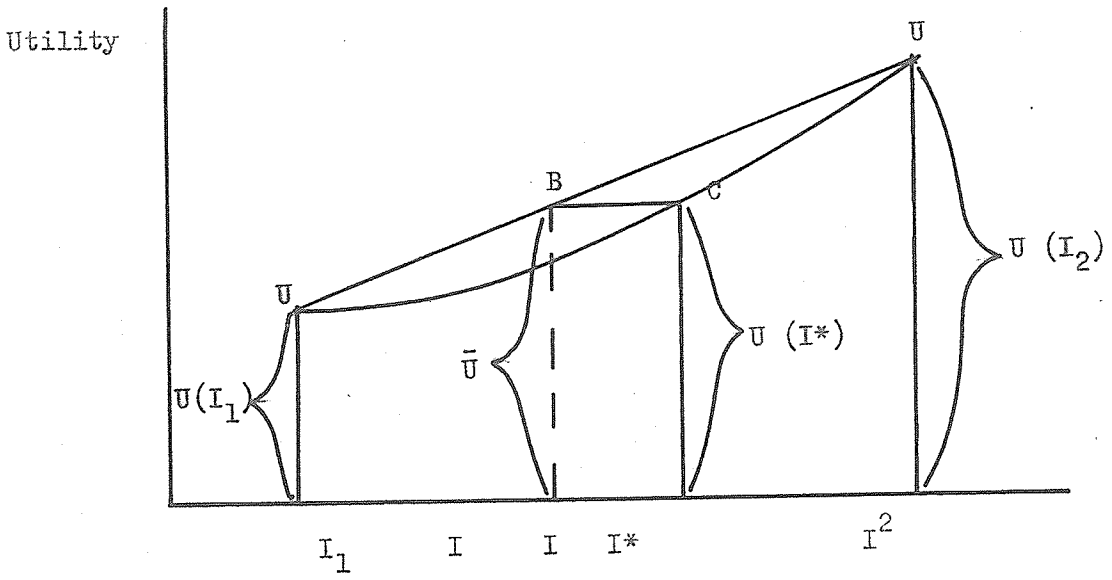
The concept of chance taking in every day business decisions or gambling is relatively the same as insurance, except that the utility function of the individual, if he is to gamble, is usually concave from above.

In a risk situation, the entrepreneur exchanges a certainty for a

chance situation involving probabilities of both a gain and a loss. The average income of the loss and the gain situation is usually less than what the income would be if the chance were not taken.

FIGURE 5

Utility Choice Analysis for Certainty Preference



Let us assume that before taking a risk, a farmer has control of assets yielding a given income I*.

After taking a chance, the probability of receiving a higher income I_2 is (p) and of receiving a lesser income I_1 is (1-p).

$\bar{I}$ = average of I_1 and I_2 weighted according to chances of gain or loss

$= p\,(I_2) + (1-p)\,(I_1)$

I_1 = chance taking income with a loss

I_2 = chance taking income with a gain

The utility of this income is:

$\bar{U} = (p)\,(U \circ I_2) + (1-p)\,(U \circ I_1)$

If the average utility (straight line) is greater than the utility of the income (U . I*) before taking a chance, the chance is taken.

i.e. $\bar{I} > I^*$

In this case he will not be willing to pay more than $I^* - \bar{I}$ for chance taking.

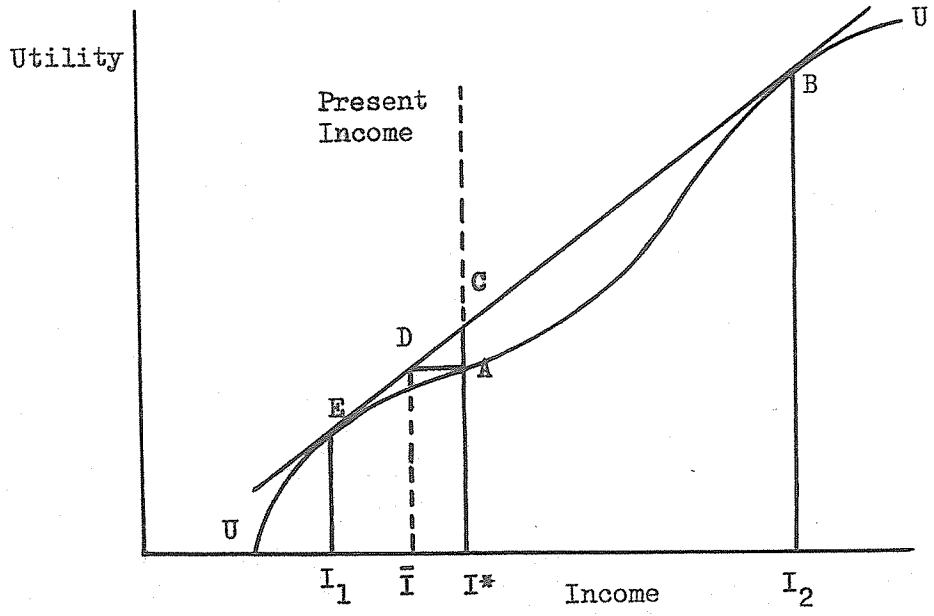
This implies that the utility of gains in income and income - producing ability must increase at an increasing rate.

Thus, income and income-producing assets have increasing marginal utility for a person taking a chance.

The behaviour of individuals to insure and gamble simultaneously, combined with the multiple prize in formal gambles (everyday business decisions) tend to indicate the following utility curve UU.

FIGURE 6

Illustration of a Typical Shape of a Utility Curve



If entrepreneurs formally insure as well as take chances, it implies that the loss of utility accompanying decreases in incomes below their present income level must increase at an increasing rate, and that their gain in utility for incomes higher than their present income must increase at an increasing rate at least for certain increases. As there are more than one big prize in business (analogous to gambling schemes, such as a lottery) the utility derived from chance taking does not continue to increase indefinitely at an increasing rate, as evidenced in the last portion of the curve.

An illustration in gambling may help explain the concept. Let us assume that an individual has a current income at the initial convex segment, say at point I*. The entrepreneur would be willing to insure against the loss, if the premium is not higher than $(\bar{I}-I_1)$, since a chord from the utility curve at I* to the utility curve at the lower income $(\bar{I}-I_1)$ that would be the consequence of the loss would be everywhere below the utility function. He would not be willing to take a small gamble.

The entrepreneur would be willing to engage in a small chance of winning a relatively large sum equal to $I_2 - I^*$ and a large chance of losing a relatively small sum equal to $I^* - I_1$. Under these conditions, the farmer would clearly prefer the gamble since the expected utility I*C is larger than the utility I*. Thus, the individual would be willing to pay a maximum of $I^* - \bar{I}$, in excess of the actuarial values for a gamble involving a chance of $(1-p)$ of winning $I_2 - I^*$ and a chance p of losing $I^* - I_1$. This gamble is equivalent to business decision offering a chance of 1-p of an income $I_2 - I_1$ in return for a ticket (input) at a price of

$I^* - I_1$, the prize (income) being such that $\bar{I} - I_1$ is the actuarial worth of a ticket (input) (i.e. equal to $(1-p) \times (I_2 - I_1)$. In this case if the individual won the prize, his net winnings would be $I_2 - I^*$, since the cost of the ticket (input) must be subtracted from the prize (income). Several prizes would make the gamble considerably more attractive thereby increasing a person's willingness to participate.

This implies that a person may take chances and insure simultaneously. It also implies that an individual, prefers larger to smaller certain incomes, is willing to take small chances to receive long chances for big gains, is willing to insure against major losses, but refuses to take small chances or engage in petty insurance schemes.

Asset preferences, and decisions to gamble or insure are determined mainly by expectations (subjective and objective) in regards to future opportunities, along with preferences either for risk or security.

Boulding[5] developed a theory of uncertainty or an indifference preference map, with the most probable (expected) value on the vertical axis (OY) and some measure of the certainty of this value on the horizontal axis (OX), the possible ranges of values. These were developed by using the theory of insurance and gamble.

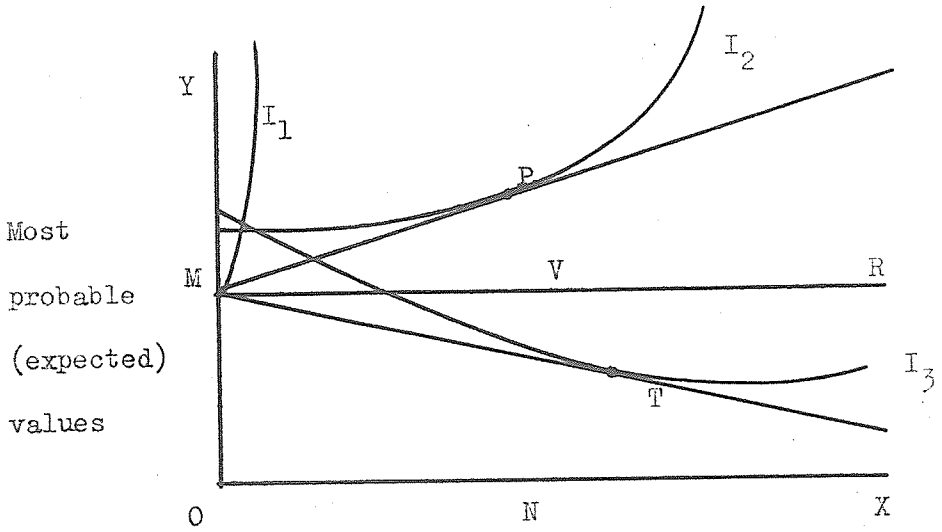
Suppose that point P represents a certain income NP with a range of income ON. P would represent an average value of any income having a range of ON, but which would more likely fall at P.

---

[5] Boulding, K.E., A Reconstruction of Economics. New York: John Wiley & Sons, Inc., 1950. pp. 116-134.

FIGURE 7

Indifference Analysis of a Theory of Gambling



Suppose that an individual has a capital sum of a, with objective odds of x to 1, and with a subjective valuation of y to 1.

He bets a sum n,

Then, the extremes of the range of possible values are (a-n) if he loses, a + n (x-1) if he wins.

The range is:

(1) $r = nx$, indicating that as n increases the range increases.

The expected subjective value of the assets is:

$$v = \frac{(a-n)\ (y-1)}{y} + \frac{a + n\ (x-1)}{y}$$

(2) $$= a + \frac{n\ (x-y)}{y}$$

Eliminating n between equation (1) and (2) we get the equation of the opportunity line

$$v = a + \frac{r\ (x-y)}{xy}$$

$$= a + r\left(\frac{1}{y} - \frac{1}{x}\right)$$

If x = y (i.e.) the subjective and objective odds are the same, the opportunity line becomes simply v = a i.e. line MR. If x exceeds y, the line will have a positive slope (MP), and if y exceeds x a negative slope (MT).

A system of indifference curve may be postulated. If the operator is a risk averter, the curves slope upward. This implies that to induce him to take a longer chance the opportunity or expected value must be larger. The indifference curve also becomes steeper at higher ranges, indicating that the more risk an individual is bearing, the less he wants to accept more risk. The slope of the indifference curve indicates the increase in range of values which the individual would be willing to accept in return for a unit increase in expected values. Thus, the higher indifference curves are those toward higher expected values and lower risks; and vice versa.

If indifference curves are steeper than an opportunity line, like I_1, the individual will refuse to take chances, staying at M. If he is not adverse to risk bearing, his indifference curve will be flat like I_2. He will then gamble an amount represented by P, i.e. an amount $\frac{ON}{x}$ where the objective odds are x to 1.

Thus, if an individual is averse to risk he will bet only if he thinks that the chance (subjective odds) of winning are greater than the objective odds. The slope of the opportunity line, in this case, must be positive.

If his subjective odds are equal to, or less than the betting odds indicate, he will not bet, unless his indifference curves are negative, at least at the start. In this case risk must be a utility

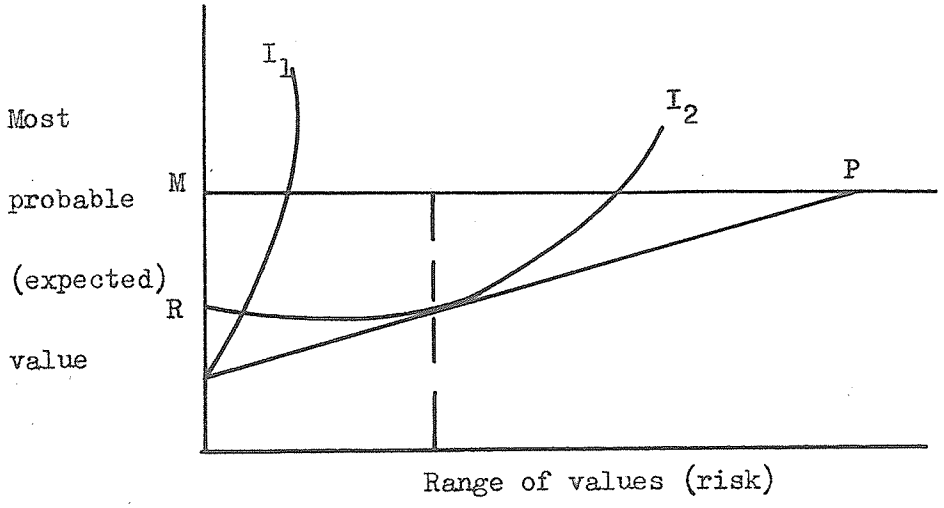
not a disutility; where he is willing to give up expected values in order to have greater risk. Opportunity line MT, could be touched only by an indifference curve like I_3.

Thus, the only logical explanation of chance taking, especially gambling, is that either people have an over estimate of their own good fortune, rating their chance of winning more than the actuarial value or having a preference for risk.

The same logical reasoning may be applied to the concept of insurance. The result of insurance at a rate equal to the expected chance is to reduce the range without changing the expected value.

FIGURE 8

Indifference Analysis of a Theory of Insurance



In this case the individual moves from P, his position without insurance, along PM towards M. If the cost of insurance[6] is greater than the expected value, the opportunity curve has a positive slope such as PR.

---

[6] This is a normal assumption, if insurance companies are to stay in business.

This may be illustrated mathematically

where A = the value of the insured object

$1/x$ = probability of destruction

Suppose a is the total cost of insurance, at a premium rate of y; so that if a loss occurs the claim paid is ay.

$A - a$ = value if no loss occurs

$ay - a$ = value if a loss occurs

The range is $r = A - ay$ (1)

The expected value (subjective) is then

$$v = (A-a)\frac{x-1}{x} + a(y-1)\frac{1}{x} \qquad (2)$$

Eliminating a, by equation (1) and (2) combined,

The opportunity line becomes

$$v = A\left(\frac{x-1}{x}\right) + (A-r)\left(\frac{1-1}{x\ y}\right)$$

$$= A\left(1-\frac{1}{y}\right) + r\left(\frac{1-1}{y\ x}\right)$$

If the insurance cost is exactly equal to the subjective expected value, i.e. $(x=y)$, the opportunity line is constant at

$v = A\left(1-\frac{1}{y}\right)$, the expected value of the capital sum.

Let us assume that

PR is the opportunity line where P represents no insurance and R full insurance.

An individual having a strong risk aversion, indifference curve such as I_1, steeper than the opportunity line at all points where they cut it, will insure fully -- at R where risk is fully

eliminated. If he has less risk aversion, such as indifference curve I_2, which touches the opportunity line at T, he will not insure fully. He will proceed down the opportunity line only up to the point T.

Since the optimum combination is not the same for all firms and families because of differences in their economic status, the nature of their exposures, their attitudes toward risk (which makes up their utility preference map) each firm must make its own plan. Consequently, managers undertake various strategies available to them to reduce risk and maximize their own satisfactions.

Strategies may be divided into two broad categories, personal and impersonal. Personal strategies refer to devices, techniques or expressions employed by a manager in dealing with other people. For example bargaining done by a manager with a neighbour or feed man, is personal. Impersonal strategies, on the other hand, can be insurance and other contractual dealings.

Formal insurance[7] involves the payment of a premium to someone in return for protection against loss from risk. Informal insurance (self-insurance) involves the case where the firm sets up its own insurance scheme with no transfer of premium to a second party. The two are distinctly different. Formal insurance implies the transfer of the risk, or a portion of it to another

---

[7] Appendix B contains a more detailed discussion on available formal and informal insurance schemes.

person assuming risk with all its consequences. In the case of an informal scheme, if disaster should strike, the person whose property is damaged or destroyed still bears the burden of the loss. Basically the difference is that formal insurance requires the transfer of the responsibility for bearing the risk to a second party, while with informal insurance the individual or firm carries the risk.

While formal and informal insurance schemes appear to be the most logical classification of protective methods, most authors recognize three basic risk management tools (1) Avoid risk (2) Prevent and reduce risk and (3) Assume risk. The latter can be further classified in (a) retention (b) transfer, (c) combination and (d) speculation.

1. Avoid

The method which appears most sensible is to avoid risk, whenever possible. It may be avoided by refusing to assume it even momentarily. A firm may avoid the risk of a particular enterprise by refusing to engage in that activity. A family may avoid the risk of automobile accident by refusing to own a car. This method has some application but it is not always the most sensible nor always the most profitable to use. Some risks, such as the risk of death, may even be unavoidable, even with the best methods. Nevertheless, in certain situations, risk avoidance is both possible and desirable.

2. Prevent

The next method is to prevent risk whenever possible. Loss

prevention and reduction means reducing uncertainties through improved techniques and organizational procedures. In agriculture many improved techniques, for example, fire resistant insulation materials, safety shields, better lighting facilities, more powerful machinery, better fertilizer, new insecticides, and new herbicides, have been developed to reduce risk. Weather safety features have been devised to rectify weather excesses--for example, drainage ditches to remove excess water, irrigation to supplement water shortage, new wheat varieties to increase yields and avoid frost, and grafting of trees to increase hardiness. However, loss prevention and reduction methods offer only a partial solution to the problem in risk management.

3. Assume Risk

A third method is to venture into an activity, assuming its risks. A farmer may assume the risk because it is unavoidable or because the advantages outweigh the disadvantages. In the latter, it would be poor risk management to use deliberately more resources to reduce risk than would be the risk itself. Risk managers may bear risks, either alone, in combination with a group of person, or by transferring the risk to a second party.

Retention of Risk

Risk may be solely retained by the firm and the family either passively or actively.

Retention is passive when the firm is not aware that the risk exists and consequently makes no attempt to deal with it.

For example, a farmer may think that the only source of potential civil liability is automobile public liability, taking no additional precaution against farm, employer's and product liabilities. Or he may know that other forms exist but postpone decisions to take insurance through negligence or lack of interest. Retention is active when the person evaluates other methods of handling risk and voluntarily decides to pay potential losses out of accumulated funds and resources. He may also decide to retain the risk when other ways of handling risks are not available. For example, farm land located near a river is subject to flooding, yet there is possibly no other way of handling flood risk than to assume it.

Whenever other methods of handling risk exist the decision to retain[8] the risk will depend upon the relative effectiveness of alternative methods, the magnitude and probability of the risk, and the relative cost of alternative methods. For example, although a farmer finds it possible to transfer the risk associated with crop hail, he may find the cost to be too high, relative to size of loss and probability of loss.

Risk retention, passive and active, may by chance be the most effective way of handling specific risk. However, passive retention of risk due to lack of knowledge or lack of initiative to learn is not a rational way of handling risk. On the other hand, active retention of risk, though it may not be the most appropriate way of

---

[8] Self insurance is a form of retention. A distinction must be drawn between this form and others. In self insurance the farmer can predict fairly accurately the losses (mean, variance) it will suffer because it has a large number of widely scattered and fairly homogeneous units, as compared to other forms where the probability cannot be known apriori or calculated.

handling risk, may be justified in many different ways: personal preferences, risk attitudes, costs, etc.

Transfer

The firm may transfer risks to some other person or group of persons in either of two ways:

a) by transferring the property or activity responsible for the risk, or

b) by transferring the risk but not the property or activity.

Risk transfer is a very useful device in risk management. One of its attractive attributes is that it explores the opportunity of one business to shift a risk to another at a price favorable to both parties. In some cases of risk transfer, the price may appear to favor both parties while in actual practices it favors only one. The value of the risk is, in this case different in the hands of the transferor[9] than in the hands of the transferee.[10] For example, the cost of repairs and breakdown might be much smaller to a large machinery dealer than to a small farmer who has to borrow capital and pay the full cost of the repairs. There is also the inequitable transfer of risk when one management group is wrong about the value of the risk transferred. In this case, the risk could be worth more or less than the price of assuming it. These are a few of the factors that influence farmer's decision to transfer risk.

---

[9] transferor--refers to the manager, farmer or operator of the firm who transfers the risk to an insurance company or someone else. At times he is also referred to as the insured.

[10] transferee-refers to the person or group of persons who accepts the risk. Insurer will also be used synonymously.

Transferring the property or activity responsible for the risk is not an uncommon practice in agriculture. In certain cases the transferee is in a much better position to prevent or reduce the loss. For example, a farmer may deposit money (property) in the bank which avoids the risk of losing it and of being robbed. In this way, money, the cause of risk, is transferred to the bank who is responsible for it and its safeguard. The activity of risk may be transferred to a second party. Risks of an activity such as raising weanling hogs may be transferred by purchasing weanlings on contract, thereby leaving the other party responsible for carrying the losses associated with raising weanlings. In this way the risks associated in owning the property or carrying out the activity are transferred to a second party.

Farmers may transfer the risk but not the property or activity. The best example is formal insurance. The insured by paying a nominal sum transfers to the insurer the risk but not the cause of risk. A person buying automobile liability insurance transfers the risk of liability to the insurer but not the car. The insurer assumes the risk of loss if and when the insured is made liable by another person while operating the automobile. Another example of risk transfer is for a landlord to ask a fixed rental fee (i.e. fix rental fee per acre rather than crop share) and thus transfers the risk of unstable income to the renter. Poultrymen very often transfer the risk of price. Transferring risk, a popular way of protecting the business, is to a risk manager one of many possible ways of handling risk.

Combination of Risk

The next method which may be employed to reduce risk is by pooling or combining risks. Risks are pooled when the number of units are increased.[11] A firm may expand internally or through a merger with other farms. This method increases the number of units exposed to a given risk. A small operator may minimize the effect of some risks by either diversifying or by combining a larger number of similar risks by expansion.

The principle of combining risk may be explained by the Law of Large Numbers which states that as the number of observations are increased, the ability to predict accurately increases. The greater the number of exposures to loss, the more likelihood that the actual loss experience will approach the underlying rate of loss probabilities.[12] By having a larger number of units to make predictions, the chance of being correct increases. The law does not, however, provide the tools to remove risk; it only helps the firm to reduce the error of inaccurate estimation. Nevertheless, by increasing the chance of predictability it helps to determine the true costs of operation and remove some of the doubts associated with insufficient knowledge.

Diversifying on a farm has long been recognized as a method for reducing risk and loss. An operator can diversify in two

---

[11] Williams, G.A. Jr. and Heins, R.M. op. cit. p. 43.

[12] Mehr & Hedges op. cit. p. 108.

possible ways: a) by segregation of the physical arrangement of assets (i.e. multiple enterprise) and b) by ownership arrangement of assets (or other persons sharing ownership in the property). Though partial diversification is the usual practice, complete diversification can be arrived at by spreading risk over a wide range of factors: by type of security, type of industry (vertical integration), horizontal integration, geographical location, time of purchase, time of selling, and date of maturity so that the firm is completely protected and balanced from any possible gains against all possible loss. However, it must be emphasized that diversification will not increase the ability to predict risk, instead it spreads the risk over a larger time period and space period in order to avoid disastrous results.

Diversification may be used as a precautionary method for stabilizing income or minimizing loss. Under perfect knowledge, a farmer will maximize his income when the marginal rate of product substitution equals the inverse price ratio of the products. The optimum degree of diversification or specialization will, to a large degree depend on the technical relationships between inputs and outputs for each product and any technical conditions of complementarity or supplementarity for the products when they are produced in combination. However, since we are not operating in perfect knowledge situations, the main pruposes of diversification are either to minimize the variance of outcome, or to put a floor under the income level.

The principle of diversification can be explained by examining

the effect of variance.[13] Diversification can be accomplished either by adding new resources to produce another product or by shifting part of the present resource to produce another product. Income variability can be lessened through diversification only if prices or yields of the products bear the proper correlation. If prices or yields, and incomes have a correlation coefficient of +1.0, combination of the two products will not reduce variability. If the correlation coefficient is -1.0, the two enterprises are optimal for protecting against uncertainty. While, a correlation coefficient of zero is preferable to a positive correlation. Let us first illustrate how the principle works. By adding an enterprise through additional resources it is possible to decrease or increase the variability of income. Let us assume that we combine two enterprises A and B each with a variance σ_A^2 and σ_B^2 respectively with correlation coefficient = p. The total variance becomes $\sigma_T^2 = \sigma_A^2 + \sigma_B^2 + 2p\sigma_A \sigma_B$.

This equation states that the variance for the combined enterprise is equal to the variance of enterprise A, σ_A^2, plus the variance of enterprise B, σ_B^2 plus the covariance of each enterprise $(2p\ \sigma_A\sigma_B)$. If the correlation coefficient from the two enterprises (p=0) the equation then becomes $\sigma_T^2 = \sigma_A^2 + \sigma_B^2$. Hence, the addition of enterprise B to enterprise A will always increase variance (for the combined operation as compared to specialization in A along) regardless of the relative variance for enterprise B. If the p is +1.0 the equation becomes $\sigma_T^2 = \sigma_A^2 + \sigma_B^2 + 2\ \sigma_A\ \sigma_B$ and the variance will be increased by

---

[13] Heady, Earl, Diversification in resource allocation and the minimization of income variability, J.F. E. 1952.

still a wider margin, having a considerably greater destabilizing effect. If however, the correlation coefficient p is -1.0 then the equation becomes $\sigma_T^2 = \sigma_A^2 + \sigma_B^2 - 2\sigma_A\sigma_B$. The variance under the combined operation can be lower than A alone. The addition of enterprise B will reduce the total variance (compared to A along) only if the quantity $2\sigma_A\sigma_B$ is greater than σ_B^2, the variance of B alone.

Diversification under limited resources can have quite a different outcome than under unlimited capital. For easier analysis, let us assume that we have constant returns to scale and no autocorrelation.

The total variance for two enterprises can be written $\sigma_T^2 = q^2\sigma_A^2 + (1-q)^2 \sigma_B^2 + 2 p q (1-q) \sigma_A\sigma_B$. Where q refers to the proportion of resources allocated to enterprise A while 1-q refers to the proportion allocated to enterprise B. (i.e. 1/2 of the resources of A have been shifted to B to produce B).

Now let us assume that $q = 1/2$ and $1-q = 1/2$ substituting in the above equation we obtain $\sigma_T^2 = .25\ \sigma_A^2 + .25\ \sigma_B^2 + \frac{p\ \sigma_A\ \sigma_B}{2}$

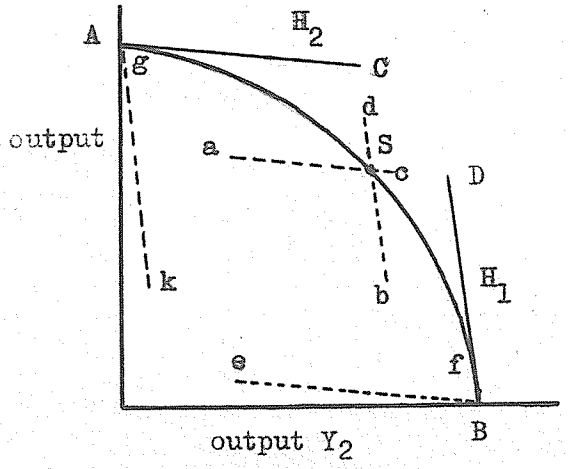
When $p = 0$ the equation reduces to $\sigma_T^2 = .25\ \sigma_A^2 + .25\ \sigma_B^2$. The total variance in this case will be decreased only if $.25\ \sigma_B^2$ is less than $.75\ \sigma_A^2$ (the amount by which the variance for enterprise A is reduced). Thus, total variance will decrease if $\frac{.75\ \sigma_A^2}{.25\ \sigma_B^2}$ greater than one. When P is + 1.0, the equation reduces $\sigma_T^2 = .25\ \sigma_A^2 + .25\ \sigma_B^2 + \sigma_A\sigma_B/2$ and the total variance will be increased if the sum $.25\ \sigma_B^2 + \sigma_A\sigma_B/2$ is greater than $.75\ \sigma_A^2$.

Also when p is equal to -1.0, the equation becomes $\sigma_T^2 = .25\ \sigma_A^2 + .25\ \sigma_B^2 - \frac{\sigma_A \sigma_B}{2}$ and the diversification leads in the direction of a lowered variance; diversion of one-half the resources from A to B will increase variance only if $.25\ \sigma_B^2$ is greater than the sum, $.75\ \sigma_A^2 + \sigma_A \sigma_B / 2$. This explains the principle of diversification as a method for reducing variability in income.

Diversification may also be used as a safeguard against disaster in one single year. The logic used for explaining this concept is drawn from the sampling theory which states that as the number of observations drawn from a single population is increased, the variance will decrease. With an increased number of enterprises, the chance is decreased that a low income for one enterprise will accompany a low income for another (providing returns for different enterprises do not have a high positive correlation).

FIGURE 9

Diversification of enterprises to stabilize income



The logic used can be illustrated by the following example. Let us suppose that there are two hypotheses:

H_1: that the price relationship is as revenue line DB - which calls for specialization in production Y_2 to realize maximum profits.

H_2: that the price relationship will be AC - which calls for specialization in production Y_1, to realize maximum profits. However, if the entrepreneur produced Y_2 alone and price relationship of H_2 is actually realized, income will be the low level indicated by revenue line e rather than by the maximum denoted by AC (the two lines are parallel indicating same price relationship) and by specialization in Y_2. The same thing will happen if plans are in terms of H_2 only and Y_1 alone produced, income will be gh. (rather than by DB). Thus to help minimize the chance of income as low as ef and gh, the farmer may select a combination of the two enterprises at S. While income will be only at ac and db if H_2 or H_1 respectively are realized the probability of low income has been reduced. However, while the chance of low income has been reduced, the probability of high income has also been reduced under diversification.

Pooling of risks may be explained by the principles of transfer and diversification. In this method groups of owners protect their losses through combination of their resources with other owners like themselves. By pooling their assets, they are able to share their losses in proportion to their respective assets; transferring part of their losses in one period to other members in the group thereby avoiding large losses in a single year. There exists many other modifications of pooling. For example where a group of

firms contribute a small annual sum sufficient to cover (losses) claim costs plus incidental expenses they are pooling. An example of this method would be mutual fire insurance companies premiums where the patrons share on the assessment based on the company's claim experience for that year.

Speculation of Risk (neutralization)

In speculation an individual tries to balance a chance of gain against a chance of loss. The best illustration of this method is to try to neutralize a bet made on one baseball team by placing a bet on the opposing team. An industrial example of this type of method is commodity futures.[14] The successful operation of hedging rests on the assumption that futures and cash commodities prices move up and down together. When hedging the speculator makes simultaneous but opposite transactions on the futures and cash markets. For example, if cash wheat is purchased, future wheat is immediately sold and vice versa. Though this method is not very often used by farmers, it is one which could be used by larger farmers to protect against wide price fluctuations reducing both the chance of large gains as well as large losses.

The choice of any one of the basic tools, either alone or in combination, will depend to a large extent on an individual's preference for risk and security.

In this study an attempt was made to examine the attitudes orientation and values of the farmers studied.

---

[14] It is the process of shifting the risk of a price change in either direction.

CHAPTER IV

ATTITUDE MEASUREMENT

Concept of Attitude

Attitude is a hypothetical construct or latent variable, not directly observable but inferred from verbal expression or overt behavior. The concept does not refer to any one specific act or response of an individual but is an abstraction from a large number of related acts or responses. Accordingly, it is an entity or process inferred as actually existing and as giving rise to a measurable phenomena, including phenomena other than the observable that led to hypothesizing the concept.[1]

Attitudes are inferred from the way people react to a particular stimulus. When attitudes are studied what are observed are the evoking stimulus and the various types of response to that stimulus.

Rosenberg defines attitudes as the "predispositions to respond in a particular way toward a specific class of object."[2] For example, a farmer may consistently refuse to borrow money regardless of the many opportunities for investment. In social psychology this consistent behaviour toward a certain object is explained by the concept of attitude. Thus, it refers to certain

---

[1] Secord, P.F. and Backman, C.W., Social Psychology. New York: McGraw-Hill Book Co., 1964.

[2] Rosenberg, M.J., and Hovland, C.I., et al. Attitude Organization and Change "An Analysis of Consistency among Attitude Components" New Haven: Yale University, 1960. p. 1.

regularities and consistencies of an individual's feelings, thoughts and predisposition to act toward some attitude object. These three components are usually identified by the following terms: affective for feeling, cognitive for thinking and the behaviourial for predisposition to act.

Rosenberg and Hovland diagrammatically[3] presented the concept of attitudes in a simple schematic form.

FIGURE 10

Diagrammatic Presentation of the Concept of Attitude

Measurable variables (independent)	Intervening variables		Measurable variables (dependent)
Stimuli (individuals, situations, social issues, social groups and other attitude objects)	Attitudes	1 Affect	Sympothlien nervous responses
			Verbal statements of affect
		2 Cognitive	Perceptual responses
			Verbal statements of beliefs
		3 Behaviour	Overt actions
			Verbal statements concerning behaviour

[3] Ibid. p. 3.

As may be visualized from diagram 5, one may hold attitudes toward concrete objects such as fertilizer, or toward abstract entities such as social organizations. It may also pertain to remote objects such as foreign aid programs or be extremely personal, such as one's feeling in being short or tall. The three components of attitudes are important parts of attitudes and it is usually through these variables that attitudes are measured. An individual's affective response toward another object may be inferred through the measurement of one's nervous response or through one's verbal statements about the object. The cognitive component is inferred from what he believes, perceives and conceptuallizes (oral or written) about the attitude object. Similarly, the behavioral component consists of action tendencies inferred by what he does or will actually do when confronted with a given situation. Thus, attitudes could be defined as "an (enduring) syndrome of response consistency with regard to (a set of) social objects".[4] It is through this consistency and enduring characteristic that we are able to measure attitude. Attitudes should not, however, be confused with beliefs or opinions that one holds about some object in the environment. These terms differ from attitude in being relatively free of emotion (affective component). Opinion is usually characterized by the cognitive component or elements of knowledge. It may even take the form of a statement about a certain situation; but, it still lacks the emotional aspect of attitude about the environmental object. In this study,

---

[4] Green, B., Attitude Measurement. Lindsey, G. editor, Handbook of Social Psychology, Vol. 1. Mass.: Addisson-Wesley Publishing Co., p. 336.

however, since we were unable to measure the emotional component of attitude, we were actually measuring verbal response (opinions) and action which make up attitudes. A further distinction should be made between attitudes and values. Attitudes are usually thought of as pertaining to one object. Values, on the other hand, are usually thought of as an orientation toward whole classes of objects. For example, a farmer whose value system is socialist would have favorable attitudes and beliefs toward social welfare, egalitarian and central governments, while he may have different attitudes toward each of these objects. Thus, individual attitudes can be organized into a complete value system. In this study it was important to emphasize the need for measuring attitudes toward risk in farm investment and farm practices. Value orientations, opinions and actions toward investment, new technology and decision making reflect a farmer's attitude toward security or risk. A priori it was believed that the security oriented farmer would try to stay out of debt, be the last to adopt new practices, take as little risk as possible in selecting a course of action, do the best he could with what he had, and set his goals as low as possible to avoid getting hurt. These in a sense were the types of criteria used in evaluating the farmers' attitude toward risk and uncertainty.

Attitude Measurement

The contents of an attitude were referred to by Green as an

---

[5] Ibid

"attitude universe".[5] The elements of this universe were observable variables in response to specific situations (questions). By the use of a sample of elements, inferences were made about the entire universe of attitudes. In this study, it must be kept in mind, however, that we had only a small sample, and were using the free response questionnaire which is not always suitable for quantifying variables. Although, inferences were made about certain behaviour through the questions since they could not be verified through action taken they were not too broadly generalized. More experimentation would have been required before broad generalizations could have been made. In this case, it was possible to make inferences from verbal responses to similar verbal questions. This concept of attitude universe, was helpful in formulating the measurement problem and was particularly useful in discussing the validity of these attitudes toward risk. The basic procedure for measuring attitudes lies in selecting a scaling model by which the data can be related to the attitude variable in question. Various scaling methods are available.[6] Many scientists have argued that psychological attributes are not entirely measurable nor experimentally verifiable.[7] However, others such as Stevens, Gulliksen, and Lorge have argued that numerical values could be assigned according to certain rules , to persons, objects or events by which they could be measured and compared. With the rules properly defined, the numerals

---

5 Ibid

6 A complete discussion on the various scaling methods may be obtained from B. Green article on Attitude Measurement. Ibid. p. 336.

7 Ibid

may be used to represent relations among objects, and to compare these objects with other sets of objects similarly measured resulting in a scale. Stevens, distinguishes mainly four different types of scales: nominal, ordinal, interval and ratio scales.

In nominal scales, objects are placed in several mutually exclusive categories, not necessarily related. Each category has a numerical lable, with no quantitative meaning to the category in question. The aim is to select items with respect to certain characteristics, which are as homogeneous as possible as compared with differences between categories. In an ordinal scale, the objects are arranged in a rank order in respect to some other defined variable. In this type of scale, we are unable to say exactly by how much they differ; yet, we are able to say that these individuals or objects have a higher score than certain other individuals.

In an interval scale, the degree of distance or differences between objects on the scale can be measured. In an interval level scale, measurement is expressed in some sort of physical unit which can be agreed upon as a common standard and replicated. An example of an interval is the thermometer. Though we cannot say that 20 degrees Fahrenheit is twice as hot as 10 degrees Fahrenheit, we are still able to express the temperature in equal units with consistency and reliability. In contrast, a ratio scale results when there is some way of showing how many times greater one object is than another. It implies a fixed zero point. The only permissible transformation in this scale is a multiplication by a constant. For example, weight represents

a ratio scale because we can say by how much heavier is 16 ozs. compared to 4 ounces, i.e. 4 times.

The reliability of a scale is of primary importance in evaluating attitudes. Reliability of a scale or index refers to the consistency to which repeated measurements yield similar results. If chance fluctuation causes relatively large shifts in an individual's score, then any particular determination of the score is practically meaningless. When reliability is lacking, a relatively low correlation might be expected between such scores and other variables. Basically there are two main aspects of reliability: stability and equivalence. When stability exists, high correlation exists between the same questionnaire administered at two different periods. This is measured by the coefficient of stability. It is very often argued that attitudes are dynamic and change over time, being thus unstable in nature. Nevertheless, it is important that the scale represents a permanent change in attitude and not a sporadic one. For this reason, scientists place more usefulness in a higher coefficient of stability scale as a predictive instrument than one with a low index score.

The social scientist is able to determine by the use of the equivalance scale method whether the change in attitude is genuine or not. As attitude scores are determined by a sample of items, then he is able to determine what score differences could be expected if a different sample of items were used. Thus, scales on an equivalent sample of items from the same population should yield very similar scores. The correlation between parallel scales is called the coefficient of equivalence. It measures the extent to which the scale is specific to the particular

items used.

Methods of Interview Responses

There are basically four methods that can be employed to create responses in an interview. The scientist may use a standardized interview or unstandardized interview form either with open end or closed end questions.

In a standardized interview the questions are decided upon in advance of the interview and are asked in the same order for all respondents; while in an unstandardized interview the interview is free to ask all the questions or only a few, and change the order and procedure of questionning. In the latter, the responsibility lies entirely with the interviewer at the time of the interview.[8] It is more difficult to obtain reliable comparability in an unstandardized interview than in a standardized interview. Different methods must also be used to analyse the data.

One of the major areas of discussion among social scientists has been on the use of open end or closed end questions in interviews. The differences between open end and closed questionnaires lies mostly in the different methods of recording the information and guiding the interviewee. In the open end questionnaire the respondent receives little or no guidance as to the form or content of his answer. He has a wide variety of ways in which he may answer. A closed end questionnaire limits severely the interviewee to a series of alternatives which he must choose; in a way it forces him to select an answer which falls in a classification.

---

[8] Maccoby, E.L., and Maccoby, M., The Interview: A Tool of Social Science, "Handbook of Social Psychology." Ibid. pp. 450-455

The open end question in a sense, asks the respondent to recall something which he must reproduce spontaneously; while a closed question asks the respondent to recognize an object. In general, people have more difficulty in recalling than recognizing objects. This may lead to two serious errors, in one case (open end) omissions and gaps may occur; while in the second case respondent may have a tendency of choosing answers even though they have very little knowledge or opinions on the subject matter. In one it is possible to detect ignorance while in the latter the respondent chooses something to avoid admitting ignorance.

One of the greatest advantages of the open end question, is that it promotes greater communication between the interviewer and the interviewee. It is more like a natural conversation which should produce a closer replica of the kinds of statements the respondent might have in real life.[9] It also brings out the extensive content of attitudes. It permits the respondent to express his feelings and conviction on certain subject in his own words and in his own manner. The disadvantages of the open end questions are apparent, in the analysis of the responses. In a closed end questionnaire, greater uninformity is obtained among respondents and each respondent is forced to an answer which fits into the categories of analysis. These categories can be finalized before the interview and coded in the field. In open questions, it is not that the respondent could not have answered along the relevant dimension; but that he must at times be probed into one direction or that the questions must clearly indicate what his answers will be, for example

---

[9] Ibid. p. 458.

dichotomous questions where he answers yes or no.

Scaling Methods Used:

From Likert, Thurstone, Riker, Stouffer and other authors[10] basically six different methods for measuring attitudes may be identified: the judgment method, the method of summation ratings, scalogram analysis, the unfolding technique, latent structure analysis and ratings methods.

None of these methods will be reviewed here except to point out that the method of measuring attitude used in this study was a modification of the method of summation ratings. Each item was scored according to the principle of increasing continuum and normal distribution. In the scale used in this study each judge[11] was asked to place a score beside every answer on each item depending on how strongly the respondent favored risk at one extreme and avoided risk at the other. One extreme of the attitude continuum i.e. risk seeking, was designated the numerically high position and given a

---

[10] Green, op cit. pp. 345-365; Likert, R., A Technique for the Measurement of Attitudes. Arch. Psychology, No. 140, 1932; Likert, R., Roslow, and Murphy, G., A Simple and Reliable Method of Scoring the Thurstone Attitude Scales. J. Soc. Psychology, 1934; Riker, B.L. A Comparisson of Methods Used in Attitude Research. Journal Abnormal Social Psychology, 1944, Vol. 39; Stouffer, G.W. Measurement and Prediction, Princeton, N.J.: Princeton University Press, 1950.

[11] Two Judges were used to score the items. J.P. Hudson research associate & G.E. Ackerman, associate professor of the Agricultural Economic Department of the University of Manitoba. J.P. Hudson was a fieldman for Carman District Farm Business Association 1957 to 1967. G.E. Ackerman supervised activities of the Western Manitoba Farm Business Association 1961 to 1967.

value of 5; the other extreme alternative i.e. risk averting, was assigned a value of 1.

The two judges were given instructions to avoid errors in scoring: First they were to assess the range of possible responses to each item and then score the items according to the following way:

Nature of response to risk taking	Score	# Values
Strong interest	⊕	5
Approval	+	4
Undecided, doubtful, neutral	0	3
Cautious	-	2
Strong aversion	⊖	1

Each item was assigned the values 5, 4, 3, 2, and 1. An individual score was the sum of his scoring on all the items, with a higher score indicating a strong predisposition to risk taking on investment and farm practices, with a correspondingly low score indicating a strong aversion to risk.

Internal consistency was assumed to be accurate by the use of knowledgeable judges who approved the questions used and scaled the responses impartially and as consistently as possible. At this stage, we may point out that some difficulties were encountered in scoring incomplete responses. In general, however, most items were scorable with relative ease and general agreement.

Content analysis[12] was employed to evaluate value orientation

---

[12] Berelson, B., Content Analysis. Handbook of Social Psychology op. cit. p. 509.

of individual farmers toward level of living. Values[13] are defined as consistant orientation toward certain extrinsic or intrinsic ends. They may be orientations toward ends associated with moral considerations satisfying or protecting certain conditions of living or conditional value orientation. It is possible to measure the relative intensity of these values, by a careful account of key words and frequency of references to the subject matter. One of the greatest disadvantages of this method is that it is time consuming and requires a complete recording of all words, sentences and even expressions which may influence the final evaluation.

There are many different methods which can be employed in evaluating and measuring attitudes. The basic requirements, however, are to obtain consistency, reliability, objectivity and reproductibility.

---

[13] Schwarzweller, Harry K., Value Orientation in Educational and Occupational Choices. Journal of Rural Sociology. Vol. 24, 1959. pp. 246-256.

CHAPTER V

SOURCE OF DATA, METHODOLOGY, GENERAL DESCRIPTION OF FARMS

Location of Area

The area selected for the study was located in Western Manitoba, approximately 50 miles North West of Brandon. It was bordered by townships 11 and 19 to the south and north and by ranges 15 and 28 to the east and west respectively. It included the following municipalities: Miniota, Hamiota, Blanshard, Saskatchewan, Odanah, Minto, Clanwilliam, Harrison, Strathclair, Shoal Lake, Rosedale, Langford, and small parts of Woodworth, Daly and Elton.

The soils in the area were mostly of medium textures of the Newdale Association. The topography was generally undulating with innumerable undrained depressions, varying in size from small pot-holes to large shallow lakes. Surface drainage was quite variable and ranged from excessive runoff to prolonged inundation in the depressed areas. The soil ranged from well drained to intermediate and to poorly drained Newdale soil. In general, the soils were highly productive and fertile agricultural land with a high organic content, favorable texture and structure, excellent moisture retention and aeration, and very good tilth and workability. However, some of these soils were not suitable for grain production due to the poor drainage and stony surfaces.

> Thus it may be seen that the agricultural value of Newdale soils varies from very high to very low and an individual parcel of land is largely dependent on the local topography which

governs the distribution of the various soil associates.[1]

The area was also bordered by Erickson association soils to the northeast and Carrol Association soils to the southwest. However these soils comprise only a small portion of the area. The topography of the Erickson soils was irregular and moderately sloping, with some sharp slopes and some Glacial stones on the surface. Drainage ranged from intermediate to poorly drained. Yet, the better drained soils were nearly equal in fertility to the Newdale soils, with a slightly lower organic content but equal moisture retention. The Carrol Clay loam varied from level to irregular and moderately sloping topography. The Carroll soils were also highly productive except where soil erosion had occurred.

In general, the area surveyed was characterized by highly productive and fertile soils, except where salinity, excess depression and stoniness existed. The soils were according to the soil productivity index report,[2] classified as mainly 8 and 9 in[3] cereal productivity.

---

[1] Soils Reports #6, by Ehrlich, W.A., Pratt, L.E., and Poyser, E.A., Report of Reconnaissance Soil Survey of Rossburn and Virden Map Sheet Areas. April 1956 -- published by Dept. of Agriculture, Province of Manitoba.

[2] Soil Productivity Index Report by A.O. Ridley, J. Friesen, and R.E. Smith, Manitoba Department of Agriculture, U. of M.

[3] Productivity index was an interpretative classification of soils according to the productivity of cereal grains (wheat, oats and barley). Various mapped soil units of major significance in crop production were selected and long term average yields were determined from benchmark farms. The classes were assigned a numerical rating from one to ten, with the most productive soils receiving the highest rating.

The population on the 3188 farms in municipal districts [4] was according to the 1961 census, 11,746. The farms in the area had the following acreage distribution as compared to the group studied:

TABLE 11

FREQUENCY DISTRIBUTION OF FARMS BY ACRES AS COMPARED TO GROUP STUDIED

Acres	Farms In Area	Farms in Group Studied
Under 240 acres	524	1
240 - 399 "	966	7
400-559 "	709	13
560 - 759 "	543	15
760 - 1199 "	321	17
1120-1599 "	101	3
1600-2239 "	18	3
2240-2879 "	4	-
2880 & over "	2	-

Source: DBS 1961 Census and from WMFBA financial records.

From the data in Table 11 and other information to follow it was evident that the farmers chosen for this study were operating more land than the average farm in the area and were not representative of the area. The area contained approximately 1,502,486 acres of land of which only 999,631 acres were improved. Yet, the cropping programs followed by the area and the farms studied

[4] The Municipalities as described on p. 76.

TABLE 111

FREQUENCY DISTRIBUTION IN PERCENTAGE OF IMPROVED ACRES, FOR AREA AND FARMS STUDIED

	Area	Farm Studied
Percentage Inproved Cultivated Acres of total improved	66.31%	65.23%
Land Use	Percent of Improved Cultivated Acreage	Percent of Improved Cultivated Acreage
Wheat	27.27%	22.14%
Oats	9.94%	11.22%
Barley	8.80%	9.34%
Mixed grain[1]	1.75%	3.09%
Special Crops[2]	4.27%	5.58%
Other Crops	2.73%	.57%
Misc. -		
Hay	4.87%	9.72%
Improved Pasture	3.17%	4.12%
Summerfallow	37.20%	34.22%

Source: DBS. 1961 Census and financial records of W.M.F.B.A. in 1961.

[1] Includes Rye, Rapeseed, Flaxseed

[2] Includes corn for silage, oats for hay and mixed grain

TABLE IV

AVERAGE YIELD AND VARIATION IN WHEAT, OATS, BARLEY AND FLAX IN MANITOBA AND CROP DISTRICTS #9 & 10 FOR THE PERIOD 1921 - 65

	Mean			Variance			Coefficient of Variation %		
Crop	9	10	Man.	9	10	Man.	9	10	Man.
Wheat	19.3	21.5	18.5	31.9	35.7	22.7	28.7	27.6	25.6
Barley	24	26.3	24.5	36.3	57.7	64.8	24.8	28.4	32.8
Oats	31.3	34.7	31.4	107.7	134.9	79.5	32.1	32.8	28.4
Flax	8.6	9.1	8.8	3.9	5.5	3.6	22.6	25.5	21.5
Rye	15.4	17.9	16.1	8.6	15.3	8.2	19.1	21.8	17.9

Source: Weather Data for Yield Predictions University of Manitoba.

were very similar as it may be viewed from table 111. The type of farming in the area was mostly mixed farming with beef cattle being the predominant livestock on most farms.

The long run average yield and variation for wheat, oats, barley, flax and rye summarized in table 1V indicated that the average yield and variance for the area was higher than the provincial averages.

Nature and Source of Data

The data was collected from the 87 charter members of the Western Manitoba Farm Business Association who organized the association in 1961. It was felt that a more comprehensive study could be given to the problem of risk by considering only members who could provide a continuous flow of financial information for the 5 year period (1961 - 1965). For this reason only 59 members were thoroughly studied and evaluated. Therefore, the information was treated as a population. (The sample was known to be not random). Such treatment invalidates any tests of significance that are based on assumptions of random sampling. Inferences based upon case studies, though they do not permit generalizations on an entire farm population, provide us with new information in the search for knowledge.

Insight on farm problems is gained which serves as a guide for further studies on risk. If uncertainty is the most restricting factor in the decision making process, the evaluation and determination of various attitudes on uncertainty is crucial to understanding successful farming. It was believed that a more accurate analysis could be made on a group which had reliable sources of financial information than a sample of representative farms with mediocre

records.[7] To establish farmers' attitudes toward risk, two questionnaires (open end type) were conducted. One in the fall 1961 and a second 5 years later in the summer of 1966.[8] Many questions were repeated to establish whether there would be any change in the answers over the five year period. Surprisingly, many answers were exactly the same, reflecting similar attitudes and values.

Free response questions rather than other formal attitude scales were used, primarily because a more descriptive and qualitative measure of attitude towards risk was sought. It was further believed that some degree of quantitive measure of attitude could be obtained from this method. In the free response technique the questions were asked in such a way as to allow the respondent to answer the questions in his own words. It permitted the farmer to express himself in a wide variety of ways. It also brought out the extensive content of attitude. It helped establish certain relations between different attitudes and between attitudes and the individual operator. Because the respondent was free to say as much or as little as he pleased and to express himself with vigor and emotion, it was easy to judge by the way he answered the saliency of these attitudes.

---

[7] These records were annually audited and verified for possible errors by the Department of Agricultural Economics & Farm Mgt. University of Manitoba.

[8] A sample of the questionnaires used in 1961 and 1965 are included in Appendix A.

For this reason, it was essential to record all the discussion, regardless of its apparent relevance. Very often the farmer answered the questions directly, with an air of certainty, then by substantial qualifications scaled himself as to the importance of this problem to him.

A standardized interview form was used to overcome some of the inherent disadvantages of open end questions. All respondents answered the questions in the same order, which permitted greater uniformity and a more reliable comparison between individuals. The problem, however, was selecting the questions which appeared to be the most relevant in evaluating attitudes on risk and values and at the same time in obtaining a complete insurance record, without making the interview too long or a mere approval of whatever was asked. On the average, interviews lasted about 2 to 2.5 hours.

The questionnaire was very closely considered, and worded so as to maintain objective and to avoid suggesting answers. In certain instances, especially when it appeared that a direct question would have suggested an answer, the interviewer began the question with an explanation to create balance. In most cases, the questions created a clear picture on the subject matter and avoided unnecessary explanations. If a question means different things to different people, then there is no way that the responses can be meaningfully appraised. The danger is that questions may appear to express but one single meaning and yet not provide the same kind of stimulus to

different people.[9]

The objectivity and careful wording was verified by testing the questions on a group of farmers outside the sample area. A few questions were reworded to obtain clarity and some were deleted as being irrelevant and ambiguous. It was found that in many instances, a closed end question should have been utilized, to obtain relevancy and remove doubtful coding. However, since the purpose of the study was to determine knowledge or ignorance on farming risks and obtain some measure on their attitudes toward this object, a combination of methods appeared to be more appropriate.

The majority of questions were primarily open questions, with some closed end, and some projective questions.[10] Projective questions were used primarily to reflect and confirm the farmers' attitude. Some difficulties were experienced in measuring attitudes towards farming risks, because of some incomplete answers which created gaps in coding. In many cases, the respondent did not clearly fall in one specific category, but bordered on two. This ambivalence with regard to classification was overcome in many instances by recording in full the interviewee's response. It was further believed that certain key words would be important in content analysis if it were impossible to scale the item in question from his answer.

---

9 Maccoby, E.L. and Maccoby Mathar, The Interview. A Tool of Social Science. "Handbook of Social Psychology." pp. 450-55.

10 Questions asked about someone other than the respondent. The assumption is that the respondent will put himself in the place of the other person, so that his answer will reflect his own attitude.

Certain precautions were taken to obtain internal validity and external validity. Internal validity was obtained by defining the universe and its content. In defining a universe of behaviour the questions asked were directed toward its content. i.e. risk. The content of the item must belong in the universe of risk. Each item (question) was discussed with G.E. Ackerman and J.P. Hudson to determine whether these items graded the farmers on risk attitude. It was concluded that only 12 items[11] showed internal validity. They reflected attitudes to change in unproven practices, or in economically proven recommendations, attitudes to the use of borrowed capital and attitudes towards specialization. These were combined to measure attitudes of each farmer to farm business risks. Many other questions could have been asked which may have yielded the same results. However, it was believed that these were the most pertinent questions at this time period.

> An attribute belongs to the universe by virtue of its content. The investigator indicates the content of interest by the title he chooses for the universe, and all attributes with that content belong to the universe. There will, of course, arise borderline cases in practice where it will be hard to decide whether or not an item belongs in the universe. The evaluation of the content thus far remains a matter that may be decided by consensus of judges or by other means.[12]

---

[11] The questions were those of questionnaire 1965 section 3; 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20.

[12] Stouffer, S.A. op. cit. p. 84.

Precautions were taken to maintain objectivity and validity of verbal responses. Two agricultural economists, specializing in farm management, were asked to independently scale the items for risk. (The author had become so familiar with the answers and respondents that it became difficult not to be impartial). To avoid bias, reliance was placed on the knowledge of the two judges for classifying the answers. Each item was scored separately. This permitted the judges to determine the range of answers without being influenced by other questions. Furthermore, farmers' responses were staggered and the items mixed to assure anonymity of the respondents. Words that could easily reveal identification were omitted.

Finally, the scores from each judge were placed on a master sheet and compared for consistency. On the majority of cases, they had similar scores. The scores from each judge on each item were totalled and averaged. The individual's score was the total of the twelve average scores.

To further test the scores, each individual's total score was compared with his financial record. There were five items used for measuring behaviour in regards to farm business practices: liquidity-asset ratio, percentage summerfallow of improved acres, number of enterprises, capital purchases versus internal capital produced by the business, and amount of fertilizer used per seeded acre. The questionnaire was used to measure a type of universe, while a participant's financial record may reveal a different type of behaviour. In this study, each were investigated separately and then examined for external

validity (correlation).[13] However, according to Stouffer to inquire into the accuracy of opinions does not in general make sense.

> Perhaps what is referred to by such an inquiry are problems concerning the sampling of questions and of bias .... Such problems are the problems of scale and intensity analysis, and are internal to the universe. They are not problems of 'external validity'.[14]

The measure of accuracy was not attempted; rather it was a measure of consistency between the cognitive and behaviorial components which was examined. Individuals with similar scores had more identical attitudes to risk than farmers with opposing placing. The greater the difference the greater the dissonance and the more likely the individual would change to restore the balance. By comparing the two scores we were thus able to rank the farmer as to his risk attitudes. Farmers were stratified in four quarters: Risk Seekers, Willing Risk Takers, Unwilling Risk Takers and Risk Averters.

Risk seekers were identified as farmers who had a seeking predisposition to take risk in farm investment and farming practices. Willing risk takers had less favorable predisposition to risk. Unwilling risk takers were cautious. Risk averters were labelled as having extremely unfavorable predisposition to assume risk.

Content analysis was used to determine farmers' value orientations toward level of living. There were five questions[15]

---

[13] External validity is related to the problem of prediction which is determined imperically. One method is to see how well one universe correlated with another.

[14] Stouffer op. cit. p. 59.

[15] These questions were 1, 4 and 5 of section 2 and 7 of section 3 and any other answer that appeared to reflect value orientation as may be found in Appendix A.

asked in 1961 and repeated in 1965 which helped identify these values.

There were 5 categories which were identified from the responses of these questions: profit, luxuries, material comfort, security and leisure values. Each individual was classified according to these categories. Though it was impossible to determine the degree of intensity of these values for each individual, it was practical to recognize the values from the discussion. In other words, value orientation may be interpreted as the desire or wish of farmers to achieve certain goals. Farmers who were profit oriented indicated that they wanted a high level of income to meet all their needs. Luxury oriented farmers enumerate other values, such as luxuries, trips, holidays, travelling expeditions, trips and other fringe benefits. Those who desired material comfort - indicated that they wanted a new house, house improvements, sewage, education for their children, maintenance of their health and other material conveniences. Farmers who were classified as security oriented indicated that their ambitions were to be debt-free, to retire debt-free or to stay out of debt as much as possible. It was also possible to identify leisure-oriented farmers who just sought to maintain their status quo and have more free time, farm as a way of life, or obtain other non pecuniary benefits.

It is important to note that this classification was not mutually exclusive. In other words, a farmer might be profit oriented while at the same time want luxuries, material comfort,

and be security-minded.

It was hypothesized as a working hypothesis that orientations toward profit and luxury were positively correlated to rapid financial business progress; while security and leisure orientations were negatively correlated to rapid financial business progress.

Finally, another method was employed to determine farmers' income aspiration. Two questions were asked - first as to whether their present level of income was satisfactory, a bit low, or considerably lower than desired and a second projective question where they were asked to compare their income to that of their neighbours and comment on this income. By combining these two questions and their net farm income in 1961-62 and 1965 farmers were classified according to their income aspiration in four groups: ambitious, desirable, mediocre and satisfactory. Ambitious described farmers with exceedingly high desires for superior income, desirable with high income aspiration, mediocre with moderate aspiration, while satisfactory represented farmers with almost complacent desires regarding income.

Finally, by the use of statistical tests in was possible to test the general hypothesis that attitudes of younger farmers toward level of income, risk and level of living were different from those of older farmers.

Analysis of Insurance Schemes

There are three methods which may be employed for protecting

against risk situations 1) avoidance 2) prevention and reduction and 3) assumption. The latter may be further classified in a) in retention (active and passive) b) transfer (formal insurance) c) speculation (hedging) and d) combination (diversification and pooling). Though the two first methods were part of risk management, and are extremely important they were not fully examined in this study. In this study, only formal insurance and informal insurance schemes which are part of assuming risk were considered and discussed. Speculation was also omitted, because Manitoba farmers did not use this method for hedging price risks or other risks.

There were many different types of formal insurance schemes available to farmers. Insurance schemes which were considered in this study were fire and extended insurance coverage (windstorm and hailstorm) crop insurance and hail crop insurance, floater insurance on contents, livestock insurance, automobile insurance,[16] liability insurance, employer's liability, compensation insurance, life insurance, health and hospitalization insurance, accident disability and sickness insurance. Informal insurance schemes which were examined are diversification, off farm investment, and off farm income and educational training of wife. Cash as such was not considered, since the amount of cash fluctuates from year to year and in most cases was relatively small.

The procedure employed was to describe the farm operators and their farms. Formal and informal insurance schemes, categorized in four groups according to capital investment, were evaluated for their

---

[16] All the various aspects of automobile insurance, fire, theft, medical, property damage, public liability, collision and upset.

adequacy to protect the farm business against different categories of static risk. Finally, findings and interpretation on insurance protection, risk attitudes, income aspirations and values were presented and summarized.

Statistical Analysis

The relationship between variables (independent and dependent) may be examined in different ways. The statistical tests were limited to basically three methods: cross tabular analysis,[17] qualitative analysis techniques and coefficient of contingency and correlation analysis. Since much of the information was qualitative, cross tabular and other qualitative tests (rank correlation, and coefficient of contingency) were the most appropriate methods to use.

Tabulation is one of the most elementary methods of analyzing relationships. It involves classification of data into groups according to one factor and the calculation of averages of a second factor for these groups. By this method relationships between risk attitudes and other variables (or any other independent and dependent variables for that matter) were discussed and compared. The usual procedure is to group the observations according to the independent (or dependent) variable and to add and average the numerical values for the dependent (or independent) variable. In this way it is possible to observe the relationship between variables. By the use of one-way tabular analysis, the relationship between one independent and one dependent

---

[17] Pearson, F.A., and Bennett, K.R., Statistical Methods. New York. John Wiley and Sons Inc. 1942.

variable was studied. In a two way tabular analysis, it is possible to study the relationship between two independent and one dependent variable etc. The general steps may be described in the following manner:

1) The observations are divided into several groups on the basis of one of the factors. Each class includes all the observations where the factor in question falls within a certain range.
2) The total number of observation in each class is obtained.
3) The total of all the values for a second factor is obtained for each class.
4) For each class, the total of the second factor is divided by the number of observation in the first class. It results in averages of the second factor.
5) The classes, which are based on the first factor, and the averages for the second factor, are then arranged in a single table.
6) The relationship is examined by comparing the averages for the second factor for the different values of the first factor.

It is possible to determine whether any relationship exists and whether the relationship is positive or negative. A relationship exists when there is a consistent increase or decrease which indicates a positive or negative relationship respectively.

In a two way tabular analysis, it is possible to examine the data in three ways - horizontally, vertically and diagonally. The relationship between the change in one of the variables while the other is held constant is made by moving horizontally or vertically. The

relationship could also be examined when both variables changed - by examining the whole table diagonally from the upper right to lower left or vice versa.

Cross tabular was used extensively. However, it was impossible to use tabular analysis when the total number of observations in any one group was too small and when independent variables were too numerous.

Statistical reference or summary tables along with frequency counts were used whenever tabular analysis (as defined above) or any other statistical methods did not meet the required assumption. By this method information was classified and variables compared over the 5 year period. This further facilitated and emphasized important changes which occurred during the five-year period. One of the most important considerations in this type of analysis was to place figures to be compared in immediate juxtaposition. It was much easier to compare two or more series, when they were placed in adjacent columns than when placed in adjacent rows. Comparisons were greatly facilated by the use of percentage, ratio, averages or other computed relationships.

The more sophisticated statistical tests were used whenever they met the necessary requirements. Parametric tests were used only when certain assumptions were met and the data was measured in an interval or ratio scale, otherwise nonparametric tests were used.[18]

---

[18] Siegel, S., Nonparametric Statistics for the Behavioral Sciences. New York: McGraw Hill Book Co. Inc. 1956. pp. 19-21.

For this reason most of the tests on association were X^2 and coefficient of contingency and at times cross tabular analysis. The coefficient of contingency measures the degree of contingency between the two variables. The usual procedure was to arrange the date in a contingency table and calculate the X^2 using the formula

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

then determine the significance of the calculated value at the predetermined level of significance and appropriate degrees of freedom. It was then possible, if significantly different from zero to calculate the contingency coefficient by using the formula

$$C\,C = \sqrt{\frac{X^2}{N + X^2}}$$

which measures the degree of association between the variables. The larger the X^2 relative to N the closer was the association.

There are serious limitations in the use of contingency coefficient. Though it was possible to determine whether there were any association, it was difficult to determine how strong this relationship was since the correlation can never attain unit. Secondly, two contingency coefficients were not comparable unless they are yielded by contingency tables of the same size. Thirdly, the X^2 test could only be properly used when fewer than 20% of the cells had an expected frequency of less than 1. Much of the above

limitations were overcome by the ease and need for fewer assumptions required.

Whenever we were able to rank the data (ordinal scale) Spearman rank coefficient correlation (r_s) was used. The limitations are not as serious as those for the coefficient of contingency except that the data must be ranked. The formula used was

$$r_s = \frac{\Sigma x^2 + \Sigma y^2 - \Sigma d^2}{2\sqrt{\Sigma x^2 \Sigma y^2}}$$

where $\Sigma x^2 = N^3 - N - \Sigma Tx$

$\Sigma y^2 = N^3 - N - \Sigma Ty$

$d = X - Y$ (difference in rank of the original data)

$T = \frac{t^3 - t}{12}$

X = observation of one variable original data

Y = observation of 2nd variable original data

N = total number of observations

t = number of observations tied at a given rank

T = the sum of all the various values of T for all the groups of tied observations

The usual procedure was to rank the data and subtract the order for each individual, the principle being that the smaller the difference the closer the association. The t test was used to determine the significance of the calculated value.

Description of Farms and Farm Operators

There are many variables which influence farmers' attitude to

risk in farm investment and farm practices. To arrive at a more sophisticated analysis of risk taking attitudes and farmers reaction to risk, it was important to have a clear understanding about the farms and farm operators. The average farm size of the group studied in 1961, was 717 acres with an average farm capital investment of $49,283. It was assumed that the farms were commercial farms whose main sources of income was from farming. The farmers studied were relatively young, and had a minimum of 5 years of farming experience. They were interested in financial record keeping and accounting and analysis and were usually well informed on farm management practices.

Another unique feature about this study was that farmers were asked to give information, other than financial, which was used with their financial records. Additional essential information had also been gathered during the five years.

Farm Operators

Farmers were primarily sole proprietors. There were four partnerships, two of which were father and son and two of which were brother agreements. Three of the agreements were still in affect in 1965. One of the brother partnerships had disbanded, but because the farm was still in operation, at the time of the survey it was included.

In 1961 most farm operators owned at least part of their farm land, except 6 out of 59. These six farmers rented all their farm land because they had either just started farming, limited capital, or preferred to follow this farming practice. Nevertheless, at the

TABLE V

FREQUENCY DISTRIBUTION OF FARMS WITH OWNED, RENTED AND OWNED AND ALL RENTED LAND

ITEM	No. farms in 1961	% farm distribution in 1961	No. farms in 1965	% farm distribution in 1965	Farm change	% change
Own all operated land	28	47.46%	36	61.02%	8	28.5%
Rented and Owned op. land	25	43.37%	23	38.98%	-2	8.0%
Rent all operated land	6	10.17%	0	0%	-6	----
TOTAL	59	100.00%	59	100.00%		

TABLE VI

AGE DISTRIBUTION OF FARM OPERATORS IN 1961

Ages	Number of operators	% of operators
less than 24	2	3.12
25-29	9	14.06
30-34	18	28.13
35-38	11	17.19
40-44	13	20.31
45-49	4	6.25
50-54	4	6.25
55 and over	3	4.69
total operators	64	100%

TABLE VII

YEARS OF FARMING (as of 1961)

Number years farmed	Number of Operators	Percent Farm Distribution
less than 5	5	7.81
5 to 9	15	23.44
10 to 14	20	31.25
15 to 19	11	17.19
20 to 24	10	15.63
25 and over	3	4.69
Total	64	100%
Average years	13 years	

time of the second survey, every farmer owned some land. One farmer who had been renting all his farm land bought land because he felt he was missing out on capital gains in farm land and he desired more security of tenure. In general, there was a gradual increase in land ownership, with 61% of the farmers in 1965 compared to 47% in 1961. Farmers were mostly young farmers who had started farming after the depression years. The average age of the farm operator was 37 years, with the majority (82.81%) less than 45 years of age in 1961. On the average farmers had owned and operated their farms for 13 years. These statistics are presented in Table VI and VII.

TABLE VIII

NUMBER AND PERCENTAGE OF FARM OPERATORS REARED ON A FARM, REARED OFF FARM AND LEFT FOR A PERIOD

	Number of Farm Operator	% of Total Farm Operators
Reared on Farm	59	92.19%
Reared Off Farm	3	4.69%
Left for a Period	2	3.13%
Total Number	64	100%

Most of the farmers had been reared and lived on a farm. Approximately 8% had been reared off the farm or left for a short period. Of the three operators who had been raised off the farm two had operated a

small business in a rural town and one had no special training except farming. Two had left for a short period but returned when they had the opportunity of farming on their own.

TABLE IX

EDUCATION OF OPERATORS

Education	Frequency distribution	% distribution	# years schooling	Frequency distribution	% of dist.
Eighth Grade or less	12*	18.75%	8 yrs. or less	12	18.75
Attended high-school	43*	67.18%	9 yrs.	6	9.38
Graduated from high school	6	9.38%	10 yrs. 11 yrs.	17 19	26.56% 29.69%
Attended diploma course	(16)	(25%)	12 yrs. 13 yrs.	7 1	10.94 1.56
Attended or graduated from university	3	4.69	16 yrs.	2	3.13
Total	64	100%		64	100%

* 2 and 14 respectively received a diploma course in agriculture.

Operators had various levels of formal education as may be viewed from table IX. One-third had either a diploma course in agriculture or a university education. The largest proportion (84%) had not completed their high school education.

TABLE X

DEPENDENTS [19] PER FARM IN 1961 AND 1965

Number of dependents	1965		1961		Percentage Change
	Number of farms	Percentage of farms	Number of farms	Percentage of farms	
0	5	8.47	8	13.56	-38.5
1	3	5.08	3	5.08	0
2	8	13.56	5	8.47	60.0
3	13	22.03	19	32.2	-31.58
4	14	23.73	13	22.03	7.69
5	10	16.95	7	11.86	42.86
6	4	6.78	4	6.78	0
7	2	3.39	0	0	-100.00
Total	59	100.00	59	100.00	
Ave.	3.42		3.07		

The total number of dependents per farm increased from 3.07 to 3.42 in 1961 and 1965 respectively. The average family consisted of a wife, husband, and 2 children. There were, however, thirteen and seven bachelors at the beginning and end of the study period respectively. Of the latter group, five and two were living and supporting their parents in the respective years.

---

[19] Dependents - are defined as people financially dependent on the farmer. A wife was considered as one dependent.

Aspects of Farms
Land utilization

On most farms 60 to 70% of the total farm land was improved acreage, used mainly for cereal crop production. The main crops were wheat, oats, barley and flax. During the five year period, a gradual increase in improved acreage and in cash crops was evident along with a continuous reduction in summerfallow. Farmers drained and cleared new land which added to their present cultivated acreage. They also increased their seeded acreage by decreasing summerfallow from 34.22% in 1961 to 29.43% in 1965. A more detailed analysis of the cropping program may be obtained by examining table XI.

Investment Structure

The total capital investment[20] per farm was $49,283 and $81,182 in 1961 and 1965 respectively. It represented an increase of 65% over the 5 year period when expressed in current market value. This change was considerably lower (37%) when adjusted for capital gains. Farms were stratified by total farm capital (owned or rented) investment in four groups: less than $40,000, $40,000 to $60,000, $60,000 to $80,000 and $80,000 and over which were identified as groups I, II, III, and IV respectively. This classification permitted a more accurate evaluation of farm investment and gross income.

Buildings were not included in arriving at total farm capital or total farm assets. In assessing the market value of a complete farm unit, buildings do not markedly change its market value. However, since farmers were still required to invest capital in buildings and protect them from

---

[20] Total farm capital investment consists of total assets owned plus rented assets.

TABLE XI

CROPPING PROGRAM FOR THE FIVE YEAR PERIOD

Description	1961	1962	1963	1964	1965
Wheat (acres	6115	7406	7853	9843	9537
% improved acres	22.14%	26.82%	27.14%	33.30%	30.53%
Oats (acres)	3096	3547	2537	2657	2499
% improved acres	11.22%	12.84%	8.77%	8.99%	8.00%
Barley (acres)	2579	1939	2891	2381	2760
% improved	9.34%	7.02%	9.99%	8.05%	8.83%
*Mixed grain (acres)	1012	854	737	839	1092
% improved	3.66%	3.09%	2.55%	2.84%	3.50%
**Special crops (acres)	1542	830	1204	1286	2430
% improved	5.58%	3.01%	4.16%	4.35%	7.78%
Total cash crop % improved	51.94%	52.78%	52.61%	57.53%	58.64%
Hay (acres)	2682	2951	3302	3057	2771
% improved	9.72%	10.69%	11.41%	10.34%	8.87%
Imp. pasture (acres)	1139	957	754	824	955
% improved	4.12%	3.46%	2.61%	2.79%	3.06%
Summerfallow (acres)	9449	9134	9657	8673	9195
% improved	34.22%	33.07%	33.37%	29.34%	29.43%
Total improved (ac.)	27164	27618	28935	29560	31238
% total acres	65.23%	65.48%	65.35%	66.68%	67.92%
Total unimproved (acres)	14718	14558	15342	14772	14752
% total acres	34.77%	34.52%	34.65%	33.32%	32.08%
Total acres	42332	42176	44277	44332	45991

* Mixed grain has been defined as corn sitage, oats for hay and mixed grain for feed grain.

** Special crops has been defined as rapeseed, grass seed crops, flax, rye.

risk, they were discussed and assessed.

Farmers had an average building investment of $7,398 and $10,944 in 1961 and 1965 respectively, representing a 48% increase over a 5 year period. As expected, smaller farmers had a larger percentage of their investment in buildings than the larger ones. Group I and III had the largest change in investment. The largest investments were in land and machinery making a total of 60% to 68% in 1961 and 1965 respectively. Investment in land increased from 36 to 50% at current values or from 36 to 41% when adjusted for capital gains. The adjusted value confirmed that smaller farmers had purchased more farm land than larger ones who had benefitted greatly from inflationary prices. This may be verified by examining table XLVIII in Appendix C.

Over the five years, machinery and equipment investment decreased from 27% to 24% (expressed in current market values) or maintained itself at present level when expressed at adjusted values. Though machinery and equipment should be annually revaluated to arrive at a fair market value, it was not practical to follow this method which may account for the drop in percentage investment.

Farmers had proportionately the same amount of investment in machinery and equipment regardless of size. They had, however, a large variation in machinery investment per acre with an average of $23 ranging from a low of $5 to a high of $48 and with an average of $30, ranging from a low 7 and a high of $81 in 1961 and

and 1965 respectively.

Farm debts increased by an average of $10,284 (125%) over a 5 year period. This change was especially evident when adjusted for capital gains and compared to total assets. Smaller farmers had proportionately more debts than the larger ones, yet when expressed in current dollar values this change was not as apparent. Group II made the greatest changes, borrowing more and increasing their debts by (184%) $12,265. As a total group, farmers borrowed as much as 20% and 26% of their total farm assets in 1961 and 1965 respectively. Probably the most significant decreases occurred in rented land and livestock investment. Even when farms became larger in size, farmers rented less land, a drop from 16% to 10%, with Groups I and IV showing the greatest changes. In livestock all four groups had proportionately less livestock investment. Many farmers had decreased or sold their livestock herds. Group II decreased its average investment by $62 despite certain increases in hogs. On the other hand, Group I and IV increased their average investment by $2,184 and $7,731 respectively, a substantial increase of 50% and 32%. Yet, in spite of these changes farmers had a smaller proportion of their investment in livestock.

Farmers had reduced the number of enterprises from an average of 3.7 to 2.5 per farm in 1961 and 1965 respectively. Enterprises consisted of cash crop, cattle, dairy, hogs, poultry and others. In 1965, 5 farmers had only crop production as their farming enterprise compared to 2 in 1961. The predominant number of enterprises was two

which consisted of either crop and hog or crop and beef. A definite trend to specialization and fewer enterprises existed.

Farm Income Variation

An analysis of variance (two way classification) was made on the ratio of net farm income over total investment[21] to determine the income variation per dollar investment over the five year period. A ratio was used rather than net income primarily because some farmers had increased in land, machinery and livestock which would have added to the variation of income. The purpose of this test was to determine year to year variation in income with similar investment over the entire period. A strong a priori argument may be raised to select the ratio of current year net farm income over previous year's investments on the assumption that a certain waiting period is required for additional investment to increase income. The test was made using both methods, however, it did not change the test sufficiently. Both were significant at the .001 level.

The average net farm income for the five years was $5,522. Net farm income increased on the average from $5,263 in 1961-62[22] to

---

[21] Investment includes real estate, machinery, equipment, feed and grain, and livestock less capital gain on land and machinery, whether owned or rented capital.

[22] The average Net farm income of 1961 and 1962 was used rather than only 1961, because 1961 was recognized as an exceptionally poor crop year while 1962 was an above normal year.

[23] C.V. = $\frac{S}{\bar{X}}$ .100 was used to calculate the coefficient of variation on net income on each farm.
* a more detailed table on net income is available in the appendix.

$6,560 in 1965, with an average increase of $1,296 (25%) over the five year period. The average coefficient of variation[23] over the five year for the group was 55% with a range of 179 from a low of 12% to a high of 191%. It was evident that the average farmer could not predict his income within 55% of his previous year's income.

A correlation analysis was used between coefficient of variation and number of enterprises to determine whether additional enterprises had any stabilizing influence on net income. An r value of .3377[24] was obtained, showing that additional enterprises did have a stabilizing effect on income. It was doubtful however, whether it had a strong influence in stabilizing income, due to its low level of significance. A further correlation was conducted between diversification and 5 year average net farm income. It was negative with an r value of- .4030 indicating that even when net farm income was stabilized with additional farm enterprises net income simultaneously decreased. Farmers expressed similar views when they were asked to indicate the importance of diversification as a method of reducing risk.

Family Living

Since the family is closely tied to the farm unit, it was

---

[24] It was not significant at .05 but significant at .005 using

$$t_{(n-2)} = r\sqrt{\frac{n-2}{1-r^2}}$$

expected that the level of living might influence the growth of the farm and increase the uncertainties of additional investment. For this reason, it was necessary to compile the actual living expenditure over the five year period, of each group.

TABLE XII

LIVING EXPENDITURE (CASH) FOR FIVE YEAR PERIOD

Group	years					change 5 years	change
	1961	1962	1963	1964	1965	$	%
1	2163	2532	2875	3086	3289	1126	52.04
11	3220	3487	3856	4053	4580	1360	42.21
111	3168	4153	3896	4730	4452	1284	40.51
1V	2576	2909	2853	4487	4719	2143	83.20
Average	2988	3498	3694	4169	4386	1398	46.00

Cash living expenditure increased by $1,398 per farm or on a family basis by $1,309. over a five year period. Smaller size farms spent less than larger farms. However, except for group 1V, they experienced similar increases in cash living expenditure.

Types of Insurance Protection

There were many different kinds of formal insurance plans (discussed in Appendix B) available to the farmers. Farmers on the average spent $242.15 and $606.28 in 1961 and 1965 respectively (5.01% and 6.34% of total production cost) to protect their assets

and future income. There was an average increase of 150% in insurance premiums, due mostly to crop insurance. In addition they spent $184.12 and $182.53 on life insurance, for an average gross total insurance expenditure of $426.27 and $788.81 in 1961 and 1965 respectively. This amount represented 6.64% and 8.26% of the total cost of production.[25]

TABLE XIII

SUMMARY OF INSURANCE COSTS (EXCLUDING LIFE INSURANCE)

Group	Premium Average (1961) $	Premium Average 1966 $	Change $	Percent Change
1	172.38	481.23	308.85	179.1
11	210.10	557.17	347.07	165.2
111	337.07	836.75	499.68	148.24
1V	496.70	843.05	346.35	69.73
Total	242.15	606.28	364.13	150.37

[25] P.F.A.A. payments were not included in the total premium. It was impossible to obtain this information from the farmers.

TABLE XIV

SUMMARY OF LIFE INSURANCE COSTS

Group	Premium (Average) 1961 $	Premium (Average) 1966 $	Change $	Percent Change
I	139.83	147.11	7.28	5.20
II	156.15	172.53	16.19	10.49
III	180.83	184.64	3.63	2.00
IV	713.56	495.49	-218.08	-30.56
Total	184.12	182.53	-1.59	-0.86

From tables XIII and XIV it may be observed that larger farmers spent more on insurance plans than smaller ones. However, in proportion to their total production costs, larger farmers had spent relatively the same premiums on insurance. There appeared to be very little difference in farmers attitudes to insurance. Farmers were very conscious of insurance needs and wanted some type of insurance protection.

Management Risk

The purpose of this study was not to evaluate whether the firms were adequately protected against improper management decisions. There are many variables which influence management decisions, some of which are beyond the scope of this study. For this reason, only one aspect

of management was discussed in some detail, namely risk attitude. Since decisions on a farm are based on expectations of the future, it was hypothesized that farm operators and managers with favorable risk taking attitude toward farm investments and farm practices have greater financial success than security oriented farmers.

One of the measures of successful management is the ability of the farmer to prevent the cost price squeeze, despite higher cost of production. As a group, farmers did not experience any significant cost price squeeze by standing still. From table XV it may be visualized that the ratio of gross profit over total production cost did not change significantly. While this ratio does not conclusively point to lower returns, it does indicate that farmers have been able to increase production sufficiently to circumvent this constant squeeze.

TABLE XV

GROSS PROFIT* OVER TOTAL PRODUCTION COST RATIO*

Group	Year	Gross profit over total production cost ratio				
		1961	1962	1963	1964	1965
I		1.43	1.88	1.73	1.68	1.69
II		1.81	2.19	1.77	1.86	1.76
III		1.61	1.96	1.51	1.58	1.65
IV		.98	1.64	1.47	1.68	1.53
Total		1.54	1.97	1.61	1.71	1.69

*Gross profit over total production cost ratio may be interpreted as the gross return for every dollar of production cost. Production cost includes current operating costs, depreciation and interest on borrowed capital.

With this background information on the farm operator and his farm structure, a more detailed analysis may be made on farmers' risk attitudes and insurance protection.

CHAPTER VI

FINDINGS AND INTERPRETATIONS

The purpose of a research project is to make inferences about the population under study. These inferences are based on information gathered either from representative samples or from an entire population. In this study, inferences were made on an entire population. It is a group of farmers who have been submitted to an intensive extension program and from whom accurate financial records and reliable sociological and psychological information has been assembled.

To guide the study five tentative hypotheses based on the problematic situations were made. The procedure was to simultaneously test the first three hypotheses because most of the information was difficult to isolate without countless repetitions. In the second part, farmers' risk attitudes, income aspirations, and values were tested for correlation with financial success. The first three hypotheses discussed and tested were:

1) That farmers are underprotected in regards to every static risk.

2) That farmers' assessment of risks are more precise in areas of tangible assets and risks than with the less obvious kinds of risks.

3) That influences external to the business serve as guides for protecting the business from risk.

Part I - INSURANCE PROTECTION

Risks were classified in five main categories and measured for adequate formal and informal insurance schemes. In certain cases, important assumptions had to be made to facilitate the analyses. At the outset four main criteria were advanced to assess whether the risk

should be transferred:

(1) Magnitude of loss
(2) Frequency and size of loss
(3) Risk of loss
(4) Ability to continue farming in the event of loss.

The value of an asset is an important criterion for deciding whether to transfer a risk or not. In certain instances, when the size of loss or the consequences of risk are large it becomes essential for solvency to transfer the risk or cause of risk to a second party for a fixed cost. This condition is especially true when a person starts farming. It may also be important to transfer part of a loss when a farmer is in his initial stage of self-insurance and cannot afford a set back.

Frequency and size may also influence a decision to transfer a loss to a second party. If a loss occurs frequently the size times the frequency over a certain time period may be as devastating to the business as one single large loss. For example, when hail occurs frequently, though the loss may be small, its repeated occurrence may influence a farmer to take hail insurance. Under these circumstances, it may be appropriate to insure until a solution has been found or other measures have been implemented.

In establishing, whether one should buy insurance depends on whether the probability can be determined. In most instances individual farmers cannot calculate the probability. Under these circumstances, size of loss, attitude to risk, accumulated funds, or other criteria become extremely important in deciding whether to

transfer the risk. Only when a farmer has sufficient homogeneous assets and a large enough sample to calculate or determine a priori the probability with relative certainty does probability become an important criterion. When this reliability exists it permits him to pool his resources and plan for his own insurance program.

A farmer would be wise to transfer a risk whenever the destruction of the asset may cause bankruptcy or prevent him from continuing in the business. Even when the future appears profitable, it becomes irrelevent if a farmer cannot survive the first few years.

An illustration may help clarify the above situation.

Two farmers A and B farming the same size farm, with hogs as a second enterprise, ask whether they should buy fire insurance on hogs and buildings.

Since neither one of the farmers can calculate the probability of one hog barn burning, they cannot set up their own insurance program through accumulating savings. The difference lies in the financial situation of each farmer.

Farmer A is a young farmer, carrying a large mortgage on his farm. He has just started farming and has a fairly young family. On the other hand, farmer B is a well established farmer, with very few debts, with one dependent child. For farmer A the loss of his pigs and his hog barn through fire may be sufficient to bankrupt him or even prevent him from rebuilding. It becomes essential for him to transfer all potential fire losses to a second party. Though he may

never collect and his barn may never burn, maximum protection will permit him to continue farming and allow him to make financial progress with a minimum amount of hardship.

However, to farmer B, a well established farmer who has few debts, it might be good risk management to carry a minimum amount of formal insurance. This is especially true when the probability or seriousness of a loss in aggregate is small. He could carry the loss and rebuild if he had to. Yet many well established farmers prefer to carry fire insurance on the assumption that if fire ever occurred that the recovery would be less than the total costs of premiums and worry. He may also carry only part of any potential losses (deductible policy) transferring amounts over and above a certain value. In this case he carries small losses and transfers large losses to an insurance company. If the loss does not occur, he will profit by the amount of premiums he has saved.

These were the basic criteria along with others used in deciding whether a farmer should purchase formal insurance. These same criteria were used in determining whether farmers had adequate protection from specified risks.

Physical Damages to Assets

A form of insurance is required to prevent physical destruction of assets by natural hazards, and from intentional and unintentional acts of man. Assets were categorized in six groups: crops, building, machinery and equipment, grain and feed, livestock, and household and

personal contents. Under this classification, group I, group II, group III and group IV farms were examined for adequate formal and informal insurance protection.

Crop Insurance

The all-risk crop insurance policy handled by Manitoba Crop Insurance Corporation was not available to all farmers in the area. It became provincially available in 1966. Most farmers had only two plans available in 1961 and 1965: P.F.A.A. which was a compulsory relief program where the premiums were collected at the elevator on all delivered grain, and hail insurance, a voluntary plan sold by private insurance companies. Since the survey was conducted in 1966 it was thought worthwhile to examine the merit and demerit and the adequacy of all-risk crop insurance in the farmer's total insurance plans.

Crop failures were considered by farmers to be the most serious risk in the business. There appeared to be a contradiction in their statements, however, when they were asked to identify the most serious risk and its frequency. Crop failures, caused by weather, hail, flooding, drought, and other natural hazards were identified as the most serious risk by 81.7% of the farmers. Of these farmers 50% emphasized that they had never experienced a total crop failure, while 41.75% stated that they had experienced at least one or two total crop failures and 54.75% pointed out that they had experienced as many as one in every four years in partial crop failures. One farmer, in particular, had as many as 9 out of 10

crops in partial crop failures. As a group 45.83% of the farmers had never experienced crop failures whether complete or partial. Most farmers, except a few, believed that the risk of crop failure was small, as evidenced by the small number of P.F.A.A. payments received, but yet they still feared it most. This statement as contradictory as it may appear, still reflects the farmers dependence on crops for income. In most cases their largest source of income was from crops. It further reflects farmers concern about income sources and stability rather than losses of present assets through fire, hail, disease, theft and other causes. The all-risk crop insurance plan was not acknowledged by farmers as a method for reducing losses from crop failures. Farmers believed that they would never collect from this plan, regardless of increases in yield coverage. For one thing most had never collected from P.F.A.A. and secondly, coverage was too low. Many (40%) indicated that they took all-risk crop insurance to avoid P.F.A.A. premiums; while 20% believed that the plan was unsatisfactory and perhaps useless in their area. Twelve percent emphasized that the program had some merit in reducing risk. The latter felt that the program was essential if in debt and in a specialized cropping program. The remainder (28%) were neutral to the program, but they thought that prices were too high and coverage too low to make the plan worthwhile at the present time.

The amount of insurance protection varied greatly from farm to farm. Farmers, as a group, had spent $122.59 on premiums for an

TABLE XVI

TOTAL ACREAGE INSURED, % TOTAL ACREAGE INSURED IN 1961 AND 1966 FOR HAIL AND ALL-RISK

s	wheat	oats	barley	others	all crops	wheat	oats	barley	others	all crops	all crops hail and all risks
	----------all risks coverage in 1965----------					----------Hail Coverage in 1965----------					
	2633	1530	775	580	5518	2633	1530	775	580	5518	n/a
	2339	77	231	172	2819	1644	762	374	371	3151	n/a
	88.83%	5.03%	29.80%	29.66%	51.08%	62.43%	36.3 %	48.26%	63.97%	57.10%	n/a
	85.71%	12.50%	26.67%	25.00%	85.71%	66.67%	52.27%	42.76%	19.05%	76.19%	(21) 100.00%
					$ 109.54					$ 110.15	$ 219.69
					$1,909.24					$1,983.33	$3,892.57
	3656	845	1637	1135	7273	3656	845	1637	1135	7273	n/a
	2219	27	256	147	2649	2038	290	855	327	3510	n/a
	60.69%	3.20%	15.64%	12.95%	36.42%	55.74%	13.2 %	52.23%	28.81%	48.26%	n/a
	72.72%	7.14%	10.52%	14.29%	72.72%	63.63%	35.71%	27.36%	28.57%	63.63%	(21) 94.45%
					$ 106.98					$ 163.04	$ 270.02
					$1,705.50					$2,910.27	$4,615.77
	3278	1145	1090	756	6269	3278	1145	1090	756	6269	n/a
	2443	100	291	104	2938	1984	293	511	576	3364	n/a
	74.53%	8.73%	26.70%	13.76%	46.86%	60.53%	22.5 %	46.88%	76.19%	53.66%	n/a
	76.92%	9.09%	25.00%	25.00%	76.92%	69.23%	45.45%	50.00%	50.00%	76.92%	(12) 92.30%
					$ 188.86					$ 233.57	$ 422.43
					$3,215.46					$3,804.61	$7,020.07
	745	470	420	235	1870	745	470	420	235	1870	n/a
	130	---	---	---	130	130	120	200	---	450	n/a
	43.3%	0	0	0	6.94%	17.45%	25.53%	47.62%	0	24.06%	n/a
	33.33%	0	0	0	33.33%	66.67%	33.33%	33.33%	0	66.67%	(2) 66.67%
					$ 41.33					$ 383.50	$ 424.83
					$801.67					$4,283.33	$5,085.00
	10312	3990	3922	2706	20930	10312	3990	3922	2706	20930	n/a
	7128	204	778	423	8533	5796	1465	1940	1274	10475	n/a
	69.12%	5.11%	19.84%	15.63%	40.76%	56.20%	36.72%	49.46%	47.08%	50.04%	n/a
	76.27%	9.09%	18.36%	18.67%	76.27%	61.01%	50.00%	53.06%	37.50%	71.18%	(56) 94.92%
					$ 122.59					$ 170.97	$ 293.56
					$2,064.76					$2,847.00	$4,912.00

calculated($\frac{14}{45}$ had 75% on wheat only) on number of

TABLE XVI

TOTAL ACREAGE INSURED, % TOTAL ACREAGE INSURED IN 1961 AND 1966 FOR HAIL AND ALL-RISK

Groups	Items	all crops Hail 1961	wheat	oats	barley	others	all crops	wheat	oats	barley
			all risks coverage in 1965							
1	Total acres seeded	3480	2633	1530	775	580	5518	2633	1530	775
	Total acres insured	1410	2339	77	231	172	2819	1644	762	374
	% acres insured	40.52%	88.83%	5.03%	29.80%	29.66%	51.08%	62.43%	36.3 %	48.26%
	% farm with insurance*	57.14%	85.71%	12.50%	26.67%	25.00%	85.71%	66.67%	52.27%	42.76%
	Average cost / farm	$ 48.72					$ 109.54			
	Average coverage/farm	$812.05					$1,909.24			
11	Total acres seeded	4722	3656	845	1637	1135	7273	3656	845	1637
	Total acres insured	1296	2219	27	256	147	2649	2038	290	855
	% acres insured	27.45%	60.69%	3.20%	15.64%	12.95%	36.42%	55.74%	13.2 %	52.23%
	% farm with insurance*	27.27%	72.72%	7.14%	10.52%	14.29%	72.72%	63.63%	35.71%	27.36%
	Average cost / farm	$ 36.23					$ 106.98			
	Average coverage/farm	$645.91					$1,705.50			
111	Total acres seeded	4448	3278	1145	1090	756	6269	3278	1145	1090
	Total acres insured	2375	2443	100	291	104	2938	1984	293	511
	% acres insured	53.39%	74.53%	8.73%	26.70%	13.76%	46.86%	60.53%	22.5 %	46.88%
	% farm with insurance*	53.84%	76.92%	9.09%	25.00%	25.00%	76.92%	69.23%	45.45%	50.00%
	Average cost / farm	$182.70					$ 188.86			
	Average coverage/farm	$1634.00					$3,215.46			
1V	Total acres seeded	1694	745	470	420	235	1870	745	470	420
	Total acres insured	450	130	---	---	---	130	130	120	200
	% acres insured	26.63%	43.3%	0	0	0	6.94%	17.45%	25.53%	47.62%
	% farm with insurance*	33.33%	33.33%	0	0	0	33.33%	66.67%	33.33%	33.33%
	Average cost / farm	$ 201.73					$ 41.33			
	Average coverage/farm	$2250.00					$801.67			
Total	Total acres seeded	14344	10312	3990	3922	2706	20930	10312	3990	3922
	Total acres insured	5531	7128	204	778	423	8533	5796	1465	1940
	% acres insured	38.56%	69.12%	5.11%	19.84%	15.63%	40.76%	56.20%	36.72%	49.46%
	% farm with insurance *	44.07%	76.27%	9.09%	18.36%	18.67%	76.27%	61.01%	50.00%	53.06%
	Average cost / farm	$ 63.42					$ 122.59			
	Average coverage/farm	$1,004.32					$2,064.76			

* The % farms with insurance is calculated(14 had 75% on wheat only)on number of

average of $2064.76 total protection per farm. Most farmers (45) had only insured their wheat, with 14 out of 45 carrying only 75% dollar coverage. Seeded wheat acreage insured under this plan amounted to 69.12% of total wheat acreage, with very few other crops insured. Smaller farms had proportionately more all-risk crop insurance than the larger ones as may be viewed from table XVI. The same criteria as in Owen's thesis "An Economic Valuation of Crop Insurance As a Form of Crop Income Protection"[1] were used to determine adequacy of coverage. Owen argued that all-risk crop insurance coverage should be sufficiently high to cover current crop expenses. Crop expenses included seed, fertilizer, sprays, insurance, fuel, custom work, repairs, property taxes, hired labor, cash rent and interest on borrowed capital. These were considered as out of pocket expenses associated with a crop enterprise. He deducted that this level of coverage would provide sufficient security to survive a year of disaster and meet expenses accruing to crop production.

Under these criteria, three farmers had sufficient all-risk crop insurance to cover current crop expenses; while 30% had sufficient levels to cover 50% of their expenses.

Using informal insurance, namely off-farm investment[2] 45.8% had adequate insurance to cover crop expenses in case of a total crop failure. With off-farm investment, off-farm income

---

[1] Owen, B.E., An Economic Valuation of Crop Insurance as a Farm of Crop Income Protection. Unpublished Master's Thesis, Department of Agricultural Economics, University of Manitoba, 1966.

[2] Off-farm investment includes real-estate investments, government bonds, Credit Union shares, annuities, stocks or assets that can be readily converted into cash.

and formal insurance 29 farmers (49%) had sufficient security to meet current crop expenses in case of crop failure. Yet there were still 51% of the farmers with insufficient insurance. P.F.A.A. protection was not considered as an adequate plan as its level of indemnity was considerably lower than that of all-risk crop insurance.

Thus, it may be concluded that more than 50% of the farmers had insufficient protection coverage to meet out of pocket expenses in case of a crop failure.

While many farmers did not consider all-risk crop insurance as important, they viewed hail insurance as an integral part of farming. Sixty-eight percent of the farmers expressed favorable attitudes toward hail insurance. Of the latter 80% emphasized the need for hail insurance as an essential part of farm practices. They expressed the need for hail insurance as protection against high operating costs and high debts. Ten percent felt that they could carry their own plan due to their low hail experiences and present financial situations. In contrast, 6.8% indicated that they did not want hail insurance mainly because they could not afford the cost of hail insurance. The majority of farmers preferred hail insurance to all-risk crop insurance primarily because they would receive indemnity if they were hailed out regardless of potential yields; while all-risk crop insurance paid the difference between maximum coverage and harvested crop yields. As one farmer expressed it "hail insurance protects the top portion of the crop while all-risk crop insurance protects the bottom portion, which is

illogical". They strongly felt that they should receive some indemnity from an insurance program whenever they experienced damages.

Farmers, on the average, had spent $63.42 and $170.97 for $1,004 and $2,847 hail insurance protection in 1961 and 1966 respectively. It was impossible in 1961 to establish which crops were insured except to point out that 44.07% of the farmers carried hail insurance for a total of 38.56% of the total seeded acreage. In 1966, 61.02% had hail insurance, with 52.9% of the seeded acreages insured for amounts varying from $10 to $20 per acre.

Though farmers had increased their expenditures on hail insurance, there were still many farms (38.98%) without hail insurance, and 5.08% carrying neither hail nor all-risk crop insurance. It was very difficult to conclude that farmers were underprotected in regards to hail especially in 1966. Yet, by using the crop expense criterion, 87% had inadequate hail insurance to cover total crop expenses in that one year.

Thus, it may be concluded that the majority of farmers carried insufficient hail or crop insurance to cover crop expenses and stabilize income, in the event of a crop failure.

Fire & Extended Coverage Insurance

Building and Household Contents

The criteria used by fire insurance companies[3] for establishing

---

[3] The information was obtained from interviews conducted with insurance agents and insurance underwriters.

TABLE XVII

FIRE INSURANCE ON HOUSEHOLD CONTENTS IN 1961 AND 1965

Year	1961				1965			
Groups	Insurance Value $	Inventory Value $	% value insured	% farms insured	Insurance Value $	Inventory Value $	% value insured	% farms insured
I	1367	1807	75.62	80.95	2462	2686	91.67	100
II	1886	1638	115.19	77.27	3023	2852	105.98	95.04
III	4104	2069	138.48	92.38	3546	2763	128.33	92.30
IV	1667	2667	62.5	100.00	4833	3000	151.11	100.
Total	1906	1845	103.28	83.05	3031	2781	108.98	96.04

TABLE XVIII

FIRE INSURANCE ON BUILDINGS IN 1961 AND 1965

Year	1961				1965			
Groups	Insurance Value $	Inventory Value $	% value insured	% farms insured	Insurance Value $	Inventory Value $	% value insured	% farms insured
1	5181	5602	94.10	100	10333	10133	101.97	100
11	7715	7308	105.56	100	11888	8945	132.9	100
111	11497	9011	127.58	100	15567	14737	105.63	100
1V	13167	13640	97.26	100	18533	14842	124.8	100
Total	7441	7398	100.58	100	12483	10944	114.05	100

adequate fire insurance on buildings or any other assets are: the uncertainty of occurrence for the individual insured and the asset insured for at least 80% of the current replacement value less depreciation. When the asset is insured for less than this amount the asset is considered as underinsured. The valuation of the asset, they insist, must be assessed by a knowledgeable appraiser. Insurance companies do recognize that many of their agents appraise properties, though they are not fully qualified to do so, but do so because people insist that they do. They suggest that farmers must ask expert advisers when they are uncertain. For example, ask building contractors or building appraisers to valuate their houses, barns and out buildings, machinery dealers to appraise their machinery and equipment, furriers to appraise their furs etc. However, on certain assets farmers do have enough experience to evaluate accurately, such as on grain, feed, livestock and some buildings. Yet insurance companies representatives insist that farmers must know their limitations and ask expert advice whenever they require it.

Using the same criteria, but at 100% of aggregate asset value farmers were first evaluated for adequate formal fire insurance on all assets. Farmers were examined for adequate formal and informal insurance protection.

Farmers had relatively the same amount of fire insurance protection in both periods, with 95% considering this type of protection as essential. On building and household contents, they had insured for amounts equivalent to their market value. In several

instances they had more insurance than the actual market value. There are several explanations for this apparent illogical situation. In certain cases they may have undervalued their household contents, and buildings; on others they may have taken insurance coverage on a three year period without yearly adjustments for depreciation; or they may simply have neglected to change their insurance policies. A closer examination of the data revealed that 59% and 57% of the farmers had adequate formal fire insurance on building and household contents respectively in 1965. While 81% had adequate formal and informal insurance on both assets in 1965. (Similar results were obtained in 1961, as may be viewed from table XLIX in Appendix C). Thus, it may be concluded that farmers carried sufficient fire insurance on buildings and household contents **valued at present market value.**

Farmers did not, as a rule, carry extended coverage (windstorm and hailstorm) on buildings and contents. Seven farms had extended coverage for a total protection of $26,850 and $25,275 in 1961 and 1965 respectively. This amount represented a very small percentage of the total values of buildings and contents. It may be concluded that farmers had inadequate extended coverage insurance.

Machinery and Equipment

Adequate fire insurance on machinery and equipment was more difficult to establish, primarily because farmers had many different kinds of equipment, of all ages, and with a wide range of values. On the average, machinery and equipment were insured for 35.41% and 54.04% of their current market values in 1961 and 1965 respectively. In 1965, 14% had adequate formal fire insurance to cover all possible losses while 44% had sufficient formal and informal insurance to cover total losses. However, in many instances farmers had their

TABLE XIX

FIRE INSURANCE ON MACHINERY AND EQUIPMENT IN 1961 AND 1965

(EXCLUDING CARS AND TRUCKS)

Year	1961				1965			
Groups	Insurance Value $	Inventory Value $	% value insured	% farms insured	Insurance Value $	Inventory Value $	% value insured	% farms insured
1	1571	5560	28.27	61.90	4240	8595	49.3	85.71
11	3384	8231	41.11	77.27	6327	13966	45.30	86.08
111	5273	13268	39.74	76.80	15204	19957	76.18	100.00
1V	5333	23963	22.26	55.55	10867	33767	32.18	66.66
Total	3253	9190	35.41	71.18	7771	14381	54.04	88.14

TABLE XX

FIRE INSURANCE ON TRACTORS AND COMBINES IN 1961 AND 1965

Year	1961			1965		
Groups	Insurance Value $	Inventory Value $	% value insured	Insurance Value $	Inventory Value $	% value insured
1	1252	2795	44.81	3488	4303	81.06
11	2668	4694	56.84	4174	7888	59.92
111	4285	6745	63.53	9385	9878	95.01
1V	2333	10883	21.43	7733	17180	45.01
Total	2503	4785	52.32	5259	7523	69.90

equipment outside and scattered in the yard and in the field, such that the likelehood that they would all burn w fairly remote. Whenever, this condition prevails than the only significant variable becomes the value of individual equipment. It was assumed that tractors and combines were the highest priced equipment while the others were considerably lower. For this reason they were considered separately. In 1961 and 1965, 52.32% and 69.9% of the tractors and combine values were adequately insured on 54% and 79% of the farms respectively. It was further shown by examining the data, that all farmers, except four, had fire insurance on high priced tractors and combines. Thus, it may be concluded that farmers had adequate protection against fire on machinery and equipment, even when they may have had inadequate protection if they were stored under one main roof or in a machine shed.

Livestock

Farmers (50%) expressed approval for fire and lightning livestock insurance. An additional 10% emphasized that they would carry fire insurance only on livestock confined in a building. Seventeen percent refused to carry any fire insurance. Yet most farmers (81%) carried fire and lightning livestock insurance in 1965. On the average they carried $3,196 and $5,169 of livestock insurance in 1961 and 1965 respectively, approximately 39% and 55% of the total assessment. In 1961, 34 farms out of a potential 57 carried livestock insurance compared to 44 out of 54 in 1965.

Using the same criterion as on buildings first, formal

TABLE XXI

FIRE INSURANCE ON LIVESTOCK IN 1961 AND 1965

Year	1961				1965			
Groups	Insurance value $	Inventory value $	% value insured	% farms insured	Insurance value $	Inventory value $	% value insured	% farms insured
1	1971	4350	45.32	40.00	3489	6535	53.39	75.00
11	2460	8424	29.20	59.54	3757	8361	44.93	75.00
111	5538	10419	53.16	83.33	8796	10592	83.04	100.00
1V	7017	23827	29.45	100.00	11558	31558	36.63	100.00
Total	3196	8196	39.00	59.64	5169	9382	55.09	81.48

insurance and second formal insurance plus off-farm investment, for year 1965, 9% of the farmers had adequate formal insurance and 43% had adequate formal and informal insurance to cover fire losses.

None of the farmers carried insurance on other risks such as on wind, suffocation and extended coverages.

Thus it may be concluded that farmers did not carry adequate livestock insurance against most hazards.

Grain and Feed

Grain and feed fire insurance was carried by 28 out of a potential 59 farmers, with less than 25% of the grain and feed assessment[4] insured. Accurate statistics were not available for determining storage place, and quantity insured in relatively close quarters when exposed to fire. Twelve percent of the farmers had adequate formal insurance and 32% had adequate formal and informal insurance in both periods to cover complete loss through fire. This was evident as 40% percent carried some fire insurance on grain and feed. Though many would not have been bankrupted if fire occurred, they would certainly have experienced serious set-backs in their financial progress. In many instances granaries and hay stacks were stored closely, increasing the hazard and size of loss. Thus, grain and feed were inadequately insured against fire losses.

---

[4] Inventory values were taken on December 31st, which was assumed to be an average inventory for the year, with the peaks at harvest and the lows in July.

TABLE XXII

FIRE INSURANCE AND GRAIN AND FEED IN 1961 AND 1965

Year	1961				1965			
Groups	Insurance value $	Inventory value $	% value insured	% farms insured	Insurance value $	Inventory value $	% value insured	% farms insured
1	1143	3959	28.86	28.57	933	5001	18.67	33.33
11	1880	6228	30.18	40.91	2976	9111	32.66	50.00
111	2792	9671	28.87	53.85	3985	12462	31.97	53.85
1V	2333	15883	14.69	66.67	5333	17571	30.35	100.00
Total	1842	6670	27.61	40.68	2591	8817	29.39	47.46

Loss of Ownership Through an Adverse Judgement of Law

The risk of loss of ownership through an adverse judgement of law was determined mainly by the potential size of loss. Adverse judgement of law usually results from negligence, carelessness or other causes which are unforeseeable but highly destructive when they occur. Under these circumstances, farmers without liability insurance from any potential liable suits were considered inadequately protected.

At the outset, it may be appropriate to outline the two basic assumptions required for the above general statement. It must be agreed that the loss through an adverse judgement of law is an uncertainty on each farm. In other words, individual farmers are not immune from this hazard. Farmers may through their negligence or carelessness incur large losses to other people which may make them liable. Secondly, while in aggregate the risk is small, the magnitude of the loss if it occurs can be extremely costly and even disastrous to the family and the farm.

Automobile Liability Insurance

Every motor vehicle owner was required by law to carry automobile liability insurance or pay a penalty of $25.00.[5] All

---

[5] Penalty, in the sense that if a person had automotive insurance, he was not required to pay $25.00 at the time of registration. The purpose of this fund was to protect other people incidently injured, or whose property was damaged from uninsured owners or drivers of automobiles.

TABLE XIII

INSURANCE COVERAGE ON CARS AND TRUCKS IN 1961 AND 1965

Group	Item	No. of Vehicles Owned	Ave. cost Insurance	No. of Vehicles Insured	Ave. Maximum Insurance			Value of Vehicle Owned	No. of Vehicles with less than $50,000. P.L. & P.D.
					Public Liability	Property Damage	Collision & upset	Average	
		1961	$ 1961	1961	$ 1961	$ 1961	$ 1961	$ 1961	1961
I	Car	19	27.61	17	36,842.	54,211.	27,632.	818.	10
II	Car	23	33.04	23	97,608.	113,913.	85,217.	1,011.	9
III	Car	14	52.21	14	69,286.	88,571.	52,857.	1,535.	7
IV	Car	3	62.86	3	50,000.	100,000.	11,666.	3,200.	3
All	Car	59	37.25	57	67,203.	86,203.	55,294.	1,184.	29
I	Truck	15	12.49	14	31,333.	47,333.	12,333.	788.	12
II	Truck	22	18.46	22	78,864.	111,363.	57,273.	690.	12
III	Truck	17	18.79	17	55,294.	61,176.	49,706.	585.	10
IV	Truck	4	15.90	3	31,250.	37,500.	1,250.	1,150.	3
All	Truck	58	16.83	56	56,379.	75,000.	39,568.	716.	37

Continued.....

TABLE XXIII....INSURANCE COVERAGE ON CARS AND TRUCKS IN 1961 AND 1965

Group	Item	No. of Vehicles 1965	Ave. Cost of Ins. $ 1965	No. of Vehicles Insured 1965	Ave. Max. Insurance Public Liability and Property Damage $ 1965	Value of Vehicle Owned Average $ 1965	No. of Vehicles with less than $50,000. Public Liability and Property Damage 1965
I	Car	21	54.87	21	87,524.	1,262.	4
II	Car	23	68.74	23	131,956.	1,982.	4
III	Car	14	65.52	14	134,643.	2,054.	2
IV	Car	3	97.90	3	100,000.	3,554.	(-)
All	Car	61	71.20	61	115,820.	1,828.	(10)
I	Truck	18	17.33	18	79,444.	638.	(6)
II	Truck	23	16.73	23	93,478.	1,206.	(8)
III	Truck	22	24.73	22	85,454.	1,101.	(8)
IV	Truck	4	33.87	4	67,500.	2,321.	(2)
All	Truck	67	20.54	67	85,522.	1,085.	24

farmers carried automobile liability insurance on cars and trucks, with usually specified perils for fire and theft except for collision and upset.

In 1961, 24 out of 56 trucks were insured for fire, theft, and collision. Since most of the trucks were old trucks of low market value, it was too expensive to insure for the small protection that they would receive from these risks. In 1965, over 55% of the trucks were insured against fire and theft. Farmers insured farm trucks and cars only when the market value of these assets warranted large amounts of protection. Consequently, then public liability and property damage became the relevant considerations in assessing adequate insurance on cars and trucks.

Thus, it may be concluded that farmers had adequate fire, theft, collision and upset automotive insurance.

Farmers carried substantially more car and truck liability and property damage insurance in 1965 than in 1961 as may be viewed in table XXIV. A reason for this could have been that farmers had more expensive vehicles which made them believe that it was necessary to carry liability insurance. A few indicated that the agent had influenced their decisions in taking additional protection. A further reason may have been that it was cheaper to purchase insurance than to pay the $25.00 penalty for Unsatisfied Judgement Fund[6] at registration. Generally farmers did not

---

[6] The unsatisfied Judgement Fund Act was passed in parliament in May, 1965.

believe that liability insurance was an essential part of farm insurance. They felt that while it was necessary and good for highway vehicles, it was not essential on the farm. Nine farmers (15%) felt that liability insurance was not needed whether on cars, trucks or on the farm. An additional 7 farmers (12%) thought that though liability was necessary for a car, it was not essential on the farm or with farm implements. Ten farm operators (17%) emphasized that liability insurance was essential and a necessary precaution. They described it by using such words as a 'must', 'can't afford to be without', and 'the more you own the higher the chances of loosing everything'. The significant difference, however, between insurance and Unsatisfied Judgement Fund is that insurance protects the owner and driver of the vehicle, up to that limit, while contribution to the Unsatisfied Judgement Fund protects only innocent bystanders from damages if the vehicle owner cannot pay the damages from his own assets. The farmer may still be liable for any amount under Unsatisfied Judgement Fund and it cannot be judged as adequate insurance. In 1961, it was not compulsory to acquire automobile insurance, which may account for the difference in the number of automobiles insured and owned. In 1965, all cars and trucks were insured for public liability and property damages for an average of $116,000 for cars and $88,000 for trucks.

It appeared that farmers had sufficient insurance protection. Yet, 16% of the farmers carried less than $50,000 liability

insurance on their cars. It was felt that farmers must carry enough liability insurance to cover their total assets or a minimum of $100,000 whichever is the largest. There are no general rules that apply to all farms. But any adverse judgement of law that may financially affect or even bankrupt the farm and jeopardize the security of the family may be considered as inadequate liability insurance. Under this criterion, it may be concluded that most farmers were carrying adequate automotive public liability and property damage, while a minority were not.

General Liability Insurance

Farmers do not carry large amounts of general farm liability (comprehensive) insurance or personal liability insurance. In 1961, only 7 farms (12%) carried liability insurance for an average protection of $15,714. One farm carried $50,000 worth of general liability insurance, and six carried $10,000. Group I, small farms, carried no farm liability insurance. In 1966, however, 37 farms (62%) carried general farm liability insurance. The amount of average liability insurance for those carrying insurance decreased by $1,931 for an average $13,783. There were still over 50% of the farmers in group I with no liability insurance.

Employer's liability and compensation insurance was practically unheard of. While farmers considered that they should "look into it", only two farms had employer's liability. Yet, 88% had hired men and part-time labor which made them potentially liable.

TABLE XXIV

GENERAL LIABILITY INSURANCE IN 1961 AND 1965

Year	1961				1965			
	Farm Liability Insurance		Employer liability Insurance		Farm Liability Insurance		Employer liability Insurance	
Group	No. farms	Amount $	No. farms	Amount $	No. farms	Amount $	No. farms	Amount $
I	None	None	None		12 6 3	None 10,000 25,000	1	10,000
II	5	10,000	None		6 16	None 10,000	None	
III	11 1 1	None 10,000 50,000	None		3 6 3 1	None 10,000 25,000 50,000	None	
IV	None		1	10,000	1 1 1	None 10,000 20,000	1	10,000
Total	52 7	None 110,000	1	10,000	22 37	None 510,000	2	20,000
(Average)	(7)	15,714			(37)	13,783		

Thus, it may be concluded that farmers were underprotected against liability suits, whether by formal or informal insurance schemes.

Loss of Possession by Fraud or Criminal Action

Loss of possession by fraud and criminal action was of minor importance in this study. Farmers in general did not insure their assets against losses from theft and fraudulent actions except on cars, trucks and certain personal belongings. It must, however, be recognized that though the magnitude of a loss through fraud or criminal action could be large, it is usually small and not frequent. Thus, it may be concluded that though farmers were inadequately protected by formal insurance, most had sufficient informal insurance (savings and other assets) to be adequately protected against small losses.

Loss of Net Income Resulting from Death or Disability of Key Persons

The loss of a key person from death or disability could seriously affect the financial progress of the farm and the security of the family. Death is a certainty. It is not that death will occur that creates the problem, but that death might occur when the business is in its infancy or when the farm is heavily mortgaged or when the breadearner has a large and young family to protect or an handicapped dependent to support. Thus life insurance must be viewed as a protection for the farm and family against premature death. While life insurance might be

bought as a source of retirement and savings plan, it was not examined from that point of view. Likewise, accident and sickness disability, health insurance, and hospital insurance were examined in relation to the amount of protection it provided to the farm business and the farm family.

Life Insurance

Two different approaches were used to establish the need for purchasing life insurance. In the first method farmers were asked to indicate the type and to justify the need for life insurance, while in the second method yardsticks were developed to measure adequacy.

To obtain uniformity, three main classes of life insurance were made, for the farmer to identify, namely: (1) protection, (2) protection and savings and (3) savings.[7] Questions were asked in reference to these three categories to determine what farmers wanted in life insurance. The largest proportion (62%) wanted protection in life insurance i.e. pure insurance. Most of these, 16 out of 37, argued that they would rather invest in the farm where returns on investment are higher than in life insurance where returns are minimal and lower. The remainder wanted life

---

[7] Savings was considered as an endowment or annuity insurance; while protection was interpreted as term. Savings and protection was identified as ordinary life, and limited pay life.

insurance for protection against debts or for their young growing family or for inheritance taxes.

Twelve farmers (20%) indicated that they wanted both protection and savings in life insurance. Of the latter, 75% reasoned that they wanted mainly protection for their dependents, growing family and debts. The remainder desired protection for their family and some saving for security and retirement.

Six farmers out of 59 preferred savings in life insurance either for education of their children or retirement income for themselves or their wives.

Four farmers were undecided and preferred not to buy insurance either because they were too old or had no dependents.

Farmers, in general, had not purchased the type of insurance that they wanted. Of the 229 life insurance policies bought 129 were intended for protection of which only 76 were in fact protection only. However, most of the farmers who had intended to buy savings in insurance had bought savings type insurance, as may be viewed from table XXV.

TABLE XXV

TYPES OF LIFE INSURANCE DESIRED AND BOUGHT

	Savings	Protection and Savings	Protection	Others	Total
Intended	48	23	129	29	229
Bought	41	86	76	26	229

I Change	II Change	III Change	IV Change	Total Change
$ 7.28 5.20%	$ 19.38 10.49%	$ 3.81 2.00%	$ -218.07 -30.56%	$ -1.59 -0.86%
$6,752.00 74.97%	$10,556.00 159.40%	$11,284.00 98.79%	$18,000.00 130.95%	$9,756.00 109.59%
$ 25.82 23.28%	$ 15.24 11.56%	$ 31.20 23.85%	$ -218.07 -30.56%	$ 10.67 6.93%
$8,083.00 116.14%	$10,531.00 180.09%	$11,334.00 113.49%	$18,333.00 130.95%	$10233.00 135.34%
3	2	3	0	8
12	18	14	2	46
2	2	-1	2	5
-3	-6	0	0	-9
0	-5	1	0	-4
0	0	1	0	1
-2	-1	0	0	-3
0	-4	-2	0	-6
1	1	-2	0	0

TABLE XXVI

SUMMARY AND COMPARISON OF LIFE INSURANCE IN 1961 AND 1965

IV (1961)	Total (1961)	I (1965)	II (1965)	III (1965)	IV (1965)	Total (1965)
$ 713.56	$ 184.12	$ 147.11	$ 172.53	$ 184.64	$ 495.49	$ 182.53
$14,000.00	$8,904.00	$15,760.00	$17,178.00	$22,705.00	$32,000.00	$18662.00
$ 713.56	$ 153.73	$ 136.72	$ 147.05	$ 162.00	$ 495.49	$ 164.39
$14,000.00	$7,561.00	$15,043.00	$16,353.00	$21,321.00	$32,333.00	$17794.00
0	23	6	5	4	0	15
0	17	19	20	22	2	63
5	32	13	9	8	7	37
0	47	11	17	10	0	38
2	39	11	14	8	2	35
0	0	0	0	1	0	1
0	10	0	4	3	0	7
0	16	7	1	2	0	10
0	6	3	3	0	0	6

Group Year or change	I (1961)	II (1961	III (1961)	I (19
Average premium (operator and other)	$ 139.83	$ 156.15	$ 180.83	$
Average insurance coverage (operator and other)	$9,008.00	$6,622.00	$11,421.00	$14,
Average premium (operator)	$ 110.90	$ 131.81	$ 130.80	$
Average insurance coverage (operator)	$6,960.00	$5,822.00	$ 9,987.00	$14,
No. of farmers with insurance on others	9	7	7	
No. of term insurance (op.)	7	2	8	
No. of ordinary life insurance (op.)	11	7	9	
No. of limited pay life insurance (op.)	14	23	10	
No. of endowment life insurance (op.)	11	19	7	
No. of term insurance (other)	0	0	0	
No. of ordinary life insurance (other)	2	5	3	
No. of limited pay life insurance (other)	7	5	4	
No. of endowment life insurance (other)	2	2	2	

A X^2 test was conducted to determine the degree of association between intentions and actions. It was highly significant at .001 clearly indicating that farmers had purchased something else than what they intended to buy. The reason for this discrepancy could have been similar to the following given by Consumer Reports:

> But wisdom doesn't come easy in the insurance market. The agent sells a confusing array of wares, and he seems to have a habit of keeping his pure protection policies tucked out of sight. The premium prices that he quotes may be full of imponderables-quantity discounts, annuity (retirement income) values, the rate at which cash savings accumulate in the policy, and the unpredictable timing and size of refunds of surplus premiums (dividends), to cite a few. His manner of speaking about a policy's duration can make what he calls "permanent" insurance sound like an essential safety feature when it may actually be unneeded optional accessory.[8]

In other words, farmers were perhaps confused as to what they were actually buying. This was reflected in the study when several farmers insinuated that they had bought insurance, "just to get rid of the salesman", or "because it sounded good".

Farmers had increased the amount of life insurance that they carried from an average of $7,561 to $17,794 in 1961 and 1965 respectively. They had purchased on their own life an additional $10,233 of pure life insurance with an additional $10.67 (6.93%) premium. It was evident that farmers had drastically changed their

---

[8] Consumer Reports Vol. 32, No. 1, op. cit. January 1967.

thinking on the role of insurance in their business and family. They had increased their own insurance policies by 38, while at the same time decreasing by eight the number of insurance policies from 32 to 24 on their dependents. The total number of term insurance policies as a percentage of total insurance policies had increased from 12.6% to 36.5%, with all farmers carrying some life insurance in 1965. This was evident as their total premium on life insurance had decreased by 0.86% with a marked increase of 109.59% in additional life insurance coverage.

It may be argued that this was not the most appropriate method for calculating insurance protection and that cash-surrender values should have been included as part of their total insurance protection. However, since the main objective was in evaluating and measuring adequate protection in case of disability (permanent and temporary) and premature death of the farmer and other key persons responsible for the welfare of the family and the firm, it was not relevant. Furthermore as security for loans in case of emergency, the cash values of most insurance policies were extremely small and quite insignificant in terms of helping finance a modern farm business.

The purpose of life insurance in any business is to cover against premature death of persons directly involved in the success of the business. Accordingly insurance coverage should be sufficient to fullfill two goals: (1) to replace the operator and his key personnel in case of imminent death until adjustments have been

completed and (2) to provide enough security for the family to maintain its present standard of living and fulfill its goals. As a group, it was only possible to establish that farmers carried on the average enough life insurance to cover their debts in both periods. This would appear to be a minimum criterion. It was questionnable, however, whether life insurance needs could be determined by grouping data. Further analysis was required in a more detailed form. Life insurance needs vary with each family, its standard of living, its goals, dependents, assets, liabilities, personal values and training of housewife. In this study, it was necessary to examine each farm family relative to certain agreed upon criteria. The farm business and the family were examined as a unit.

Family Life Insurance Needs

A need for life insurance is created when one or more persons of a family must depend on another member for money on which to live. Marriage does not automatically create economic dependency; it was assumed that a young, healthy wife would support herself so long as she had no children to support. Thus it takes an income earner plus some dependent person to constitute an insurable interest.

Family protection, in the event of premature death to the chief operator, must be adequate to fulfill goals. One of the main tasks of each family, must be to identify its goals and assess the effect of imminent death on the family's way of life. An adequate

insurance policy may best be measured against the consequence of death at a specified time period. Needs do change and for this reason must be reviewed periodically.

Under these circumstances, life insurance must be sufficiently large to supplement existing resources at an adequate level to guarantee economic security and fulfill present objectives.

At death the amount and type of economic security must fulfill the following needs:

(1) provide sufficient liquidity

(2) provide family monthly income

(a) During the critical monthly income period
(b) Widow working income period
(c) Widow retirement period

(3) Education fund

(4) Mortgage payments

At the time of death a certain amount of liquidity is required for living expenditure and for settlement and succession obligations. This liquidity may be available in cash, fairly liquid assets, off-farm investments, borrowing power or in life insurance.

Liquidity must be available for readjustment of the family and succession duties in the event of death. This amount will vary depending on the size of the estate and other objectives. Funeral costs, household bills, and medical costs must be paid shortly after death. Current expenses[9] and intermediate term loans must be settled in the

---

[9] This includes operating expenses, taxes, interest and unpaid short term loans, etc.

event of death. Executor funds must be provided, so as to permit effective and equitable distribution of present resources without liquidation of the farm. The family must be provided with a readjustment and emergency fund in the event of delays and unforeseen circumstances. Estate tax and income tax must be paid within 6 months of death or bear interest at 6%. Thus one main objective must be to provide the necessary liquidity until the family has had sufficient time to sell the farm at a reasonable market price and not be forced into a quick sale at a lower price. Life insurance plus existing resources must be adequate to provide sufficient income for the family until the children can provide for themselves and the widow can make necessary adjustments. Though existing assets must be liquid enough to buy groceries, pay current expenditures and meet living expenditures until the estate is settled, it must be sufficiently large to meet necessary expenses for raising a family to maturity. This period was identified as critical income period. In this study, it was assumed that the present standard of living (at present cash living expenditure) would be maintained until the youngest member of the family had completed high school, or reached the 18th birthday.

The amount of life insurance depends on the number of years of family responsibilities, present assets, level of living, debts and present goals. The more people there are depending on the bread-winner for support, the higher the cost of living expenditure. Likewise, the younger the children the more resources are required.

Health and resourcesfullness also influence insurance needs; such that when dependents are mentally or physically infirm insurance needs increase. Farmers with large wealth require less insurance than small ones with few assets and many debts. Yet, probably the most important factor influencing present levels of insurance are predetermined goals and desired standard of living.

Education fund must also be one of the main objectives in evaluating insurance needs. To-day most people view a college education for their children as virtually obligatory. Under this assumption it was estimated that parents would provide approximately half the cost of a college education. Thus, college education, calculated at approximately $1,500.00 per year for a four year period, would increase insurance needs considerably. The need for life insurance will be influenced by the widow's training, health, and the family's decision of whether to provide her with supplementary income during her working years. This period was identified as from her youngest childs' 18th birthday until she reached age 65, at which time she would receive old age security pension.

The family must decide whether it will supplement or guarantee the widow's income during her working period. It was assumed that if provided it would be sufficiently high to guarantee an above subsistence level.

The final step in any life insurance plan is to provide retirement income for the widow. It was assumed that if provided it would be adequate to provide the same level of income as in the preceding period until death. The sum was assumed to be sufficient

to buy an annuity guaranteeing the desired monthly income for life or up to age 85.

Mortgage insurance is not an end in itself but a means to an end. It may be desirable to carry sufficient life insurance to free the farm of debts, though it is not a necessity. As previously mentioned short term and intermediate term debts are usually due at death or shortly after. Under this circumstances, provisions should be made to supply this amount. Most long term debts can be refinanced or paid for when the farm is sold. The operator who wishes to clear the farm of debts to save on the interest payments and thereby increase the resources by that amount would increase his resources by the amount of interest saved and must account for it when planning insurance needs.

Economic resources will not all be spent on necessities immediately after death and must be discounted. Unused funds should be discounted for the interest they can earn in the interim. However, if history is a guide to the future, price inflation will cut sharply into insurance funds, and sufficient resources should be provided to overcome these sharp rises in prices. In this study it was assumed that interest on investment would yield 5½% (tax free), while inflation would increase by 2.5% per year, giving a net annual return of 3%. It was further assumed for easier calculation that the farm was sold and the funds invested in government bonds or fairly liquid assets. When the funds are invested in real estate the funds must be discounted for the full interest less income taxes that they

will earn. Real estate, usually follows price rise and increase in value with inflation, earning higher interest.

The first step was to determine liquidity needs.

STEP I

Immediate Commitments at death		Liquid Assets	
Income Tax	_____	Life Insurance already in existence	_____
Estate tax	_____	Off-farm investment	_____
Funeral expenses	_____	Cash on hand	_____
Settlement fund (executor fund, transfer & lawyer fees etc.)	_____	Pension plan and others (lump sum) only	_____
Debts to be liquidated at death (short term debts, intermediate term debts (current operating expenses)	_____	Borrowing ability of widow	_____
		Sub total	B
Emergency fund (to carry over current living expenditure, household)	_____	Livestock	_____
		Grain and feed	_____
Total liquidity needs required upon death	A	Total liquid assets	B

STEP II

The second major step was to assess the adequacy of assets to meet family responsibilities in the event of premature death.

Critical Income Commitment		Total Assets	
Total liquidity needs required upon death	A	Total farm assets	
		Life Insurance	
Long term debts		Off farm investment	
Present lump sum for family until children are grown (less pension income)			
Housing fund			
Total lump sum required for critical monthly income period	C	Total Assets	D

STEP III

The third major step was to establish an education fund. However, since the fund will not be required for a number of years it will earn interest in the interim at 3% net interest.

Education Fund		Assets for Education Fund	
Total Education	E	Total Assets	D
		Less Total Critical income commitment	C
		Total for education	F

STEP IV

The family may also establish insurance for retirement.

		Assets remaining to supplement widow's income	
		Total	F
Lump sum required until widow reaches 65 years	G	less total	E
		Total (remaining supplement widow's income)	H

STEP V

Widow's retirement income from age 65 until death.

Lump sum value of retirement income (less annuities, pension plan)	I	Residual assets in above step	J

By following the above rules and setting priorities on liquidity commitments and adequate economic security for the critical income period and education funds, farm families were analyzed. The analysis was completed for 1961 and 1965.

The above forms (presented) were used to measure life insurance needs in terms of priorities.

The most difficult item to arrive at was a suitable and reasonable valuation of liquidity needs. It was necessary to make certain estimates in regards to readjustment fund, funeral expenses, executors fund, current debts, succession duties, and others so as to calculate liquidity needs. Income tax was calculated on the sum of 1961 or 1965 net cash farm income, less depreciation plus livestock, grain and feed inventories less a basic exemption of $1,000, $1,000 for his wife, $100 medical expense, less $300[10] for each dependent child under 18 years of age using 1961 and 1965 income tax schedule rates, as shown in Tables LIV and LV in Appendix C.

In practice, farmers use a higher depreciation rate on depreciable assets than those used in the study. On the other hand,

---

[10] In 1961, $250 was allowed for deduction per dependent child.

many assets were fully depreciated for income tax purposes. It was assumed that the present depreciation rate was a fair estimate of depreciation for income tax purposes. Estate tax was calculated on net worth less income tax paid with $40,000 basic exemption, $20,000 survivor exemption (for dependent spouse) and $10,000 for each dependent child under 21 years of age using 1961 estate tax schedule rates. Current debts were defined as short term debts, and intermediate debts, which had to be paid at death or shortly after.

Current farm expenses were impossible to estimate. It was assumed that the business was sufficiently efficient to pay current farm expenses or carry them until settlement had been completed. Funeral expenses and other medical costs were estimated at $900 and $1,000 in 1961 and 1965 respectively. This amount will vary with medical, hospital and other medical bills which have to be paid at death.

Settlement fund was estimated at $1,800 and $2,000 in 1961 and 1965 respectively. Settlement funds included readjustment fund, transfer fees, lawyer fees, executor's fund and miscellaneous expenses. It was fully recognized that this amount would be influenced by size of estate, estate planning, wills and other family decisions, but for calculation it was necessary to assume a certain value.

Emergency fund was valued at the present cash living expenditure and fluctuated greatly with each family. It was interpreted as the sum of money required to tide the family over

until the estate had been settled. It could significantly have been higher if it had been considered as a true emergency fund used only for illnesses or other misfortunes.

These were totaled to arrive at the amount of liquidity required at death or shortly after. On the same form, liquid assets were calculated using present life insurance (face value only), off-farm investments, and borrowing ability of widow. Borrowing ability was assumed as an amount totaling up to 25% of total assets. This gave us a subtotal which would provide necessary liquidity without selling out of livestock, grain and feed. However, total liquid assets may be obtained by selling livestock and grain and feed, which are fairly liquid assets.

The second form was used to assess critical income commitments. Housing funds were assumed at $13,000 and $15,000 in 1961 and 1965 respectively and long term debts as mortgage payments on farm. Present lump sum required for family until children were mature was calculated using table XLI in Appendix C at 3% interest. The procedure was to determine the number of years monthly income was required and multiply that amount by desired level of monthly income divided by 100. It was assumed that the desired monthly income, during the critical income period, was the present cash living expenditure. For example let us assume that the present level of living is $400 per month and that this income is to be maintained for 15 years.

$$\frac{400. \times 14,557.}{100}^{11} = \$58,228.$$

---

[11] Value taken from table XLI earning interest at 3% per year.

TABLE XXVII

SUMMARY OF ADEQUATE LIFE INSURANCE COVERAGE IN 1961 AND 1965

Level of Life Insurance / Insurance Needs	Liquidity*		Liquidity (livestock grain and feed) included		Critical Income Period		Education Fund		Working Period		Retirement Period	
	1961	1965	1961	1965	1961	1965	1961	1965	1961	1965	1961	1965
Adequate life Insurance	(21)**	(38)	(50)	(57)	(10)	(31)	(6)	(27)	(4)	(11)	(2)	(10)
	36%	64%	85%	96%	21%	53%	14%	47%	8%	29%	4%	27%
Inadequate life Insurance	(38)	(21)	(9)	(2)	(38)	(28)	(39)	(32)	(44)	(43)	(46)	(44)
	64%	36%	15%	4%	79%	47%	91%	53%	92%	71%	96%	73%

* Liquidity - includes only life insurance and off farm investment.

** In bracket, represents the number of farmers. There were 11 and 5 bachelors in 1961 and 1965 respectively.

The present lump sum required was $58,228.

In the event of a pension plan, monthly income derived from the pension must be subtracted from the desired level of income.

Total assets were calculated from total farm assets, plus life insurance and off farm investment.

The difference between Total D and C determined adequate insurance income.

Step IV was calculated in the same manner as for critical income except that the value was discounted for the interest earned in the interim.

For example assuming that present income was required for 15 years at $200. a month 15 years from now. Then

$\frac{200 \times (14,557)}{100}$ = $29,114. The amount would be discounted at present 3% using table LII in Appendix C

$$29,114 \times .597 = \$18,381$$

Present value of lump sum required for widow until she reaches age 65 was $18,381.

The final step was to determine retirement income at $100. per month. Similar procedure was used to evaluate adequacy. By this method, it was found that there was a significant change from 1961 to 1965. While in 1961, it may be concluded farmers carried inadequate insurance, they carried sufficient amounts in 1965. In 1965, it was found that 64% of the farmers had adequate life insurance plus off-farm investment to fulfill liquidity needs.

However, 96% had adequate liquid assets to meet liquidity commitments at death or shortly after. Forty-seven percent of the farmers had adequate resources to maintain present standard of living during the critical income period, while 17% had adequate securities for retirement income, with an additional 10% being bachelors, having no responsibilities. Approximately 69% of the inadequately protected were from farm families with operators of less than 40 years of age. This was further evident when 84% of the operators less than 40 years of age were inadequately protected to fulfill their responsibilities.

Assuming that the wife had special training and would work after her husband's death, an additional 10 farmers had sufficient insurance protection. This increased the total of adequately protected farmers to 63% (or as high as 73% including bachelors). Thus, it may be concluded that most farmers had adequate life insurance protection against premature death, especially when the housewife had special training.

Accident Disability and Sickness Insurance

In general farmers showed considerable dissatisfaction for accident and sickness insurance plan, with 37% emphatically refusing to carry any, with 19% being unsure and questionning the plans, and with an additional 17% arguing that it was necessary but finding the claims too difficult to collect and with too many restrictions. There were 19% who felt that they had to carry some.

TABLE XXVIII

MEDICAL, HOSPITALIZATION, ACCIDENT AND DISABILITY INSURANCE, COSTS AND COVERAGE IN 1961 AND 1965

Year			1961							
			Medical Cost Insurance					Accident & disability		
Group	Total Number farms	Total number families	No. farms	No. families	Cost $	Coverage $	Hospitalization Insurance Premiums $	No. farms	Coverage	Cost $
1	21	23	none	none	none	none	960.00	2 2	2 plans 1 plan up to $3,000.	101.63
11	22	23	1	1	79.20	HCX	1,032.00	4 3	1 plan 2 plans	173.15
111	13	16	1	1	42.00	H	600.00	4 1 1	1 plan 2 plans Polio & special diseases	120.00
1V	3	4	2	2	136.00	H Private	210.00	None		
TOTAL	59	66	4	4	257.20		2,760.00	17	21plans	294.78
Average per farm					4.30		46.77			5.00

TABLE XXVIII Continued.....

MEDICAL, HSOPITALIZATION, ACCIDENT AND DISABILITY INSURANCE, COSTS AND COVERAGE IN 1961 AND 1965

Year			1965							
			Medical Cost Insurance				Hospitali-zation Insurance Premiums $	Accident & disability		
Group	Total number farms	Total number families	No. farms	No. families	cost $	coverage		No. farms	Coverage	Insur. Prem. $
1	21	23	21	23	2,462.35	9 HCX 6 HC 5 H Supp + Muni. 3 Municipal	1,056.00	6	1 plan	141.65
11	22	23	20	21	1,119.60	7 HCX 2 HC 1 H 2 HCX + Mun. 8 H + Mun. 1 Mun. 2 None	1,008.00	9 1	1 plan 2 plans	284.60
111	13	16	12	15	999.96	7 HCX 1 HC 1 H 1 HCX + Mun. 4 H + Mun. 1 None	696.00	2 1	1 plan Monthly income	151.00
1V	3	4	2	3	129.00	1 HCX 2 H 1 None	168.00		None	None
Total	59	66	55	62	4710.91		2,928.00			577.25
Average per farm					59.54		49.62			9.78

Very few farmers had accident disability and sickness insurance policies. Many carried accident disability to cover medical cost through the patronage of grain and fuel companies. Seventeen and twenty-one farms had purchased accident disability insurance on their own in 1961 and 1966 respectively; only two had accident disability and sickness income insurance which would provide them with a continuous source of monthly income if permanently disabled. None had compensation insurance for their employees. Two had taken additional medical insurance through their grain buying company. Five farmers had no accident disability and sickness insurance, whether purchased or through patronage of a supply company. An adequate insurance plan should provide sufficient income in case of disability to hire someone of comparable management skill to offset increase expenses or loss of income. It may be concluded that farmers carried inadequate accident disability and sickness insurance.

Hospitalization

Hospitalization, being compulsory in Manitoba, it may be concluded that farmers had adequate protection to cover their hospital costs. Their contribution to the Manitoba Hospital Commision covers their hospitalization costs in any Manitoba hospital, or in other provinces and other countries in emergencies. Under these circumstances, it may be concluded that farmers were adequately protected against this risk.

Medical Insurance

Much controversy and interest had developed on various medical insurance plans in Manitoba in the period under study. This may account for the significant change of medical protection in the group over the 5 year period. In 1961, 4 out of 66 families had medical protection; while in 1965, 62 out of 66 families had a medical insurance plan. In the latter period, four were protected through a municipal plan only, while 58 out of 66 families had purchased their own medical insurance or taken an additional amount over and above municipal insurance.

From this it may be concluded that though farmers were inadequately protected in 1961, they were adequately protected against medical costs in 1965.

Informal Schemes

Diversification

Diversification has long been recognized as a method for stabilizing income. Farmers favored diversification as an insurance method. When farmers were asked to state the importance of diversification as an insurance scheme, 40.7% believed that it was very important, 37.3% stated that it was important, but they recognized that they had to specialize and 22% rejected it as in insurance scheme.

Different reasons were given to justify diversification as a very important protection method. To some diversification meant the difference between being bankrupt and farming, to others it served

as a method for spreading the work load or to stabilize income, to some to utilize low quality feed, and to serve as security in case of drought, hail, crop failure and for borrowing purposes. Farmers who refused to recognize diversification as a method for protecting against risk, gave these reasons: that there was no relationship between diversification and stability of income, that it was a habit (misconception) rather than a sound management principle, and that it increased risk by spreading management too thinly. For them it was too difficult to keep up to date on new innovations and technological breakthroughs. They believed that today's farming forced them to specialize, to take advantage of economies of scale.

Diversification was found to stabilize income and reduce the coefficient of variation of net farm income over five years. Yet, while farm enterprise diversification had some stabilizing effect on net farm income, it was negatively correlated with the number of enterprises. It may be interpreted that as additional farm diversification stabilizes income, net farm income decreases with additional farm enterprises.

Off Farm Investment

Off farm investment may also be considered as a form of diversification, and as a source of liquidity. From table XXIX, it was possible to evaluate the amount of off farm investment on each farm. It was beyond the scope of the data to establish the reliability and interest return from off farm investment. For this reason it was impossible to establish whether farmers had sufficient off-farm

TABLE XXIX

OFF FARM INVESTMENT IN 1961 AND 1965

Year										
					1961					
Group		Real Estate	Shares C.U.	Bonds	Debenture loans	Savings plan	Annuities	Pension Plan & Common share	Total	Total Operator and Wife
1	Op.		1137 (8)	4000 (6)	802 (2)	3767 (3)	---		9706	
	F.		719 (3)	950 (4)		237 (1)	---		1906	11612
11	Op.		4502 (6)	10951 (13)	7283 (9)	25975 (9)	---	250 (1)	47858	
	F.			2415 (4)	3150 (1)	5500 (2)	---		12065	59923
111	Op.	7500 (1)	15281 (9)	7900 (8)	4400 (4)	12295 (5)	---	1000 (1)	48376	
	F.	7000 (1)	624 (2)	4700 (4)		450 (1)	700 (1)		13474	61850
1V						None	---			
Total Op.		7500 (1)	20920 (23)	22851 (27)	12487 (15)	42037 (17)		1250 (2)	105940	
F.		7000 (1)	1343 (5)	8065 (12)	3150 (1)	6187 (4)	700 (1)		27445	133385

Continued. . . . . .

TABLE XXIX.....OFF FARM INVESTMENT IN 1961 AND 1965

Year		1965									
Group		Real Estate	Shares C.U.	Bonds	Debenture Loans	Savings plan	Annuities	Pension Plan	Total	Total operator & wife	Change from 1961 Op. & family percent
I	Op.		10173 (12)	7280 (6)	510 (4)	3900 (2)			21868		
	F.		1555 (3)	1300 (2)		1039 (1)			3894	25762	121.85
II	Op.	9500 (3)	31152 (14)	8080 (9)	5239 (8)	47624 (15)	500 (1)	800 (1)	101895		
	F.		4321 (2)	10050 (6)	1200 (1)	12642 (2)			23892	125787	109.91
III	Op.	6550 (4)	18027 (9)	8350 (7)	17587 (6)	26922 (9)	6000 (1)		83436		
	F.		10326 (5)	250 (1)	800 (2)	3940 (2)		2600 (1)	17916	101352	63.86
IV						517 (1)			517	517	
Total	Op.	16050 (7)	59357 (35)	23710 (22)	23336 (18)	78963 (26)	6500 (2)	800 (1)	207716		
			16202 (10)	11600 (9)	2000 (3)	17621 (6)		2600 (1)	45702	253418	89.98

Note: In brackets indicates the number of people with plans.

Op. Operator

F. family (includes wife's off-farm investment.

investment to help stabilize net income. Farmers had on the average $4,295. and $2,261 of off farm investment in 1965 and 1961 respectively with an 89% increase over five years. This off farm investment was readily convertible into cash which could be used in emergencies. By itself off farm investment has very little significance, but must be considered in combination with crops, fire and insurance schemes.

Off-farm Income

Off farm income[12] was fairly important as a source of income. On the average 18% of the total net income was received from off-farm sources, with one farmer receiving as much as 60% of his income from this source over the five year period.[13] It was not possible to indicate the source and reliability of this income nor which member of the family earned it. Nevertheless, off-farm income constituted an important source of revenue and helped farmers to increase their net income as may be viewed from table XLIX in appendix C.

---

[12] Non farm income consisted of all types of off farm income from family allowance, custom work, part time jobs, off-farm family income by children or wife, real estate income and interest from bonds, stocks etc.

[13] Net farm income and off-farm income were compared rather than gross farm income because of the method of calculating off-farm income. In practice most expenses relating to off-farm income are included in farm expenses. It becomes more significant to compare net farm income with off-farm income.

Summary of Results on Insurance Schemes

We are in a position to summarize the results on the first three hypotheses. In hypothesis one, it was stated that farmers are underprotected in regards to every risk. Data presented supports this main hypothesis:

While the majority of farmers had sufficient fire insurance to cover losses of buildings, machinery and equipment and household content resulting from fire; very few had adequate fire insurance on grain feed and livestock. A minority carried extended coverage insurance on buildings and livestock. In aggregate the probability of this risk is small, which makes it a rather inexpensive insurance when taken with a standard fire insurance policy. Farmers could have purchased this type of insurance plan with very little extra cost. Farmers carried inadequate formal and informal insurance to cover crop expenses in the event of a crop failure.

Farm families had adequate life insurance to cover liquidity needs in both periods. In 1965, 53%[14] had sufficient resources to fulfill the family's financial commitments during the critical period. Considerable changes occurred during the 5 years, but still not sufficient to fulfill these needs in the event of premature death.

---

[14] Compared to 21% in 1961.

Few of the farmers had adequate reserves to replace the loss of income arising from permanent or temporary disability. In all cases, except two, they carried a compensation insurance plan (for a loss of a limb, life) at low coverage. The majority had adequate hospitalization and medical insurance to cover medical expenses.

Farmers had inadequate general, exmployer's and product liability insurance, with most carrying no formal insurance. In general, they had confidence and trust in their neighbours and felt that this risk was extremely small, even impossible.

Thus, it may be concluded that the evidence supports this hypothesis.

The second hypothesis, that farmers' assessment of risks is more precise in areas of tangible assets and risks than of the less obvious, was generally supported. It was shown that farmers had sufficient fire insurance on buildings, machinery and equipment, household contents, but lacked insurance on crops, feed and grains and livestock. Yet it was shown that they had inadequate insurance and general liability, premature death of a key person, accident and sickness disability, and medical costs in 1961.

Thus, it may be concluded that farmers' assessment of risks is more precise in areas of tangible assets and risks than of the less obvious.

The third hypothesis, that influences external to the business serve as guides for protecting the business from risk, was more difficult to test and evaluate. As evidenced from the information obtained farmers had a fairly accurate assessment of their insurance needs on fire and tangible assets. Most farmers, however, had inaccurate or lacked information on many aspect of insurance. Under these circumstances, they had to rely on the insurance agent or hearsay to purchase insurance. This was particularly noticeable when they were asked to give their own thinking and philosophy on insurance.

On life insurance many farmers bought the wrong type of insurance, where they had indicated that they wanted to buy one type while they had bought another. This was further evidenced by the change in policies which had been made in the five year period. They had reduced the number of insurance policies on other members of the family while at the same time increasing their own protection for very little extra cost.

In general, farmers had very little knowledge about liability insurance and thought they were immune from an adverse judgment of law. Employer's liability, farm comprehensive liability, and product liability insurances were practically unheard of on the largest number of farms. While many acknowledged that they had heard about liability suits they felt that they could do without this protection. They were under the impression that they were living in an honest neighbourhood where everybody knew each other and trusted one

another. Their assessment of potential liability was badly underestimated and rather illogical.

Accident disability and sickness insurance were not recognized as a necessary part of insurance needs. Fifty percent of the plans in force had been purchased for premature death resulting from accident. While 73% of the farmers had either refused to take this type of plan or held very little faith in the plan, many of the farmers had taken accident disability. Under these circumstances, it may be concluded that farmers were either irrational, ignorant about the type of coverage protection or influenced by outside pressures.

Thus, it may be concluded that influences external to the business served as guides for protecting the business from risk when the farmer had unsatisfactory or inadequate knowledge.

Part II

ATTITUDES TO RISK, INCOME AND VALUE

Economists, rural sociologists and extension persons often contend that there are large financial rewards for taking investment risks and adopting new farm practices early. More accurate extension recommendations could be made, if it were shown that entrepreneurs with aggressive risk taking attitudes made correspondingly more rapid financial progress.

Two major hypotheses were forwarded to verify this theory:

(1) That attitudes of younger farmers toward income aspirations, risks and values differ from that of older farmers.

(2) That such attitudes constitute restrictions or stimuli of primary importance to the financial success of the farm business.

Working hypotheses were constructed to permit the use of

more accurate statistical tests.

Relationship of Age to Attitudes

The first main hypothesis was tested.

Working Hypothesis I

"That an association between risk attitudes and age exists."

TABLE XXX

ASSOCIATION OF AGE TO RISK ATTITUDES

Sub-Classes	Classes	Age
Aggressive Risk Taker	Risk Seekers	33.3
" " "	Willing Risk Takers	33.6
Cautious Risk Taker	Unwilling Risk Takers	41.0
" " "	Risk Averters	40.5

According to the above table XXX, younger farmers were more aggressive risk takers than older ones. There were no gradual increases, rather it was a clear cut difference between two groups - aggressive risk takers and cautious risk takers.

By the use of Spearman rank test a correlation of - .45 significant at .005,[15] was found. This lends strong support to the hypothesis that younger farmers had more aggressive risk taking attitudes than older ones.

Working Hypothesis II

That age and income aspirations are correlated.

Farmers were stratified by age into three groups: 43 and over, 33 to 42, and 32 and under. It was assumed a priori that farmers who had started farming during or prior to the depression years would be cautious risk-takers and were classified in one group, 43 and over. From that point on, no special reason to group farmers other than in intervals of 10 years was used.

TABLE XXXI

ASSOCIATION OF AGE TO INCOME ASPIRATION

Income Aspiration \ Age	43 & over	33 to 42	32 & less	Total
Ambitious	3	8	7	
Desirable	4	3	3	28
Mediocre	4	3	8	
Satisfactory	3	9	4	31
TOTAL	14	23	22	59

By X^2 and contingency coefficient, it was evident that no relationship existed between age and income aspiration.

---

[15] We were able to test the significance of the hypothesis by the following formula:

$$t = r_s \sqrt{\frac{N - 2}{1 - r_s}}$$ with N-2 degrees of freedom

Working Hypothesis III

That age and value orientation were correlated.

As in the previous working hypothesis age was classified in three groups. Value orientation were grouped in three main classes: (1) More Profit Oriented - farmers who were scored as luxury and/or profit oriented. (2) Profit and Material Comfort Oriented - farmers who - had been classed - in any one of the following combination as profit and/or luxury and security and/or leisure oriented. (3) Material comfort - farmers who had been classed as material comfort and/or leisure oriented.

TABLE XXXII

ASSOCIATION OF VALUE ORIENTATION TO AGE

Value orientation \ Age	43 & over	33 to 42	32 & less	Total
More Profit Oriented	0	3	8	11
Profit & Material comfort Oriented	7	6	8	21
Material Comfort Oriented	7	14	6	27
Total	14	23	22	59

The table showed that no relationship existed between age and value orientation. However, the data indicated that farmers under 32 years of age were more profit oriented desiring higher material comforts. Likewise, none of the farmers over 43 years of age were

solely more profit oriented; along with profits and luxuries, they either wanted less work, more security, more satisfaction or to farm as a way of life. Nevertheless, we must conclude that while there is some evidence to support the hypothesis, no strong association exists between age and value orientation.

From the above statistical tests it may be concluded that younger farmers have higher risk taking attitudes, but not necessarily different value orientations and income aspirations than older farmers.

The second main tentative hypothesis states that risk attitude, income aspiration and value orientation constitute restrictions or stimuli of primary importance to the financial success of the farm business. Many different methods and working hypotheses were used to test this main hypothesis.

At the outset, financial success may be measured in many different ways: gross profit, net farm income, financial growth, earned financial progress, margin for growth, and gains from farming. In this study three methods of measuring financial progress were utilized namely net farm income, margin for growth, and gains from farming.[16]

---

[16] These terms were defined as follows:
Net farm income: average return for family labor, operator's labor and management, and interest on farm equity over a five year period.
Margin for growth: net farm income less family living expenditures.
Gains for farming: total margin for growth plus capital gains.

Association between Risk Attitude and Financial Progress

Working hypothesis I

That risk taking attitudes was positively correlated to financial progress.

By cross tabular analysis, farmers with aggressive risk taking attitudes had higher net farm income than those with cautious risk taking attitudes.

TABLE XXXIII

ASSOCIATION OF NET FARM INCOME TO RISK ATTITUDE

Risk Attitude	Net Farm Income $
Risk Seekers	7,467.47
Willing Risk Takers	6,279.93
Unwilling Risk Takers	5,202.36
Risk Averters	4,226.53

By Spearman Rank correlation test we were able to establish that a correlation of .33 existed between net farm income and risk attitude which were significant at the .05 level.

Gains from farming were positively correlated to risk attitudes by the Spearman Rank test (r_s). The correlation was weaker than for net farm income at .23 but still significant at the .05 level.

When the data was examined for correlation between risk

taking attitudes and margin for growth no correlation was evident at the .05 level. These results tend to indicate that risk taking attitudes had very little influence on living expenditures which indirectly influences rate of growth. We may also surmise that gains from farming were influenced more by previous decisions (i.e. capital gain) such as previous investment decisions and farm practices than from present risk attitudes, as evidenced from the weaker correlation.

To obtain a more accurate evaluation of the main hypothesis, farmers were categorized in three groups based on 1961 total farm capital investment and evaluated for associations between financial progress and other variables.[17] By this classification we were able to isolate the influence of farm capital investment on risk taking attitude.

TABLE XXXIV

FREQUENCY DISTRIBUTION OF RISK ATTITUDE, CLASSIFIED BY SIZE OF FARM INVESTMENT

Groups \ Risk Attitudes	R S	WRT	UWT	RA	Total
Group I	4	3	5	9	21
Group II	5	7	6	4	22
Groups III & IV	6	5	3	2	16
TOTAL	15	15	14	15	59

[17] The same classification as the previous chapter was used. In this section, farmers were classified in three groups - I, II, and III & IV.

This was particularly noticeable when 68% in group III and IV were high risk takers; while 67% in group I were low risk takers. The table XXXIV showed that larger farmers had higher risk taking attitudes than smaller ones. It was impossible to finalize, however, whether they were willing to risk because they could afford to risk or because of this attitude they were able to make rapid financial progress.

Further information was obtained by a two way cross tabular analysis.

TABLE XXXV

ASSOCIATION OF RISK ATTITUDE TO NET FARM INCOME WHEN CLASSIFIED ... TOTAL FARM INVESTMENT

Risk Attitude \ Group	1	11	111 & 1V
Risk Seekers	4487	8140	8894
Willing Risk Takers	3490	6286	6981
Unwilling Risk Takers	3179	5861	6258
Risk Averters	4311	3832	5319

In the above table XXXV, net farm income was positively correlated to risk taking attitudes in groups 11, and 111 & 1V. In Group 1 no correlation was evident between risk attitudes and net farm income. In group 1, one risk seeker had experienced poor crop years, while similarly one risk averter was an excellent manager who

had above average crops. This may explain the reason for the lack of correlation in the first group. Under these circumstances, it may be concluded that a correlation existed between risk attitude and financial progress, with higher risk takers making correspondingly higher net farm income.

Correlation between margin for growth and risk attitude was also tested.

TABLE XXXVI

ASSOCIATION OF MARGIN FOR GROWTH TO RISK ATTITUDE WHEN CLASSIFIED BY TOTAL FARM INVESTMENT

Groups \ Risk Attitude	R.S.	W.R.T.	U.R.T.	R.A.
1	6168	5596	5200	6473
11	16448	14981	10371	5752
111 & 1V	18324	12617	9745	4798

A positive correlation existed between risk attitude and margin for growth in groups 11, and 111 & 1V, while in group 1 no correlation was apparent. It was evident that group 11 had a higher margin for growth than group 111 & 1V despite a lower net income.

Using the same classification there were no correlation between gains from farming and risk attitude.

TABLE XXXVII

ASSOCIATION OF GAINS FROM FARMING TO RISK ATTITUDE

CLASSIFIED BY TOTAL FARM INVESTMENT

Groups	R.S.	W.R.T.	U.R.T.	R.A.
I	13788	14764	12502	15760
II	39401	25736	21358	19848
III & IV	39467	40842	20577	37107

Since gains from farming are largely capital gains, a direct function of capital investment it was not necessarily the farmer's present risk attitudes which accounted for rapid rate of growth.

It may be concluded that there are some evidence to support the hypothesis that farmers with higher risk taking investment attitudes have greater financial progress than farmers with low risk taking attitudes.

Association between Income Aspiration and Financial Progress

Working Hypothesis II

That income aspiration was positively correlated to financial success.

Income aspirations were categorized in four distinct groups: ambitious, desirable, mediocre and satisfactory.[18] By cross tabular

[18] For further information on the meaning of this classification refer to page 88.

analysis, , as summarized in table XXXVIII, it was evident that financial progress was positively correlated to income aspirations.

TABLE XXXVIII

ASSOCIATION OF GAINS FROM FARMING, NET FARM INCOME, MARGIN FOR GROWTH TO INCOME ASPIRATIONS

Income Aspirations	Net Farm Income	Margin for Growth	Gains from Farming
Ambitious	8,609	17,400	37,689
Desirable	5,296	10,195	27,525
Mediocre	4,923	7,655	17,601
Satisfactory	3,424	3,577	13,502

Thus, it may be concluded that financial progress and income aspiration were positively correlated.

Association between Value Orientation and Financial Progress

Working Hypothesis III

That financial progress was positively correlated to higher profit oriented values.[19]

Four major value orientations were constructed and tested individually with net farm income. To facilitate testing four working hypotheses were forewarded.

---

[19] Value orientation was interpreted as a propensity or desire to act in a certain direction or toward certain objectives and goals.

Working Hypothesis (a)

That profit oriented values were positively correlated with financial progress.

By X^2 and Contingency Coefficient, a positive correlation of .25 significant at .05 was determined.

TABLE XXXIX

ASSOCIATION OF NET FARM INCOME TO PROFIT ORIENTED VALUES

Oriented Values \ Net Income	$5,000. and over	less than $5,000.	Total
Profit	9	2	11
Non-profit	23	25	48
Total	32	27	59

The statistical data conclusively showed that more than 80% of the profit oriented farmers had incomes over $5,000.00 with more than half having net farm incomes averaging over $9,000.00 per year.

Thus, it may be concluded that profits oriented values are positively correlated to net farm income.

Working Hypothesis (b)

That luxury oriented values were positively correlated to financial progress.

TABLE XL

ASSOCIATION OF NET FARM INCOME TO LUXURY ORIENTED VALUES

Oriented Values \ Net Farm Income	$5,000.00 & over	Less than $5,000.00	Total
Luxury	21	7	28
Non-luxury	11	20	31
Total	32	27	59

By X^2 and contingency coefficient, luxury orientations was positively correlated at .37 and significant at the .05 level. Luxury oriented farmers desired trips, holidays, vacations, travelling and in many instances a new house. They desired benefits greater than mere material comfort goods, depending heavily on farm resources to provide them with these resources.

Working Hypothesis C

That security orientation was negatively correlated to financial progress.

Farms were stratified in two groups, security oriented and non security oriented. By the use of X^2 and contingency coefficient it was evident that no association existed between security orientation and net farm income.

TABLE XLI

ASSOCIATION OF NET FARM INCOME TO SECURITY ORIENTED VALUES

Oriented Values \ Net Farm Income	$5,000.00 & over	less than $5,000.	Total
Security	12	16	28
Non-security	20	11	31
Total	32	27	59

It was suspected that since security oriented farmers may also be profit and luxury oriented that these values may have more influence than security value and offset its effects. To overcome this difficulty the twenty-eight security oriented farmers were divided into two groups: (a) profit or luxury and security, and (b) security oriented. Security oriented farmers had an average net farm income of $4,116., compared to $7,838. for the profit or luxury group. This information suggests that security oriented farmers do have lower net farm income, but whenever these attributes occur in combination with either profit or luxury values that it becomes recessive.

Thus it may be concluded that net farm income was negatively correlated to security orientation.

Working Hypothesis D

That leisure orientation was negatively correlated to financial

success.

Farmers were stratified in two groups as to whether they were leisure oriented or non leisure oriented. By X^2 and contingency coefficient, it was shown that no association existed between the two variables.

TABLE XLII

ASSOCIATION OF NET FARM INCOME TO LEISURE ORIENTED VALUES

Oriented Values	$5,000. & over	less than $5,000.	Total
Leisure	14	10	24
Non-leisure	18	17	35
Total	32	27	59

Thus it may be concluded that leisure orientation was negatively correlated to financial progress.

From the above statistical tests, it may be concluded that luxury and profit orientations, were correlated with higher net income, while security and leisure orientations were of lesser significance, being overruled by profit and luxury orientations, whenever they occurred in combination.

The next procedure was to test the relationship between value orientations and margin for growth, and value orientations and gains from farming. By cross tabular analysis, it was evident that no

relationship existed between these variables and financial progress.

TABLE XLIII

ASSOCIATION OF NET FARM INCOME, MARGIN FOR GROWTH,

GAINS FROM FARMING TO VALUE ORIENTATIONS

Value Orientations	Net Income	Margin for growth	Gains from farming
More Profit Oriented	6735	11093	29477
Profit & Material Comfort Oriented	6612	11697	30448
Material Comfort Oriented	4500	8090	19449

The above table XLIII indicates that value orientation was positively correlated to net income. Yet it failed to indicate any strong correlation between margin for growth and gains from farming.

Since gains from farming was derived in large part from capital gains (a direct function of capital investment), farmers were categorized by total farm capital investment in three groups, and compared for gains from farming and value orientations.

TABLE XLIV

ASSOCIATION OF GAINS FROM FARMING TO VALUE ORIENTATIONS

CLASSIFIED BY TOTAL FARM INVESTMENT

Oriented Values	Group 1 $	Group 11 $	Group 111 & 1V $
More profit	14128	35974	59855
Profit and Material comfort	15389	31890	35319
Material comfort	14299	18568	32105

From table XLIV profited orientation was positively correlated to gains from farming. Group 1 showed no correlation. However, when two farmers, one in more profit category and another material comfort were excluded from this group, a positive correlation did exist.

Thus, it may be concluded that profit orientation was a stimulus to higher net farm income, and gains from farming, but not necessarily to higher margin for growth.

Influence of Attitude on Financial Progress

We are now in a position to examine the main hypothesis that these attributes in combination constitutes a stimuli or restriction of primary importance to financial success. To verify this general hypothesis, we classified farms according to net farm income, margin for growth and gains from farming. The attitude attributes were examined in view of one of these measures of financial progress.

Farmers were ranked and categorized in quartiles according to one of the above measures of financial success. Each category was examined in turn and discussed in detail.

Association of Net Farm Income to Attitudes

Table XLV summarizes the association between net farm income and risk attitude, income aspiration and value orientation attributes.

In the top quartile, farmers with higher net income had higher risk taking attitudes, more ambitious income aspirations and profit or luxury oriented values than in other quartiles. In this first quartile only four had security oriented values.

In contrast, in the bottom quartile farmers had mostly risk averting or unwilling risk taking attitudes, low income aspirations and material comfort, security or leisure oriented values. One farmer indicated that he was partly profit oriented yet he stated that he was completely satisfied with his present level of income and his present standard of living desiring nothing more.

TABLE XLV

RELATIONSHIP OF NET FARM INCOME AND ATTITUDES TO RISK,

INCOME ASPIRATIONS AND VALUES

Net Farm Income (Quartiles)	No. of Farms	Risk Attitude	Income Aspirations	Value Orientation
1st	15	6 R.S. 4 W.R.T. 3 U.R.T.	13 Ambitious 1 Desirable 1 Mediocre	6 profit 6 Luxury 3 Material Comfort
2nd	15	4 R.S. 6 W.R.T. 3 U.R.T. 2 R.A.	5 Ambitious 5 Desirable 5 Mediocre	2 Profit 6 Luxury 7 Mat. Com., Leisure and Security
3rd	15	3 R.S. 3 W.R.T. 4 U.R.T. 5 R.A.	1 Ambitious 2 Desirable 7 Mediocre 5 Satis-factory	1 Profit 5 Luxury 9 Mat. Com. Leisure and Security
4th	14	2 R.S. 2 W.R.T. 4 U.R.T. 6 R.A.	2 Ambitious 1 Desirable 11 Mediocre	1 partly profit yet complacent 4 Luxury 9 Material Comfort

Second and third quartiles had similar value orientations but differed in risk attitudes and income aspirations. The second quartile had higher risk taking attitudes and more ambitious income aspirations. In the third quartile farmers had more unwilling risk taking and risk averting attitudes. They indicated that they were

satisfied with their present income level.

Thus, it may be concluded that aggressive risk-taking attitudes, high income aspirations and more profit oriented objectives promotes higher net farm income.

Association of Gains from Farming to Attitudes

Farmers were categorized in quartiles by their five year gains from farming. By this method we were able to determine the relationship between the three main attributes and gains from farming.

TABLE XLVI

RELATIONSHIP OF GAINS FROM FARMING AND ATTITUDES TO RISK, INCOME ASPIRATIONS AND VALUES

Gains from farming	No. of Farms	Risk Attitude	Income Aspiration	Value Orientation
1st quartile	15	8 R.S. 5 W.R.T. 2 R.A.	12 Ambitious 2 Desirable 1 Mediocre	7 Profit 5 Luxury 3 Material Comfort
2nd Quartile	15	1 R.S. 5 W.R.T. 6 U.R.T. 3 R.A.	5 Ambitious 4 Desirable 4 Mediocre 1 Satisfactory	9 Luxury 6 Material Comfort
3rd Quartile	15	3 R.S. 3 W.R.T. 4 U.R.T. 5 R.A.	2 Ambitious 2 Desirable 2 Mediocre 8 Satisfactory	3 Profit 2 Luxury 10 Material Comfort
4th Quartile	14	3 R.S. 2 W.R.T. 4 U.R.T. 5 R.A.	2 Ambitious 5 Desirable 7 Mediocre	6 Luxury 8 Material Comfort

It was evident that the top 10 farmers, in quartile 1, with exceedingly rapid gains from farming had high risk taking attitudes, ambitious income aspiration and profit or luxury value oriented. Meanwhile, 65% of those who had slow farming gains, in the 4th quartile, had low even risk averting attitudes, low income aspirations and mainly material comfort oriented values. The relationship in the second and third quartiles was not as apparent. In fact, it did not follow any definite pattern.

In summary, it may be concluded that very rapid gains from farming was greatly dependent on farmers' risk attitudes, value orientations and income aspiration. Yet these conditions did not appear to be as essential for moderately rapid farming gains.

Association of Margin for Growth to Attitudes

The same procedure was followed to determine the association between margin for growth and other attributes.

The data summarized in table XLVII, showed that very rapid margin for growth was highly dependent on aggressive risk-taking attitudes, high income aspirations and profit or luxury value orientations. Similarly slow margin for growth, was associated with risk averting attitudes, low income aspirations and material comfort and security oriented values. However, farmers did not require all these attributes for moderately rapid margin for growth income. It may be inferred from this table that while these attributes are essential for gigantic growth margins they were not all required for moderately rapid growth margins.

TABLE XLVII

RELATIONSHIP OF MARGIN FOR GROWTH AND ATTITUDES

TO RISK, INCOME ASPIRATIONS AND VALUES

Quartile	No. of Farms	Risk Attitudes	Aspiration to level of income	Value orientation
1st	15	6 R.S. 6 W.R.T. 2 U.R.T. 1 R.A.	10 Ambitious 3 Desirable 1 Mediocre 1 Satisfactory	3 Profit 7 Luxury 5 Material Comfort
2nd	15	2 R.S. 5 W.R.T. 3 U.R.T.	5 Ambitious 4 Desirable 6 Mediocre	3 Profit 4 Luxury 8 Material comfort
3rd	15	4 R.S. 6 W.R.T. 3 U.R.T. 2 R.A.	2 Ambitious 1 Desirable 5 Mediocre 7 Satisfactory	3 Profit 5 Luxury 7 Material Comfort
4th	14	3 R.S. 4 W.R.T. 7 R.A.	2 Ambitious 2 Desirable 2 Mediocre 8 Satisfactory	1 Profit 6 Luxury

Conclusion

Thus, it may be concluded that risk attitudes, income aspirations and value orientations constitutes a stimuli of primary importance to rapid financial progress of the business. Furthermore, while risk attitudes and income aspirations stimulated or restricted financial progress, value orientations were not as important nor as restrictive in the rapid financial success of the business. From this statistical analysis it may be concluded that in general, these attributes are important factors in stimulating or restricting the financial progress of the farm business.

CHAPTER VII

CONCLUSION

Changes in the farm structure, from self-sufficient family farm units to the more specialized commercial farms, have greatly enhanced the need for more accurate and better planned risk management practices. More intensive use of capital has greatly increased the farmer's dependence on a constant source of income. A larger degree of specialization forced upon him by higher capital inputs has greatly reduced his previous methods of protection. In turn, larger capital inputs have compelled the farmer to expand his production base to reap greater benefits from economies of scale. While these changes have been necessary to meet competition, they have without question pressed the firm into different risk management techniques to protect the business against uncertainty.

Farmers have many different formal and informal insurance schemes which they may utilize to protect themselves. Formal insurance schemes are interpreted as contractual agreements with other people where the risk or cause of risk is transferred for an agreed price. The most common types of formal insurance are fire, extended coverage, hail, all-risk crop, hail crop, liability, theft, life, accident and sickness, medical and hospitalization. Informal insurance are not normally thought of as insurance. In this plan the risk or cause of risk is retained. Savings, discounting, prudence, prevention, diversification and other similar

methods are used to reduce the loss. Both schemes either alone or in combination are used to reduce losses or increase security.

The main objective of the study was to determine the need for appropriate risk management schemes with the ultimate aim of indicating that proper risk management accompanied with proper risk attitudes in farm practices were necessary for higher financial success. In addition, an investigation on farmers' opinion and reactions to formal insurance was made.

In consideration of these objectives and problematic situations five hypotheses were advanced and tested. To facilitate analysis risk was classified in two main categories: dynamic and static. Static risks were the only risks tested for adequate protection. Static risk occurs either in a progressive or retrogressive economy which results only in losses; while dynamic risks were usually interpreted as changes which may either result in higher profits or unexpected losses.

The first hypothesis stated that farmers are underprotected against every risk. The hypothesis was supported from evidence obtained in the survey. Crops, livestock, feed and grain were inadequately insured. Buildings, machinery equipment and household contents were adequately insured from fire and associated causes. As a group, farmers had most assets adequately insured against fire. However, assets lacked insurance protection against other sources of risk.

While farmers had inadequate insurance against major

fraudulent actions, most had adequate resources to cover minor criminal losses. Farmers, however, lacked knowledge on protective methods against fraud. In most instances they had inadequately assessed fraud as a potential source of loss.

Farmers were inadequately protected against adverse judgment of law. Many were under the impression that liability insurance was not an essential form of insurance and should only be carried on highway vehicles. A minority felt that liability insurance was not necessary whether on farms or off-farm. The group had increased their liability insurance coverage over the 5 year period, but still carried inadequate insurance coverage on most civil liabilities.

Farmers were inadequately protected against the loss of a key person, especially in 1961. They had, however, sufficient life insurance to cover most debts. But since the purpose of life insurance was to fulfill goals, only 40% and 92% of the families in 1961 and 1965 respectively had sufficient insurance for maintaining their present standard of living, during the critical income period. On the other hand, the majority had inadequate insurance for the widow's retirement. Thus, it may be concluded that at one time they had inadequate life insurance, which was solved during the five year period.

The second hypothesis was supported from farmer's opinion and action which were presented in chapter VI. Farmer's assessment of risk was more precise on fire hazards, and on tangible

assets such as on buildings, machinery and household contents than on intangible losses and assets such as adverse judgment of law, premature death, medical costs, and accident and sickness disabilities. In general, they had increased their life insurance coverages sufficiently to cover debts, and fulfill most of their goals in the event of premature death. Yet they did not understand life insurance policies. While they were fairly precise in their demands for certain types of life and accident and sickness disability insurance, they had purchased other types of coverages. Thus, farmers' assessment of risk was inaccurate, in all areas, but especially on intangible risks and assets.

The hypothesis that influences external to the business served as guides for protecting the business was supported by the evidence. There were strong indications that farmers were suspicious about salesman and insurance agents. They had very little confidence in their recommendations. On the other hand, many farmers had attested that they had taken insurance from these agents on their recommendations, without reading the policies. Farmers also admitted that they understood very little about insurance and believed that many policies contained too many fine and hidden clauses written in a language that they could not understand. This was particularly evident when they commented on accident and sickness insurance where they recognized the need for such a policy but preferred not to buy. Farmers were highly influenced by insurance agents on their purchase of life insurance.

They had indicated a preference from one type while they had bought other types of life insurance. From this evidence it may be concluded that influences external to the business rather than sound decisions based on risk assessment served as guides for protecting the business against risk.

The fourth hypothesis, that attitudes of younger farmers to risk, income and values differed from that of older farmers was not completely supported. While evidence tended to support the hypothesis that younger farmers had higher risk taking attitudes it failed to prove that they differed significantly in income aspirations and value orientations. There were some indications, however, that older farmers wanted more than just profits. Along with these values, they wanted more free time and security and were in general more satisfied with their present income. On the other hand, younger farmers were more profit oriented and were slightly oriented toward higher material comforts. Thus, while some evidence tended to support the hypothesis, it was not sufficient, except to indicate that younger farmers had higher risk taking attitudes than older ones.

The fifth hypothesis, that these attributes constitute stimuli or restrictions of primary importance to financial success was generally supported.

Three measures of financial success were used to verify the hypothesis namely, net farm income, margin for growth and gains from farming.

Statistical evidence confirmed that risk taking attitudes, high income level aspirations and more profit oriented values were associated with extremely rapid financial success whether measured in net farm income, margin for growth or gains from farming. A positive correlation existed between net farm income and attitudes to risk, income and value orientation. Statistical tests failed to show whether a strong correlation existed between these attributes and margin for growth and gains from farming. Thus, it may be concluded that there was some evidence to support the hypothesis that these attributes were necessary for extremely rapid financial progress but that the evidence failed to demonstrate that low risk taking attitudes, low income desires, and security and leisure value orientations were strong restrictions to financial success.

The prime objective of the study that of establishing the need for appropriate insurance schemes with the ultimate aim of indicating that proper risk management accompanied with proper risk attitudes and values were associated with higher financial success was achieved. The need for more appropriate risk management was evident from the lack of knwoledge on insurance plans and the inadequacy of insurance protection carried by farmers. The data showed that higher risk taking attitudes was closely associated with higher net farm income and total farm capital investment. Larger farms had higher risk taking attitudes and consequently did not discount as greatly as smaller ones. It was impossible to determine whether they had reached rapid financial success because of higher risk taking attitudes or

because of their present financial position they could afford to take higher risks. Nevertheless, the information indicated that proper risk attitudes was associated with rapid financial success.

The second main objective was also reached. Farmers supplied through their answers and by their insurance protection the information necessary to show that there was a definite need for better education and advice on insurance needs and proper insurance schemes.

Some recommendations for further studies will be briefly underlined.

1) This study was conducted in one particular area in Manitoba on a selective group of farmers. It is suggested that a similar study be conducted in Manitoba on a representative sample of farmers. All the conclusions drawn may not necessarily hold for other areas.

2) The questionnaire should be perfected, to obtain a more accurate measurement on risk attitude, and value orientation. To develop such a questionnaire it will be essential to pre-test and measure for reliability and consistency. The use of closed-end questionnaire would be suggested instead of open-end questions. It would facilitate measurement and permit more accurate statistical tests.

3) Further considerations should be given to other risk management tools. There are many different combinations of risk management, many of which are inexpensive but effective when used in

proper proportions. These along with formal insurance become important management tools for the farm operator in protecting his farm against uncertainty. Therefore it might prove useful in protecting the business against risk.

4) Further research could be conducted in developing and improving attitude scales on human attributes which are responsible for the success of the farm. The ability of a farmer to make sound management decisions may be as dependent upon "how he sees himself" as upon the opportunities for productive use of his resources. A dependent type of person is likely to seek direction and reassurance from others in place of innovative and perhaps more profitable pioneering action. Here, then, is a need for cooperation among several disciplines - sociology, psychology and economics. Emperical testing of these attitude scales should be carried out to determine their predictive significance in the financial success of the farm.

5) At the present stage of development, there is a further need for pilot and extensive sample studies in research concerning risk, values and income aspirations.

Potential extension uses for the findings of this study include any or all of the following:

1) A summary and classification of farm business risks.

2) Descriptive information on formal insurance schemes. (This information will have to be reviewed periodically in order that it may serve as a continuing source of reference).

3) As farming becomes more specialized and more dependent on borrowed capital for rapid financial success, credit agencies are challenged

to lend on management ability rather than on collateral. Use of an attitude scale on values, risk-taking and business skills could substantiate the farmer's credit-worthiness.

4) An optimum insurance (formal and informal) for each class of farm business risk could be required by the farm credit agency.

5) Extension personnel will require research studies on farmers' attitudes toward particular technological innovations, methods and practices in order to develop effective communication on their appropriate use. For this study, summerfallow and cow-calf enterprises illustrated this need. Scientific application of the theory of dissonance could well modify existing attitudes and condition farm managers for planned changes in their business, e.g. for the gradual reduction of summerfallow and the objective review of the role of the beef cattle enterprise in the farm business.

BIBLIOGRAPHY

Angell, F.J. Insurance Principles and Practices. New York: Ronald Press Co., 1959.

Boucher, G.P. Risk and Uncertainty in Agricultural Entrepreneurship. The Economist Annalist, Vol. No. 4, 1948.

Boulding, K.E., A Reconstruction of Economics. New York: John Wiley & Sons, Inc. 1950.

Bradford, L.A. and Johnson, G.L., Farm Management Analysis. New York: John Wiley & Sons Inc. 1953.

Brown, J.J. Life Insurance -- Benefit or Fraud? Toronto: Longmans Canada Limited, 1964.

Brown, R. Social Psychology. New York: The Free Press, 1965.

Coates, C.H. and Bertrand, A.L. A Simplified Methodology for Developing Multi-Measure Indices as Research Tools, Rural Sociology, 1955-56.

Chychota, R.S. A Study on the Feasibility of a Crop-Hail Insurance in Manitoba. Unpublished Masters Thesis, Department of Agricultural Economics, University of Manitoba, 1966.

Dawson, J. Changes in Agriculture to 1970. Staff Study No. 11, Economic Council of Canada, 1964.

Ehrlich, W.A., Pratt, L.E. and Poyser, E.A. Soils Report No. 6, Report of Reconnaissance Soil Survey of Rossburn and Virden Man Sheet Areas. Manitoba Department of Agriculture, 1956.

Friedman, M. and Savage, L.J. The Utility Analysis of Choices Involving Risk. "The Journal of Political Economy" Vol. LVI. 1948.

Guilford, J.P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1965.

Guilford, J.P. Psychometric Methods, New York: McGraw-Hill, 1935.

Hagood, M.J., An Examination of the Use of Factor Analysis in the Problem of Subregional Delineation. Rural Sociology Vol VI, 1941.

Hardy, C.O.. Risk and Risk Bearing. University of Chicago Press, 1923.

Heady, E.O.. Economics of Agricultural Production and Resource Use. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1960.

_____. Uncertainty in Market Relationships and Resource Allocation in the Short Run. Journal of Farm Economics, May 1950.

_____. Diversification in Resource Allocation and the Minimization of Income Variability. J.F.E., 1952.

Johnson, D.G., Forward Prices for Agriculture. Chicago: The University of Chicago Press, 1947.

Johnson, G.L. and Haver, C.B., Decision-Making Principles in Farm Management. Lexington: Kentucky Agricultural Experiment Station Bulletin No. 593, University of Kentucky, 1953.

Knight, F.H. Risk, Uncertainty and Profit. New York: Hart, Schaffner and Marx, 1921.

Kriedt, P.H. and Clark, K.E. Item Analysis versus scale analysis. Journal of App. Psychology, 1949.

Levely, C.E., Gregory, C.L. The Rural Sociocultural Area as a Field for Research. Rural Sociology, March 1954, p. 21.

Likert, R., Roslow, S. and Murphy G. A Simple and Reliable Method of Scoring the Thurstone Attitude Scales. J. Soc. Psychology, 1934.

Lindzey, Gardner. (editor). Handbook of Social Psychology. Vo. 1, Cambridge, Mass.: Addison-Wesley Publishing Co., 1954.

Mehr, R.I. and Hedges, B.A. Risk Management in the Business Enterprise. Homewood, Illinois: Richard D. Irwin Inc., 1963.

Mueller, J.H. and Schiressler, K.F. Statistical Reasoning in Sociology. Boston: Houghton Mefflin Co., 1961.

Nelson, V.E. An Analysis of Effectiveness of Diversification. Unpublished Masters Thesis, Department of Agricultural Economics, University of Manitoba, 1959.

Ostle, B. Statistics in Research. Ames, Iowa: The Iowa State University Press, 1963.

Owen, B.E. An Economic Valuation of Crop Insurance as a Form of Crop Income Protection. Unpublished Masters Thesis, Department of Agricultural Ecomics, University of Manitoba, 1966.

Payne, S.L. The Art of Asking Questions. Princeton: Princeton University Press, 1951.

Pearson, F.A. et al. Statistical Methods. New York: John Wiley and Sons Inc., 1942.

Pedoe, A. Life Insurance Annuities and Pensions, University of Toronto Press, Toronto, Ontario, 1964.

Pfeffer, I. Insurance and Economic Theory. Homewood, Illinois: Richard D. Irwine Inc., 1956.

Ray, P.K. Principles and Practices of Agricultural Insurance. Sanker Ghosh Lane Calcutta: Bookland Private Limited, 1958.

Remmers, H.A.H. Introduction to Opinion and Attitude Measurement. New York: Harper and Brothers, 1954.

Ridley, A.O. et al. Soil Productivity Index Report. Manitoba Department of Agriculture, University of Manitoba.

Riegel, R. and Jerome, S.J. Insurance Principles and Practices. Prentice Hall, 1959.

Riker, B.L. A Comparison of Methods Used in Attitude Research. Journal Abnormal Social Psychol., 1944. Vol. 39.

Rosenberg, M.J. et al. Attitude Organization and Change. New Haven: Yale University Press, 1960.

Schwarzweller, H.K. Value Orientations in Educational and Occupational Choices. Rural Sociology, Vol. 24, 1959.

Secord, P.F. and Bachman, C.W. Social Psychology. New York: McGraw-Hill Book Co., 1964.

Siegal, S. Non Parametric Statistics for Behavioral Sciences. New York: McGraw-Hill Book Co., 1956.

Singh, I.J. Impact of Crop Yield Instability on the Farm Business. Unpublished Ph. D. Thesis, Department of Agricultural Economics, University of Manitoba. 1966.

Snedecor, G.W. Statistical Methods. Ames Iowa: The Iowa State University Press, 1956.

Stone & Cox. Life Insurance Tables. Stone & Cox Limited, Toronto, 1965.

Stouffer, S.A. Social Research To Test Ideas. New York: Free Press of Glencoe, 1962.

_____. Measurement and Prediction. Princeton, N.J. Princeton University Press, 1950.

Strange, H.G.L. A Short History of Prairie Agriculture. Winnipeg: Searle Grain Co. Ltd., 1954.

Walker, H.V. Economics of Farm Size in the Carman Area of Manitoba. Unpublished Ph. D. Thesis, University of Manitoba, Department of Agricultural Economics, 1964.

Wallin, P. A Guttman Scale for Measuring Women's Neighborliness. American Journal of Sociology, 1953.

Willet, A.H. The Economic Theory of Risk and Insurance, University of Pensylvania Press, 1951.

Williams, G.A. Jr., and Heins, R.M. Risk Management and Insurance, Toronto: McGraw-Hill Co., 1964.

Yeh, M. Yield Prediction for 1965 Wheat, Oats and Barley in Manitoba. Canadian Journal of Agricultural Economics, Vol. XIII, No. 2, 1965.

REPORTS AND GOVERNMENT PUBLICATIONS

A Farm Business Digest. Winnipeg: Information Service United Grain Growers.

An Act Respecting Insurance of Residents of the Province Against The Costs of the Provision of Hospital Services, Winnipeg: Queen's Printer for Manitoba, 1962.

Annual Reports of The Manitoba Hospital Commission. Winnipeg: Queen's Printer for Manitoba, 1965.

Annual Report of the Fire Commissioner. Department of Labor, Province of Manitoba, 1960, 1961, 1962, 1963, 1964, 1965.

Canada Year Book 1966. Ottawa: Dominion Bureau of Statistics, Queen's Printer and Controller of Stationery, 1966.

Census of Canada, 1961. Ottawa: Dominion Bureau of Statistics, Queen's Printer and Controller of Stationer.

Consumer Reports. Mount Vernon, Consumers Union of U.S., Inc., Monthly issue of January, February, and March 1967, and July 1962.

Estate Tax Guide and Return. Department of National Revenue, 1960.

Fire Losses in Canada, Report of the Dominion Fire Commissioner, Department of Public Works. Ottawa: Queen's Printer and Controller of Stationery, 1961 to 1965.

Hospital Coverage for Manitobans, The Story of Your Hospital Coverage. Winnipeg: The Manitoba Hospital Commission.

Manitoba Farm Outlook 1967. Winnipeg: Manitoba Department of Agriculture and Conservation, Queen's Printer for Manitoba, 1967.

Meeting the Needs of Tomorrow's Commercial Farmers. 'Proceedings of 1966 Workshop, Canadian Agricultural Economic Society,' Winnipeg: Manitoba Agricultural Economics Association, 1966.

Office Consolidation: The Insurance Act. Winnipeg: Queen's Printer for Manitoba.

Office Consolidation of The Workmen's Compensation Act. Winnipeg: Queen's Printer of Manitoba.

Structural Changes in Commercial Agriculture. Center for Agricultural and Economic Development, Iowa State University, Report 24, 1964.

Terms and Conditions of Subscriber's Contract. Manitoba Medical Service, Winnipeg, 1966.

The Canada Pension Plan. Department of National Health and Welfare, Ottawa, Queen's Printer and Controller of Stationery, 1965.

The Unsatisfied Judgement Fund Act. Winnipeg: Printer to Her Most Excellent Majesty, 1965.

APPENDICES

APPENDIX A

Questionnaire forms used in study

APPENDIX B

Formal and Informal Insurance Schemes

APPENDIX C

Summary of Data used in study

APPENDIX A

Questionnaire 1961

University of Manitoba

Department of Agricultural Economics and Farm Management

Life Insurance and Off-Farm Investments Questionnaire

Section I

1. What do you own in the way of life insurance?

Identify each policy	1	2	3	4	5	6	7
Company							
Coverage							
Kind							
Annual premium							
Special provisions							
On whose life							
Date written							

2. How did you come to acquire these?- - - - - - - - - - - - - - - - - - -

3. What or who in particular influenced you?- - - - - - - - - - - - - - - -

4. (If applicable) Have you ever used your life insurance as security for a loan?- -

   Purpose of loan- -

5. Have you ever dropped a life insurance policy?- - - - - - - - - - - - - -

6. What other kinds of insurance do you carry? Company - coverage - etc.

   Kind

   Buildings

   House Contents

Auto

Truck

Tractor

Machinery

Livestock

Stored crop

Hail

Liability

Medical

Hospitalization

7. What is your thinking (philosophy) about insurance?-

--- about life insurance in particular?

8. Have you always felt this way?

Section 11

1. Let's list your off-farm investments (ie. those not part of your farming operation)

Items	Amount	Description	Date Acquired	Present Value	Present Earnings
Farm land rented out					
Non-farm real estate					
Agreements for sale					
Mortgages					
Co-op Shares including U.G.G.					
Person loans					
Credit Union					

Bonds - Federal
Provincial
Local gov't
Industrial
Co-op.

Debentures

Private business

Preferred Shares

Savings & Loans

Investors Syndicate

Trust Co. certificates

Mutual funds

Closed end trusts

Common Shares

---

2. How did you come to acquire these?

3. What or who in particular influenced you?

4. Have you ever used any of the above as security for a loan?

----Which ones _____

----Purpose of loan _____

5. If you unexpectedly inherited $10,000. how would you use the money?

If you unexpectedly inherited $2,000. how would you use the money?

6. If your long run farm business earnings were to increase by $2,000. and continue that high year after year, how would you use the money?

Section lll

Now we have some general questions dealing with farming risks, price changes, level of living and retirement plans.

1. What do you consider to be the more serious risks in your farming business?

2. What is the best way to deal with these risks?

3. Have changes in the prices of farm products affected your farm operation very much?

4. Have changes in prices of things you buy affected your farm operation very much?

   Which prices?

5. Has anything else affected your level of living? e.g. illness, educating children.

6. What is your ambition as far as level of living is concerned?

7. Would you say your present income is Satisfactory

   A bit low

   Considerably lower than you would like it

   How does your income compare with your neighbours?

8. Have you done any thinking about retirement?

9. What do you think is important in your retirement plan?

QUESTIONNAIRE 1966

University of Manitoba

Department of Agricultural Economics & Farm Management

Farm Business Risks

Section 1

1. What do you own in the way of life insurance?

   Identify each policy

   Company

   Kind

   Annual Premium

   Special Provisions

   On whose life

   Date written

   Date cashed

   Cash value

2. How did you come to acquire these?

3. Have you ever used your life insurance as security for a loan?

   Purpose of loan

4. Life insurance policies are usually bought for two purposes:

   Protection and savings

   a) When you originally purchased these policies, were you buying primarily protection or primarily savings?

   b) If you were buying life insurance today which feature would you be interested in? Why?

5. Have you ever dropped a life insurance policy?

6. What other kinds of insurance do you carry?

	Co.	Coverage	Kind	Annual	Premium
Auto					
Trucks					
Buildings					
House contents					
Tractors					
Machinery					
Combine					
Livestock					
Stored crop					
Hail					
Crop insurance					
Liability					
Accident disability					
Medical (MMS) others					
Hospitalization (beyond MHS)					

7. What is your philosophy (thinking) about insurance in general?

   About insurance in particular?

   About fire insurance?

   About crop insurance?

   About hail crop insurance?

   About liability insurance?

   About medical insurance?

   About livestock insurance?

8. Have you changed your thinking about insurance?

Section 11

1. Let us list your off-farm investments (ie. those not part of your farm operation; wife's investments included)

ITEMS	Amount	Description	Date Acquired	Present Value	Present Earnings
a) Farm land rented out					
b) Non-farm real estate					
c) Agreements for sale					
d) Mortgages					
e) Co-op shares including UGG or other co-operative					
f) Credit Union shares					
g) Bond - Federal Provincial Local gov't. Industrial Co-op.					
h) Debentures					
i) Private business					
j) Preferred shares					
k) Contract plans e.g. W.S. + L					
l) Trust Co. Certificates					
m) Mutual funds					
n) Closed end trusts					
o) Common Shares					
p) Other (specify)					

2. How did you come to acquire these (a, b, c, etc.) off-farm investment?

3. Have you ever used any of the above as security for a loan?

   Which ones?

   Purposes of loan

Now I'm going to give you a chance to do some dreaming!

4. If you unexpectedly inherited $10,000. how would you use the money?

5. If your long-run farm business earnings were to increase by $2,000. over what they now are, and stayed that high year after year, how would you use the money?

Section lll

Now I have some general questions dealing with farming risks, price changes, level of living and retirement plans.

1. What do you consider to be the most serious risks in your farming business? Explain.

2. What is the best way to deal with these risks?

3. (Depends on how he answers previous question)

   How often have you ever experienced (ie. poor health, crop failure)

4. Have changes in prices of things you sell in the last five years affected your farm operation very much? Which prices?

5. Have changes in prices of things you buy in the last 5 years affected your operation very much? Which prices?

6. Has anything else affected your level of living e.g. illness, accident, educating children, price of land or property, etc.

7. What is your ambition as far as level of living is concerned?

8. Would you say your present income is - Satisfactory
   - A bit low
   - Considerably lower than you would like it

   b) How does your net income compare with your neighbours? I know that you don't know what their income is, but what is your impression?

9. Lately, there has been much discussion on gradual elimination of summerfallow and perhaps continuous cropping, by professionals, university, extension, on T.V., in public meetings and in many short courses. However, the experts don't always agree. How far do you think you can profitably go?

10. What do your neighbours think about continuous cropping? In your opinion, do you think that continuous cropping (without summerfallow) is too risky? Explain.

11. Another item which has been discussed a lot lately is the beef cow and cow-calf enterprise. Again, the experts don't always agree. What is your thinking on cow-calf enterprise as part of your farm business?

    b) Under what conditions would you sell your herd of cattle?

12. Was there any time in the last 5 years when you changed or added crops and livestock enterprise for the main purposes of getting your eggs in more baskets? yes--- no---

13. How important is diversification as a method for reducing risks? Which risks? Explain.

14. Do you keep larger equipment on hand than is necessary for average weather in order to handle the crop in case of poor weather?

Which equipment?

15. a) What do you consider to be the optimum (ideal) size farm?

b) How many acres (improved)?

c) How big a livestock enterprise?

16. Have you reached that point yet?

17. What is your thinking about the use of credit?

b) Has anything influenced your thinking on the use of credit?

c) Do your neighbours agree?

d) What influenced their thinking?

e) What lies behind this thinking?

18. a) How much can you borrow on your present farm assets?

b) How much would you safely borrow on your present farm assets?

19. Could you have used more credit profitably last year? Yes--- No---
Did you refrain from borrowing so as to have property to mortgage in case of trouble? Yes--- No---

20. Was there any time in the past five years when you refused (to use your money) or borrow for an apparently profitable purpose in order to "play it safe". Yes--- No---
Explain.

21. Have you done any thinking about retirement?

22. What do you think is important in your retirement plan?

23. Have you a pension plan now? (Co. amount, kind, annual premium)

24. What is your thinking about pension plans, ie. government pension plan?

In Summary, I would like to identify the risks which you consider to be the most serious.

___ Health (temporary disability)
___ Hail
___ Health (sore back, arthritis, permanent discomfort)
___ Dry weather
___ Price changes in things you sell
___ Too heavy a debt loan
___ Not enough labor to get the work done on time
___ Weather in general (too much rain at seeding, at harvest or at other time)
___ Price changes in things you buy
___ Quota surplus (can't sell grain)
___ Accident (disability)
___ Crop failure (due to disease, rust)
___ Livestock (disease, lose, etc.)
___ Premature death
___ Livestock enterprise where you have not had enough practical experience
___ Crop enterprise where you have not had enough practical experience
___ Specialization (most of the eggs in one basket)
___ Crop failure due to insects
___ Loss of property (theft, fire, damage from wind)
___ Adopting practices not tried in the district
___ Keeping up with new technology (ideas)
___ Getting a son or daughter established on a farm, etc.
___ Political uncertainty (outguessing the government)
___ Unable to borrow enough money
___ Health in the family - other member of the family
___ Others, specify

APPENDIX B

FORMAL AND INFORMAL

INSURANCE SCHEMES

APPENDIX B

FORMAL AND INFORMAL INSURANCE SCHEMES

Many types of formal and informal insurance schemes are available to farmers. These will be discussed in relation to various classes of risks. The most common types of formal insurance will be discussed in considerable detail, while informal schemes will be mentioned briefly.

Formal Insurance

In its simplest form, formal insurance consists of a machinery for collecting premiums from a large number of people and for distributing a proportion of the sums collected to satisfy valid claims. The premiums collected should be sufficient to cover the expenses of the insurance system itself and perhaps yield a profit.[1]

Sources Causing Physical Damage to Assets

Crop Insurance - For the area studied, there were three types of formal crop insurance schemes: a) the all-risk crop insurance schemes offered by the Manitoba Crop Insurance Corporation; b) hail insurance offered by private insurance companies; and c) the insurance relief program of the Prairie Farm Assistance Act.

In 1959, the Manitoba Crop Insurance Test Areas Act was passed by the Provincial government for an all-peril crop insurance program. Coverage levels for wheat, oats, barley and flax were established at 60% of the long-term average yield in terms of average grade, at a stipulated market price for each individual crop. Long-term average yields are adjusted for different soil productivity classifications so that the premium and coverage per acre varies for individual crops, depending on the productivity rating of the soil upon which the crop is grown.

---

[1] Consumer Report July 1962, p. 352.

The level of coverage or maximum indemnity receivable also varies with the stage at which the crop is damaged. Three stages are recognized: 1) The first stage is after the crop has been seeded and while it is still possible to re-seed it to an alternative crop. Coverage at this stage is 50% of the total indemnity. 2) The second stage of adjustment is applied when it is too late to seed to a substitute crop and the insured does not feel that his crop is worth carrying through to harvest. Maximum coverage at this stage is based upon 90% of the harvested coverage. 3) In stage 3, 100% of the harvested coverage applies. The indemnity paid equals the difference between the value of harvested production and the value of coverage on that acreage.[2] Farmers taking crop insurance are also exempt from the 1% P.F.A.A. levy.

Hail insurance is also offered to Manitoba farmers by mutual hail insurance and private insurance companies. Protection is offered by hail insurance in the form of a certain amount of coverage per acre, usually between $10.00 and $20.00. The major difference from crop insurance is that the amount of coverage does not depend on value of the crop produced, but upon the level of coverage the farmer desires. The adjusted loss depends upon the percentage loss which has occurred. For example, if a farmer insures a crop for $20.00 per acre, and the assessed damage is 50%, the farmer would be indemnified for $10.00 per acre, regardless of the quality of crop and stand.

---

[2] Owen, B.E., An Economic Valuation of Crop Insurance as a form of Crop Income Protection. Published thesis, presented to the Faculty of Graduate Studies and Research. University of Manitoba 1967.

Hail insurance can preserve the actual return per acre in the event of hail damage and assures the farmer some minimum amount per acre for his crop. The main advantage of hail and crop insurance is that it provides protection in case of disaster. However, hail insurance provides security only for one specific loss, i.e. hail, and covers only up to the extent of the loss coverage. One of the most severe limitations of hail insurance is that it provides no indemnity in case of flooding, erosion and other natural causes, which might accompany hail. On the other hand, crop insurance provides protection against all risks from any cause from the time the crop is seeded until it is in the bin. The farmer may also combine these two methods of insurance and, by so doing, decrease his range of expectation by a considerable margin.

The Prairie Farm Assistance Act was first passed in parliament in 1939, chiefly as a relief program for farmers in the three prairie provinces and the Peace River area of British Columbia. The type of protection offered is similar to the one offered by crop insurance. However, the level of coverage is so low, and the method of awarding claims so formulated, that it cannot be called an individual protection program. The amount of relief under the Prairie Farm Assistance Act is based upon average yield of wheat in a township, providing the average yield is not more than 12 bushels per acre. The award is two dollars an acre of the farmer's cultivated land, if the yield is more than 5 bushels per acre with a maximum award of $400.00. If the yield is less than five, but more than three, the award is three dollars per acre with a maximum of $600.00. Or, if the average yield is not more than three bushels per acre, the award is four dollars per acre with a

maximum amount receivable in this case of $800.00. The premium is collected from the farmers (i.e. 1% of the value) on all grain sold at elevators. The money collected is put in the P.F.A.A. fund and paid out to farmers in areas where the average yield is within the specified limits.

Fire Insurance

The standard fire insurance policy covers losses caused by fire, lightning, explosion, and removal of objects from the premises endangered by fire. Most fire insurance policies do not define fire, yet many courts have held that a fire has not occurred unless there has been a visible flame or glow. Consequently, scorching and blackening may not have involved fire. Furthermore, the fire must be hostile not friendly. A "hostile" fire is one which has escaped from its proper container, so that if an object is lost by being thrown in a fire, it is not normally covered under the fire policy. The insurer covers losses if fire sets in action some other peril, unless that subsequent peril is excluded under the fire policy. Thus, water damage from hostile fire is usually covered in a fire insurance policy.[3]

Not all fires are covered by fire insurance:

(a) loss or damage to goods while undergoing any process involving the application of heat, whether fire occurs or not.

(b) loss or damage caused by riot, civil commotion, war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil

---

[3] Insurance Policy - Wawanesa; Williams C.A. Jr. and Heins pp. 189 to 214; The Insurance Act of Manitoba, Winnipeg, Queen's Printer for Manitoba pp. 62-64.

war, rebellion, revolution, insurrection, or military power.

(c) loss or damage to electrical devices or appliances caused by electrical currents other than lightning, unless fire ensues and then only for such destruction or damage as result from such fire.

(d) loss or damage caused by contamination of radioactive material.
(e) when the building insured or containing the property insured is, to the knowledge of the insured, vacant or unoccupied for more than a specified number of months, usually from 4 to 6 months, unless provisions are made. A property is considered vacant if it contains no people or things; it is considered unoccupied if it contains no people. Normally, the fire insurance policy does not cover money, securities, bills, deeds, evidence of debt, and other numismatic property. It covers only direct losses, not indirect or consequential losses, such as the loss of business, increased costs of repair due to any ordinance or law etc.

Fire insurance contracts normally start at noon standard time of a specific date to noon standard time of another expiring date, at the location named. Policy term is one year, three years or five years, or any other specified time period. The insurer or insured has the right to cancel the contract prior to expiring date. Furthermore, if fraud or wilfully false statement in a statutory declaration in relation to fire loss were made, it vitiates the claim of the person making the declaration. Policy may also be declared void if the insured fails to exercise due care to save his property during and after a loss, or when the neighboring property is endangered by fire, or has misrepresented or fraudulently omitted any circumstance which is material to be known to the insurer in order to

enable it to judge the risk to be undertaken.

Under the fire policy, the insurer agrees to pay the actual cash value of the loss or the cost of repairs or replacement cost of the property (whichever is the lesser) with material of like kind and quality. Usually, the cash settlement value is the cost of repair or replacement less physical depreciation; but, it might be less if the property is obsolete. However, the actual cash value could exceed the repair or replacement cost, less depreciation, if the property has some additional market value. The insurer agrees to share the loss on a pro rata basis if other valid insurance policies are in force. Nevertheless, the insurer will not pay more than the amount of insurance applicable to the insured assets (i.e. the face value of the policy). The amount of insurance is limited to the share of the insured in the property, unless the interest of the insured therein was stated in the contract.

As fire insurance applies to various classes of items, buildings and contents; the following types of policies will be discussed: (a) specific, (b) blanket, (c) general and (d) reporting policy forms.

A specific policy form places a separate amount of insurance on each kind of property at each location.

A blanket policy provides a single amount of insurance on two or more kinds of property at two or more locations. The advantage is that the full amount of insurance can be used to cover any loss.

A general policy is used when the insured wishes to divide his insurance among insurance companies. It lists the full amount of insurance to be covered and the amount which each company is responsible for. For example, company A may make a list of all the items insured, stating

the percentage of loss it is responsible for, along with other companies.

Under the standard fire insurance, an optional settlement clause may be added. However, this insurance applies only to farm dwellings and not to outbuildings. This clause in effect makes it possible to insure the farm dwelling for its replacement cost without deduction for depreciation. There are no additional premiums required except that the building has to be insured to at least 80% of its replacement cost. A differed loss settlement clause may also be applied on a standard fire insurance policy; it must, however, be applied to all buildings insured on the policy. The advantage of using this clause is that the insured receives a reduction in premium. Under this plan, in the event of a loss, the insured collects 50% of the loss, and if the insured rebuilds within a specified time period on or within 200 feet of the original site, the insured collects the remaining 50%, plus 6% interest.

It should be noted that the rate on any farm building or its contents is determined by competition, subject to Provincial approval. Once the basic rate is approved, the construction of the building itself plays an important part in arriving at the final applicable rate. Construction of walls, roofs, floors, chimneys, all affect the rate so that the final rate can only be arrived at by the agent and the insured.

Insurance is also available for allied lines insurance. These include protection against extended coverage perils, vandalism, earthquake, water damage, sprinkler leakage, windstorm, tornadoes etc..... They are usually extended on standard fire insurance policy when separate coverage is specifically demanded, and they are referred to as extended coverage.

Fire insurance companies also carry insurance for indirect or consequential losses. Indirect losses occur when damage of assets cause further losses to the business. An example of a consequential loss is the loss of income due to the interruption of business. For example, if a tractor is destroyed by fire during seeding time, direct loss occurs. However, if the tractor is not immediately replaced, it delays seeding. If this delay causes a reduction in yield of 5 bushels per acre, this loss of income is consequential, or indirectly caused by the loss of the tractor. Consequential insurance coverage is usually offered in combination with the standard fire insurance policy, or if desired, as a separate insurance policy.

It would not add greatly to the study to include a complete description on all forms of insurance policies offered by fire insurance companies. At this stage, it would be sufficient to enumerate the most important types available. Insurance is available for: business interruption, to cover loss of earning power, resulting from physical damages to the property, extra expenses insurance to cover increased cost of production caused by damage to the premises of the insured, rent value insurance to protect a landlord or tenant against the loss of rent paid under a rental agreement, temperature damage insurance to cover damage and loss resulting from physical damage to a power supply, such as the loss of broilers from heat failure or improper ventilation, leasehold rent interest to protect the tenant against the cancellation of valuable leases when the leased property are damaged or destroyed, and replacement cost insurance to cover the difference between the actual cash value of the loss and the replacement cost without any deduction for depreciation. Livestock insurance are available to cover the loss of an animal against death through disease, accident

or other specified causes such as transit, castration or other minor operations of animals, or consequential losses such as sterility, and many others.

Allied insurance are available along with fire insurance policy or as separate policy to cover other specified causes of loss. Indirect or consequential insurance may be used for losses arising from specified causes - against losses arising out of the inability to use destroyed or damaged property, or other specified causes such as temperature, power failure (disease, sterility, accident) in livestock etc....

Floater insurance are available to protect property, at regular locations, in transit or on other properties, i.e. furs insurance, musical instruments, tools, appliances, machinery, and livestock. This coverage is usually attached to the standard fire policy, except if indicated otherwise.

There are several forms of livestock insurance available which should be discussed in more detail. There is the usual livestock insurance which covers only loss by fire and lightning. It covers hogs, poultry, dairy or other specified livestock at a specified maximum per animal.

Then there is the form which covers fire and lightning plus theft and transportation perils (upset and collision if transporting conveyance). This form is more appropriate for those who transport their own stock to market and those who travel with stock to exhibitions. A further extension can be made to cover livestock from accidental shooting.

There is also the special floater policy which covers the same hazards as the previous policy plus loading and unloading while travelling,

even though death is not a result of an accident to the transportation conveyance.[4]

Then there is the mortality accident which covers any accidental death as well as death by disease or sickness. To qualify for this insurance a veterinary examination is usually required. The cost for this type of insurance is fairly expensive.

The deductible herd policy covers mortality from perils similar to the above mortality policy. However, the assured stands the first loss equal to the premium paid to the insurer. For example, on a policy of $15,000. with a premium of $600., the insured would stand the first loss of $600., then the company would carry the loss up to $15,000. To receive benefit the insured must include all insurable animals. The total amount of coverage must be at least $1,500. and the minimum number of animals to be insured must be 15 head. It also requires that no animal be insured for more than 15% of the total face value of the insurance, or 4,000, whichever is the lesser. Each animal has to be identified by name, age, sex, registration number, purchase price, and amount of insurance.

As previously mentioned, livestock insurance can be included in the standard fire insurance policy, usually identified either as package, comprehensive, or umbrella.

Property Insurance - Automobile Physical Damage Insurance

The next type of property insurance which will be considered is the

---

[4] A Farm Business Digest: Winnipeg. Information Service, United Grain Growers.

the automobile and liability insurance.[5] Property insurance normally covers losses or damages to the automobile and equipment, while liability insurance protects the insured against any potential liability arising out of the ownership, or maintenance or use of the automobile.

Most policies cover automobile property losses arising from various perils classified in the following way: (a) all perils, (b) collision or upset (c) comprehensive and (d) specified perils.

(a) All-peril covers perils arising from all causes except (this also applies to other sections) from war, bombardment, invasion, civil war, insurrection, rebellion, revolution, military or usurped power or by operation of armed forces.

(b) Collision or upset provides protection to the automobile by collision with another object or by upset. Loss or damage caused by missiles, falling objects, fire, theft, explosion, earthquake, windstorm, hail, rising water, malicious mischief, riot or civil commotion are not usually excluded from this section.

(c) Comprehensive protects the property from damages or losses from any peril other than by collision with another object or by upset. Loss or damage (applies to and) caused by theft of any person or persons residing in the same dwelling or premises as the insured by any employee of the insured engaged in the operation, maintenance or repair of the automobile, whether the theft occurred during or after hours

---

[5] Economical Automobile Insurance; Insurance Act of Manitoba op. cit. pp. 96-118. The insurance forms used in Manitoba were standardized for all insurance underwriters. "No insurer shall use a form of application, policy endorsement or renewal or continuation certificate in respect of automobile insurance other than a form approved by the superintendent."

of such service.

Specified perils are exactly those perils which are specified. They include perils caused by fire, lightning, theft, or attempted theft, windstorm, earthquake, hail, explosion, riot or civil commotion, falling or forced landing of aircraft or of parts thereof, rising water, or the stranding, sinking, burning, derailment or collision of any conveyance in or upon which the automobile is being transported on land or water.

The excluded perils are: wear and tear, mechanical or electrical breakdowns, repossession by law, or embezzlement, theft or conversion by a person who possesses the automobile under some encumbrance such as a conditional sales agreement, unless the loss or damage is caused by theft coincident with the above-described section.

The automobile insured in the policy is the automobile (car, truck) named in the policy, or temporary substitute automobile, or newly acquired automobile, (providing no other valid insurance covers the new car and it is within 14 days of delivery).

Temporary substitute automobile is an automobile not owned by the insured nor any other person or persons residing in the same dwelling which is used as a substitute while the described automobile is temporarily removed from services because of breakdown, repair, servicing, loss, destruction or sale. Newly acquired automobile is defined as an automobile acquired by the insured when no other valid insurance exists and it is within fourteen days of the delivery date. This newly acquired automobile is not insured unless the same insurer insures all the automobiles owned on the delivery date and agrees to pay any additional

premiums required.

The total amount of recovery depends on the cash value of the automobile at the time any loss or damage occurs. The loss or damage shall be ascertained or estimated according to such actual cash value with proper deduction for depreciation. Yet, in no event shall the cash value exceed what it would cost to repair or replace the automobile or any part with material of like kind and quality, except, if the part is obsolete and out of stock. Usually a deductible clause exists for automobile property damage or loss.

Medical payment and liability, also part of automobile insurance, will be discussed later on in this appendix.

Adverse Judgment of Law (liability losses)

Insurance is available to protect the business against adverse judgment of law. As previously explained, property loss through civil liability of criminal action, probably the most destructive type of damage that may occur, is as real as if the property had been damaged or destroyed by fire. Potential liability exists whenever someone suffers a loss because of the failure of a business or member of the family to perform certain duties whether it is intentional or unintentional.

Liability insurance protects the insured against liability arising from these acts or failure of acts. There are many different forms of liability insurance available to the firm and family: the general liability insurance, employer's liability insurance, workmen's compensation insurance, bailee liability insurance, comprehensive farm liability and the multiple line property and liability insurance. There is probably an overlap of coverage in these insurance policies, yet each

covers a certain range of protection which will be briefly discussed.

Automobile liability insurance covers accidents arising out of the ownership, maintenance or use of an automobile within the Canadian and U.S. boundaries. As previously described, the automobile liability insurance applies to the named automobile, a temporary substitute automobile not owned by the named insured or spouse, or a new purchased automobile replacing the named automobile.

This type of insurance protects (a) the named insured and spouse, (b) any person using the automobile with the permission of the owner or spouse, (c) any person legally responsible for the use of the automobile.

There are also some exclusions under the basic liability plan: 1) while the automobile is used as a public or livery conveyance, unless specifically declared as such, 2) against liability assumed under any other agreement; for example, liability imposed by any workmen's compensation law, 3) against liability for injuries, diseases, or deaths of employees of the insured arising out of and in the course of employment, 4) against liability for damage to property transported by the insured or property rented to or in charge or in custody, or in control of the insured, 5) against liability while the insured is towing any hired or owned (not borrowed) trailers not described in the contract which is not covered under an automobile liability insurance contract issued by the same insurer (except trailers which designed for use with a private passenger automobile and are not being used for business by any other automobile).

Losses covered are usually those defined on page 35 of the general liability insurance. He may further elect to protect against

either bodily injury or death liability or property damage liability or both types PL and PD.[6] He may elect to purchase medical payments and passenger hazard insurance. Under the medical insurance coverage, the insurer agrees to pay for each person who sustains bodily injury caused by an accident while driving, being carried in, or upon entering or getting out of, all reasonable medical and funeral expenses occurring within one year of the accident. The coverage limit is specified in the contract. Passenger hazard protects the insured from any loss or damage resulting from bodily injury to, or death of, any passenger. There is no aggregate limit arising from bodily injuries or property damage claims; (i.e. it is not accumulative in nature). The maximum usually applies to each accident. An insurer may cancel the liability protection for any of the following reasons: driving while intoxicated, leaving the scene of an accident, theft of a motor vehicle, false statements, any felony, criminal negligence while operating an automobile, fraudulent misrepresentation, committing acts resulting in driver's suspension or failure to pay premium when due.

Other forms of automobile insurance exist. There is the schedule automobile liability policy, the comprehensive automobile liability policy, and family automobile policy. These will not be discussed, since they are irrelevant to the study.

Before leaving the subject of automobile liability insurance, it

---

[6] This was true in 1961. However, an amendment to the Act in 1962 required only combined coverage, public liability and property damage at a minimum coverage of $35,000.

is necessary to mention the Unsatisfied Judgment Fund. This fund is set up to provide minimum recovery to innocent accident victims who are unable to collect from the wrongdoer after exhausting all their legal remedies.

The funds are collected by assessing all the uninsured motorists at the time of registration an annual premium of $25.00.[7]

Employer's liability insurance is also available to farmers as a separate policy. Under this section, the covered peril is an accidental bodily injury or disease sustained by an employee arising out of, and in the course of, his employment by the insured (employer) which is not covered under the Workmen's Compensation Act (if he carries this protection), but for which the insured is legally liable. For example, under certain special conditions, an injured employee, not allowed to sue the employer under the Compensation Act, may sue and recover from some third party on the grounds that the third party's negligence (as proven by the board) caused the accident. In turn, the third party may be able to sue the employer, which the employee could not have done. Employer's liability would provide the necessary protection, unless the third party's right arises out of a hold-harmless agreement with the employer.

The Workmen's Compensation Act of Manitoba was first enacted in 1916 with the last major revision made in 1954. The Act applies to

---

[7] Unsatisfied Judgment Fund Act - 1965. Winnipeg. Queen's Printer for Manitoba.

most industries, except to farm labour, domestic and menial servants "but the board may, by its order, bring any such employee within the application of this Act upon the application of his employer".[8] In other words, for most industrial workers, other than agriculture, it is compulsory, while for farmers it is voluntary. It does, however, exclude a person whose employment is of a casual nature and who is employed other than for the purpose of the employee's trade or business. Under this policy, the workman is covered against accidental bodily injuries and disease for which the insured employer or firm may be legally responsible under the Workmen's Compensation Act of Manitoba. "Under the Act, compensation is payable to a workman for personal injury by accident arising out of and in the course of employment in a covered industry and disability as a result of an industrial disease that is incurred in an industrial process or occupation."[9] It must be noted that this policy does exclude any non-occupational disability benefits.

In any case, neither the workman, nor his legal personal representative, nor his dependents, nor the employer of the workman shall have any right of action in respect of the accident against an employer in any industry, or against any workman of such an employer covered by the Act, and in any such case where it appears to the satisfaction (not covered by the Act) of the board, that a workman of an

---

[8] The Workmen's Compensation Act. Office Consolidation 1966 Winnipeg Queen's Printer of Manitoba pp. 7.

---

[9] The Workmen's Compensation Act. Office consolidation 1966 Winnipeg Queen's Printer of Manitoba pp. 7.

employer in any class is injured owing to the negligence of an employer or of the workman of an employer in another class within the scope of the Act, the board may direct that the compensation awarded in the case shall be charged against the other class.

An employer [10] of any industry may be admitted to compensation and receive the same benefits as a workman providing he receives approval from the board.

The following compensation may be received:

Medical aid - A workman suffering a compensable accident is entitled to receive all the medical treatment deemed necessary to care and relieve from the effect of the injury. If the injuries suffered in the accident fully disabled the workman, he receives 75% of average earnings at the time of the accident (except for certain limits set from time to time by the board) while disabled. If the injuries result in permanent disability (either total or partial) compensation is payable during his lifetime based on his average earnings and his degree of disability due to the accident. But in any event, the earnings capacity may not exceed the ceiling or maximum rate of $6,000.00 per annum, as from July 1st, 1965.

The workman is also entitled to death benefits:

1) a lump payment at once to the dependent widow.

2) necessary funeral expenses up to $300 plus $50 for burial plot

---

[10] An employee is a person who has entered into or works under a contract of service or apprenticeship, while an employer is a person having the right to hire people whether he is the owner or not; eg. a manager of a corporate firm would be an employer and would require permission from the board to be covered under compensation.

3) cost of transporting the body to the usual place of residence in Manitoba.

4) $100 a month pension to a dependent widow.

5) $35 a month for each child under 16 or $45 a month if the child is an orphan, with a provision to continue payment to age 18 for education purposes.

6) on the marriage of the widow, she forfeits her pension, but is entitled to $2,400 lump sum payment.

7) in no case for items 4, 5, 6, shall the benefits exceed 75% of the deceased's earnings. However, compensation is not to be less than $135 a month where there is a widow and one child, nor less than $170 a month where there is a widow and two children.

Comprehensive farm liability insurance is available to the operator along with his fire insurance policy. This insurance is available to families and homeowners in a package along with their fire insurance policy. Under this policy, the insured is protected against damage to his own personal property or property for which he may be liable.

It pays the full amount of any judgment against the farmer up to the limits of the policy and, in addition, all the expenses for defending him. It reimburses the insured for medical expenses for immediate first aid and, regardless of a person's responsibility or legal liability, the policy pays up to $250 per person for medical expenses on injuries suffered by persons other than a member of the family or employees.

This policy protects the insured and residents of the household,

his spouse, children, other relatives and any other person under 21 years of age while in the insured's care. It further protects any person or organization who may be legally responsible for animals and watercraft owned by the insured person.

This policy may be extended to cover animal collision up to $300 per head if struck by a motor vehicle on a public road.

Probably the most common type of general comprehensive liability insurance available to the farmer is the Comprehensive Farmer's Liability Insurance, which includes all exposures not specifically excluded on or nor already covered by another policy. The general comprehensive liability insurance normally covers any premises and sources of liability existing on the date of the contract or new premises acquired and source of liability developing during policy term.

Fraud and Criminal Violence

The property may also be lost by theft, burglary, robbery, embezzlement, forgery, misappropriation, willful abstraction, or other fraudulant acts. Basically, there are three types of insurance:

1) Theft Insurance, which protects the business or family against loss by burglary, robbery or some other form of theft.

2) Dishonesty Insurance (fidelity bonds), which protects against losses caused by dishonest action of employees.

3) Surety Bond Guarantees, which guarantee the ability to meet some expressed obligation.

There are many different kinds of theft insurance available to farmers.[11] Limited contracts protect the business or family against a

---

[11] Williams C.A. Jr. and Heins op cit pp. 283.

specified kind of theft. Examples are the mercantile, which covers merchandize, furniture, and fixtures, under certain specified cases, such as robbery or burglary, and the mercantile safe burglary which covers loss of property such as the forcible entry into a safe or vault, or damage to property resulting from actual or attempted robbery or burglary.

The second type is the comprehensive form contract, which covers any form of theft. Many forms of contract exist for this type of loss. Money and security (broad form) provides insurance to cover losses of money and securities on and off premises. The comprehensive plan which permits the insured to select one or more coverages. The most common coverages are: employee dishonesty coverage, money and securities broad form, either on premises or off premises, money orders and counterfeit paper currency coverage, and depositor's forgery coverage. In this type of policy, a limit is placed on each risk situation.

The employer dishonesty policy protects an employer from risks caused by employees dishonesty specified as either an individual, a named person, a position held by any individual or individuals or all regular employees, whether named or not. Money and securities broad form, on or off premises, covers just that. Money orders and counterfeit paper currency coverage covers losses due to the acceptance in good faith of illegal, or counterfeit money orders in exchange for merchandise, services or money. The depositor's forgery coverage protects against outgoing or incoming forgery losses: cheques, drafts, promissory notes, contracts, or similar written promises or some alteration in the

amount of an otherwise valid instrument.

An operator may use a blanket crime policy to cover this type of loss. In this type of form, the insured must purchase the entire package where one limit applies to all losses, regardless of the nature of the risk. Dishonesty insurance (fidelity bonding), is most suitable for protecting the employer against any type of property losses caused by fraudulent or dishonest act of an employee, such as larceny, embezzlement, theft, forgery, misappropriation, and willful misapplication. Many other forms of coverage restriction exist in which coverage is only for specified types of risks, i.e. only embezzlement or only larceny and embezzlement etc.

Surety bonds protect one person, called an obligee, against the failure of another person, called the principal, to carry out some expressed obligation. [12] It differs from insurance in that the principal pays the premium while the obligee obtains the protection. [13]

Life Insurance

The family and business uses life insurance contracts to provide funds against the risk of premature death. An individual does not insure for loss of life, for death is a certainty; rather he insures his life against the unexpected and premature hazards which will affect the welfare of the firm or family i.e. loss of a manager or operator. Thus, life insurance is designed to replace the life value which is lost when a

---

[12] Williams G.A. Jr. and Heins op. cit pp. 230.

---

[13] Mehr and Hedges op. cit pp. 476-479.

man dies. From a material standpoint, any man has a "life value" in the same manner as a machine or a building, denoted by the firm as a manager, technician, operator, etc. Thus, life insurance is meant to replace a portion of a man's future earnings if he dies. Though the loss of a human life is especially severe to society when it comes early in life, it is much greater to the firm and family whose welfare may directly depend on that person. For this reason, insurance is much more appropriate for an individual who has debts, and many young children, than to an individual who has raised and educated his children and accumulated funds for his own and his wife's retirement.[14]

In spite of the wide range of insurance schemes offered, there are basically two different categories of life insurance:

(a) term insurance and (b) permanent insurance.

Term insurance is pure protection divorced from any savings account or "cash value" feature; while permanent insurance is a combination of decreasing protection and increasing savings.

Term insurance protects the insured individual if he dies within the term specified in the policy. If he survives to the end of the specified time limit, the policy expires. It resembles fire insurance.

---

[14] Angell, F.J., Insurance Principles and Practices. Published for the S.S. Huebner Foundation for Insurance Education, Homewood, Illinois: Richard Irwin Inc. 1959 p. 545.

in that it covers for damages if they occur within the specified term of contract.

Common types of term insurance are one year term, five year term, ten year term, twenty year term and term to age 60 and 65. The amount of coverage may either be level over the entire term period or decreasing over time. The premium in a decreasing term stays at the same level over the entire period. In a constant type policy, the premium increases at definite time intervals.

Term insurance may be renewable, convertible or both. When the insured selects a renewable term, the insurer renews the policy, regardless of the insurability of the insured, for the number of time periods specified in the contract or to a specified age (usually 65). The policy is guaranteed renewable without further medical or other evidence of insurability. The premium cost increases at the beginning of each renewable option date, depending on the age of the insured at each renewable date. If the policy is convertible, the insured has the option to convert the policy to an ordinary life contract or to another insurance - plus savings plan insurance contract at or before a specified date. He may also have the option to convert either (a) as of the attained date or (b) as of the date of issue of the term policy. The premium differs in that in the former case, the premium paid is assessed at the convertible date; while in the latter case, the premium paid is the same as if he had taken it at the original date. In the latter, the insured is asked to pay a lump sum to make up for the deficiency of payment of premium from the date of original date to the date of conversion.

Permanent insurance is basically pure insurance plus saving.

By following the conventional method of classification we are able to distinguish three basic forms of permanent life insurance: (a) ordinary life, (b) limited pay life and (c) endowment.

In an ordinary life insurance, the amount insured and premium paid remains fixed for as many years as the holder keeps it in force. If the policyholder lives to an age of 100, 96 or 85 in some policies, the policy pays an endowment equal to the face value of the policy. At any time before then, the policy may be cashed in for a sum specified in the contract, (cash surrender value) and the insurance expires. It is a kind of savings account whose value accumulates over the number of years the policy is in force. It is, therefore, a combination of decreasing term insurance (the pure protection element) and increasing savings.

Limited pay life resembles ordinary life except that the number of premium payments are specified on the contract, with the contract carrying itself until death of the insured and increasing in cash value, (i.e. 20 pay life, paid up at 65, paid 85, etc.) until death.

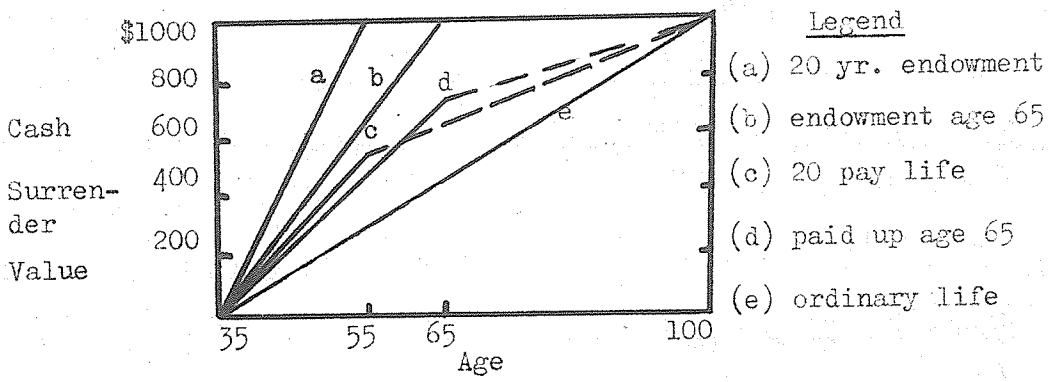
The investment element is more important in this policy, because of the higher limited payment premiums during the early years. However, since there are many different types of limited pay life, the accumulating cash value is indirectly proportional to the number of payments. Usually, under most contracts there is no cash value in the first few years, while the cash value continues to accumulate after the end of the premium period.

The third type, endowment insurance, protects the beneficiary if the insured dies within the endowment period. In addition, if the

insured is still living at the end of the endowment period, he is assured the face value of the insurance. In endowment insurance, the investment element is relatively more important than in ordinary life and limited pay life. The purpose is to give a person some protection while at the same time compel him to save at a rapid rate. The basic difference in cash value per $1,000 insurance for various types of permanent plans can be illustrated by the following diagram.

Figure 11

Difference in Cash Surrender Value
on Permanent Life Insurance Policies



Source: Heins and Williams op cit.

The important factor to remember in any type of insurance plus savings plan is that if the insured dies anytime before the date of maturity or before the policy is cashed in all the money that has been saved (cashed-surrender value) is lost. If a person buys term insurance at a much lower premium, and invests the balance in another account, his savings will accrue to his beneficiary if he dies. [15]

---

[15] Brown, J.J., Life Insurance - Benefit or Fraud? Toronto: Longmans Canada Ltd., 1964.

However, it may be argued that endowment insurance compels a person to save. This statement is true only up to the point that the person lives until his endowment matures or he cashes in his policy and maintains his premium payments.

Health Plan

The family or farm income may be severely affected by the disability of the operator or of his family, either directly or indirectly. The family farm or sole proprietorship is so tightly knit with the family unit that whatever occurs to the family usually affects the business. High medical expenses may affect the business by demanding funds necessary for financing the business or for making a down payment on an essential purchase. It may affect the business by depriving the business of the manager and operator through higher costs of production or lower gross returns.

Though health hazards are usually regarded as less severe than death, they occur without notice, and can in certain circumstances be as costly to the business as a loss of any material assets.

In Manitoba there are basically three different health plans offered by various agencies: (a) hospitalization, (b) medical expense contracts and (c) disability income.

In the spring of 1962, the Provincial Government of Manitoba enacted the "The Hospital Service Insurance Act" to administer the Act whereby all residents of Manitoba contributed a premium (compulsory) to the Manitoba Hospital Commission which, in turn, protects them from certain hospital and ancilliary costs. Every resident in Manitoba is

required to register himself to his employer or to the Municipality in which he resides. Dependents under 19 years of age or students under 21 years of age attending university or training school, are covered through their parents' plan.

All persons receiving public assistance, such as persons receiving mother's allowance, blind person's allowance, disabled person's allowance, old age assistance, social allowance, and wards of the government, are eligible for benefits without payment of premiums.

Under this plan, the following in-patient benefits [16] are provided standard ward accommodation and meals, necessary nursing service, laboratory radiological and other diagnostic procedures, together with the necessary interpretations, drugs, biological treatments and related preparations when administered in hospital, use of operating room, case room and anaesthetic facilities including necessary equipment and supplies, routine surgical supplies, use of radio therapy and physiotherapy facilities. Dental care in hospital is covered only if more than 8 permanent teeth are removed, or if a physician certifies that hospitalization is necessary because of some other ailment.

There is no limitation on the number of days that hospital benefits can be provided, except when specified. Out patient care is also available for emergency diagnosis and treatment within 24 hours of an accident, physiotherapy, occupational therapy, and speech therapy

---

[16] These apply to persons detained in hospital.

in certain designated hospitals, electro-shock therapy, and therapeutic radiologist, but not including clinical surgical services.

Benefits in hospital outside Manitoba are provided on the following basis. If the service is in Canada, the same rate is paid to the hospital as that provided by the Provincial Hospital Insurance Plan. If a person receives treatment and care outside Canada, because of an accident or sudden attack of illness, or because the service can not be adequately provided in Manitoba, or because a person is temporarily employed outside of Canada, the commission pays 75% of the hospital charges for insured services. If, however, a person elects to choose a hospital outside Canada, the benefits are the lesser of 75% of the hospital's charges for insured services or the amount that, in the opinion of the Commission board, would have been paid for the service if carried in Manitoba.

Medical expense contracts are available from (a) commercial companies, (b) voluntary non-profit agencies (Manitoba Medical Service), (c) municipalities (doctor plans), (d) medicare (provided by the Department of Welfare of the Province of Manitoba).

There are basically three major types of plans carried by mutual and private insurance companies: 1) basic medical expenses contract, 2) major medical expense contracts and 3) comprehensive contracts.

The basic medical expense contract is designed for registered bed patients or emergency out patient treatment necessitated by an accidental injury. In this plan, there is usually a waiting period for certain ailments, such as for childbirth or miscarriage, tonsillitis, health disease, female disorders etc., which require 9 months to a

year. Certain items, such as mental disorders and dental work are usually excluded from this plan, or any benefits covered by other insurance plans or government plan, i.e. hospitalization. All bills for medical, or surgical treatment, nurses fees, etc. are covered up to a certain limit or up to a certain time limit after an accident. The plan is basically designed to provide protection against most common diseases or injuries giving as complete a protection as possible against the most common diseases. All three plans are renewable only with the consent of the insurer and may be cancelled within the policy period. All plans cover a family.

Major medical expense contracts generally provide blanket coverage against all types of medical expense in excess of a certain amount. They are designed to provide fairly complete protection against the financially serious illnesses and little or no protection against the less serious ones. The insurer covers a long list of medical expenses, with some exclusions, of pregnancy, childbirth, alcoholism, mental disorders, war, and military services along with a deductible clause. The deductible provision lowers the cost of the insurance and prevents abuses. The deductible amount varies from $100 to $1000 depending on the contract and type of illness. Though the insurer pays most of the claims above a deductible amount, it never pays more than a specified maximum share.

There is also the comprehensive medical expense insurance, which is a blending of the above two plans, usually with a very low deductible amount on major medical insurance coverages and with a higher maximum

coverage than the basic medical plan.

Manitoba Medical Service, a non-profit service, provides basically three plans: designated as the H., H C, and H C X, (description to follow on next three pages. Under these plans, the M.M.S. agrees to pay a qualified medical practioner at rates set by the corporation at the time of service.

> The Corporation shall pay medical members at the rates from time to time in force provided that the medical member shall receive such payment as payment in full for the care and treatment rendered by him, except that where a subscriber and dependents have a total annual income exceeding $10,000 or where any of the services rendered are included in any other insurance or pre-payment benefits the medical member may require him to pay an additional fee. [17]

However, since not all Manitoba doctors are members of M.M.S. the subscriber (insured) assumes all liability for charges over and above the amount assumed by the Corporation.[18]

The corporation pays out of province care under two conditions: a) when an insured is temporary absent from Manitoba and requires care and treatment in respect of any sudden and unexpected sickness or injury or aggravation or recurrence which has its onset while he is temporarily absent from Manitoba, and which necessitates adequate and appropriate services which cannot be postponed or replaced by temporary measures, he is entitled to receive the service as provided in Manitoba,[19]

---

[17] Manitoba Medical Service Bulletin.

[18] Newsletter sent to individual subscribers, 1966. Another amendment was made in January 1967, whereby member doctors may charge over and above the amount assumed by the Corporation.

[19] Manitoba Medical Service

or b) when in the opinion of the corporation, the therapeutic services are not available in Manitoba and he obtains prior approval and authorization from the Corporation. Under these two conditions, the M.M.S. assumes all liability at the rates from time to time payable to members of the Corporation or the actual charges, whichever is the lesser. The subscriber assumes all liability for charges over and above the amount paid by the Corporation.

The subscriber may select any one of the following three plans: 1) H, 2) H C, 3) H C X.

Under Plan H

a) This plan includes provision for services of a legally qualified medical practioner while a subscriber or dependent is a registered and admitted bed patient in a public general or extended treatment hospital. The range of services includes:

b) Medical services - no limit on days.

c) Surgical services, including services of assistant surgeon when necessary.

d) Services for treatment of fractures and dislocations, burns and lacerations.

e) Maternity services.

f) Services of anaesthetist, when surgery or maternity is covered.

g) Services of consultant, when necessary.

Plan H C

a) This plan includes, in addition to the services of Plan H, the full range of services included under Plan H, when provided out of

hospital i.e. at the patient's home or at the physician's office.

b) This plan also provides for a complete annual physical examination, providing that the subscriber or dependent has not received such examination within 365 days.

c) This plan does not include the additional services described below in the plan H C X.

Plan H C X

a) This plan includes, in addition to the services of plan H C, the following services when rendered in a physician's office.

b) X-ray services

c) Medical treatment including immunizations, injections, allergy care.

d) Medical examinations and tests - including basal metabolism test, heart tracings, brain tracings, ear tests, eye tests etc.

e) Laboratory services - including blood tests, gastric analysis etc.

f) This plan also provides for diagnostic services if such services are rendered on an out-patient basis in a public general hospital when other facilities are not provided by the Manitoba Government Services Plan or, in urban areas when rendered in an emergency on an out-patient basis, in a public general hospital when other facilities are not available and when such services are not provided by the Manitoba Government Hospital Services Plan.

There are, however, some limitations on the types of available services:

1. Out-of-province service, except when approved or under emergency.

2. Delay in maternity services until both wife and husband have been enrolled on the same contract for at least 270 consecutive days - except if both had separate contracts for 24 consecutive months prior to date of services (although not necessarily as husband and wife).

3. Services for illness covered by any Workmen's Compensation Act, occupational disease law or similar legislation.

4. Services for sterilization purposes or for conditions not detrimental to health.

5. Services connected with dental care, nursing services and ambulance services.

6. Medicines, drugs, materials, appliances, or supplies.

7. Physiotherapy services in or out of the hospital.

8. Services or examinations for reasons of employment insurance, travel, marriage or any other services required by a third party.

9. Mileage, travelling time, detention time.

Certain municipalities also have their own medical plan. They hire a municipal doctor. Under this plan, the premium is collected through taxes, whether they use the plan or not. In addition, they may purchase a supplementary plan from M.M.S. which covers medical expenses whenever specialist assistance is required.[20]

---

[20] Special interviews with farmers and municipal secretaries.

Medicare is available to the needy. This plan will not be discussed, since it is only available to people on welfare or qualifying for public assistance.

Accident and Sickness Disability Income Insurance

An individual may also take accident disability insurance for loss of income or expenses which are incurred as a result of an accident or sickness or both. This type of insurance is of vital importance to persons, including farm families who depend on their income to meet their present and future obligations. If a person's income is reduced or becomes negligible due to higher expenses or lower gross returns, he is still required to buy groceries and essentials, provide for his family, and meet living expenditures. While most people tend to think of health insurance as medical insurance, "the protection of the family breadwinner's income is of greater importance".[21] Disability income contracts are normally designed to provide disability income coverage incurred through accident and sickness.

Income benefits are usually paid weekly or monthly depending on the terms in the contract. Benefits are available for accident only or for both accident and sickness.[22]

---

[21] Angell, op. cit. p. 356.

[22] Coverage depends on the type of occupation and premium at the time of issue. Insurance companies are reluctant to offer income insurance for sickness only. At times it becomes difficult to establish whether a person is in fact disabled from sickness. To avoid fraudulent declarations and unwarranted claims, most insurance companies refuse to offer this type of insurance policy.

Accident policy or combined policy protection are generally offered against loss resulting directly and independently of all causes from accidental bodily injury while the policy is in force. Some policies still require that the injury results from accidental means (i.e. a falling object), rather than by accidental causes (i.e. injuries incurred indirectly by lifting or other causes). Most income insurance exclude any previous injuries. For example, previous back injuries would be automatically excluded from further disability claims resulting from back injury. Certain types of injuries caused by war, suicide, intentionally inflicted injury, and injuries while in military services are excluded. Nevertheless, the insurer has to set forth in the policy every exception or reduction which may affect the amount payable under the contract.

The policy may also provide for both total disability and partial disability income benefits. Sickness benefit is not available for partial benefit coverage. The total disability income is limited to 60% to 70% of a person's earned income or calculated income at the time of issue of the policy. The total disability income provides an income for loss of time for a specified period in which such injuries did, within thirty days after the proof of claim, wholly and continuously disable the insured and prevent him from performing each and every duty pertaining to his occupation. The payment continues at the same rate, thereafter, as long as the insured is wholly and continuously disabled by such injuries from engaging in any occupation or employment for wage or profit for which he is

reasonably fitted.[23] In this case, the payments continue for life if the insured is unable to engage in any occupation for which he is reasonably fitted. Insurance companies offer non-cancelled contracts, which are renewable at the option of the insured, up to a specified age.

Partial disability payments are often available in accident policies, either as part of the policy or for an additional premium. The payments are commonly two fifths of the weekly total disability income benefit for a specified number of weeks (either 26 weeks or 52 weeks). This holds providing the injury is declared within a specified short period following the accident or immediately following a period of total disability which continuously prevents the insured from performing important daily duties pertaining to his occupation. However, if the person partially recovers from an injury after a year and is only partially disabled for a certain period, (for example, three months), before becoming totally disabled again for life, his total disability is not continuous, and he is eligible for benefits only for the year of total disability plus potential duration of partial disability benefits.

Disability benefit is provided for dismemberment and loss of sight. It is usually a lump sum ($2500 to $10,000). This sum is payable for the loss of both hands, both feet, the sight of both eyes, while a lesser sum for the loss of one hand, one foot, or either hand

---

[23] Angell, op cit. page 359.

or foot, and the sight of one eye if the loss occurs within specified times (30 days or 90 days) following the accident.

Most accident benefit contracts contain an accidental death benefit, which is a conditional kind of life insurance. Others provide as double indemnity the amount payable under various benefits from specified types of accidents. This is very similar to the double indemnity clause in life insurance.

Sickness benefits are always more limiting in maximum duration than the benefits provided for accidents. Cancellable policies often limit sickness benefits to a maximum of one year to two years; while non-cancellable policies are of different duration, short term (less than three years), intermediate term contracts (usually 5 years) long term (usually 10 years) or extra long term contracts (15 years or to age 65). The extra long term contracts benefits are not very common, and if given usually contain a limited benefit clause, i.e. 50% monthly income, after a stated benefit period up to age 65. The sickness policy provides benefits if the insured is unable to perform his own occupation for one or two years, and for the balance of the period only, if he can not engage in any occupation.

Most sickness policies exclude pre-existing sickness and injuries or sickness occurring before a certain waiting period has elapsed or sickness which originates during the first 14 to 30 days of the policy. It covers sickness which originated only after the 15th or 31st day of the policy date. The purpose is to exclude pre-existence conditions.

Other provisions may be reserved to confining or non-confining insuring clause. If a confining clause exists, the insured must be both totally disabled and confined to his house or hospital to receive benefits while if a non-confining policy clause exists, the insured must be totally disabled but not necessarily confined to his house or hospital.

Most income sickness benefit contracts generally limit the amount of income benefit to 60% to 70% of the insured earnings. Income from other sources, such as investment, are usually not insured, since this income continues regardless of the insured's disability. The companies usually specify the maximum benefit that they will write for any one individual (i.e. $300 or $400 per month). This does not mean, however, that there is an aggregate limitation. They may also specify a maximum amount of benefit which they will participate in with other companies.

The price for various policies varies primarily according to age, sex and occupation, with premium rates higher for females. Premium rates also differ depending on type of contracts.

Double indemnity and waiver of premium are available for life insurance policy holders. The waiver of premium benefit provides for the insured if he is totally and permanently incapable of engaging in any occupation for wage or profit, as a result of bodily injury or disease, with a waivement of premiums on the contracts during the continuance of the disability. This disability, however, must not be by intentionally self inflicting injuries, war, or of a violation of the law. The disability must also be for at least a minimum time period (usually 6 months). However, blindness and dismemberment are considered

immediately as having caused total and permanent disability. The insured may also add a life insurance contract containing an income disability contract. It resembles the waiver of premium clause. Except, that in most income disability contracts he receives an income up to an advanced age, which he may use as he wishes; while a waiver of premium clause pays the policy premium on behalf of the insured up to age 65, at which time it is converted to an endowment.

There is also mortgage protection insurance which is written specifically for the purpose of meeting payments on a mortgage if the insured becomes disabled. There is usually a monthly lifetime benefit provision for accident and a two-year maximum benefit for sickness. The policy shows the name of the mortgagee, the amount of monthly mortgage payments, and the unpaid mortgage balance.

The most common types of income disability insurance benefits available have been discussed. Many other different types exist. Some are automatically issued when a person takes a loan, such as at a Credit Union, requiring no medical examination except a declaration of good health; while others are optional, such as at Commercial Banks or at Mortgage Companies. In some income disability insurance, if he is partially disabled for more than three months, the insurance pays the interest charge until he recovers. However, if he is totally and permanently disabled, the entire loan is completely paid up.

Annuities and Canada Pension Plan

Farmers planning to build a fund for security and old age may purchase annuities and pension plans. Annuities are very often confused with life insurance. They differ markedly from these policies.

They are merely an agreement or a promissory contract (forced saving) to invest either monthly or annually a certain sum of money which will, if carried to maturity, provide sufficient income for retirement. No risk is being transferred nor is the heir guaranteed a maximum sum. It is only when the annuity matures that the person receives the maximum amount. At maturity, the annuities may be received monthly or in a lump sum depending on the arrangements in the contract.

Governments and private companies provide annuities and pension plans. In this study, we will discuss the Canada Pension Plan and private companies annuity plan. The Canada Pension Plan is a compulsory plan which also contains some life insurance benefits and for this reason will be discussed. On the other hand, annuities provide a farmer with a guaranteed retirement pension which is comparable to the saving aspect of life insurance.

Canada Pension Plan

The Canada Pension Plan[24] operates in all parts of Canada except where a province establishes a comparable program. At present Quebec is the only province providing this service. Benefits are portable and once a person contributes to the plan, he does not lose the right to the retirement pension based on his years of contribution. Benefits are not fixed once and for all; rather, they increase proportionally with the cost of living.

---

[24] The Canada Pension Ottawa: Queen's Printer and Controller of Stationery 1965.

To be covered under the plan, a person must obtain a Social Insurance Number. Yet, if he does not obtain a Social Insurance Number, he is still required to make contributions to the plan, based on his salary, wages, and income from self-employment, except where his income is received from an investment, an annuity or a pension plan. For example, in 1966 and 1967, the contribution was calculated on an individual's earnings up to a maximum of $5,000 a year, with a basic exemption of $600.00. The maximum contribution was $79.20 for an employee and $158.40 for a self-employed person. The reason for the difference in contribution is that employers have to match their employees' contributions. To qualify for a particular year, a person has to be between the ages of 18 and 70 and earn no less than $600.00 in that year if an employer, or at least $800 in that year if self-employed.

The plan covers, on a compulsory basis, all types of employment except employment by a spouse, by a father or mother or any other person who supports a person but does not pay cash wages. Employment on a casual basis, not for the purpose of the employer's business, employment as a migratory worker, in occupations like farming, fishing, trapping, logging, where a person works less than 25 days a year for the same employer or when he earns less than $250.00 a year from the same employer are exempt from contribution.

The retirement pensions are calculated on 25% of the annual earnings up to $5000 averaged from age 18, except earnings that have been received before January 1966, the starting date of the plan. To

offset rising costs, the earnings and contributions are adjusted before they are averaged for pension purposes.

Earnings are averaged over the numbers of years a person might have contributed, excluding any years in which a person could have been receiving a disability pension.

After 1975, a person will be able to disregard low or non-earnings years in the following way:

1. Each year of earnings beyond age 65 can be substituted for a year of low or even no earnings before that age.

2. In addition, a person can "drop out" 15% of the remaining years he might have contributed to the plan. This drop-out provision must not reduce the total number of years for averaging purposes to less than 10.

A contributor at age 68 starting in 1967 or at age 65 in 1970 may apply for his pension. If he wishes, he may postpone his application for a pension and keep on working. If he takes the pension before age 70 and earns $900 or more during a year, his pension is reduced. If he earns between $900 and $1500 his pension is reduced by 50 cents a year for every dollar he earns, and if he earns over $1500 per year his pension is reduced by one dollar for every dollar earned. However, no reductions are made in the monthly pension for any month in which he earns $75.00 or less. Full retirement pensions will not become available before January 1, 1976. Contributors who become eligible for pensions before this date will receive a reduced pension. In this case, earnings will be averaged over 10 years, less

any periods in which he received a disability pension.

Disability pensions, under the Canada Pension Plan, will become available after May 1970. However, to be eligible for this pension a person must have contributed to the plan for at least five years, at least 1/3 of the total number of years a person could have contributed to the plan, or for 10 years, whichever is the lesser, and 5 of the last 10 years that he could have contributed.

The amount of disability pension is a flat rate $25.00 a month plus 75% of his retirement pension, calculated as if he had reached age 65 at the time he became disabled. It is based on a contributor's full retirement pension. This disability pension starts four months after the month in which the disability is considered to have begun. This pension is paid until recovery or age 65. At 65, the disability pension is replaced by the retirement pension.

Disability benefits for the dependent children of a disabled contributor are also available. To qualify, the dependent child must be: (a) a natural or adopted child of the contributor, or a child in the custody and control of the contributor; (b) unmarried, (c) under age 18 or between 18 and 25 and continuing to school or university full time; (d) conceived or adopted before the disabled received disability pension.

The amount of contribution is $25.00 a month for each dependent child up to four children, and $12.50 a month for each additional child.

A survivors benefit will begin in February 1968 for the following purposes:

1. a death benefit (lump sum)
2. a widow's pension
3. a disabled widower's pension
4. an orphan's benefit

To qualify for survivor's benefit, the contributor must make contributions for 1/3 of the years in which he may have contributed or 10 years, whichever is the lesser, subject to a minimum of three years.

A death benefit will be paid to his estate in a lump sum equal to six times his monthly retirement pension.

A widow's pension will be paid if the widow is under age 65. Full pension is $25.00 a month plus 37.5% of her husband's retirement pension. However, she qualifies for full pension only if she has dependent children or is disabled, or becomes disabled later on. She may receive a reduced pension if she is widowed under age 45 and has no dependents or is not disabled or if before age 45 she ceases to have dependents or ceases to be disabled. In the latter case, her pension is $25.00 a month plus 37.5% of her husband's retirement pension at death, less 1/120 for each month by which she is under age 45 at the time she qualifies. However, if she becomes a widow at age 65 or over, she receives a widow's pension equal to 60% of her husband's retirement pension.

A disabled widower's pension is similar to the widow's pension

under age 65 and over age 65, except that he must have been wholly or substantially dependent on his wife financially at the time of her death.

Annuities

Annuities contracts differ markedly from the life insurance contracts. Under an annuity, the insurer promises to pay an income for a specified number of years. It commences at a given time and continues for a definite number of years or for the lifetime of a designated person or persons. The main difference could be summarized as follows: Normally, life insurance pays if a person dies, while an annuity pays only as long as a person lives. No medical examination is required to obtain an annuity, and the health of the insured is of no concern to the insurance company. The reason being that the sooner a person dies, the fewer the number of payments the company will be required to make. Its value lies in the fact that a person will not outlive his income and will be assured of an income as long as he lives.

Annuity assumes many different forms. A straight life annuity provides payment as long as the annuitant lives. Upon the death of the annuitant the liability of the insurance company terminates and no further payments are made regardless of the number of payments made. Other plans provide either for a guaranteed payment period (5, 10, 15, or 20 years) or for a refund provision. For example, under a life annuity contract, with 10 years certain, the insurer promises to pay a minimum number of payments regardless of whether the insured lives or

dies. However, if he lives beyond ten years, the insured will continue to receive payments until death.

Under an installment refund annuity, the guaranteed payment to the annuitant and benefit equals the purchase price. If the balance is payable in cash upon the death of the annuitant, this is known as a cash refund annuity.

Annuities can also be classified as immediate or deferred annuities. An immediate annuity is one in which the first payment is made at the end of the first period and at the end of each succeeding period. While a deferred annuity is one in which the payment begins only at the end of a predetermined year or age. Annuities may also cover one life or joint lives, depending on the contract.

Annuity contracts are mainly of two types: 1) of fixed number of dollars (called conventional annuities) or 2) a fixed number of units (called variable annuities). In the former, the annuity is expressed in a fixed number of dollars, while in the latter it varies according to the market value of the companies equity investment portfolio. The major drawback of the conventional annuity is that the income from the annuity remains fixed while general price levels change. i.e. no protection from the effects of inflation. The variable annuity on the other hand will change according to the investment success of the funds and may well increase faster than the cost of living index.

The principle behind the variable annuity is the same as that of the conventional annuity, i.e. that premiums are paid to the company and upon retirement payments are made to the annuitant for his lifetime. The difference lies in the amount of the payments to the annuitant upon

retirement. In the conventional type, income received is fixed at the time the policy is written. In the variable annuity the annuity income is not fixed, rather it is the number of units which are fixed. The income of the annuitant is determined by the investment experience of the company and decrease or increase in accordance with this variation such that the value of the number of units purchased by each annuity premium is determined by the current value of the units. The value of the unit changes each month depending on the evaluation of the company's security holdings. At retirement, the accumulation units are converted into life annuity units, such that the income from the annuity is determined by the number of units times the current value of the unit. Each unit is revalued each year depending on a company's investment experience, mortality, and the financial position.

Informal Insurance

Informal Insurance schemes may be used for protecting the business from risk. They differ from formal insurance in that they do not transfer the risk to a second party. The most common methods are prevention, reserves, diversification, flexibility in planning, and discounting. There are many reasons for utilizing informal insurance schemes. The major reason is to avoid transfer costs. In many cases, the risk can be fairly accurately predicted, which permits the risk manager to build up his own protective reserves. At times, the risk may be retained because the cost of formal insurance is too high compared to the loss. It may be used where it is neither possible to determine loss nor to purchase formal insurance. Finally, it may be used when the farmer is willing to take the chance of loss in order to

make larger profits, yet wants additional security in case of loss.

The prevention of risk is probably the best known method for eliminating potential sources of loss. For example, fireproof building materials may be used to protect against fire risk. Shields may be used for covering moving parts of machinery. Shorter working hours may be practiced to prevent accident and time loss. Good public relations may help iron out personnel problems. Careful management decisions and sufficient knowledge may prevent larger financial losses. These are some of the preventative methods which may be used to eliminate losses.

The reduction of risk through other methods may also be substituted for preventive measures. For example, the building of a complete fireproof building might be too costly to build. A better and more suitable plan could be to guarantee a good supply of water from a dugout or a nearby ditch. In this case, the fire hazard is reduced but not eliminated. Many alternative methods exist for a farmer's use in reducing losses from risk. The extent that a farmer may implement these methods will depend on the principle of marginality. (Extra costs for prevention compared to expected losses prevented).

The farmer may also protect himself by accumulating cash reserves either in his own banking account, in a saving plan, in liquid assets such as bonds, or in inventory of grain and livestock which may be easily converted into cash.

Credit reserves may be used to protect the farmer against unfavorable development and to provide flexibility. Money which could

be borrowed but was not borrowed, can usually be borrowed in unfavourable situations to pay creditors and maintain solvency. It is very similar to cash reserves except that the only cost that can be attributed to it is the forgone profit which could have been made had the money been borrowed and invested (i.e. opportunity cost). The cost of holding cash reserves is higher than credit reserves by the amount of foregone interest associated with holding idle money.

Diversification has long been recognized as a method for reducing risk and stabalizing income. On page 56 we showed how diversification might reduce uncertainty. "The 'hope' of the farmer is that if the return of one product is low, the return from another will be high when the "eggs are not all in one basket.""[25] However, it must be remembered that diversification may also have an unstabilizing effect or negative effect on production and on income when wrong combinations of enterprises are followed.

Flexibility of production organization permits the individual to make revisions and shift resources from one product to the next according to changes in expectation. Flexibility increases with diversification, intensification (variability of input applications at the intensive margin) and the proportion of variable costs relative to the total cost structure. It decreases with length of production period (i.e. cow-calf operation has a longer maturing period than farrowing-hog enterprise) and with product specialization (dairy cows vs dual purpose beef cows). Flexibility of resource use may be important in farm planning. It can also be arrived at by inventory management or crop storing where income stabilization can be

---

[25] Heady, op cit pp. 510.

maintained by storing feed grain or hay in good years to feed livestock in poor crop years.

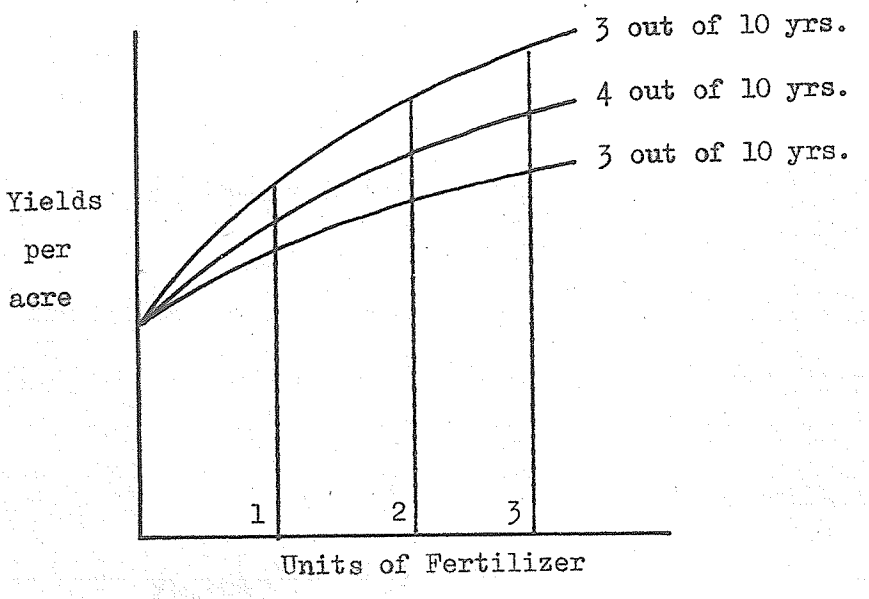
The storing of feed and hay is a form of self insurance in that production is geared to a mean with storing of feed to complement low productivity. The purpose of storing is to avoid purchasing of feeds when costs are high and difficult to obtain.

However, this flexibility in management inventory might have some severe limitations especially if the time incidence or poor crops or price condition is such that long periods of excessive inventories may be required for individual farms to remain solvent.

Cash reserves may also permit more flexibility of plan and shifting of resources from one product to the other. However, it is often very difficult to maintain cash reserves, especially when a farmer has a small farm, and requires all the capital to maintain his level of living.

Another precaution used by farmers to ascertain a minimum profit is to discount or subtract a safety margin on production inputs to reduce large losses. Discounting or safety margins are mainly used in establishing the amount of resources to use in producing a certain product.

In general, most input recommendations are based on average expected yields. They do not anticipate variation in yields, which may be realized in any single year. For example, the middle curve (production function) in diagram 12 represents the average response to yield increases by applying various rates of fertilizer. The farmer to prevent excessive loss may select to base his fertilizer application on the lower curve, so



DIAGRAMMATIC PRESENTATION OF SAFETY MARGIN

Figure 12

that by choosing the lower curve, the possible error is reduced. Other possible ways are to discount yields, to subtract a safety margin from good years, or select the amount of fertilizer that will give him the highest profit in the average year. In this case, the possible error is smaller as illustrated by the spread between curves in diagram 12 as you move to the left.

Summary

Farmers have many different ways of protecting themselves against uncertainty. These methods have been summarized under two main headings, formal and informal insurance schemes, which may be used in order to minimize losses and produce optimum profits under uncertainty.

	I			$15,340.91 91.20%							
Total farm assets (current market value)	II	42,817.59	75,143.45	$32,325.86 75.50%		100%	100%	90.20	92.99		
	III	52,338.08	91,385.85	$39,047.77 74.61%		100%	100%	74.67	80.83		
	IV	103,448.33	157,305.00	$53,857.67 52.06%		100%	100%	88.08	93.84		
	TOTAL	41,387.49	73,119.42	$31,731.93 76.70%		100%	100%	83.98	90.07		
	I	28,539.00	49,483.76	$20,944.76 73.39%				100%	100%		
Total farm capital (current market value)	II	47,472.14	80,811.64	$33,339.50 70.23%				100%	100%		
	III	70,088.08	113,061.92	$42,973.84 61.31%				100%	100%		
	IV	117,448.33	167,638.33	$ 50,190.00 42.73%				100%	100%		
	TOTAL	49,283.25	81,181.95	$ 31,898.70 64.73%				100%	100%		
	I	16,821.90	32,162.81	$15,340.91 91.20%	60.53	69.40	67.38	71.40	68.59	75.15	73.10
Farm Equity (current market value)	II	36,149.86	56,209.59	$20,059.73 55.49%	68.87	84.43	74.80	85.95	76.57	86.67	77.49
	III	43,148.46	73,319.46	$30,171.00 69.92%	75.32	82.44	80.23	86.89	84.02	85.02	82.98
	IV	83,172.00	120,070.33	$36,898.33 45.36%	70.11	80.40	76.33	82.75	77.79	82.68	78.37
	TOTAL	33,203.44	54,667.69	$ 21,464.25 64.64%	68.95	80.23	74.74	83.40	77.25	83.23	78.03
	I	21,019.29	38,185.76	$17,166.47 81.67%	---	---	---	---	---	---	---
Net Worth (current market value)	II	43,400.13	70,084.73	$ 26,684.60 61.49%	---	---	---	---	---	---	---
	III	50,520.69	84,913.77	$ 34,393.08 68.08%	---	---	---	---	---	---	---
	IV	87,000.67	126,870.33	$ 39,869.66 45.83%	---	---	---	---	---	---	---
	TOTAL	39,219.98	64,885.68	$ 25,665.70 65.44%	---	---	---	---	---	---	---

FOOTNOTE

Adjusted = Investment where capital gains have been subtracted.

Total farm assets includes land, machinery and equipment, feed and grain, supplies, farm accounts receivable.

Total farm capital includes total farm assets and rented land.

			12.29%							
TOTAL	6,923.69	9,542.02	$2,618.33 37.82%	16.05	16.73	13.05	14.05	11.75	14.19	11.35
I	73.38	244.10	$ 170.72 231.39%	.62	.31	.52	.26	.48	.25	.42
Farm II	293.18	347.14	$ 53.96 19.06%	.57	.68	.46	.63	.43	.58	.42
Accounts III	304.15	668.54	$ 364.39 119.80%	.92	.58	.73	.43	.59	.50	.63
Receiva- IV ble	184.67	294.67	$ 110.00 59.57%	.23	.18	.19	.16	.17	.16	.18
TOTAL	211.85	378.61	$ 116.76 78.72%	.64	.51	.52	.43	.47	.44	.45
I	7,418.05	15,544.71	$8,126.66 109.55%	39.47	30.60	32.62	28.60	31.41	24.85	26.90
Farm II	6,668.18	18,933.86	$12,265.68 183.94%	31.13	15.57	25.20	14.05	23.43	13.33	22.51
Debts III	9,189.62	18,066.38	$ 8,876.76 96.60%	24.68	17.56	19.77	13.11	15.98	14.98	17.02
IV	20,276.33	37,234.67	$16,958.34 83.61%	29.89	19.60	23.67	17.25	22.21	17.32	21.63
TOTAL	8,182.59	18,466.69	$10,284.10 125.68%	31.05	19.77	25.26	16.60	22.75	16.77	21.97
I	4.319.05	1,819.05	$-2,500.00 -57.88%	---	---	---	15.11	3.68	---	---
Rented II (land)	4,654.55	5,668.18	$ 1,013.63 21.78%	---	---	---	9.80	7.01	---	---
III	17,750.00	21,676.08	$ 3,926.08 22.12%	---	---	---	25.33	19.17	---	---
IV	14,000.00	10,333.33	$-3,666.67 -26.19%	---	---	---	11.91	6.16	---	---
TOTAL	7,895.77	8,062.53	$ 166.76 2.11%	---	---	---	16.02	9.93	---	---
I	24,447.14	39,387.90	$14,940.76 61.11%	100%	---	---	---	---	---	---
Total II Farm	42,817.59	60,829.68	$18,012.09 42.07%	100%	---	---	---	---	---	---
III Assets	52,338.08	73,189.38	$20,851.30 39.84%	100%	---	---	---	---	---	---
(adj.) IV	103,448.33	130,544.33	$27,096.00 26.19%	100%	---	---	---	---	---	---
TOTAL	41,387.49	59,466.00	$18,078.51 43.68%	100%	---	---	---	---	---	---
I	28,539.00	41,206.95	$12,667.95 44.38%	---	---	---	---	---	---	---
Total II farm	47,472.14	66,497.86	$19,025.72 40.08%	---	---	---	---	---	---	---
capital III	70,088.08	94,871.13	$24,783.05	---	---	---	---	---	---	---

	I	9,002.00	10,192.97	$1,190.97 80.87%	---	---	---	---	---	18.77	17.53
Buildings	II	7,308.14	8,944.86	$1,636.72 22.39%	---	---	---	---	---	14.58	10.64
	III	9,010.62	14,737.31	$5,726.69 63.55%	---	---	---	---	---	14.69	13.88
	IV	13,640.00	14,841.67	$1,201.67 8.81%	---	---	---	---	---	11.65	8.62
	TOTAL	7,397.95	10,943.75	$3,545.80 47.93%	---	---	---	---	---	15.16	13.02
	I	6,862.48	9,833.33	$2,970.85 43.29%	24.97	---	---	---	---	---	---
Machinery and Equipment (adj.)	II	9,977.91	15,053.09	$5,075.18 50.86%	24.75	---	---	---	---	---	---
	III	15,685.15	20,853.15	$5,168.00 32.95%	28.49	---	---	---	---	---	---
	IV	28,696.67	37,908.67	$9,212.00 32.10%	29.04	---	---	---	---	---	---
	TOTAL	11,078.36	15,635.34	$4,556.98 41.13%	26.28	---	---	---	---	---	---
Machinery and Equipment (current market value)	I	6,862.48	10,421.19	$3,558.71 51.85%	---	28.30	21.86	24.03	21.06	22.99	18.03
	II	9,977.91	17,294.64	$7,316.73 73.32%	---	23.31	23.02	21.02	21.41	19.91	20.57
	III	15,685.15	24,033.00	$8,347.85 53.22%	---	29.97	26.30	22.38	21.26	25.57	22.65
	IV	28,696.67	40,417.67	$11,721.00 40.84%	---	27.74	25.69	24.43	24.11	24.51	23.48
	TOTAL	11,078.36	17,510.32	$6,431.96 58.06%	---	26.77	23.95	22.48	21.57	22.71	20.83
Live-stock	I	4,350.19	6,535.10	$2,184.91 50.23%	16.59	17.94	13.71	15.23	13.21	14.58	11.31
	II	8,423.68	8,361.32	$ -62.36 -0.74%	13.75	19.67	11.13	17.74	10.35	16.81	9.94
	III	10,417.77	10,592.08	$ 174.31 1.67%	14.47	19.90	11.59	14.86	9.37	16.98	9.98
	IV	23,826.67	31,558.33	$7,731.66 32.45%	24.17	23.04	20.06	20.29	18.83	20.35	18.33
	TOTAL	8,196.37	9,382.34	$1,185.97 14.47%	15.78	19.80	12.83	16.63	11.56	16.80	11.16
Inventory Feed Grain & Supplies	I	4,153.86	5,495.19	$1,341.33 32.29%	13.95	17.13	11.53	14.54	11.11	13.91	9.51
	II	6,498.41	9,989.91	$3,491.50 53.73%	16.42	15.18	13.29	13.69	12.36	12.96	11.88
	III	9,996.38	13,346.08	$3,349.70 33.51%	18.23	19.10	14.60	14.26	11.80	16.29	12.58
	IV	16,120.33	18,101.00	$1,980.67 12.29%	13.86	15.58	11.51	13.73	10.80	13.76	10.51
	TOTAL	6,923.69	9,542.02	$2,618.33 37.82%	16.05	16.73	13.05	14.05	11.75	14.19	11.35
Farm	I	73.38	244.10	$ 170.72 231.39%	.62	.31	.52	.26	.48	.25	.42

AVERAGE INVESTMENT VALUE PER GROUP AND PERCENTAGE DISTRIBUTION OF TOTAL ASSETS, TOTAL FARMING CAPITAL AND TOTAL ADJUSTED INVESTMENT IN 1961 AND 1965

Item	Group	Ave. Invest. per farm (1961) $	Ave. Invest. per farm (1965) $	Change	% Dist. of adjusted total farm assets (1965)	% Dist. of total farm assets (1961)	% Dist. of total farm assets (1965)	% Dist. of total farm capital (1961)	% Dist. of total farm capital (1965)	% Dist. of total farm assets & bldgs. (1961)	% Dist. of total farm assets & bldgs. (1965)
Land (adj.)	I	8,805.38	17,280.19	$ 8,474.81 96.24%	43.87	---	---	---	---	---	---
	II	17,624.41	27,078.23	$ 9,453.82 53.64%	44.51	---	---	---	---	---	---
	III	15,934.61	27,729.54	$11,794.93 74.02%	37.89	---	---	---	---	---	---
	IV	34,618.67	42,681.67	$ 8,063.00 23.29%	32.70	---	---	---	---	---	---
	TOTAL	14,977.22	24,527.69	$ 9,550.47 63.76%	41.25	---	---	---	---	---	---
Land (current market value)	I	8,805.38	24,969.14	$16,163.76 183.57%	---	36.32	52.38	30.83	50.46	29.50	43.20
	II	17,624.41	39,145.91	$21,521.50 122.11%	---	41.16	52.10	37.12	48.44	35.16	46.55
	III	15,934.61	42,746.15	$26,811.54 168.26%	---	30.45	46.78	22.74	37.81	25.97	40.28
	IV	34,618.67	66,933.33	$32,314.66 93.34%	---	33.46	42.55	29.48	39.93	29.57	38.88
	TOTAL	14,977.22	36,306.14	$21,328.92 142.41%	---	36.19	49.65	30.39	44.72	30.70	43.19
Buildings	I	5,602.00	10,132.57	$4,530.57 80.87%	---	---	---	---	---	18.77	17.53
	II	7,308.14	8,944.86	$1,636.72 22.39%	---	---	---	---	---	14.58	10.64
	III	9,010.62	14,737.31	$5,726.69 63.55%	---	---	---	---	---	14.69	13.88
	IV	13,640.00	14,841.67	$1,201.67 8.81%	---	---	---	---	---	11.65	8.62
		[illegible]	[illegible]	$7,731.66 32.45%	24.17	23.04	20.06	20.29	18.83	20.35	[illegible] 18.33

APPENDIX C

SUMMARY OF DATA AND TABLES USED

IN THE STUDY

TABLE XLIX

DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Buildings value $ 1961	Buildings ins. $ 1961	Household contents value $ 1961	Household contents ins. $ 1961	Machinery & equip. value $ 1961	Machinery & equip. ins. $ 1961	Livestock value $ 1961	Livestock ins. $ 1961	Grain & Feed value $ 1961	Grain & Feed ins. $ 1961
1	---	---	---	---	---	---	---	---	1634	---
2	1900	2800	1183	1000	3666	800	7170	6250	2558	500
3	3112	2500	2200	1500	4080	---	4404	---	3326	---
4	---	---	---	---	3474	---	2480	---	2619	---
5	5625	2500	1200	1000	3125	---	4950	---	2699	---
6	4235	8800	2400	2000	3535	1300	6083	4700	3257	1700
7	5000	7100	2000	2000	4673	2100	3087	2350	2871	5100
8	---	---	2500	3000	7245	2800	2315	2000	2728	---
9	6525	1000	2000	1000	3840	1000	1563	---	4230	---
10	4158	6300	2000	1000	4514	---	6230	2800	2498	---
11	7020	8700	1800	1000	7081	4300	4590	---	3017	5100
12	7550	6300	1736	700	4713	---	10200	---	1471	---
13	8890	8000	1500	2000	3780	---	1750	---	6165	---
14	8259	3500	2980	2000	16329	4000	3980	---	3667	---
15	7925	8250	2000	---	8609	---	7020	---	1973	---
16	11730	7500	1500*	1500	13507	5000	5900	14700	5393	---
17	8172	9750	2000	3000	8429	2800	210	---	7394	---
18	5150	5000	3000	2000	11243	900	7675	6000	3675	---
19	7950	---	2000	---	7930	---	6130	---	6782	---
20	7100	6300	3000	1000	13357	3000	5585	2600	5010	---
21	7341	13500	2455	3000	9056	5000	32	---	10175	10600

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm	Buildings		Household contents		Machinery & equip.		Livestock		Grain & Feed	
	value	ins.	value	ins.	value	ins.	value	ins.	value	ins.
	$	$	$	$	$	$	$	$	$	$
No.	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961
22	11070	7700	2500	3000	5384	2000	3790	3000	4270	200
23	5075	8100	---	---	11550	---	6616	---	4001	---
24	6745	9000	1960	---	6802	---	8180	6000	4774	---
25	5968	8300	2400	3000	9336	9000	7194	4875	3575	1700
26	9125	4500	1500	2000	7662	3200	7230	4000	7573	1500
27	2860	4375	1500	2500	8631	---	4670	---	9525	---
28	11040	8000	3000*	3000	10663	5150	8306	1800	6697	---
29	4531	2025	500	---	11531	---	7410	---	4529	---
30	7325	7185	2500	2500	8204	4300	7920	3000	8695	8800
31	8050	9650	1000	2000	7966	5550	8640	11400	5060	200
32	12632	11600	1500*	1500	12413	3300	6670	2000	4749	---
33	8475	27200	1500	---	8762	6440	10632	---	2985	---
34	5500	3500	1500	1000	8160	3000	6900	---	8938	---
35	7350	12900	1500	3000	13067	8200	5070	3500	10114	11160
36	5803	---	700	1000	10925	2000	8310	---	5454	---
37	1675	---	1928	2000	9156	3500	4210	2000	8610	6000
38	7425	9100	3000*	3000	10958	200	11304	---	6698	---
39	8860	11850	5000	4000	11898	7100	7038	5000	7437	---
40	10102	14400	3000	5000	13295	1000	11249	2500	3939	1000
41	9506	9100	2000	1500	9886	4500	7312	5050	6301	5000
42	11715	3000	4000	1500	11535	---	14125	---	8152	---
43	---	---	1000	---	11730	6000	22545	---	4950	---

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm	Buildings		Household contents		Machinery & equip.		Livestock		Grain & Feed	
	value	ins.	value	ins.	value	ins.	value	ins.	value	ins.
	$	$	$	$	$	$	$	$	$	$
No.	1961	1961	1961	1961	1961	1961	1961	1961	1961	1961
44	19413	7900	2000	1500	15922	----	11950	10000	9769	3000
45	11500	12850	2000	3000	14613	9500	9785	5650	7979	8500
46	9950	7600	1000	2000	15550	5100	14610	7500	7100	----
47	----	----	400	----	17320	----	15662	----	8498	----
48	6000	9550	1500	3000	14687	3000	9260	2000	12751	----
49	17310	26600	3000	4000	17218	8500	14435	14500	10614	10000
50	8300	14900	1500	3500	12335	10000	11449	14000	7980	7000
51	9700*	9700	2500	2000	14337	2000	11447	2000	6538	500
52	13000	19200	6500	4400	16434	6900	14592	7200	11488	5000
53	12400	10475	2000	3350	19662	8150	12080	6650	14527	2300
54	8115	8350	2000	1000	20448	7440	4225	2500	17642	----
55	11150	10000	2500	3500	19720	17000	----	----	10080	----
56	----	----	3000*	3000	5661	----	5936	----	761	----
57	12970	11000	2500	2000	29835	----	36400	5000	13380	4000
58	8450	11500	1500	3000	24345	8000	14620	6050	13375	3000
59	19500	17000	4000	5000	31910	8000	20460	10000	20899	----

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm	Buildings value $	Buildings ins. $	Household contents value $	Household contents ins. $	Machinery & equip. value $	Machinery & equip. ins. $	Livestock value $	Livestock ins. $	Grain & Feed value $	Grain & Feed ins. $
No.	1965	1965	1965	1965	1965	1965	1965	1965	1965	1965
1	3643	8000	1100	2000	3730	---	7500	---	2090	---
2	3215	1000	1150	1500	5748	3400	11880	8000	4703	1500
3	5992	5600	2650	2000	2914	1500	8020	6000	3119	---
4	5417	6000	2200	2000	4566	9000	4030	2300	3287	1000
5	5713	2000	2000	1000	4686	---	5590	---	3305	---
6	8865	15950	3400	2000	3170	2200	5195	4500	2100	500
7	5283	7700	2500	2000	8525	7000	3320	2675	2924	4100
8	10166	10200	2500	2500	9423	4100	4915	3000	2840	---
9	10385	6500	2000	2000	12275	1250	1865	---	5288	---
10	9150	7700	2500	2500	6396	---	10120	2800	4613	---
11	6350	9050	2000	2000	5851	7500	4340	2200	4387	1000
12	9965	9800	2600	1200	12578	3200	3275	9600	1680	---
13	8347	14050	1650	3000	9757	7200	4930	4000	8210	---
14	14430	7500	3000	3000	13429	2500	8098	---	2606	---
15	22361	15400	5000	3000	11167	2500	13650	5000	3214	---
16	9604	11500	3510	3000	8526	5500	4000	1700	6649	---
17	6638	6250	2300	3000	8676	5500	790	---	3924	---
18	11317	21700	3000	5000	14107	400	21100	10000	7630	---
19	40743	20200	2800	2500	9294	8200	8110	6500	12525	8401
20	6717	8400	3800	1000	14023	11600	6509	5000	3858	4000
21	7483	15000	4738	3500	12017	6500	---	---	16081	---

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm	Buildings value	Buildings ins.	Household contents value	Household contents ins.	Machinery & equip. value	Machinery & equip. ins.	Livestock value	Livestock ins.	Grain & Feed value	Grain & Feed ins.
	$	$	$	$	$	$	$	$	$	$
No.	1965	1965	1965	1965	1965	1965	1965	1965	1965	1965
22	10524	11500	2500	4000	14379	5000	3430	3000	7639	5500
23	5552	5000	1065	---	10328	---	9890	3100	4865	---
24	7998	8000	3000	3000	11241	3000	7500	3400	6330	---
25	5561	9800	2500	4000	8483	10000	7675	4500	5611	11000
26	10000	8850	1500	2000	15684	4200	12865	4200	5711	---
27	6005	5375	1800	2500	9171	---	6085	---	5248	---
28	12397	13800	5300	6000	10247	6500	10095	6000	11342	---
29	11020	5200	500	1000	18226	10000	20450	8000	9849	3000
30	8350	10100	2600	2500	8433	11000	5900	---	7686	5100
31	8150	11650	1935	2000	10299	9550	7800	10700	9708	200
32	11170	12150	350	1500	19803	7000	2760	2000	9590	---
33	13629	24950	4000	5000	29456	1400	---	---	16366	---
34	35732	9800	4000	5000	25020	9800	13200	---	8038	---
35	17119	21675	3000	3500	15397	8350	4375	3000	14166	12100
36	5839	4450	1060	1000	10267	3000	7500	2500	5240	---
37	8613	6650	3785	3000	8470	5000	---	---	10374	10000
38	6878	8800	3000	3000	12234	3300	5135	---	13585	---
39	9732	13000	5000	4000	17975	11650	9675	13500	15256	14575
40	17009	17950	6000	3000	16286	20150	12124	7250	8705	1000
41	10341	14150	5000	3500	8521	5300	11290	5000	8106	1000
42	8965	8150	7350	2000	17748	---	17120	6500	10953	---
43	11020	9000	3500	2000	10478	5000	20450	---	6083	2000

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm	Buildings		Household contents		Machinery & equip.		Livestock		Grain & Feed	
	value	ins.	value	ins.	value	ins.	value	ins.	value	ins.
	$	$	$	$	$	$	$	$	$	$
No.	1965	1965	1965	1965	1965	1965	1965	1965	1965	1965
44	31021	22500	4000	2000	14740	24900	10400	6000	9937	---
45	11224	16100	3500	3000	12625	14000	9700	5200	11435	15500
46	9350	9300	1000	2000	15157	6700	16910	14250	8066	---
47	11800	7100	400	---	18444	16300	18025	7500	10986	---
48	5580	10000	3200	3000	17677	1800	12027	2000	8185	500
49	23895	25900	3000	4000	24715	22300	16410	18500	13925	10000
50	9755	15700	2000	4000	15106	13000	8326	14000	5998	13000
51	10479	9000	3000	2000	20340	12500	16200	4000	3901	500
52	21514	18800	5000	4400	27782	9600	17434	10000	19524	5000
53	27440	18250	6000	6000	25661	18850	11350	8000	18622	7300
54	7322	11525	2967	2000	23746	16900	---	16900	21096	---
55	22205	26600	4200	4200	36094	33000	---	---	24204	---
56	---	2500**	3655	4000	7355	7800	915	---	6174	---
57	16775	17200	2000	5000	43390	---	50550	6000	13999	4500
58	10050	10500	3000	3000	35069	20100	14225	15575	24750	10500
59	17700	24400	4000	6000	22564	12500	29900	13100	13965	1000

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Total farm capital year 1961	Total farm capital year 1965	Total farm assets year 1961	Total farm assets year 1965	Long term debt 1961	Int. term debt 1961	Short term debt 1961	Total debt 1961	Long term debt 1965	Int. term debt 1965	Short term debt 1965	Total debt 1965	Total net Worth 1961	Total net Worth 1965
1	17447	35253	3947	31253	----	----	----	----	8498	2745	2085	13328	4682	19337
2	17726	45196	17226	42996	----	500	----	500	----	2850	1200	4050	22587	44206
3	20146	41043	20146	41043	6000	952	631	7583	12702	400	1572	14674	15472	31163
4	20642	33387	8642	33387	----	660	365	1025	7425	3884	407	11716	8091	25637
5	20825	37168	20825	37168	----	----	501	501	----	739	----	739	25728	44247
6	22923	28763	22923	28763	7300	600	1283	9183	5600	600	----	6200	18398	31063
7	23747	54906	23747	54906	----	6848	424	7270	11151	4839	----	15990	20930	44071
8	27334	39626	12334	39626	----	1955	----	1955	10000	3050	295	13345	14088	30518
9	28183	59528	19183	39978	1572	1305	----	2877	7500	1000	1203	9703	19809	35024
10	28595	41641	17595	41641	3500	3200	573	7273	11605	2010	375	13990	15274	32337
11	28867	52527	28867	52527	11180	3240	----	14420	13290	540	----	13830	18343	44709
12	29517	45224	23517	45224	2268	3811	5777	11856	14491	5119	----	19610	15486	32025
13	29770	69040	29770	69040	11500	3927	1583	17010	20054	5029	1400	26483	15160	46533
14	30419	44316	30419	44316	7623	5358	1076	14057	4000	3973	4531	12504	23217	39142
15	31842	48839	28842	48839	8243	1900	4158	14301	6273	15211	14176	35660	16683	17693
16	32343	56805	32343	56805	6060	6263	2381	14704	30503	4839	2718	38060	19666	26358
17	34292	40864	34292	37864	8890	1516	2392	12798	5940	642	1892	8474	25270	32906
18	37394	79885	28994	79885	----	3700	1042	4742	38493	----	1920	40413	33914	53213
19	38956	59147	31956	59147	5200	1100	1178	7478	1400	2705	9025	13130	27080	50147
20	39293	60065	34043	60065	----	1916	3320	5236	----	7879	2994	10873	32707	54011
21	39478	70478	39478	56484	----	830	180	1010	----	1200	1568	2768	48920	67392

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Total farm capital year 1961	Total farm capital year 1965	Total farm assets year 1961	Total farm assets year 1965	Long term debt 1961	Int. term debt 1961	Short term debt 1961	Total debt 1961	Long term debt 1965	Int. term debt 1965	Short term debt 1965	Total debt 1965	Total net Worth 1961	Total net Worth 1965
22	40498	64541	40498	64541	11033	700	1488	13221	9757	5417	----	15174	30200	55279
23	41012	53454	33012	43454	9400	1050	----	10450	8625	2987	1102	12714	23622	32510
24	41291	62396	30291	54396	3000	1079	1821	5900	3000	4056	1270	8326	27969	48815
25	41453	82268	41453	82268	----	----	----	----	20000	2000	2184	24184	51202	71400
26	41515	80535	41515	80535	1000	1719	1290	4009	12000	11220	657	23877	40656	59908
27	41986	57434	31986	39434	----	----	1500	1500	----	2600	2661	5261	36156	41564
28	42043	64504	32143	64504	----	2250	222	2472	----	2434	4766	7200	47541	75259
29	44464	61366	44464	61366	----	3059	----	3059	----	3000	----	3000	59569	85825
30	44941	68312	44941	68312	19000	2001	1068	22069	14000	----	50	14050	33011	72867
31	45797	88118	45797	88118	24000	1400	1387	26787	37845	2467	600	40912	20605	49744
32	46841	65916	46841	65916	----	----	----	----	----	----	----	----	58734	85895
33	46970	165629	46970	114229	----	3263	4775	8038	12000	3600	----	15600	41402	105569
34	48593	115003	48543	115003	7607	----	----	7607	24287	7920	3525	35732	50437	94651
35	49258	79441	42258	79441	2800	2200	177	5176	7713	3406	571	11690	46487	85191
36	49435	52487	34435	41887	2000	3600	700	6300	3500	1400	----	4900	30925	38997
37	50286	69182	35286	48482	2246	----	----	2246	1618	----	147	1765	37213	58275
38	50752	67752	50752	67752	1190	450	931	2571	----	3600	----	3600	61858	91526
39	53511	121070	47511	121070	----	3195	1100	4295	64132	6600	----	70732	54859	67309
40	54514	105281	54514	105281	----	1000	4801	5801	22400	6336	1642	30378	59200	95299
41	56156	92454	43904	92454	----	6761	3	6764	33300	----	2600	35900	44117	64824
42	56177	98021	56177	98021	----	----	171	171	----	31000	----	31000	62458	116465
43	57646	62692	41646	56692	2750	5514	----	8264	12000	8250	300	20550	36582	45192

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Total farm capital year 1961	Total farm capital year 1965	Total farm assets year 1961	Total farm assets year 1965	Long term debt 1961	Int. term debt 1961	Short term debt 1961	Total debt 1961	Long term debt 1965	Int. term debt 1965	Short term debt 1965	Total debt 1965	Total net Worth 1961	Total net Worth 1965
44	60970	82871	60970	82871	----	4266	1755	6021	----	9865	----	9865	60824	79735
45	61477	86788	50477	86788	16500	1329	2500	20329	19000	----	----	19000	33259	75641
46	62622	84467	62622	84467	5000	----	----	5000	1500	----	----	1500	68209	103538
47	64641	67527	46891	60127	----	2480	4692	7172	----	4866	2200	7066	43698	58825
48	68286	101525	53286	83525	----	----	69	69	5900	3027	2000	10927	58480	79082
49	70548	152656	70548	114656	----	3770	280	4050	----	600	----	600	82848	129906
50	70574	94709	46574	58709	13500	4385	2339	20224	12343	2787	2300	17430	28489	47791
51	72422	81897	32422	67397	----	14686	145	14831	33650	7602	4949	46201	20744	24539
52	74935	135291	74935	135291	10500	1000	----	11500	----	12150	----	12150	86094	156052
53	75128	207519	75128	167519	10771	----	1810	12581	3445	50250	7156	66851	72786	101574
54	75414	102450	62414	82061	2370	----	----	2370	----	----	----	----	65381	99175
55	76421	204341	31421	145341	----	9347	822	10169	15998	5900	14640	36538	27324	129280
56	77707	67764	12707	19264	----	4722	427	5149	----	4182	2553	6735	7633	18741
57	104534	180443	104534	180443	----	6554	----	6554	23500	12200	3440	39140	102280	143803
58	107408	151531	87408	142531	27500	----	----	27500	31031	4941	1000	36972	62469	113462
59	145403	170941	118403	148941	----	25841	934	26775	12777	13930	8885	35592	96253	123346

Continued.....

TABLE XLIX....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Average net farm income	C. of V. net income (5 yrs.)	Ave. Operator's Earning	Off-farm Invest. (1961)	Off-farm Invest. (1965)	Off-farm Income (Ave.)	Living Expenditures cash 1961	Living Expenditures cash 1965	Margin for Growth (5 yrs.)	Gains from farming (5 yrs.)
1	3205	35	2701	---	---	615	551	1879	8434	12530
2	2964	50	908	3000	6200	1686	1927	2297	3930	15336
3	4489	23	3387	250	800	357	1753	3220	9331	16293
4	3248	28	2571	---	258	1241	1500	3200	2594	10619
5	3530	28	2154	337	---	434	2144	2951	2711	16867
6	2629	19	1708	660	450	756	1608	2993	781	7687
7	4095	32	2634	35	50	313	2245	3263	6295	17174
8	3624	34	2745	157	1039	1295	2556	3066	3742	12188
9	5696	43	4479	---	35	603	1768	4108	14276	28414
10	4497	68	3565	100	1900	1172	1907	3392	8961	13924
11	5278	24	4050	601	800	502	2411	3805	10630	24004
12	3612	47	2614	400	350	1368	3261	3829	1680	10948
13	3642	87	2421	800	1112	2685	2002	1926	5612	19570
14	4346	54	3047	550	1250	435	2050	2029	9109	9024
15	3308	82	2478	---	---	508	1531	3874	4286	15744
16	1597	191	807	348	495	1246	3487	3281	-8661	-1291
17	3203	122	1866	---	---	167	2676	3511	-265	4173
18	5945	52	3956	942	2300	2565	5017	5561	8258	11189
19	7101	58	5129	500	4743	3326	1833	3991	20790	29512
20	3703	60	4955	300	380	1333	2278	4067	2581	17316
21	5103	30	5103	3100	3600	617	3087	6118	11638	12571

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Average net farm income	C. of V. net income (5 yrs.)	Ave. Operator's Earning	Off-farm Invest. (1961)	Off-farm Invest. (1965)	Off-farm Income (Ave.)	Living Expenditures Cash 1961	Living Expenditures Cash 1965	Margin for Growth (5 yrs.)	Gains from farming (5 yrs.)
22	5565	55	3713	125	535	1502	2618	4383	11261	19173
23	1401	124	129	450	----	818	778	988	2907	10293
24	5779	20	4080	----	300	211	1840	2156	17086	28097
25	4495	50	1865	3511	8630	900	3395	3972	3508	16613
26	3979	51	1578	----	730	1576	2938	4933	383	14316
27	3141	98	1304	945	1148	471	2331	3901	-1195	7544
28	7270	38	5377	5000	9111	1759	4558	6297	9584	29753
29	5911	37	3354	10050	16923	297	1840	2156	22411	23959
30	6196	14	4472	5210	14610	976	3151	4945	12896	35462
31	4341	70	2755	----	5	2840	1100	2682	10443	25897
32	5888	33	3122	6454	13034	1067	2920	3461	15310	24006
33	8607	74	5349	----	----	2460	4689	9073	11928	54664
34	5446	71	2615	400	6244	2032	4628	5357	1734	36171
35	6810	51	4317	2041	8900	1771	3462	3000	17222	47239
36	3550	91	1940	2061	1500	224	2496	2975	5116	9542
37	7136	31	4975	2975	7551	1617	4507	5014	6477	18754
38	5866	47	2986	7966	17858	2489	2225	4733	12703	22833
39	13164	39	10083	1093	11013	1151	4099	4795	44666	65247
40	9161	54	6149	7292	11013	1356	5306	7477	17866	33458
41	5736	47	3409	100	1035	615	2577	4839	8497	12936
42	11400	12	7731	1250	5800	1260	6945	8000	19435	43510
43	4364	63	2345	3000	1000	349	2445	4320	3533	5231

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Average net farm income	C. of V. net income (5 yrs.)	Ave. Operator's Earning	Off-farm Invest. (1961)	Off-farm Invest. (1965)	Off-farm Income (Ave.)	Living Expenditures Cash 1961	Living Expenditures Cash 1965	Margin for Growth (5 yrs.)	Gains from farming (5 yrs.)
44	6252	56	2752	2400	416	801	4445	5767	4791	30115
45	8293	36	6103	425	1845	1799	2930	4833	20658	41688
46	4811	48	1389	6350	20251	981	2384	1870	14285	33249
47	4484	80	2092	1900	4750	46	1246	1654	16335	18851
48	7734	17	4505	2000	3700	265	3267	4670	15553	34768
49	5827	44	1609	19000	6200	409	3248	1828	7486	40965
50	3416	81	1468	13070	950	2840	3855	6657	-7376	7606
51	3768	85	2278	---	---	493	2730	4181	289	1607
52	14731	35	10224	11500	22700	2483	6439	8553	28300	65298
53	11363	31	6657	7300	14500	984	5136	8913	8942	40735
54	9183	12	5635	6543	8525	750	5930	6498	16655	30911
55	6399	71	3715	789	12565	7161	4119	6764	11691	78975
56	6226	87	5134	2273	4950	672	1796	4591	18394	18675
57	5633	101	-41	---	---	419	2902	4807	10627	56176
58	13389	42	9253	---	517	69	3500	7149	45450	54135
59	5176	106	204	---	---	2038	3902	6921	-2834	23214

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Crop Expenses in 1965 $	All-risk crop Insurance in 1966 $	Hail crop Insurance in 1966 $	Life Insurance protection 1961 $	Life Insurance protection 1965 $	Medical Insurance Plan 1961	Medical Insurance Plan 1965
1	2675	773	----	1000	11000	----	M.D.
2	5483	1143	1635	1000	1000	----	HCX
3	3342	3187	----	5000	17800	----	HCX
4	2511	1937	900	----	17000	----	HCX
5	1316	----	1155	7809	6448	----	H
6	1789	2714	----	6500	14500	----	HC
7	3998	2664	3550	7000	34000	----	HCX
8	2821	1031	1640	5000	15000	----	HC
9	2423	3262	1030	1500	7500	----	HC
10	4004	1937	1050	----	3000	----	H + M.D.
11	3625	3351	2500	11500	21000	----	HC
12	5748	2855	----	2000	20500	----	M.D.
13	5632	3820	2960	4750	3750	----	HCX
14	3366	1696	1180	3500	3500	----	H + M.D.
15	4049	----	1900	1000	21000	----	HC
16	6974	2687	4920	30000	35000	----	H + M.D.
17	3375	2163	----	8600	6600	----	HCX
18	10808	602	----	----	10000	----	HC
19	4816	----	5550	10000	10000	----	H + M.D.
20	3582	1238	5040	13500	26500	----	HCX
21	9123	3034	6640	12000	30800	----	HCX

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Crop Expenses in 1965	All-risk crop Insurance in 1966	Hail crop Insurance in 1966	Life Insurance protection		Medical Insurance Plan	
				1961	1965	1961	1965
	$	$	$	$	$		
22	3675	1375	---	5000	15000	---	HCX
23	3604	1025	---	1000	1000	---	HCX + M.D.
24	3769	---	2250	2070	12070	---	H + M.D.
25	4454	2274	5440	11500	30300	---	HCX
26	4073	1375	5875	3000	2000	---	---
27	3017	1656	---	6000	6000	---	---
28	4374	1719	---	4921	6921	---	HC
29	3255	---	2000	3000	2000	---	HCX
30	3498	2384	---	10000	20000	---	H
31	4724	2247	3560	6000	26000	---	H + M.D.
32	3629	3525	---	6500	6500	---	H + M.D.
33	13401	3624	6700	---	26500	---	HCX
34	8746	2767	9625	9100	38937	---	HCX
35	4365	3210	---	3000	3000	---	HCX
36	2984	---	2000	---	8400	---	---
37	3695	---	1800	6000	8000	---	HCX
38	4957	2644	3050	5000	5000	HCX	H + M.D.
39	8686	---	9880	1000	40000	---	H + M.D.
40	5183	3956	2975	6500	5000	---	H + M.D.
41	6311	2365	4170	7000	50200	---	HC
42	7432	1375	4700	1200	31000	---	H + M.D.
43	5067	---	---	16000	16000	---	HCX

Continued.....

TABLE XLIX....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Crop Expenses in 1965	All-risk crop Insurance in 1966	Hail crop Insurance in 1966	Life Insurance protection		Medical Insurance Plan	
				1961	1965	1961	1965
	$	$	$	$	$		
44	6910	3430	----	----	22000	----	H + M.D.
45	4058	1559	6580	10816	27000	----	HCX
46	4217	2490	1350	5000	5000	----	----
47	7790	2685	4100	2000	2000	----	HCX
48	6440	7130	----	9650	13640	----	HCX
49	9657	2109	7975	7000	7000	----	HCX
50	7561	----	4500	10000	8000	----	HCX
51	5187	2129	4180	10000	36000	----	H
52	10496	----	----	15000	13000	----	HCX
53	12441	10821	----	20000	78500	----	H + M.D.
54	7839	4400	3850	12239	44900	----	HC
55	20239	5048	10250	30000	49000	H	HCX
56	3634	----	6675	11500	22127	----	HCX + M.D.
57	10854	----	----	5000	20000	Priv. Co.	----
58	11566	----	10000	26000	46000	H	H
59	12419	2405	2850	11000	15000	----	HCX

Continued.....

TABLE XLIX

DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Year of Operator's Birth	Marital Status of Operator 1961	1965	No. of Dependents 1961	1965	Age of Youngest Dependent in 1966	Education of Operator	Special Education of Spouse	No. of years Operator Farmed 1961
1	1939	S.	M.	0	2	1	10	secretary	4
2	1927	S.	S.	2	2	parents	9	n/a	15
3	1932	M.	M.	3	4	2	Univ.	no train.	5
4	1933	S.	M.	0	3	1	9 and diploma	active nurse	11
5	1906	M.	M.	5	3	14	8	no train.	30
6	1923	M.	M.	3	4	3	12	no train.	11
7	1914	M.	M.	5	5	10	8	no train.	17
8	1926	M.	M.	3	3	6	12	no train.	2
9	1920	M.	M.	5	6	2	8	no train.	14
10	1928	M.	M.	5	6	1	9 and diploma	no train.	7
11	1929	M.	M.	3	5	1	8	no train.	5
12	1924	M.	M.	6	7	1	8 and diploma	no train.	11
13	1926	M.	M.	4	5	1	9 and diploma	no train.	12
14	1904 1933	M. S.	M. M.	1	4	1	9 10	no train.	11
15	1932	M.	M.	2	3	2	11	no train.	9
16	1927	M.	M.	3	3	7	10	active teacher	12
17	1911	M.	M.	3	1	18	7 and diploma	inactive teacher	12
18	1909	M.	M.	4	1	19	10	no train.	24
19	1935	M.	M.	4	3	4	9 and diploma	active nurse	3

Continued.....

TABLE XLIX...DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Year of Operator's Birth	Marital Status of Operator 1961	Marital Status of Operator 1965	No. of Dependents 1961	No. of Dependents 1965	Age of Youngest Dependent in 1966	Education of Operator	Special Education of Spouse	No. of years Operator Farmed 1961
20	1929	M.	M.	4	4	5	9 and diploma	inactive teacher	7
21	1919	M.	M.	4	4	6	12	inactive teacher	23
22	1924	M.	M.	4	4	7	10 and diploma	active teacher	12
23	1925	S.	S.	0	0	-	10	n/a	16
24	1926	M.	M.	2	4	1	9 and diploma	no train.	9
25	1914	M.	M.	3	2	17	9 and diploma	inactive teacher	18
26	1921	M.	M.	3	3	8	9	no train.	14
27	1912	M.	M.	3	3	8	9	active nurse	22
28	1917	M.	M.	6	6	6	8 and diploma	inactive teacher	20
29	1921	S.	S.	0	0	-	7	n/a	19
30	1927	M.	M.	3	5	1	university	inactive teacher	12
31	1930	M.	M.	3	4	2	8 and diploma	no train.	8
32	1921	S.	S.	0	0	-	8	n/a	20
33	1929	M.	M.	3	3	10	8 and diploma	university	10
34	1924	M.	M.	5	5	8	11	no train.	17

Continued.....

TABLE XLIX....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Year of Operator's Birth	Marital Status of Operator 1961	Marital Status of Operator 1965	No. of Dependents 1961	No. of Dependents 1965	Age of Youngest Dependent in 1966	Education of Operator	Special Education of Spouse	No. of Years Operator Farmed 1961
35	1920	M.	M.	1	1	-	10	inactive teacher	14
36	1917	M.	M.	2	3	1	10	inactive nurse	21
37	1924	M.	M.	5	4	10	10	no train.	12
38	1908	M.	M.	3	2	15	8 and diploma	teacher inactive	23
39	1933	S.	M.	0	2	1	11	active nurse	10
40	1918	M.	M.	6	6	4	4	no train.	20
41	1928	M.	M.	4	5	7	11	active nurse	7
42	1934	M.	M.	4	5	1	11	no train.	10
43	1931	M.	M.	3	4	3	8	no train.	10
44	1929	M.	M.	3	4	4	9 and diploma	secretary	13
45	1930	M.	M.	3	3	5	10	inactive teacher	4
46	1918	S.	S.	0	0	-	10	n/a	16
47	1924	S.	S.	0	0	-	11	n/a	10
48	1911	M.	M.	5	5	10	11	no train.	19
49	1906	M.	M.	3	1	-	10	inactive teacher	27
50	1919	M.	M.	4	2	12	11	active teacher	20

Continued.....

TABLE XLIX ....DATA PERTAINING TO THE WESTERN MANITOBA FARM BUSINESS ASSOCIATION MEMBERS IN THE STUDY

Farm No.	Year of Operator's Birth	Marital Status of Operator 1961	1965	No. of Dependents 1961	1965	Age of Youngest Dependent in 1966	Education of Operator	Special Education of Spouse	No. of Years Operator Farmed 1961
51	1938	M.	M.	2	3	1	9	no train.	8
52	1917	M.	M.	4	5	3	11	Univer.	21
53	1929	S.	M.	1	7	1	9 and diploma	Univer.	6
	1935	S.	M.				10	teacher	15
54	1922	M.	M.	1	1	-	12	inactive nurse	15
55	1931	M.	M.	2	3	2	Univer.	inactive nurse	8
56	1930	M.	M.	4	4	5	10	no train.	5
57	1931	M.	M.	4	5	3	10	no train.	9
58	1928	M.	M.	3	4	4	12	no train.	6
	1929	S.	S.	0	0	-	12	n/a	6
59	1912	M.	M.	6	4	12	8	no train.	17

C. of V. = $\frac{S}{\bar{X}}$ .100

* Since the farmer had not assessed a value on these household contents, they were assumed to be equal to the amount of insurance value.

** Farmer was carrying some fire insurance on rented farm buildings.

TABLE L

ATTITUDES TO RISK, INCOME AND VALUES

Farm No.	Risk Attitude as Scaled	Risk [1] Attitude with self rating scale	Income Aspiration as Scaled	Income [1] Aspiration with self rating Scale	Value Orientations
1	R.A.	URT+	Satisfied	12,000.	Luxury and material comfort
2	R.A.	URT-	Satisfied	8,000.	Material comfort and security
3	U.R.T.	WRT-	Desirable	14,000.	Material comfort
4	R.A.	URT-	Satisfied	Undecided 10,000.	Luxury, material comfort, leisure
5	R.A.	RA+	Satisfied	Undecided	Material comfort, security, leisure
6	R.A.	RA	Satisfied	None	Material comfort, security, leisure
7	U.R.T.	URT-	Mediocre	15,000.	Material comfort and leisure
8	W.R.T.	WRT	Satisfied	12,000.	Material comfort
9	R.A.	URT-	Desirable	20,000.	Material comfort and security
10	U.R.T.	URT+	Mediocre	10,000.	Material comfort, security, leisure
11	R.A.	WRT-	Mediocre	10,000.	Luxury, material comfort, leisure
12	U.R.T.	URT-	Satisfied	8,000.	Material comfort and security
13	W.R.T.	WRT+	Satisfied	20,000.	Material comfort, security, leisure

Continued.....

TABLE L ....ATTITUDES TO RISK, INCOME AND VALUES

Farm No.	Risk Attitude as Scaled	Risk Attitude with self rating Scale	Income Aspiration as Scaled	Income Aspiration with Self rating Scale	Value Orientations
14	R.A.	WRT-	Mediocre	10,000.	Material comfort and security
15	R.S.	WRT+	Satisfied	20,000.	Partly profit, material comfort and leisure
16	R.S.	WRT+	Mediocre	15,000.	Luxury, material comfort
17	U.R.T.	URT-	Desirable	10,000.	Material comfort and security
18	R.S.	URT-	Mediocre	20,000.	Luxury, material comfort, security
19	R.S.	RA-	Ambitious	20,000.	Luxury, material comfort
20	R.A.	URT+	Satisfied	10,000.	Profit and material comfort
21	R.A.	RA	Satisfied	25,000.	Profit and material comfort
22	U.R.T.	URT+	Mediocre	20,000.	Material comfort
23	R.A.	URT+	Satisfied	8,000.	Material comfort, security, leisure
24	U.R.T.	WRT+	Desirable	10,000.	Luxury, material comfort, security
25	R.S.	URT+	Satisfied	10,000.	Security and leisure

Continued.....

TABLE L ....ATTITUDES TO RISK, INCOME AND VALUES

Farm No.	Risk Attitude as Scaled	Risk Attitude with self rating Scale	Income Aspiration as Scaled	Income Aspiration with self rating Scale	Value Orientations
26	R.A.	WRT-	Satisfied	15,000.	Material comfort and security
27	R.A.	URT-	Desirable	10,000.	Material comfort and security
28	U.R.T.	WRT+	Desirable	12,000.	Luxury, material comfort, leisure
29	W.R.T.	URT+	Ambitious	20,000.	Luxury, material comfort, leisure
30	R.S.	WRT+	Ambitious	10,000.	Material comfort
31	W.R.T.	URT+	Desirable	10,000.	Material comfort and security
32	W.R.T.	WRT-	Desirable	12,000.	Material comfort and leisure
33	W.R.T.	WRT-	Ambitious	25,000.	Profit, luxury and material comfort
34	R.S.	WRT-	Ambitious	25,000.	Luxury, material comfort and leisure
35	R.A.	WRT	Mediocre	10,000.	Luxury, material comfort, security and leisure
36	U.R.T.	URT+	Satisfied	12,000.	Material comfort
37	U.R.T.	URT-	Ambitious	9,000.	Luxury and material comfort
38	U.R.T.	URT+	Mediocre	None	Material comfort and leisure

Continued.....

TABLE L ....ATTITUDES TO RISK, INCOME AND VALUES

Farm No.	Risk Attitude as Scaled	Risk Attitude with self Rating Scale	Income Aspiration as Scaled	Income Aspiration with self Rating Scale	Value Orientations
39	R.S.	WRT+	Ambitious	25,000.	Profit, luxury and material comfort
40	W.R.T.	WRT-	Ambitious	10,000.	Profit, luxury, material comfort and leisure.
41	W.R.T.	URT-	Mediocre	15,000.	Profit, material comfort, leisure
42	R.S.	URT+	Ambitious	12,000.	Luxury and material comfort
43	W.R.T.	WRT-	Mediocre	10,000.	Luxury and material comfort
44	W.R.T.	WRT-	Mediocre	None	Luxury, material comfort, security and leisure
45	W.R.T.	URT-	Ambitious	20,000.	Material comfort and security
46	R.A.	URT-	Mediocre	5,000.	Luxury, material comfort, leisure
47	R.A.	WRT-	Desirable	None	Material comfort and security
48	W.R.T.	WRT	Ambitious	25,000.	Material comfort and security
49	R.A.	URT	Desirable	8,000.	Luxury, material comfort, security, and partly profit

Continued.....

TABLE L ....ATTITUDES TO RISK, INCOME AND VALUES

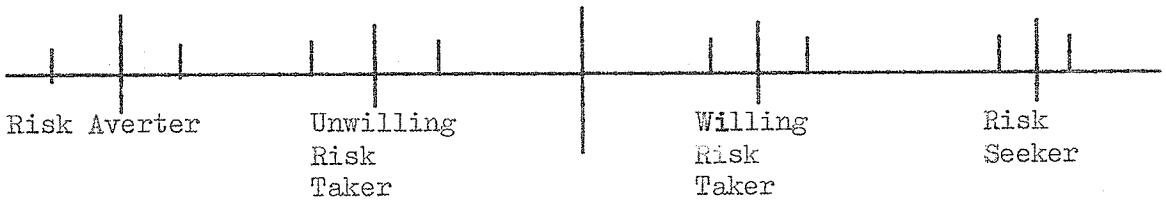
Farm No.	Risk Attitude as Scaled	Risk Attitude with self Rating Scale	Income Aspiration as Scaled	Income Aspiration with self Rating Scale	Value Orientations
50	U.R.T.	URT+	Satisfied	10,000.	Luxury and security
51	R.S.	WRT+	Mediocre	Undecided 15,000.	Luxury, material comfort, leisure
52	R.S.	URT+	Ambitious	25,000.	Luxury, leisure and partly profit
53	R.S.	WRT+	Ambitious	30,000.	Profit, luxury and material comfort
54	U.R.T.	WRT	Ambitious	10,000.	Luxury, material comfort, security and leisure
55	W.R.T.	URT+	Desirable	15,000.	Luxury and material comfort
56	W.R.T.	WRT+	Desirable	9,000.	Material comfort, security, leisure
57	R.S.	WRT-	Ambitious	20,000.	Profit, luxury and leisure
58	R.S.	WRT+ RA	Ambitious	10,000.	Luxury and security
59	U.R.T.	WRT-	Ambitious	15,000.	Luxury, material comfort and security

FOOTNOTE TO TABLE L

[1] In the fall of 1967, farmers were asked to scale themselves as to risk attitude and income aspirations.

Two questions were asked. Farmers were scaled by the self-rating scale.

(a) How do you rate yourself as a risk-taker?



(b) What level of net farm income are you aiming for?

_____per year

These questions were not used in the analysis. They were asked mainly for comparative purposes.

TABLE LI

INSURANCE REQUIRED TO PROVIDE $100. A MONTH FOR 1 TO 30 YEARS AT VARIOUS RATES OF INTEREST

(FIRST PAYMENT IMMEDIATE)

Table showing the amount of insurance required to provide an income of $100. a month for any given number of years at various interest rates.

No. of Years Income	Use Rate of Interest Applicable								
	2%	2¼%	2½%	2¾%	3%	3¼%	3½%	3¾%	4%
1	1,189.	1,188.	1,187.	1,185.	1,184.	1,183.	1,181.	1,180.	1,179.
2	2,355.	2,350.	2,344.	2,339.	2,333.	2,328.	2,323.	2,317.	2,312.
3	3,498.	3,486.	3,473.	3,461.	3,449.	3,437.	3,425.	3,414.	3,402.
4	4,619.	4,597.	4,575.	4,554.	4,533.	4,512.	4,491.	4,470.	4,450.
5	5,717.	5,684.	5,650.	5,617.	5,585.	5,552.	5,520.	5,489.	5,457.
6	6,794.	6,746.	6,699.	6,652.	6,606.	6,560.	6,515.	6,470.	6,426.
7	7,850.	7,786.	7,722.	7,659.	7,597.	7,536.	7,476.	7,416.	7,358.
8	8,886.	8,802.	8,720.	8,639.	8,560.	8,482.	8,404.	8,328.	8,253.
9	9,900.	9,796.	9,694.	9,593.	9,494.	9,397.	9,301.	9,207.	9,115.
10	10,896.	10,769.	10,644.	10,522.	10,402.	10,284.	10,168.	10,054.	9,943.
11	11,871.	11,720.	11,571.	11,425.	11,283.	11,143.	11,006.	10,871.	10,739.
12	12,827.	12,650.	12,475.	12,305.	12,138.	11,975.	11,815.	11,658.	11,505.
13	13,765.	13,559.	13,358.	13,161.	12,968.	12,780.	12,596.	12,417.	12,241.
14	14,684.	14,449.	14,218.	13,994.	13,775.	13,561.	13,352.	13,148.	12,949.
15	15,586.	15,318.	15,058.	14,804.	14,557.	14,316.	14,082.	13,853.	13,629.
16	16,469.	16,169.	15,877.	15,593.	15,317.	15,048.	14,787.	14,532.	14,284.
17	17,335.	17,001.	16,677.	16,361.	16,055.	16,757.	15,468.	15,187.	14,913.
18	18,185.	17,815.	17,456.	17,109.	16,771.	16,444.	16,126.	15,818.	15,518.
19	19,017.	18,611.	18,217.	17,836.	17,167.	17,109.	16,762.	16,426.	16,100.
20	19,834.	19,389.	18,959.	18,544.	18,142.	17,753.	17,377.	17,012.	16,600.

Continued.....

TABLE LI ....INSURANCE REQUIRED TO PROVIDE $100. A MONTH FOR 1 TO 30 YEARS AT VARIOUS RATES OF INTEREST (FIRST PAYMENT IMMEDIATE)

No. of Years Income	Use Rate of Interest Applicable								
	2%	2¼%	2½%	2¾%	3%	3¼%	3½%	3¾%	4%
21	20,634.	20,150.	19,683.	19,233.	18,797.	18,377.	17,970.	17,577.	17,198.
22	21,419.	20,895.	20,390.	19,903.	19,431.	18,981.	18,544.	18,122.	17,715.
23	22,188.	21,623.	21,079.	20,556.	20,052.	19,566.	19,098.	18,647.	18,212.
24	22,942.	22,235.	21,752.	21,191.	20,651.	20,133.	19,633.	19,153.	18,690.
25	23,681.	23,031.	22,408.	21,809.	21,234.	20,681.	20,151.	19,641.	19,150.
26	24,406.	23,712.	23,048.	22,410.	21,799.	21,213.	20,651.	20,111.	19,592.
27	25,117.	24,378.	23,672.	22,996.	22,348.	21,728.	21,134.	20,564.	20,018.
28	25,813.	25,030.	24,281.	23,565.	22,881.	22,227.	21,600.	21,001.	20,426.
29	26,496.	25,667.	24,875.	24,120.	23,399.	22,710.	22,051.	21,422.	20,819.
30	27,166.	26,290.	25,455.	24,660.	23,901.	23,177.	22,487.	21,827.	21,197.

TABLE LII

PRESENT VALUE OF $1.00 DUE AT THE END OF ANY NUMBER OF YEARS FROM 1 TO 40

Years	2½ %	3 %	3½ %	4 %	5 %	6 %
1	.976	.971	.966	.962	.952	.943
2	.952	.943	.934	.925	.907	.890
3	.929	.915	.902	.889	.864	.840
4	.906	.888	.871	.855	.823	.792
5	.884	.863	.842	.822	.784	.747
6	.862	.837	.814	.790	.746	.705
7	.841	.813	.786	.760	.711	.665
9	.801	.766	.734	.703	.645	.592
10	.781	.744	.709	.676	.614	.558
11	.762	.722	.685	.650	.585	.527
12	.744	.701	.662	.625	.557	.497
13	.725	.681	.639	.601	.530	.469
14	.708	.661	.618	.577	.505	.442
15	.691	.642	.597	.555	.481	.417
16	.674	.623	.577	.534	.458	.394
17	.657	.605	.557	.513	.436	.371
18	.641	.587	.538	.494	.416	.350
19	.626	.570	.520	.475	.396	.331
20	.610	.554	.503	.456	.377	.312
21	.595	.538	.486	.439	.359	.294
22	.581	.522	.469	.422	.342	.278
23	.567	.507	.453	.406	.326	.262
24	.553	.492	.438	.390	.310	.247
25	.539	.478	.423	.375	.295	.233
26	.526	.464	.409	.361	.281	.220
27	.513	.450	.395	.347	.268	.207
28	.501	.437	.382	.333	.255	.196
29	.489	.424	.369	.321	.243	.185
30	.477	.412	.356	.308	.231	.174
31	.465	.400	.314	.296	.220	.164
32	.454	.388	.333	.285	.210	.155
33	.443	.377	.321	.274	.200	.146
34	.432	.366	.310	.264	.190	.138
35	.421	.355	.300	.253	.181	.130
36	.411	.345	.290	.244	.173	.123
37	.401	.335	.280	.234	.161	.116
38	.391	.325	.271	.225	.157	.109
39	.382	.316	.261	.217	.149	.108
40	.372	.307	.253	.208	.142	.097

TABLE LIII

RATES OF ESTATE TAX

Aggregate Taxable Value		Tax	
Under $5,000.		10% of aggregate taxable value	
$ 5,000-	9,999	500 + 12% of amount over $	5,000
10,000-	14,999	1,100 + 14% of amount over	10,000
15,000-	19,999	1,800 + 16% of amount over	15,000
20,000-	39,999	2,600 + 18% of amount over	20,000
40,000-	59,999	6,200 + 20% of amount over	40,000
60,000-	99,999	10,200 + 22% of amount over	60,000
100,000-	149,999	19,000 + 24% of amount over	100,000
150,000-	199,999	31,000+ 26% of amount over	150,000
200,000-	274,999	44,000 + 28% of amount over	200,000
275,000-	349,999	65,000 + 30% of amount over	275,000
350,000-	449,999	87,500 + 32% of amount over	350,000
450,000-	549,999	119,500 + 34% of amount over	450,000
550,000-	649,999	153,500 + 36% of amount over	550,000
650,000-	749,999	189,500 + 38% of amount over	650,000
750,000-	849,999	227,500 + 40% of amount over	750,000
850,000-	949,999	267,500 + 42% of amount over	850,000
950,000-	1,099,999	309,500 + 44% of amount over	950,000
1,100,000-	1,299,999	375,500 + 46% of amount over	1,100,000
1,300,000-	1,549,999	467,500 + 48% of amount over	1,300,000
1,550,000-	1,799,999	587,500 + 50% of amount over	1,550,000
1,800,000-	1,999,999	712,500 + 52% of amount over	1,800,000
2,000,000 or more		816,500 + 54% of amount over	2,000,000

FOOTNOTE TO TABLE
ESTATE TAX

BASIC EXEMPTION

A basic exemption of $40,000. is allowed in computing the Aggregate Taxable Value of any estate.

SURVIVOR EXEMPTIONS

For the purpose of survivor exemptions, a "child" of a deceased person includes "an illegitimate child of that person, an individual adopted either legally or in fact by that person while such individual was under twenty-one years of age and an individual of whom, either

legally or in fact, that person had, or immediately before such individual attained twenty-one years of age did have, the custody and control". The term "infirm" as applied to children over age 21 and to a widower means "any mental or physical infirmity rendering that person incapable ordinarily of pursuing any substantially gainful occupation."

If the deceased is survived by a widow there may be deducted, in addition to the basic exemption of $40,000. a survivor exemption of $20,000. plus $10,000. for each child under age 21 or any age if wholly dependent upon the deceased or the spouse of the deceased, or both, because of infirmity. When a deceased wife is survived by an infirm widower and a child or children under age 21 or any age if wholly dependent because of infirmity, there may be deducted, in addition to the basic exemption, a survivor exemption of $20,000. plus $10,000. for each child under age 21 or any age if wholly dependent because of infirmity. It is to be noted that where the deceased is survived by an infirm widower but there are no surviving children under age 21 or wholly dependent because of infirmity, no survivor exemption is allowable. Also, no survivor exemption is allowable in respect of a widower or surviving children if the surviving widower is not infirm.

Where there is no surviving wife or husband, an exemption of $15,000. may be claimed for each surviving child under age 21 or any age if wholly dependent because of infirmity.

There are special exemptions allowable if the death of the deceased was attributable to war services. Enquire at the District Taxation Office for details.

SOURCE - Income Tax Guide 1961 and 1965.

TABLE LIV

DETAILED METHOD OF CALCULATING INCOME TAX IN 1961

FEDERAL INCOME TAX ON TAXABLE INCOME

The "Federal Income Tax on taxable income" is to be calculated by using the "1961 Rates of Federal Income Tax" below. These rates include the Old Age Security Tax.

1961 Rates of Federal Income Tax

Taxable Income	Tax		
$ 1,000. or less	14%		
1,000.	$ 140. + 17%	on next $	1,000.
2,000.	310. + 20%	on next	1,000.
3,000.	510. + 19%	on next	1,000.
4,000.	700. + 22%	on next	2,000.
6,000.	1,140. + 26%	on next	2,000.
8,000.	1,660. + 30%	on next	2,000.
10,000.	2,260. + 35%	on next	2,000.
12,000.	2,960. + 40%	on next	3,000.
15,000.	4,160. + 45%	on next	10,000.
25,000.	8,660. + 50%	on next	15,000.
40,000.	16,160. + 55%	on next	20,000.
60,000.	27,160. + 60%	on next	30,000.
90,000.	45,160. + 65%	on next	35,000.
125,000.	67,910. + 70%	on next	100,000.
225,000.	137,910. + 75%	on next	175,000.
400,000.	269,160. + 80%	on remainder	

MAKE CALCULATION HERE

Taxable Income $.....

On the first $_____ Tax is - - - $.....

On remaining $..... Tax at_____% is $_____

FEDERAL Income Tax on taxable income* $_____

* Enter this amount on the corresponding line on the return.

TAX ADJUSTMENTS

This line is provided for use when adding to your tax such items as:

(a) a portion of a dependent's income, as explained in the income tax form.

(b) the amount of Family Allowances or Family Assistance as explained earlier under item 12.

(c) the amount payable in respect of certain lump sum payments.

TABLE LV

DETAILED METHOD OF CALCULATING INCOME TAX IN 1965

FEDERAL INCOME TAX ON TAXABLE INCOME

The "Federal Income Tax on taxable income" is to be calculated by using the "1965 Rates of Federal Income Tax" below. These rates do not include the Old Age Security Tax for which all taxpayers are liable and such tax must, therefore, be calculated separately.

1965 RATES OF FEDERAL INCOME TAX

Taxable Income	Tax	
$ 1,000. or less	11%	
1,000.	110. + 14% on next	$ 1,000.
2,000.	250. + 17% "	1,000.
3,000.	420. + 19% "	1,000.
4,000.	610. + 22% "	2,000.
6,000.	1,050. + 26% "	2,000.
8,000.	1,570. + 30% "	2,000.
10,000.	2,170. + 35% "	2,000.
12,000.	2,870. + 40% "	3,000.
15,000.	4,070. + 45% "	10,000.
25,000.	8,570. + 50% "	15,000.
40,000.	16,070. + 55% "	20,000.
60,000.	27,070. + 60% "	30,000.
90,000.	45,070. + 65% "	35,000.
125,000.	67,820. + 70% "	100,000.
225,000.	137,820. + 75% "	175,000.
400,000.	269,070. + 80% on remainder	

MAKE CALCULATION HERE

Taxable Income $.....

On the first $_____ Tax is - - - $.....

On remaining $..... Tax at____% is $_____

FEDERAL Income Tax on taxable income* $_____

*Enter this amount of the corresponding line on the return.

TAX ADJUSTMENTS

This line is provided for use when adding to your tax such items as:

(a) a portion of dependent's income, as explained in the note at the bottom of Page 2 of the return;

(b) the amount of Family Allowances or Family Assistance as explained earlier under item 12;

(c) the amount payable in respect of certain lump sum payments described earlier under item 2.

Continued.....

DETAILED METHOD OF CALCULATING INCOME TAX IN 1965

DIVIDEND TAX CREDIT

If your income includes dividends from "taxable Canadian corporations" you are entitled to a dividend tax credit. The amount of this credit is 20% of the NET dividends from such corporations. ("NET" means gross dividends received or allocated minus any deductions therefrom such as depletion and carrying charges). However, the amount of this credit may not exceed the "Total Income Tax".

FEDERAL ABATEMENTS

(A) Abatement for Provincial Taxes - This abatement is applicable to all individuals who are liable for provincial income tax - that is, all individuals who resided in one of the ten provinces of Canada of 31st Dec. 1965. (The Yukon Territory and Northwest Territories are not "provinces"). This abatement, based on the province in which you resided of 31st Dec. 1965, is at the following rates:

(a) All provinces other than Quebec - 21% of the "Basic Tax".
(b) Quebec - 44% of the "Basic Tax". (The rate of abatement for persons resident in Quebec reflects the difference in shared-cost programs and schooling allowances).

(b) 1965 Tax Reduction - This abatement reflects the general tax reduction for the 1965 taxation year and is applicable to all individuals, regardless of residence. The amount of this reduction is 5% of the "Basic Tax" or $300, whichever is less.

OLD AGE SECURITY TAX

All taxpayers are subject to the Old Age Security Tax which is 4% of "Taxable Income" or $120, whichever is less.

PROVINCIAL TAX PAYABLE

Each of the 10 provinces levies a provincial income tax, provincial income tax and, with the exception of the income tax levied by the Province of Quebec, this tax is to be computed and paid in conjunction with the federal income tax.

As the Province of Quebec collects its own income tax, provincial income tax levied by that province must not be added to the Federal Tax calculated on this return.

Persons resident in the Yukon Territory or Northwest Territories on 31st Dec. 1965, are not subject to provincial income tax and similarly are not entitled to the Federal Abatement for Provincial Taxes.

Provincial income tax, based on the province in which you resided on 31st Dec. 1965, is payable at the following rates:

(a) Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Alberta and British Columbia - 21% of the "Basic Tax",
(b) Manitoba - 26% of the "Basic Tax",
(c) Saskatchewan - 27% of the "Basic Tax".

TABLE LVI

PRICE INDEX OF FARM SERVICES, COMMODITIES, WHOLESALE PRICES AND CONSUMER PRICES

FOR PERIOD 1961 - 1965 BASED ON 1949 PRICES

Year	Field Prod.	Animal Prod.	Farm Mach.	Farm Real Estate	Feed & Seed	Ferti-lizer	Grease & Oil	Hard-ware	Build-ing Material	Elec. Power	Cons. Total	Cons. Food	Wholesale Prices Farm Prod.
	2	2	2	1	3	3	3	3	3	3	1	1	1
1961	191.7	270.0	261.4	268.6	210.9	194.6	156.5	242.0	324.3	117.6	129.2	124.0	230.9
1962	195.5	286.0	268.1	276.9	232.2	193.8	157.8	247.2	326.3	116.5	130.7	126.2	240.8
1963	197.2	275.4	272.9	297.5	232.0	201.6	157.6	249.2	334.2	116.8	133.0	130.3	236.8
1964	198.2	267.3	279.6	330.6	226.1	203.8	159.9	254.4	357.8	117.0	135.4	132.4	227.3
1965	196.4	289.3	284.9	371.9	227.3	212.9	159.7	266.1	371.4	117.3			

SOURCE: 1. Quarterly bulletin of Agricultural Statistics - July 1967

2. Prices and Price Indexes

3. Price Index Numbers of Commodities and Services used by farmers