

CHAPTER FIVE

RISK MANAGEMENT STRATEGY AND INSURANCE IN AGRICULTURE

Agriculture can be defined as the production of food, feed, fiber and other products by the systematic growing and harvesting of plants and rearing of animals to sustain life. Agriculture deals with farming and/or raising livestock. Crops livestock are living things; hence, they are subject to both biotic and abiotic factors, which have made their production subject to risks. Therefore, this unit is devoted to the concept of Agricultural risk and insurance concepts.

5.1.AGRICULTURAL RISK

5.1.1. Risks versus Uncertainty

Definitions

Risk is a situation where all possible outcomes are known for a given management decision and the probability associated with each possible outcome is also known. Risk refers to variability or outcomes which are measurable in an empirical or quantitative manner. Risk is insurable. Example, if a farmer know that his maize crop is likely to fail in one of the four years of consecutive production period by 25% then this is a risk because even if he doesn't know the exact year he is expecting failure in one the four years of production period.

Uncertainty refers to risks that take place in an atmosphere of imperfect knowledge. It is a situation where all possible outcomes and the probability of the outcomes are unknown or neither the outcome nor the probabilities are known. Uncertainty is not insurable.

5.1.2. Sources of Risks in Agriculture

The following are the major sources of risks in agriculture:

- **Natural Hazards:** weather risks are a major source of uncertainty in agriculture. Hydro-meteorological risks such as droughts, cyclones and floods not only endanger human lives and property, but also have a devastating impact on food production and farmers' livelihood systems. Farm communities that do not have inbuilt buffering mechanisms, as in resource poor rain-fed regions, are disproportionately vulnerable to the severity of extreme climate events.

- **Market Fluctuations:** Fluctuations in market output vis-a-vis fluctuations in prices, is another source of risks in agricultural industry. The gestation periods of crops (period between planting and harvest) may be short or long. The price of a particular agricultural product may be very high at the planting season, but at the time of harvest, the price often falls due to large supply, but the high price of the product would have propelled farmers to plant large hectare of the crop. However, the fall in price will lead to reduction in net farm income.
- **Social Actions and Wars:** Wars and social actions have great risk in agricultural industry. Conflict is an ever-present risk and one of the most common causes of food insecurity. The displacement of people and the disruption of agricultural production and food distribution leave tens of millions of people at risk of hunger and famine. Conversely, food insecurity may lead to or exacerbate conflict.

5.1.3. Types Of Risks In Agriculture

There are two major types of risks that are associated with agricultural lending. They are those faced by financial institutions and those faced by the small farmers.

A. Risks Faced by Financial institutions: These are:

- ✓ **Credit or Loan default risks:** This refers to situations where borrowers are unable or willing to repay the loan principal and to service the interest rate charges.
- ✓ **Liquidity risk:** This occurs when a bank is not able to meet its cash requirements. Mismatching the term of loan assets and liabilities exposes banks to high liquidity risks.
- ✓ **Interest rate risk:** This happens when a loan declines in value as interest rate changes or because of inflation. For example a bank gave out loan at 20% interest rate for 5 years, but during the time inflation rose to 30%.
- ✓ **Foreign exchange risk:** This defines exposure to changes in exchange rates which affect international borrowings designated in foreign currency.

B. Risks Faced By Small Farmers

- **Production or yield risk:** refers to the unpredictable impact of climate, crop and livestock diseases and pests, and other natural and manmade calamities on outcome (output).

- **Price or marketing risk:** are risk associated with the variability of output of price and its effect on the farm income. Commodity prices vary from year to year and may have substantial seasonal variation within a year.
- **Financial risk:** a risk incurred when money is borrowed to finance the operation of the business. That is, any time money is borrowed there is some chance that future income will not be sufficient to repay the debt without using equity capital.
- **Technological risk:** Another source of production risk is new technology. Will the new technology perform as expected? Will it actually reduce costs and increase yields? These questions must be answered before adopting new technology.

5.2.RISK MANAGEMENT

Risk management is a mechanism for managing exposure to risk that enables us to recognize the events that may result in unfortunate or damaging consequences in the future, their severity, and how they can be controlled. Risk management is a discipline for identifying risks, assessing how serious or severe the risks are, and determining ways to address that uncertain future with a goal of avoiding or minimizing harm and financial losses. Risk management strategies are also affected by an individual's ability to bear (or to take) risk.

5.2.1. Risk Attitudes Of Farmers

On the basis of attitudes to risk, farmers can be classified in the following risk-taking categories:

- **Risk-averse person:** The risk averters or (“Avoiders”) are those individuals who have the attitude of taking appropriate measure to avoid incurring risk or the outcomes of risky events. Risk-averse people are not comfortable with risks; they are willing to avoid the risks, once identified, rather than taking them. Risk averters are laggards in adoption of innovation.
- **Risk Neutral:** Risk-neutral people manage risks based on their expected value, that is, probability time’s impact. In other words, their decisions towards risks are not biased by any other factors, except for the risks’ expected value. A person willing only to pay the average loss as a premium would be considered risk neutral. Risk neutral people are also known as “Calculators”. Before making a decision or taking action, they gather information and analyse the odds. Calculators try to be realistic, recognize the

risks, and try to reduce risks to acceptable levels. Most farmers are Calculators, at least in the majority of their decisions.

- **Risk Seekers** : Risk-seeking people see risks as challenges and feel exciting dealing with them. A farmer or farm manager who accepts risk at less than the expected average loss, perhaps even paying to add risk is a risk seeker. Risk seekers are also known as adventurers. Adventurers are individuals who enjoy risks. To Adventurers, risks are challenging and exciting. Often Adventurers look for the chance to take risks.

5.2.2. Steps in Risk Management

The risk management concept enables a systematic and realistic framework to be established for accident prevention. Risk management process can be divided into 5 distinct stages as follows.

5.2.2.1.Risk Identification

The first step in risk management is risk identification. Knowing and appreciating the risks one faces is critical to designing effective management responses. The objective is to reveal all possible potentials for harm or damage that exist in a particular agricultural production or enterprise being analysed. If this step is not conducted properly, the whole risk management scheme would be affected. Such identification actions by the organisation are focused on generating relevant information on sources of risk, hazards, risk factors, perils and exposure to loss. In order to properly recognize the operational risks of a particular farm enterprise there is the need for farmers or farm manager to have thorough knowledge of

- The farm enterprise (crop farming, livestock, aquaculture, apiculture etc)
- The market in which it operates
- The legal, social, economic, political and climatic environment
- The financial strengths and weaknesses of the crop or livestock enterprise
- Its vulnerability to unplanned losses
- The production and management systems of enterprise.

5.2.2.2.Risk Estimation

A second step is to measure the likelihood the risk will occur and the potential negative impact by assigning probabilities and outcomes. This is a particularly difficult step because of the subjective nature of many of these measurements. However, this only underscores the

importance of accurately measuring those variables for which reliable, objective measures are available. After risks have been identified, they will need to be further analysed to define the effects of risks on production and farmer's income.

Risk estimation will provide information on the relative severity of the various risks, the crops or animals or other aspect of the agricultural production that will be affected and thereby signify the enterprises and the assets that must be protected or people to whom protections have to be provided. As previously defined, risk is "a measure of the probability and severity of adverse effects". Therefore, in the "risk estimation process", the consequences as well as the probability of occurrence of those hazards identified are assessed.

5.2.2.3.Risk Evaluation (Acceptability Evaluation)

The third step in risk management process is risk evaluation. Risk evaluation is the making of an overall judgment on the importance of a risk, to determine its acceptability. On the basis of risk estimation, an evaluation is then made as to whether the risk is acceptable or additionally safety measures are necessary to reduce the risk to an acceptable level. Risk assessment is very much a subjective judgment. However, by following certain principles, the subjectivity in risk assessment can be minimised.

5.2.2.4.Establishment of Control Measures

Risks can normally be reduced through one or several safety measures. The reduction can apply to either the consequences or the probability that they will occur. The control measures may be by ways of "engineering control" or "administrative" controls. "Engineering Controls" refer to hardware such as guards, barriers or contour against erosion. "Administrative Controls" refer to software issues such as safe working procedures, safety systems e.g. crop rotation, use of organic fertilizer instead of inorganic fertilizers etc.

5.2.2.5.Implementation of Control Measures

Appropriate control measures are put to work at this stage. It may take a long while to implement the measures because considerable time may be needed for training, equipment purchases, installation work, and often the need for overcoming resistance to change. The process of risk management as mentioned above is a continuous process which is never ending. Some risk may have been overlooked and need further identification and new risks may be introduced in

the course of time and the whole process will have to be performed again. Furthermore, the residual risk of certain risks may also need to be assessed to evaluate their acceptability after appropriate control measures have been implemented.

5.2.3. Benefits of Risk Management

The benefits of risk management can be viewed from three angles as below.

Benefits of risk management to the farm enterprise

- An effective risk management supports strategic and enterprise planning
- It supports effective use of resources
- Risk management promotes continuous improvement in agricultural production
- Risk management enables farm enterprise to quickly grasp new opportunities
- It helps internal audit each farm enterprise
- It improves credit status of the farm business.

Benefits of risk management to farmers and workers

- Risk management will result in higher productivity of the farmers, the family labour and hired labour.
- Higher productivity of the farmers and the labour force will in turn increase the gross national product of the economy.
- The farmers and the hired workers are guaranteed a tranquility of mind; and his needs, wants and aspirations are guaranteed because pains, sickness, injury and property loss associated with operational risks are reduced to bearable limits.

Benefits of risk management to national economy

- The benefits accruing to the various farm business enterprise will invariably enhance the positive development of the national economy.
- An effective risk management will increase foreign exchange earnings from agricultural sector, and thereby reduce our nation's dependence on food imports and other agricultural products.

- Efficient risk management will reduce wastage in the farm and in relation to damage and destruction of farm equipment.

5.2.4. Strategies In Risk Management

Risk management in agriculture is now an essential tool for farmers to anticipate, avoid and react to shocks. An efficient risk management system for agriculture will preserve the standard of living of those who depend on farming, strengthen the viability of farm businesses, and provide an environment which supports investment in the farming sector. There are recognized management strategies for responding to risks. These can be described as follows.

- **Diversification:** Production of two or more commodities with negative correlation in their performance parameters may reduce income variability if all prices and yields vary.
- **Selection of stable enterprises:** Irrigation will provide more stable crop yields than dry land farming. Production risk can be reduced by careful selection of the enterprises with low yield variability. This is particularly important in areas of low rainfall and unstable climate.
- **Crop and livestock insurance:** For phenomena, which can be insured, possible magnitude of loss is lessened through converting the chance of large loss into certain cost through insurance arrangement.
- **Flexibility:** Diversification is mainly a method of preventing large losses. Flexibility is a method of preventing the sacrifice of large gains. Flexibility allows for changing plans as time passes, additional information is obtained and ability to predict the future improves.
- **Spreading sales:** Instead of selling the entire crop output at one time, farmers prefer to sell part of the output at several times during the year. Spreading sales avoids selling all the crop output at the lowest price of the year but also prevents selling at the highest price.
- **Off-Farm Employment:** Earning off-farm income is another strategy that farmers may use to mitigate the effects of agricultural risk on farm family household income. Not only can off-farm income supplement household income, it may also

provide a more reliable stream of income than farm returns. In essence, off-farm income can offer a form of diversification. The incentives for diversifying income sources depend on the level and variability of returns when considering a risk-averse producer. If farm households are risk averse, then they will be willing to supply relatively more labor to stable off-farm occupations than they would otherwise or, they may seek out other types of off-farm income (such as interest and dividends) to counter negative fluctuations in farm income.

5.3.AGRICULTURAL INSURANCE:

5.3.1. Risk Transfer or Risk Sharing Mechanism

Risk transfer refers to the transfer of the potential financial consequences of particular risks from one party to another. While insurance is the best-known form of risk transfer, in developing countries the use of informal risk transfer within families and communities is extremely important.

5.3.2. Meaning of Insurance. What is Insurance?

In general, insurance is a form of risk management used to hedge against a contingent loss. The conventional definition is the equitable transfer of a risk of loss from one entity to another in exchange for a premium or a guaranteed and quantifiable small loss to prevent a large and possibly devastating loss. Insurance is the means of protecting against unexpected loss. It is a financial response to risk which provides a specialised source of liquidity.

Insurance is defined as the elimination of the uncertain risk of loss for the individual through the combination of a large number of similarly exposed individual who can contribute to a common fund, premium payment sufficient to make good the loss caused by anyone individual. Insurance is also defined as a social device providing financial compensation for the effects of misfortune, the payment being made from the accumulated contributions of all parties particularly in the scheme

5.3.3. Meaning of Agricultural Insurance: What is *Agricultural insurance*:

Agricultural insurance is a means by which farmers formally transfer risks to an insurance company after paying a premium that will enable him to receive indemnity from the

pooled resources in case the risk insured against occur. The insurer is the party that pools the risks, but risks are still shared among the insured.

Agricultural insurance is a financial tool to transfer risks associated with farming to a third party via payment of a premium that reflects the true long term cost to the insurer assuming those risks. Agricultural insurance is a special line of property insurance applied to agricultural firms. In recognition of the specialised nature of this type of insurance, insurance companies operating in the market either have dedicated agribusiness units or outsource the underwriting to agencies that specialize in it.

5.3.4. Benefits of Agricultural Insurance

Overall benefits of agricultural insurance are outlined below.

- Crop and livestock Insurance spreads the losses over space and time.
- It gives farmers greater confidence, in making greater investments in agriculture.
- It improves the position of farmers in relation to agricultural credit.
- Government is relieved of present uncertain financial burden of providing relief.
- It can help normalize the availability of supplies and stabilize prices.
- It will help maintain the dignity of farmers.
- It enables maintenance of systematic records of crop and livestock production.