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Farm management extension guide

MANAGING RISK in farming

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Preface

Farmers in developing countries are frequently exposed to the uncertainties of weather, prices and disease. Many farmers live on the edge of extreme uncertainty, sometimes falling just below, and sometimes rising just above the threshold of survival. Farmers do not know whether rainfall will be good or bad over a season; they do not know the prices they will receive for produce sold; and they do not know whether their crops will be infected by disease. These risks are not under the control of farmers but some farmers have developed ways of coping and managing them

How do you as an extension worker help farmers deal with risk and reduce variability in productivity and profitability? How can you assist farmers by advising them on good risk management?

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David Kahan

Chapter 1

Risk, risk management and information requirements

MAIN POINTS IN CHAPTER 1

The risks of farming

Farmers make decisions every day that affect farming operations. Many of the factors that affect the decisions they make cannot be predicted with complete accuracy; this is risk. Farming has become increasingly risky as farmers become more commercial. Farmers need to understand risk and have risk management skills to better anticipate problems and reduce consequences.

Sources of risk

Risk affects production such as changes in the weather and the incidence of pests and diseases. Equipment breakdown can be a risk as can market price fluctuations. Borrowing money can also be risky with sudden changes in interest rates. Risk also occurs as a result of changes in government policies. Such risks often have a major impact on farm income. Finally, there are risks related to the health and wellbeing of the farmer and his family and the supply of labour for the farm.

Risk management

Decision-making is the principal activity of management. All decisions have outcomes or consequences. However, in most situations the

Risk management, continued

outcome of a decision cannot be predicted. The more complex the risk, the more difficult it becomes for farmers to make an informed decision. For effective decisions to be taken, farmers need information on many aspects of the farming business. Farmers have to find ways of dealing with risk and protecting themselves from the uncertainties of the future.

Farmers' attitudes toward risk

Farmers differ in the degree to which they accept risk. Some farmers are willing to accept more risk than others. Attitudes to risk are often related to the financial ability of the farmer to accept a small gain or loss. Farmers' attitudes may be classified as: ***risk-averse*** *those who try to avoid taking risks;* ***risk-takers*** *those who are open to more risky business options; and* ***risk-neutral*** *farmers who lie between the risk-averse and risk-taking position.*

Information for decision making

Good risk management decisions depend on accurate information which requires reliable data. Good information can help a farmer make rational risk management decisions. The sources of information available include farm records, off-farm statistics, information from input dealers, traders, extension workers and other farmers and market price data.

INTRODUCTION

Extension workers can help farmers to improve their risk management skills ...

... help them to recognize and understand their problems ...

... and assist them in making better farm management decisions.

Farming is risky. Farmers live with risk and make decisions every day that affect their farming operations. Many of the factors that affect the decisions that farmers make cannot be predicted with 100 percent accuracy: weather conditions change; prices at the time of harvest could drop; hired labour may not be available at peak times; machinery and equipment could break down when most needed; draught animals might die; and government policy can change overnight. All of these changes are examples of the risks that farmers face in managing their farm as a business. All of these risks affect their farm profitability.

While farmers have always faced risk, farming has over the years, as a result of market liberalization and globalization, become increasingly risky. Smallholder farmers have become especially vulnerable. A casual approach to farming, even if it is for household food consumption, is no longer viable. Farmers need to acquire more professional skills, not only in basic production but also in farm business management. Among these are risk management skills.

Skillful farmers and other business people generally do not become involved in risky situations unless there is a chance of making money. Higher profits are usually linked with higher risks. These risky but potentially profitable situations need to be managed as carefully as possible. Good risk management involves anticipating potential problems and planning to reduce their detrimental effects. Simply reacting to unfavourable events after they occur is not good risk management.

In order to succeed, farmers need to generate more profit and become competitive. They must have a good understanding of the farming environment and be skilled at managing risk. By dealing with risk more effectively, better farming opportunities arise.

Extension workers can help farmers improve their risk management skills. They can help farmers recognize and understand their problems and assist them in making better farm management decisions.

At the start of a season, farmers decide to grow different crops. They decide what to plant, how much to plant and when to plant. These decisions may appear simple, but for each decision there are many possible consequences. There will be only one outcome; only one result. But at the time the decision is made, the outcome is uncertain.

When the chance or probability of an outcome is known in advance this is called risk. When the chance of an outcome is not known in advance this is called uncertainty.

Note: For the purpose of this guide we will assume that risk and uncertainty refer to the same thing.

SOURCE OF RISK

The most common sources of risk in farming can be divided into five areas:

• **production** • **marketing** • **financial** •
• **institutional** • **human** •

Production and technical risk

Crop and livestock performance depend on biological processes that are affected by the weather, and by pests and diseases. Low rainfall or drought may lead to low yields. Hail or heavy rains could damage or even wipe out crops. Outbreaks of pests or diseases could also cause major yield losses in crops and livestock.

Risks include low rainfall, drought, hail or heavy rains, pests and disease, breakdown or unavailability of equipment and spare parts

When farmers plant seeds and fertilize their land they do not know for certain how much rain will fall, or whether there will be a hail storm. They do not know if there will be a problem with pests or diseases. But still they must decide whether they are going to plant their crops or raise their livestock. The resources they spend to plough, plant and fertilize their crops or to care for their livestock may not be recovered. This is why there is risk. Farmers produce without complete certainty about what will happen to their production.

Another source of production risk is equipment. A farmer's tractor may break down during the production season resulting in an inability to harvest in time, thus affecting yields. *Similarly, if the farmer uses shared or hired traction or other equipment, will it be available when needed? If the farmer is using a new technology, will it perform as expected? Will it actually reduce costs and/or increase yields? If seeds do not germinate and day-old chicks die what will be the impact on production and farm family income?* The farmer can never be completely certain.

Marketing risk – prices and costs

Changes in prices are beyond the control of any individual farmer. The price of farm products is affected by the supply of a product, demand for the product, and the cost of production.*

- **Supply of a product** is affected by a combination of production decisions made by farmers as a group and by the weather and other factors that influence yields.
- **Demand for a product** is affected by consumer preference, consumers' level of income, the strength of the general economy, and the supply and price of competing products.
- **Cost of production** of a unit of product depends on both input costs and yield. This makes it highly variable. Although input costs tend to be less variable than output prices, when combined with yield variations the cost of production becomes a serious source of risk.

Factors affecting risk include supply, demand and cost of production

Sometimes price movements follow seasonal or cyclical trends that can be predicted. Many times, however, supply or demand will change unexpectedly and, in turn, affect the market price. When farmers plant crops or commit resources to raising livestock, they do not know for certain what prices they will obtain for their products. In situations of low rainfall, production of crops is often reduced and, as a result, prices rise.

Financial risk

Financial risk occurs when money is borrowed to finance the farm business. This risk can be caused by uncertainty about future interest rates, a lender's willingness and ability to continue to provide funds when needed, and the ability of the farmer to generate the income necessary for loan repayment. Smallholder farmers who borrow money at high interest rates may have particular difficulty making debt repayments. Lower than expected prices, combined with low yields, can make debt repayment difficult and even lead to the sale of the farm.

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* See also Economics for MARKET-ORIENTED FARMING (Farm management extension guide 1).

Institutional risk

Institutional risk is caused by unpredictable changes in the provision of services

Institutional risk refers to unpredictable changes in the provision of services from institutions that support farming. Such institutions can be both formal and informal and include banks, cooperatives, marketing organizations, input dealers and government extension services. Part of institutional risk is the uncertainty of government policy affecting farming, such as price support and subsidies. The risks farmers face are often a result of decisions taken by policy-makers and managers. Subsidies, food quality regulations for export crops, rules for animal waste disposal and the level of price or income support payments are examples of decisions taken by government that can have a major impact on the farm business.

Human and personal risk

Human and personal risk includes illness, accidents, migration and political and social unrest

Human risk refers to the risks to the farm business caused by illness or death and the personal situation of the farm family. Accidents, illness and death can disrupt farm performance. In many countries labour migration away from rural areas is a common occurrence. Migration can cause labour shortages for the farm. Political and social unrest can also limit labour availability. The spread of HIV/AIDS has had a serious impact on labour availability and productivity in some areas. When farmers plant their crop or commit resources to raise livestock they cannot be certain whether they will have enough labour to manage the farm enterprises.

Interrelation of risks

Production, marketing, financial, institutional and human risks exist on most farms. They are frequently interrelated. The ability to repay debts depends on levels of production and the prices received for produce sold. Financing of production depends on the ability to borrow capital and the ability of the lender to supply capital in time. The different types of risk often need to be considered together.

Risk and variability

Regardless of the source of risk, the degree of riskiness of an action depends, in part, on the ability to predict what will happen in the future.

Risk occurs because of unexpected changes

If farmers are able to understand and predict the patterns and trends throughout the year, the changes that occur may not be so risky.

Example

A vegetable farmer in Zambia studied the changes in vegetable prices over several years. She observed that the prices follow a pattern of being high before the harvest, dropping at harvest time and rising again towards the end of the season. With this information, she could plan when to plant and harvest her vegetable crops. As a result she was able to have vegetables ready to sell when prices were good.

However, changes that cannot be predicted and are more sudden are likely to be more severe in their impact on the farm.

Example

A group of fruit farmers in Thailand growing under rain-fed conditions and relying on the export market found that fruit prices varied greatly. This made it hard for them to predict future prices. As a result there was always the risk of having their fruit ready for sale when prices were low.

The relative importance of the different sources of risk depends on the nature and circumstances of the individual farmer and the farm household. This includes the resource base of the farm, its physical location, the enterprise combinations chosen, the specific production processes practiced by the farm family and the attitude of the farmer towards risk.

Farmers producing under rain-fed conditions may see drought as the greatest risk. Farmers producing high-value produce may find price fluctuations to be their greatest risk. Whatever the risk, farmers need to take it into account when making decisions about what to plant, when to plant, where to plant, how to plant, how much to plant, and the resources to allocate. These are the main management decisions that farmers make.

The time between when a decision is made and when the outcome or consequence of that decision is experienced also affects risk. The farmer often needs to integrate what are called “short-term tactical decisions” with “longer-term strategic decisions”. Time also influences the usefulness of information used in decision-making. The ability of the farmer to respond to events is also affected by time. These aspects of time make assessing risk more complex.

RISK MANAGEMENT

Decision-making is the principal activity of management. Early in the cropping season farmers must make decisions about what crops to plant, and what seeding rates and fertilizer levels to use. The yield and prices obtained will not be known with certainty for several months, or even several years in the case of perennial crops and livestock.

In only a few cases are farmers certain of the outcome of their decisions. This usually occurs when the decision is easy and there is only a single outcome. For example, if farmers decide to take short-term loans, they know what will occur; banks will charge them interest at a specific rate. In this case, farmers know exactly the consequences of their decisions.

Making good decisions is the hardest part of farming ...

In most situations, however, the outcome of a decision cannot be predicted, as there is more than a single possible outcome. Farmers often find that their decisions turn out to be less than perfect because of changes that take place between the time the decision is made and the time the outcome of that decision is finalized. It may be that the outcomes themselves depend on the decisions of others and on future events that lie beyond the control of the farmer.

... one can never be absolutely certain how things will turn out.

For effective decisions to be taken, farmers must have all the necessary information regarding input prices, output prices and yields, as well as other technical data.

An example of rainfed crops

Farmers who produce rainfed crops are likely to have good yields if the rainfall is adequate. But it is not certain whether it will rain, how much rain will fall or whether that rain will fall at the right time. These farmers are uncertain of the crop yield because of the risks of weather. If farmers plant their crop and an average amount of rainfall occurs, yields could be high and the crop could generate a satisfactory profit for the farmer.

* * *

But if rainfall is not adequate, farmers may suffer low yields and low or non-existent profit. The pattern and amount of rainfall directly affect yields and the level of production of these crops. High rainfall results in good yields but runs the risk of increasing production among all farmers, resulting in price decreases. The combined effect of changes in production and price impact on the level of profit that can be earned.

The risks associated with rainfed farming are usually more complex than those encountered under irrigation.

Farmers often have a basic understanding of how their crops will perform under dry, average and wet conditions. Some may have a formal record of the annual rainfall in the vicinity of their farm, while others may just remember the pattern over the years. Some farmers may have a feeling about the likelihood of a dry or wet year occurring before they decide on a cropping pattern for the season. Often, farmers think about the possible consequences of a decision to plant and grow their crops and then they decide what to do.

Sometimes the risk may be so small that one does not give it any consideration. This is particularly the case when there is a long history of a consistent relationship

between the decisions taken and the outcome. For example, if a farmer has a long, successful working relationship with his or her hired labour force and the situation has not changed significantly, there will be little risk of labour not being available when needed.

Sometimes the risk may be very great and the farmer will need to give it careful consideration. For example, being the first farmer to adopt a new seed or livestock variety may create a wide range of risks, each of which could potentially bring about losses or gains. Before deciding to apply the new technology the farmer should take time to investigate and understand the nature of the risks and the degree of risk involved.

Before applying a new technology farmers should fully understand the risk

Where there is little or no risk, decisions are generally easier to make. The greater and more complex the risk, the more difficult it becomes to make an informed decision. It is helpful to consider the fact that farmers do not only make active decisions to do something. Refusing to choose or to make a particular decision is, in itself, a decision that has outcomes and consequences. So it is important that the farmer understands risk and how it affects his farming business. This puts the farmer in greater command of the factors that influence the household, farming and livelihood systems.

Decision-making process

Farmers, like others, generally have at least a basic set of goals and objectives in life. Some may have thought these through very carefully. Others may have only a vague or general idea of what they want to achieve. Either way, every farmer grows crops or raises livestock for a reason. It may be for household food consumption. It may be for profit. It may be because the farmer has no alternative source of income. Or it may be for any combination of these or other reasons.

Decisions about the farm are made in the context of the farmer's goals and objectives. They guide and influence the decisions the farmer makes. Because decisions are made to achieve goals and objectives, it is helpful for farmers to understand the essential elements

Figure 1
Risk management: the decision-making cycle

of decision-making. The basic decision-making process is shown in Figure 1. The goals are set; farmers look at the different ways to achieve the goals; they evaluate the different alternatives; select the best alternative; plan for implementation; and review and evaluate the consequences of the action. This is often called the decision-making cycle.

Decision-making and risk

Consequences of the decisions made by farmers are generally not known until much later ...

Farmers have to find ways of dealing with risk and protecting themselves from decisions taken today without knowing what may happen tomorrow. Risk management strategies are used to reduce the chance of a ”bad” outcome occurring. Farmers who try to manage risk should follow another sequence of steps. They need to identify the possible sources of risk; realize the possible outcomes; decide on alternative strategies available; assess the consequences of each possible outcome; and

evaluate the trade-offs between the cost of the risk and the gains that can be made. Figure 2 shows the sequence of steps to be followed by farmers in managing risk.

... and the outcomes may be better or worse than expected

Farmers differ in the degree to which they accept and estimate risk. They base decisions on a number of factors. Some farmers are willing to accept more risk than others. Often farmers' attitudes regarding risk are based on their personal feelings rather than information presented to them to help them make more rational decisions.

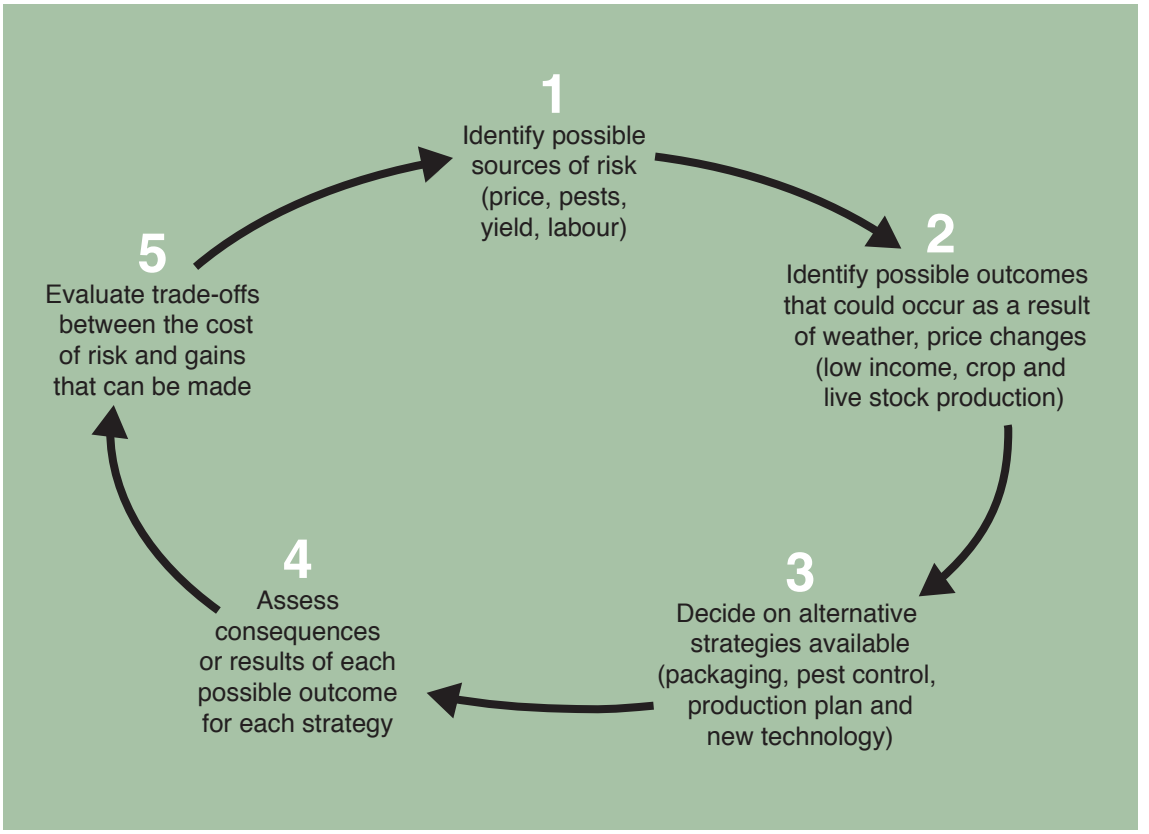

Figure 2
Steps to be followed by farmers in managing risk

Attitudes concerning risk are also associated with the financial ability of the farmer to accept a small gain or loss. It is unlikely that a large-scale commercial farmer would be badly affected or forced out of business from a small loss of $300 in one year, a relatively insignificant loss for the farmer. But it is unlikely that a small-scale farmer with a low income would be able to sustain such a loss. Consequently the farmer would be less willing to risk such a loss.

Farmers' attitudes toward risk

The risk-averse farmers try to avoid taking risks

Farmers may be divided into three types: risk-neutral; risk-takers and risk-averse. The risk-averse farmers try to avoid taking risks. They tend to be more cautious individuals with preferences for less risky sources of income. In general, they will sacrifice some amount of income to reduce the chance of low income and losses. A risk averter does not refuse to accept any risk at all. However, the risk-averse farmer would seek to be compensated for the risk taken by receiving a higher return than would normally be obtained if there were no risk.

The risk-takers prefer to take a chance to make more profit

Risk-takers are people who are open to more risky business options. Unlike the risk-averse, risk-takers choose the alternative that gives some chance of a higher outcome, even though they may have to accept a lower outcome. When faced with the choice, risk-taking farmers tend to prefer to take the chance to make gains rather than protecting themselves from potential losses. Even so, risk-taking farmers are still influenced by the return they could receive. Risk-neutral lies between the risk-averse and risk-taking positions.

It is useful for the farmers and those who provide support services to know their attitudes towards risk. In this way, they are more conscious of the motivation behind the risk management decisions made. While most farmers tend to be risk averse, attitude concerning risk is not fixed. Many factors influence it. Thus in one situation a farmer may be risk averse, and in another situation the same farmer may be a risk-taker.

The following are some of the factors that may influence a farmer's attitude towards risk

- *Farmers who operate under subsistence conditions tend to be the most risk-averse.* The provision of food for their dependants is an overriding priority for many of them. Activities with a monetary reward are frequently sacrificed in favour of meeting the objective of producing their own food.

- *Market-oriented farmers who are not willing or able to withstand the possible financial losses associated with a risk also tend to be more risk-averse*. This is often true for smallholder farmers. In effect the relationship between the input costs and the value of output from the farm influences the farmer's attitude toward risk.

- *Family commitments and responsibilities can also play a role in attitudes toward risk.* A person without family commitments may be more willing to take risks. Similarly, older people are likely to take less risks.

- *Past experience may also influence a farmer's decisions.* The effects of particularly good or bad years in the past influence decisions to be made today. Again, this may be related to age; a younger person may not yet have had many experiences on which to base decisions.

An example of decision-making in risk management

A farmer needs to decide how to cope with a possible infestation of pests. *Should he spray early as an "insurance" against the infestation occurring? Or should he wait for indications of infestation before deciding when to spray?* When market prices are low and the cost of pesticides is high, the net benefit from using pesticides in years when there is high pest infestation will be lower. In this case the farmer will be reluctant to buy expensive inputs.

Risk-taking choices

Risk management refers to actions farmers take to increase the chances of success of the farm business. Farmers can do this by influencing events in the future and by limiting the negative effect of those events. Many farmers try to do both. A good risk management strategy will try to act on both events and their consequences.

The main aspects of risk management are:

1. Anticipating that an unfavourable event may occur and acting (where possible) to reduce the chances of it happening;
2. Taking actions that will reduce the adverse consequences should the unfavourable event occur.

Farmers are often willing to accept higher risks to obtain higher incomes

An important aspect of risk management is that all responses to risk involve a cost. This cost is expressed by the amount of resources tied up in order for the farmer to manage his risks more effectively. In some cases the cost is easy to identify, in other cases the cost is less obvious.

Examples of risk management costs

A farmer may keep a stock of spare parts for the farm machinery to minimize risks of breakdowns. The spare parts are tied-up resources. The cost is the value of the spare parts.

Insurance is a common way to manage risk. In this case the cost is obvious and easily identified: the insurance premium.

A farmer may decide to grow a drought-resistant crop instead of one that is more drought prone. But the market price of the drought-resistant crop may be lower than the market price of the drought-prone crop. The cost to the farmer is the possible higher price that is given up by growing the drought-resistant crop.

A farmer may decide to use a more complex production system. In this case, the cost is in the form of additional time required in management.

Whatever its form, the cost of a response to risk will also influence a farmer's choice of strategies to manage risk.

An example of
reducing adverse consequences

A cassava farmer in West Africa has heard on the radio that there is blight in his area. *What should be done about the risk that his crop might be attacked by the blight?*

- First he needs to know how likely it is that his farm will be affected.
- He knows that one way to avoid the potential problem is to harvest his crop early. But to do this means he will have a smaller crop that will possibly attract a lower price. There is a risk in taking this action.
- He does not like taking risks. He is risk averse.
- The cost of this action is the potential loss of income. But failure to do it may lead to a total crop failure. So a lower income may be better than the risk of no income.

He decides to harvest his crop early. This way he knows he will have some income, which is better to him than the possibility of no income at all.

When risk is viewed as the chance either of gains or losses, the decision changes from seeking to remove all risk to trying to find the balance between the potential income that the farmer is willing to accept and the amount the farmer is willing to pay to reduce the risk.
That balance depends on:

- the riskiness of the action itself;
- the farmer's attitude towards risk;
- the resources tied up;
- the gains that must be given up to cover the risk.

The decision is complex and related to the farmer's ability to take risk. In order to assess the cost of risk and the effect on potential income, the farmer will need to have at least a basic understanding of farm economics.

An example of avoiding potential problems

At the beginning of every season a farmer worries that his old tractor could break down. To reduce the likelihood of this happening he may:

- overhaul the tractor before he starts using it;
- keep some spare parts for the tractor ready;
- service the tractor regularly in an attempt to avoid the risk completely.

While these actions may not prevent a breakdown, the farmer reduces the chances of one happening.

Farmers' risk-taking abilities are determined by their financial obligations. Some key indicators of risk-taking ability are:

Gross margin. Gross margin is the difference between the income of an enterprise or farm and the variable costs. The higher the gross margin, the more income the farmer can generate and the greater the risk-taking ability.

Cash flow or cash cushion. All farmers need cash to meet family living expenses, loan repayments and other expenses requiring cash payment. The farm is expected to generate an income to cover expenses. Cash flow is the expected sales minus expenses. The smaller the cash flow, the lower the cash reserve and the risk-taking ability of the farmer. In the event of a shock occurring, such as a sudden increase in costs, or an outbreak of disease leading to a high mortality of livestock, or drought and a failed crop, the farmers with a "cash cushion" are better able to absorb these risks.

An example of cash flow

Assume there are three farmers each operating 20-ha farms with the same type of machinery. All three farmers have outstanding debt from a purchase of improved seed and fertilizer. Farmer 3 borrowed $100 to cover the cost of hired labour when the farmer was in hospital. A comparison of the three respective financial situations is outlined below.

	Farmer 1	Farmer 2	Farmer 3
Gross income	$220	$180	$210
Variable costs	80	60	80
Gross Margin	140	120	130
Inflow			
Loan	—	—	100
Income	220	180	210
Total inflow	220	180	310
Outflow			
Debt repayment	10	10	80
Rent	—	100	100
Expenses	80	60	80
Total outflow	90	170	260
Net cash flow	130	10	50

Here we see that Farmer 1 has the highest gross margin and the largest cash flow. Farmer 1 can assume more risk than either Farmers 2 or 3 and has higher risk-taking ability.

A quick demonstration of this can be seen if the gross income is reduced by $60. In this situation, Farmer 1 would still have a positive cash flow, but Farmers 2 and 3 would have negative cash flows. This again shows that Farmer 1 is able to absorb greater risk.

KEY POINTS

Understanding risk will help extension workers to advise farmers on how to assess risk and to choose risk management strategies. The following are some key points to consider.

Risk is a way of describing the chance a farmer takes when making decisions

* * *

Some farmers believe that they should try to eliminate all risk. Farmers who are afraid of taking risks will try to limit the possibility of losses, even if it means reducing the likelihood of gains. They want to increase income while avoiding risk. However, increasing income almost always requires taking some risks.

Risk can often encourage positive change

* * *

Risk is not necessarily good or bad for the individual farmer. It simply describes the chance the farmer would take by following a particular production plan. In a way, understanding risk helps the farmer understand the negative and positive outcomes of decisions taken.

Risk can lead to gains or losses

* * *

Farmers who enjoy taking risks are frequently the first to adopt a new practice. This promotes technological change.

* * *

The greater the risk, the greater the potential for loss or gain

The risks associated with farming create opportunities for both gains and losses. Generally, the greater the risk, the greater the potential for loss or gain. Knowing this, farmers can then decide to what degree they want to take a chance.

* * *

The existence of risk does involve a cost to the farmer.

INFORMATION FOR DECISION-MAKING

Good risk management decisions depend on accurate information, which, in turn, requires reliable data. Good information is one of the most useful assets a farmer can have to help make rational risk management decisions. There are many sources of information available. The most appropriate place to look for information depends on the type of risk the farmer has to manage.

Farm records

All farmers who are able to do so should keep records of their farm business. Farmers who are unable to do this should consider getting assistance. Farm records are the best source of historical production data. These can be supplemented and complemented by off-farm information, especially market and weather information. However, off-farm information is not very useful by itself. Farm records are needed to make well-informed management decisions.

Farm records provide a record of past decisions made by farmers regarding their farm performance. These records include data and information about crop yields, livestock production, cost and income. Farm records give an indication of the assets used on the farm. They also give an indication of the capacity of the farmer to produce and sell farm products. If these records are kept accurately, they will show the variations in the level of production and the prices experienced by farmers over time.

Farm records include data on production, yields, use of fertilizers and chemicals, seeds, labour

Farm records help farmers to examine their past decisions and the results of those decisions. With these records farmers are able to reflect on their decisions and assess their risk preferences. The information collected on past trends should help them to take better farm management decisions.

Farm records also provide a picture of the risks that farmers have faced in the past. They give an indication of the risk management decisions taken and the consequences of those decisions. Such information can help identify any changes that should be made in the future regarding risk management.

Answers to many questions related to risk can be found in farm records:

- *What is the likelihood of dry years or drought? What is the effect of drought on yields? How variable have yields been between years?*
- *Which crops have performed best? What has been the performance of the livestock kept?*
- *What has been the effect of crop rotations? Could a change in rotation produce more desirable results?*
- *What cultural practices, tillage systems and timing of field operations have been used? With what result? Would a change produce more desirable results?*
- *What percentage of produce is sold at harvest? Are crops sold early to repay debts?*
- *How effective is the marketing strategy? What has been the impact of price changes on farm profitability?*

While farm records provide useful information about what has happened in the past, they provide very little information about what will happen in the future. To obtain this information farmers must look at additional sources collected by other organizations or people that might allow them to better understand past trends and predict future trends. However, there is no information that allows farmers to predict with complete certainty what will occur in the future.

Off-farm Information

Off-farm information is, just as it sounds, information that is obtained from sources other than the farm. Such information is vital for good farm management decisions.

A farmer can find information from many sources including:

- other farmers
- agricultural suppliers
- traders
- extension services
- private/commodity advisory services
- agricultural statistics publications and broadcasts (e.g. radio)
- farming magazines and newsletters

Farmers should compare published statistics with their own records

It is your job as extension workers to advise farmers where they can best find the information they need.

Most countries produce and publish historical information (statistics) about yields and prices of various crops. This information is often useful for farmers to compare with information collected from their own farm records. Farmers should be assisted by extension workers in accessing this information. Such a comparison can help farmers see the effectiveness of their farm management decisions, by determining how their farms compare with other farms in the vicinity. However, they must compare like with like. There is no point in comparing the performance of their farm with that of farms in different agro-climatic areas*.

Published information comprises averages of yields, product price and input costs

Farmers should think about the kind of information they require and then find appropriate and reliable sources for that information. They may require simple supply and demand information and market prices or more complex comparisons or projections as to future market trends. In some countries, highly sophisticated, Internet services may be available with up-to-the-minute prices or complex marketing information. Farmers in many countries are increasingly accessing price information through the use of mobile phones.

* See also FARM BUSINESS ANALYSIS using benchmarking (Farm management extension guide 3).

Extension services are a valuable source of information

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Farmer receiving extension service leaflets on the care of olive trees – Jordan

Agricultural suppliers are constantly in touch with farmers and are well informed

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Farmers in-and-out of agriculture stores pass on information – South Africa

Farmers with similar enterprises can be of great help to one another

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Farmers learning procedures at a fish farm exchange ideas – Botswana

Information is an input

Farmers may have to pay for information. In such cases they should treat that information like an input on their farm and apply the principles of marginal cost and return. Farmers should not pay more for information than the value that the information adds to their profits.

Finally, farmers should also reflect on the quality of the information they can obtain. Some sources of information may be more accurate or reliable than others. If farmers find that the information does not lead to better decisions with desirable results, they should reconsider their information needs and sources.

Other Information

Farmers may also require more than just market and production data. They may need information to help them select new technologies, understand legal and contractual issues, and better sustain the farm environment.

Such information might include:

- tax legislation
- import/export regulations
- environmental legislation
- resource conservation
- food safety
- water quality
- animal health
- farm programmes and policies.

All of these areas could affect decisions made by the farmer and influence risk. Again, it is the role of the extension worker to identify the sources of this information and convey them to their farmers.

Chapter 2

Approaches to risk management

MAIN POINTS IN CHAPTER 2

Types of risk

Risk can be categorized as production, marketing, financial, human and institutional. Production risk stems from uncertainty of factors that affect the quantity and quality of farm produce. Marketing risk exists because of the variability of product prices and the uncertainty of future market prices. Financial risk occurs when money is borrowed to finance the farm business. Institutional risk occurs because of unpredictable changes in the provision of services. And human risk refers to the risks to the farm business caused by human illness and the personal situation of the farm family.

Risk management strategies

Strategies have been developed to cope with all types of risks. Often farmers experience the threat of different types at the same time. Risk reducing strategies are often used in combination with one another, because no single strategy can cover all of the risk likely to be encountered. Farmers need to consider the risks simultaneously and to develop an integrated approach for better management. They need to recognize the advantages and disadvantages of each risk management option both individually and in combination. Individual farmers should select an appropriate strategy based on their goals, attitudes towards risk and their personal and financial situations.

INTRODUCTION

Risk occurs whenever the consequences of a decision are not entirely known at the time a decision is made. There are a number of ways to manage risk. Farmers may try to prevent an unfavourable event from happening or they may take actions to reduce the adverse consequences should the unfavourable event happen. If possible, they should do both.

Risk management strategies can be categorized as production, marketing, financial, human and institutional. While considered individually in this chapter they are often used in combination with another. Farmers choose and combine strategies based on their goals, attitudes towards risk and their personal and financial situations. Each individual farm family needs to find their own ways of coping with risk. Farmers' responses to risk are as diverse as the risks that affect their farms.

One must bear in mind that whatever strategy is chosen, it will come at a price. The price could be a direct cost such as making insurance payments, or an indirect cost such as giving up a potential gain, or more time spent managing the farm. A good farmer will try to find a balance between managing risk and making profits.

Note: The costs associated with each strategy are not discussed, as these will be unique to each farmer's situation.

PRODUCTION RISK

Production risk stems from the uncertainty regarding the factors that affect the quantity and quality of farm produce (e.g. weather, disease, pests). It also arises with the introduction of new technologies. Several strategies can be used to reduce production risk.

Risk-reducing inputs

Risk-reducing inputs are production inputs that improve the chances of better quantity or quality of farm products. Fertilizers and compost are used to reduce the risk of low yields. Pesticides and Integrated Pest Management (IPM) practices are used to reduce the risk of crop damage. Irrigation is used to reduce the risk of low rainfall.

Not all inputs necessarily reduce risk. For example, even if fertilizer is used, the crop still depends on rainfall, which may or may not be favourable. When soil moisture levels are low, using fertilizer can still result in low yields.

Risk-reducing inputs must be weighed against the cost of using them

Farmers, however, do not experience only one kind of production risk at a time. They often experience the risk of unfavourable weather, pests and weeds at the same time. Using a single risk-reducing input, such as drought-resistant seed will not prevent low yields caused by pest and insect damage.

To determine whether an input will reduce the risk of low yields, farmers must look at a number of factors at the same time. They should think about the effect the input is most likely to have on their crop, given other factors that also affect production. For example, hybrid seeds may increase yields in years of good rainfall but produce poorer yields than traditional varieties in years when the rain is poor. Farmers must ask themselves whether the income expected by using the input is high enough to compensate

for the increased risk involved. Essentially, farmers must weigh up the costs and benefits of using an input as a risk-reducing strategy.

Risk-reducing technologies

Farmers can reduce risk by learning about and applying new technologies and practices designed to address specific risks common to their area of production. For example, new varieties of seed are being developed and livestock are being bred with certain characteristics, including the following:

- drought-resistant seed for maize;
- bird-resistant seed for sorghum;
- disease- and pest-resistant seed species;
- desease-resistant livestock species;
- livestock bred to provide better productivity;
- irrigation for high-value crops;
- crops and livestock bred specifically to improve marketability.

Risk-reducing technologies may be difficult to implement ...

... but could be beneficial if successful

In many countries there are examples of how genetic technology has created an economically viable opportunity to address some of the risks in livestock production. For example, programmes have been developed to provide higher quality cattle to local farmers to make it possible for them to access markets that offer higher prices.

An example of introducing new techniques

A farmer in Swaziland received imported milk cows from a technical assistance project. The cows faced production risks as they could not easily adapt to the environmental conditions of Swaziland. To reduce these production risks the farmer decided to cross-breed the imported animals with local breeds, as a way to improve their disease resistance.

Selecting low-risk activities

One way to reduce production risk is to choose a farm enterprise that has a lower risk. In these situations farmers choose reliability over potential profitability. A farmer may forego an enterprise that has a high potential for income but also carries a high risk for loss, and choose instead an enterprise which is less profitable but also less risky. For example, some smallholder farmers may prefer a drought-resistant variety of sorghum or millet to high-yielding varieties that could fail in a drought.

Farmers often prefer to continue with familiar crops and production activities with low risk

Risk is often associated with a lack of familiarity with a variety. Although the yield of an improved variety may be more stable than those of local varieties, farmers may not have the knowledge and experience of growing the improved variety. This lack of experience could lead the farmer to assess the risk of cultivating the new variety as being too high. Farmers are usually aware of the differences in the yield variability of crops associated with the different soils, husbandry practices and other factors on their farm. Because of the many differences, one farmer may consider a particular activity high-risk while another may consider it a low-risk activity.

System flexibility

Farming system flexibility is an important strategy for risk management. A flexible farming system makes it possible for the farmer to make quick or short-term changes in production and sales.

Farmers who sell cash crops may also reduce risk by using available funds to enable them to change to another enterprise if the price of the main cash crop falls.

By keeping their farm systems flexible, farmers are able to make decisions in response to changing circumstances. While working with general production plans, they should keep their options as open as possible in order to respond to opportunities and risks as they occur.

EXAMPLES OF FLEXIBLITY

Vary area of land under cultivation *and/or the number of livestock kept, as a response to market changes.*

Keep land fallow *(unplanted) in times of low rainfall in order not to risk unnecessary expenditure on inputs.*

Intensify the farming system *by increasing an already existing enterprise (e.g. small stock such as pigs, sheep, poultry) if future prices are likely to be good.*

Utilize labour *rather than purchasing or hiring farm machinery.*

Spread the time of planting *and increase the area under cultivation. If an early planted food crop fails the farmer may replant with a more drought-resistant variety. If farmers feel that neither will be successful they may decide to increase the area under another staple crop for food security purposes.*

It should be noted, however, that flexibility is not possible with all enterprises. For example, tree crops are generally inflexible. The enterprise cannot be changed easily and quickly. However, coffee farmers, for example, can respond to low prices by heavy pruning – hoping that yields will be good when prices are again high.

Production diversification

Diversification spreads risk and is a successful risk management strategy because not all farm enterprises and operations are likely to be affected in the same way by changing situations. Some techniques include:

- managing multiple farm enterprises together at any one time (or in the same season);
- engaging in the same farm enterprise in different physical locations;
- engaging in the same farm enterprise over successive periods of time (or seasons);
- generating income from off-farm activities.

Managing multiple enterprises together at any one time (or in the same season). There are many forms of this kind of risk management strategy. For example, farmers concerned that their normal crop may fail because of pests may decide to produce more than one crop (i.e. multiple enterprises) over the same season. They will choose crops that are more resistant to pests and diseases.

Another example is intercropping, which is a common form of crop diversification. Crops that are more resistant to drought may be planted together with food crops to ensure that some return is obtained from the effort put into land preparation. In many countries, sorghum and maize are grown together; sorghum is drought resistant but susceptible to bird damage, whereas maize is liable to fail in a drought but is more resistant to bird damage.

Mixed broadcast farming, which is a traditional practice in low rainfall areas of Southern Africa, is an example of intercropping. In this case, the farmer literally mixes the seeds of three or four different crops (e.g. maize, sorghum, pumpkin) in a single bag and plants them simultaneously in the same field. This was designed specifically to protect the household food supply in case of drought. Even if two crops fail, there are at least one or two other crops that will provide food for the family.

O.Argenti

Women farmers preparing a field for multiple enterprises – Ethiopia

Essentially, diversification is a practical application of the saying ...

© FAO/18309/PCenini

Intercropping Laucaena and maize – Ghana

... "Don't put all your eggs in one basket"

© FAO/20910/K.Pratt

Integrated rice, duck and fish culture – Lao PDR

Many farmers around the world – particularly smallholder farmers – integrate crops and livestock to reduce risk and improve their efficiency in resource use and sustainability of the natural resource base.

Engaging in the same enterprise in different physical locations. This risk management strategy works on the understanding that the same crops grown in different areas will not meet the same fate. Perhaps a crop grown in the area surrounding the house is more likely to be infested by rodents than the same crop grown elsewhere. One piece of land may have marginally better protection against frost than another. Also, by planting crops on different soil types the farmer diversifies to avoid risk: in a dry year the crop on sandy, upland soils may fail; in a wet year the crop on wet, river-valley land may fail. Land close to a river can possibly be irrigated. By taking advantage of these differences, farmers can spread their risks and can be more assured that at least one of their production sites will succeed.

To reduce risk farmers can plant crops in different areas where soil types differ

Engaging in the same enterprise over successive periods of time (or seasons). Farmers also diversify over time. Staggered planting can be used to manage household food supply and also to reduce the risk of water stress. If an early-planted crop does not receive sufficient rain at the flowering stage, the crop planted later may not be affected in the same way. For example, the table below shows staggered planting dates for maize in parts of Africa to reduce the risk from uncertain rainfall.

Table 1
Scheduled planting dates for maize

Month	October				November				December			
Week	1	2	3	4	1	2	3	4	1	2	3	4
First planting		■	■	■								
Second planting				■	■	■	■					
Third planting							■	■	■	■		

An example of phased livestock production

A farmer in the Manica province of Mozambique, decided to develop a commercial broiler enterprise of 1 000 units. Owing to limited capital for housing and a concern over the market, he decided to spread production and rear his broilers in batches of 250 units. By so doing he was able to spread sales and sell his chickens at competitive prices. As part of his business strategy, the farmer increased production towards one of the festival days to meet the increased demand for poultry at that time.

Generating income from off-farm activities. It is difficult to separate the risks of farming from the risks of the household, particularly among smallholder farmers. In many cases, the farm and the household are a single unit. Therefore, although it is not a farming strategy, many farmers sustain their income with earnings from activities off their farm. Farmers may take part-time work in towns or on commercial farms or one of their family members may have a full-time job.

Many farm families sustain their income with earnings from activities off their farm

General considerations. Diversification of production can be used to manage price, yield, and income risk. Unlike risk-reducing inputs, the effects of which are shown on a field-by-field or enterprise-by-enterprise basis, the effects of production diversification are seen only by observing the farm as a whole. But by diversifying production practices or engaging in alternative farm enterprises, the farmer no longer uses the optimum combination of resources that gives the highest possible yield. Using different production practices on different fields may require more management time and possibly different types of farm equipment. In this way production diversification, while minimizing risk, often reduces potential farm income.

Risk-averse farmers will more likely be prepared to accept the lower income because their primary concern is to avoid risk. It is unlikely that risk-neutral or risk-taking farmers will accept the lower income because they will go for a production plan that will probably deliver the highest expected net income (over one or several seasons) regardless of risks involved. Indeed, the risk-taker might seek out more risky enterprises to gain a higher income.

An example of enterprise mix

A farmer has been debating the most appropriate mix of enterprises on his farm. In particular he is considering switching 0.5 ha from maize to beans. In adding this new crop he is not worried about the risk of a lower income, because in his area income from beans varies less than income from maize. Also, the pattern of price changes for produce sold is not the same. When the price of maize falls, the price of beans often stays the same. One thing he has realized though is that he has to consider this risk reduction against the expected income from beans.

Reserves of inputs and produce

The most common reserves are stores of farming inputs and farm products. As a risk-reducing strategy, these goods are set aside to reduce the impact of unfavourable events. Reserves of inputs such as feed for livestock, fertilizer and other chemicals can protect farmers from the risk of short-term input price changes. Food storage on the farm can also provide security against the risk of crop failure, although losses of stored grain due to pests can be considerable.

As is the case with all risk management strategies input and product reserves come at a cost. One obvious cost of holding reserves is their actual value. Resources held in reserve are tied up and do not earn a return. This can affect both the net income and cash flow negatively.

Traditional village grain storage – Malawi

Grain storage provides security against the risk of crop failure ...

Stone grain storage containers used by villagers – Mali

... for both family needs ...

... and future market sales

Woman farmer showing her new metal grain storage to neighbour – Bolivia

Share leases

With share lease agreements production and sales risks are borne by both tenant and owner

In some countries where land tenure arrangements permit (e.g. among small-scale farmers in Latin America), share leases for crop and livestock production are a common risk management strategy. Under such schemes the landowners usually pay part of the operating expenses and, in return, receive a portion of the crop or livestock produced instead of a cash rental payment. In this way the risks of low production, low selling prices, or high input costs are shared between the tenant and the owner. Under share-lease arrangements tenants require less working capital for farm operations and credit may consequently be more readily available.

Custom farming

Custom farming involves a farmer entering into an agreement with a custom operator to carry out various farm operations. It is also sometimes referred to as "contractor" farming. The advantage (or risk saving value) of this strategy is that operational costs can be fixed. Instead of facing the risk of high equipment costs, the farmer contracts someone else to do this work.

Custom farming can also be applied to livestock feeding. Under such arrangements livestock producers feed cattle or small stock owned by other farmers on their own plots for a fixed price. In either case, some farmers may undertake only part of a production activity as a means of reducing risk.

The advantage of custom farming is that operating costs can be fixed in advance

Farmers can either contract operators to work their land or be contracted as an operator to work the land of other farmers. Contracting an operator can reduce the risk of high equipment costs. A farmer with equipment, contracted as an operator, receives alternative income and makes more efficient use of equipment. Custom cattle feeding and custom farming allow farmers to focus on production.

Summary of issues related to
production risk management strategies

RISK REDUCING INPUTS

Production inputs that improve the chances of better quantity or quality of farm products

Positive factors

- Reducing the likelihood of low or unstable yields

Negative factors

- Could increase risk as its usefulness depends on the type of input used and a combination of effects
- Access to capital may be restricted
- Could increase costs of production

Production risk management strategies
(continued ...)

RISK REDUCING TECHNOLOGIES

Applying new technologies and practices designed to address specific risks common to areas of production

Positive factors

- Could result in higher crop yields
- Could make more cost-effective use of crop inputs

Negative factors

- Its usefulness depends on the type of technology designed and its overall effect on the farm business
- Access to capital may be restricted
- Could result in an increase in costs of production

SELECTING LOW RISK ACTIVITIES

Choosing reliability over potential profitability as a way to reduce production risk

Positive factors

- Could provide a safety net in terms of food security

Negative factors

- Results in a reduction of potential farm income
- Could have a detrimental effect if the enterprise, crop or variety is new

Production risk management strategies
(continued ...)

SYSTEM FLEXIBILITY

Having flexible farming system reduces risk by enabling quick or short-term changes in production and sales.

Positive factors

- Fast change-over to alternative enterprise if prices / costs become adverse

Negative factors

- Might result in a trade-off between higher income and lower income enterprises

DIVERSIFICATION

Diversification reduces the impact of risk by spreading risk over several farm enterprises

Positive factors

- Reduction in income variability
- Can ensure adequate cash flow, debt obligations and family living expenses

Negative factors

- If the yields of two commodities are interrelated risk may not be reduced
- Increases risk as a result of the need for more complex cropping systems
- Results in increased capital requirements for additional enterprises

Production risk management strategies
(continued ...)

INPUT RESERVES

Farming inputs and farm products that are set aside to reduce the impact of unfavourable events.

Positive factors

- Provides supplemental cash reserve in the light of unexpected expenses
- Increases liquidity of the farm

Negative factors

- Ties up resources that do not generate a return
- Net farm income may be reduced because of the cost of establishing and maintaining a reserve

FOOD RESERVES

Farm produce that is stored on reserve to provide security in case of risk

Positive factors

- Food security
- Increases flexibility

Negative factors

- Danger of spoilage

Production risk management strategies
(continued ...)

SHARE LEASES

Input costs are shared between tenant and the owner and thus reducing risk to either.

Positive factors

- Divides risk and results in less working capital requirement for the tenant farmer

Negative factors

- Creates dependency situations

CUSTOM FARMING

Custom farming involves a farmer entering into an agreement with a custom operator to carry out various farm operations

Positive factors

- Divides risk and results in less working capital requirement for the tenant farmer

Negative factors

- Reduction in potential income

MARKETING RISK

Marketing risk exists because of the variability of product prices and the uncertainty of future market prices that the farmer faces when making the decision to produce a commodity. Several methods can be used to reduce price variability or to set a satisfactory price before the crops or livestock are ready for sale. These are discussed below.

Spreading sales

If the farmer is producing a crop that can be easily stored after harvest, parts of the crop can be sold at different times during the year. The farmer can watch for changes in the market and sell when prices are most favourable. This particularly applies to food grains and for seasonal produce that can be stored (e.g. apples, potatoes and onions). However, storing produce has risks, entails high costs and sometimes loss. Livestock sales can also be spread throughout the year if managed properly in terms of feeding, calving and other livestock husbandry operations. This strategy may or may not increase income for the farmer but it reduces risk and provides the added benefit of ensuring a regular cash flow throughout the year. Again, in all cases farmers need to balance the costs and benefits.

It is important that farmers realize both costs and benefits of storage and on-farm primary processing ...

... and ensure that income generated covers the costs involved

An example of adding value by drying

A farmer decided to process vegetables by solar drying and to selling them at times of short supply. By so doing he avoided having to sell his produce at times where the market was flooded and prices were low. This marketing strategy increased his farm income. Primary processing can be a way of avoiding losses in storage or low market prices.

© FAO/18067/M.Griffin

Apples being picked for export will require storage – Afghanistan

© FAO/23001/K.Iversen

Potatoes on sale in the bags in which they have been stored – Bolivia

Produce that can be stored, can be sold later on in the season

© FAO/22690/J.Spaull

Selling potatoes and onions after harvest – Azerbaijan

Direct sales

For some farmers, selling directly to final consumers may be a way to enhance profitability and reduce risk. Small-scale farmers near population centres may especially benefit from direct sales to final consumers. However, the farmers need to be sure that they can sell everything taken to market. Otherwise they may end up worse off than selling to traders. They also need to be sure that the higher prices they will get from retail sales will cover the extra costs they will incur.

Contractual agreements to sell produce and buy inputs

Price uncertainty could be greatly reduced if farmers could make advance contracts with buyers of products. Contractual agreements can be made with a private individual or company. The farmer often knows in advance the prices that will be received. For example, a livestock feed-mill may contract to buy a farmer's grain at an agreed price or a tobacco company may do the same for the tobacco crop. Some companies that buy produce from farmers at harvest time also sell inputs to farmers.

An example of a contract agreement

A farmer runs a small-scale commercial chicken broiler operation. He is considering whether to enter into a production contract with an integrated broiler company. The company would supply the farmer with chicks and technical advice on feeds, health and housing throughout the production cycle. In return for handing over management decisions, his income risk is greatly reduced, market access is guaranteed and access to capital ensured. The farmer has to weigh up these potential benefits against his reduced managerial freedom and the risk that the contract might be terminated after he has made considerable investment in broiler facilities.

Marketing contracts can be either verbal or written agreements between farmers and buyers. The contracts often set the price for produce sold and the quality of the produce expected.

Forward pricing

Forward pricing is a practice where the buyer and producer agree on a price for the sale of crops or livestock in advance of delivery. An agreement is reached to deliver the crop at an agreed price, quantity, quality and time. This practice enables farmers to reduce the risk that the price they receive for their output might not cover production costs.

An example of forward pricing for vegetables

In the case of vegetable production, it is sometimes possible for a farmer to negotiate a predetermined price with a buyer. The price is often set at a level below the expected market price at harvest time. The farmer has to guarantee that supplies are delivered to the buyer according to the agreement; at the volume, quality and time set. This provides the farmer with a guarantee of the price to be received. In this way the risk of low prices is reduced. However, such agreements do not allow farmers to enjoy the advantages of possible price increase that may occur over the harvest period.

Forward pricing is particularly relevant for highly specialized or perishable products, and is also common for “niche” products although it is not widely used by small-scale farmers at present. The box on the following page shows some forms of pricing arrangements used by larger commercial farmers in more developed countries.

ADVANCED PRICING ARRANGMENTS

Cash forward contracts

Agreements that are based on an exchange of produce at a specified future time. They allow farmers to establish a price for later delivery. The contract specifies the price, quantity and quality of produce to be delivered at an agreed post-harvest date. The contract also indicates the penalty to be paid if the farmer fails to deliver.

Deferred pricing contracts

Contracts where the price is determined later at some specified date. Ownership is transferred before the price is set.

Deferred payment contracts

Contracts where the current price and delivery of the produce is set but there is delay in the receipt of payment. It transfers ownership to the buyer at delivery but allows the seller to set the price later.

Minimum price contracts

Provide farmers with a floor price for duration of the contract. They offer the farmer protection against a drop in price below a minimum level, while still leaving the final pricing until a later date.

Futures contracts

Agreements that are made for a specified future time. The risks are transferred to another business that is more willing to accept them. Here the contract is sold and bought instead of the actual produce.

Building trust

For farmers involved in contractual relationships the most critical issue is agreeing on the price with the buyer and developing trust. The nature of the business relationship is that both buyers and sellers try to obtain the best deal. Farmers aim at negotiating the highest possible price to maximize their profits and buyers try to ensure that low prices are paid so that they can also maximize their profits. Farmers need skills in negotiating contracts in order to arrive at an acceptable agreement. Even though agreement can be reached there are still risks involved for both the farmer and buyer. Problems are often related to:

There are risks involved for both the farmer and the trader

- agreement on the weight of the crop;
- agreement on the quality of the produce;
- calculating the money owed to farmers;
- failure of buyers to buy agreed quantities;
- failure of farmers to supply agreed qualities.

Both parties need to build trust and realize that the long-term advantages of a fair relationship should outweigh any short-term benefits of failing to honour the agreement. Although there are likely to be periods when products are sold at a loss, a sustainable production-marketing relationship is one in which both parties involved make a profit. For arrangements to continue for a long time they need to be financially sustainable. Both parties must benefit. The long-term success of such an arrangement depends on the capacity of farmers to negotiate with buyers and to ensure that they work well together. The position of farmers during negotiations with buyers can be improved by extension staff by:

In a fair relationship long-term advantages should outweigh immediate benefits to either side

- informing the farmers of the range of buyers available;
- encouraging the farmers to grow crops for which there is a strong demand;
- ensuring that farmers are aware of prevailing market prices and the conditions of purchase;
- advising farmers to calculate the break-even cost of production and marketing.

Market price information

A key element in managing price risk is market information, especially price information. Farmers should track price information relevant to their products. They should try to establish if there are seasonal, annual or other cyclical price trends for those products. Sound knowledge of market prices alone is not a risk management strategy. However, having such information strengthens a farmer's position to be able to forecast more accurately future price events. It will help farmers make basic decisions about their farm, including decisions about the level of inputs, production and choice of market. It will help farmers to better assess the risk of various products, production programmes, and market options. Market information can be divided into short- and long- term (see below).

Short-term market information helps farmers make instant marketing decisions on selling their products. This includes:

- up-to-date price information;
- up-to-date information on supply and demand.

Longer-term market information can be used to make planting decisions and plan marketing strategies. This includes:

- quarterly or annual price reports from market Information services;
- contacts of companies providing services (e.g. transport, storage), and inputs (e.g. seeds, fertilizers and packaging);
- descriptions of the marketing chain.

Summary of issues related to
marketing risk management strategies

SPREADING SALES

Storing a crop after harvest, and selling it at different times during the year or carrying out primary processing

Positive factors

- Spreads the risk of price fluctuations
- Could stabilize income

Negative factors

- Could result in a decrease in gross revenue if prices are less than expected
- May require introduction of new varieties and new husbandry practices
- May result in an increase in storage costs
- Requires adequate financial resources
- May result in storage losses of stored produce

Marketing risk management strategies
(continued ...)

DIRECT SALES

Selling directly to final consumers as a way to enhance profitability and reduce risk

Positive factors

- Usually leads to higher prices
- Creates opportunity for useful marketing strategy (direct contact with buyers)
- Has the potential to increase profits

Negative factors

- Entails transportation and other marketing costs
- Could take up a lot of the farmer's time

CONTRACT ARRANGEMENTS

A practice where the buyer and producer agree on a price for the sale of crops or livestock in advance of delivery

Positive factors

- Guarantees a fixed price
- Expands the choice of marketing to different time periods
- Secures a market outlet
- Generates a predictable cash flow
- Contract can be tailored to the quantity / quality of the product that the farmer has to offer
- Schedules deliveries that better fit with labour, the quality of the produce and logistics

Negative factors

- Success depends on the product and the contract
- Usually requires maintaining particular quality, handling and packaging
- Loss of opportunity for farmers to take advantage of premium prices
- Loss of flexibility
- Could involve substantial cost for the farmer
- Contractual terms may be disadvantageous for the less powerful party
- Increases the risk if there is a yield shortfall
- Might introduce other types of risk in marketing
- High transaction costs of information

Marketing risk management strategies
(continued ...)

CONTRACTS WITH BUYERS

Agreeing on the price in advance of the sale

Positive factors

- Can be developed by providing farmers with market information
- Best developed through person-to-person contact

Negative factors

- Both traders and farmers may not honour contracts
- May require organization of farmers to strengthen their negotiating position
- Takes time to develop

BUILDING TRUST

Requires negotiations that result in a 'fair relationship' that provide long-term advantages to both parties that need to outweigh any immediate benefits to either side

Positive factors

- Trust between parties can help reduce risk
- Ensures sustainability of contractual relations
- Can be achieved by providing farmers with market information

Negative factors

- Traders often take advantage of farmers
- Difficult to ensure as each party tries to maximize their profits
- Requires organization of farmers to strengthen their negotiating position

Marketing risk management strategies
(continued ...)

MARKET PRICE INFORMATION

The tracking of relevant price information is a key element in managing price risk

Positive factors

- Assists in formulating risk management strategies
- Short-term information helps farmers make decisions on selling their products
- Longer-term market information is used to make planting decisions and plan marketing strategies

Negative factors

- Requires interest among farmers or extension workers to keep records
- Market information services can be costly to implement
- Substantial costs in gathering and processing information

FINANCIAL RISK

Financial risk occurs when money is borrowed to finance the operation of the farm business. This risk is caused by uncertainty about future interest rates and repayment schedules, changes in the loan collateral, and the ability of the farm to generate the cash flow necessary for credit repayments.

In some countries small farmers have become bankrupt as a result of indebtedness. Farmers may purchase expensive inputs on credit, but with the failure of rainfall and consequent low yields may be unable to repay their loans. The failure to assess the financial risks associated with lending has a direct impact on their livelihoods. In some cases farmers have even committed suicide. This emphasises the risk of farming and the need for extension workers and farmers to be aware of the need for appropriate risk management.

The three aspects that need to be considered in managing financial risk are listed here.

The availability and cost of credit and the repayment schedule.

The farmer's liquidity or ability to generate cash flow.

The farmer's ability to maintain and increase capital.

In the face of this, there are a number of strategies to manage financial risk.

Credit

Many factors influence a farmer's decision to borrow money, including: attitude toward risk; the size and type of farm operation; the farmer's relationship with input suppliers and output purchasers; the willingness of lenders to provide loans at conditions acceptable to the farmer. Increasing the capital available to farmers through lending enables them to expand their farm businesses but this, in turn, obliges them to repay outstanding debts and creates the risk of loan default. Increased debt raises the likelihood that farmers would be unable to meet their financial obligations in a year of low returns. Highly indebted farmers operate in an environment of greater financial risk.

Liquidity

Liquidity is the ability of the farmer to raise cash. *What can a farmer do if an unfavourable event happens? Does the farmer have ready cash or other assets that can be easily converted to cash to cover his or her financial obligations?* Assets tied up in land and machinery are the most difficult to convert to cash, while stored inputs or products are easier to convert. Cash held at home or in a bank provides the best protection.

Savings with high liquidity are most easily converted to cash ...

In the case of non-cash assets, conversion to cash is generally done by selling the asset. High liquidity means that the farmer can fairly easily convert assets to cash without the assets losing much value in the transaction. It is often very useful to maintain high levels of liquidity to provide a financial cushion against the risk of low income or increased debt. However, if all farmers in an area have to sell stored crops at the same time, the price will fall and the liquid assets will be less valuable.

... asssets that are easily converted should be sold first

As a risk management strategy, the farmer should start by selling assets that are most easily converted to cash. Less liquid assets should be sold only if and when additional cash is needed.

Leasing assets

Assets are hired or rented out to another farmer for a specified period and at a specified price. The asset

remains the legal property of the owner. Farmers can lease land, machinery, equipment or livestock. Leasing assets generates additional income and spreads the cost of paying for and maintaining the asset. It also allows farmers to use equipment that might otherwise not be profitable to buy.

Managing the phasing of investments
This refers to decisions made by some farmers about the timing of the purchase of assets. Rather than buying all the necessary equipment at one time, the farmer may spread the purchases out over time – over the year or even over several years. In this way, farmers can limit (or perhaps even avoid) debt and at the same time build equity.

Contingencies
Contingencies are often included in farm enterprise budgets as a way of building risk into the business decisions of the farmer. They are a deliberate overestimation of costs to account for the risk of unexpected increases in the cost of inputs, materials and capital items. Contingencies can generally be used in three ways when drawing up an enterprise budget:

- to cover cost increases;
- to cover costs (often a variety of small items) that have not been specifically identified but which the farmer knows are likely to arise;
- to cover the cost of unexpected items that may have been overlooked in the original estimation.

In each case, the farmer knows from experience that there is a possibility (therefore a risk) that this additional cost will occur. Based on that experience, the farmer can add some cost as a contingency to those costs anticipated over a growing season or year. In practice, in the case of cost increases, a contingency allowance is calculated as a percentage of the specifically identified cost (e.g. labour, ploughing, fertilizer) and is then added to that cost. The other contingency items are often included as a separate cost entry calculated as a

percentage of the total costs. The amount included is usually determined by the experience of the individual farmer. It is not usually just a random amount.

Including a contingency item in a farm budget is a useful planning tool that shows the direct impact of an unfavourable event such as product price decreases, yield failure and cost increases on farm profit. If the calculation shows that the impact of the unfavourable event is too great, the farmer may not want to take the risk and will have to make some other plan for the farm. If the farmer goes ahead as planned, including the contingency and the unfavourable event occurs the farmer is covered. The farmer knows what to expect. If the event does not occur, the farmer enjoys additional gains.

Insurance

Some farmers, usually the "better off" more commercial farmers, can insure their farms against major risks, which have a low chance of occurrence but may have very adverse consequences. Such events include:

- the death of a farmer or a family member;
- sickness and accidents that disable the farmer;
- fires or other hazards that destroy capital items;
- loss of crops by hail, storms and floods.

Crop insurance is a simple risk management strategy ...

... what is covered is clear and the cost is immediately known

The farmer usually pays an insurance company (private or public) to provide protection against the consequences of these major risks. If the unfavourable event occurs, the insurance pays out compensation in terms of the insurance agreement. Crop or weather insurance is a simple risk management strategy. What is covered is clear and the cost is immediately known. However, farmers need to make careful calculations to determine the impact of the cost of the insurance (i.e. the premium) on their net income. It is rare that insurance is offered to smallholder farmers and affordable for them to use.

Summary of issues related to
financial risk management strategies

HOLDING LIQUID ASSETS

The holding of assets that can be used to meet cash demands

Positive factors

- Avoids the cost associated with liquidating capital assets or taking out another loan
- Does not disrupt the asset structure of the farm business

Negative factors

- Smallholder farmers unlikely to have many liquid assets

Financial risk management strategies
(continued ...)

SELLING AND LEASING ASSETS

Selling easily convertible assets for cash and renting assets for extra income and for covering the costs of the asset

Positive factors

- No need for repayment commitments
- Improves the renter's flexibility to respond to market conditions
- Reduces the long-term fixed payment on borrowed capital

Negative factors

- Could limit the short-term borrowing capacity because of the possible reduction in assets, which could be used as collateral to obtain a loan

MANAGING THE PHASING OF INVESTMENTS

Timing set for the purchase of assets

Positive factors

- Maintains management control with the farmer
- Can match the timing of investments with the cash flow situation of the farm resulting in lower repayment commitments
- Improves the farmer's flexibility to respond to market conditions

Negative factors

- Could delay capitalization and result in a lower rate of growth of the farm business

Financial risk management strategies
(continued ...)

CONTINGENCIES

A deliberate overestimation of costs to account for the risk of unexpected increases in the cost of inputs, materials and capital items

Positive factors

- Simple way to internalize risk in farm budgets

Negative factors

- Estimates and forecasts of contingencies may be overstated or understated

INSURANCE

An agreement that is designed to provide protection in the form of compensation against the consequences of significant risks

Positive factors

- Provides reliable level of cash flow
- Can offset harvest failure

Negative factors

- Not applicable to all types of risk
- High cost, not very common among smallholders
- Having insurance may negatively influence farm management decisions and may lead to farmer taking unnecessary risks

INSTITUTIONAL RISK

Institutional risk refers to unpredictable changes in the provision of services, such as the supply of credit and purchased inputs, and information from both formal and non-formal institutions. It also refers to uncertainties concerning government policies that affect farming. There are a number of strategies to manage institutional risk.

Traditional institutions and social arrangements

Close bonds between community members have resulted in mutual assistance and self-help when required

The customs and organization of traditional societies tend to provide the individual family with a measure of security against risk. As part of a survival strategy the close bonds between community members have resulted in mutual assistance and self-help when required. Generally, the more fortunate and able members of the community are obliged to help their kinsmen or neighbours in times of need. This may relieve the situation in cases of sickness, injury or death of an individual member; however, it is less effective in situations where the entire community suffers. For instance, failure of rainfall or an attack of crop pests may affect all community members in the same way.

Producer groups

Producer groups can reduce some of the risks associated with credit mobilization, the provision of inputs and marketing

When farmers have sufficient trust in each other there is scope for them to work together informally as a producer group in order to reduce some of the risks associated with credit mobilization, the purchase of inputs and marketing. Groups for credit and marketing purposes can produce:

- economies of scale in input procurement, loan administration and marketing of produce;
- capital accumulation through savings and credit mobilization;
- timely delivery of services.

The risk reducing function of farmer groups comes from the pooling of capital of individual farmers into a common fund, collecting and disseminating information to its members, and bulk buying and marketing.

Producer groups also serve to provide information to their members on the sources of additional financing, the potential prices of produce sold, the cost of inputs purchased, and the quality of those inputs and final products. Information of this kind shared with their members enables them to better cope with the many risks affecting the farm household system.

The first step in the process of group formation is for farmers to understand the benefits of working together and to show commitment to coordinate their activities.

Cooperatives

Forming and participating in more formal cooperative organizations also provides farmers the opportunity to benefit from volume sales of produce, bulk purchases of inputs and supplies, and the mobilization of credit. Cooperative marketing involves:

- consolidating loads to facilitate bulk buying by traders or bulk transport;
- sharing transport to reduce costs;
- negotiating jointly with buyers;
- purchasing inputs collectively to reduce costs;
- mobilizing savings and credit, with members providing mutual guarantees.

Cooperatives provide members the opportunity to benefit from volume sales.

Credit for individual farmers is more easily accessible through cooperatives and at lower transaction costs. Loan default and the costs of collecting delinquent loans can similarly be reduced when individuals are jointly liable for group loans. However, cooperatives and similar groupings are sometimes the source of risk for farmers, (e.g. when the managers or officers misappropriate the funds).

Summary of issues related to
institutional risk management strategies

TRADITIONAL INSTITUTIONS AND SOCIAL ARRANGEMENTS

Traditional societies provide security against risk through strong community bonds

Positive aspects

- Social obligation to assist the most vulnerable
- Economy of information collection and dissemination

Negative aspects

- Social conflict could result in unsustainability
- Risks suffered by the whole community are not mitigated

PRODUCER GROUPS

Unions between farmers that are built on trust and designed to alleviate the risks associated with credit mobilization, the purchase of inputs and marketing

Positive aspects

- Group enterprises provide confidence for more vulnerable group members
- Economies of scale in service provision
- Organization of farmers improves negotiating power with buyers and traders
- Organization of farmers ensures economy of information collection and dissemination

Negative aspects

- Potential for group conflict and poor sustainability
- Potential for mismanagement

Institutional risk management strategies
(continued ...)

COOPERATIVES

Formal organizations, which provide members with the benefit of volume sales of produce, bulk purchases of inputs and supplies, and the mobilization of credit

Positive aspects

- Economies of scale in bulk purchase of inputs
- Savings in transaction costs for mobilization of capital
- Economies of scale for bulk marketing of produce
- Economy of information collection and dissemination

Negative aspects

- Potential for mismanagement
- Requirement for strong financial management and good communication with members
- Need to employ efficient and well-motivated management
- Need for the cooperative to be properly equipped and have the necessary facilities and equipment to carry out its objectives

HUMAN AND PERSONAL RISK

Human risk refers to the risks to a farm business caused by illness and the personal situation of the farm family. It also covers issues that relate to hired workers.

Human resource management

An aspect of managing risk for larger farmers is good human resource management. This includes:

- selecting casual workers with suitable skills and experience;
- ensuring workers are employed according to the relevant law (including fair pay);
- regular communication;
- ensuring the safety of workers;
- providing adequate supervision and discipline.

Strategies to guard against unexpected changes in availability and productivity of labour

Labour planning

Another aspect of human risk management involves strategies to guard against unexpected changes in the availability and productivity of labour. Careful labour planning, such as using a seasonal labour calendar, ensures that farmers know exactly what and how much labour is needed at various times during the production season.

Labour productivity

To address labour productivity risks larger farmers may replace hand labour with animal power, tractors or motorized implements. Different production programmes including changing farm enterprises and enterprise mixes may also be looked at. Intercropping, improving farm layout, introduction of labour-saving technologies and similar actions can all contribute to a risk management strategy.

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Ploughing by hand – Malawi

Overcoming the risk of poor labour productivity by substituting hand labour with animal power or motorized implements

© FAO/14811/P.Johnson

Ploughing with animal power – Phillipines

© FAO/21725/A.Proto

Ploughing using a tractor – Serbia

Summary of issues related to
human and personal risk management strategies

HUMAN RESOURCE MANAGEMENT

The reduction of human risk by ensuring that workers with suitable skills and experience, are selected and by providing communication, supervision and a safe working environment.

Positive aspects

- Increases labour productivity
- Reduces labour problems

Negative aspects

- May involve additional labour costs
- Requires more managerial time

Human and personal risk management strategies
(continued ...)

LABOUR PLANNING

Strategies that guard against unexpected changes in the availability and productivity of labour

Positive aspects

- Protects against changes in labour availability

Negative aspects

- May involve additional labour costs

RISK MANAGEMENT STRATEGIES: THE NEED FOR COMBINATIONS

All of the strategies described in the previous sections are aimed at generating greater security for the farmer. However, it is for the farmer to decide if the benefits gained outweigh the direct or implied cost of the strategy. Making this decision involves a number of steps:

- Identify the most appropriate strategy.
- Determine the degree to which risk may be reduced (i.e. the benefit).
- Identify the cost of implementing the strategy.
- Weigh up the costs and benefits and decide whether or not to implement the strategy.

The farmer must decide if the benefits gained outweigh the cost of the strategy

It is important to note that some aspects of costs tend to be more important than others in choosing between risk management strategies. Also the various kinds of risk to which a farmer is exposed do not occur in isolation. Over the years a farmer will experience the consequences of many risks. It is therefore necessary to consider all of the risks involved and develop an integrated approach to manage them.

Often a risk management strategy to cover one risk may increase another. Take, for example, a farmer who decides to diversify his crop to cover production risks. The choice of crops could increase marketing risks because, although the new crop is likely to be profitable, there may be a higher risk of price fluctuations.

Farmers should develop a broad range of strategies that take into account the advantages and disadvantages (benefits and costs) of each risk management option individually and in combination.

Key questions that can help a farmer make these decisions:

- *What risks is the farmer facing? What is the likelihood of these unfavourable events occurring? What are the consequences of these risks?*
- *What risk management strategies are available to the farmer?*
- *What effect do the risk management strategies have on the events or consequences faced?*
- *What are the economic benefits and costs of the options?*
- *How do these benefits and costs vary for each of the farm enterprises?*
- *How do the best risk-reducing options fit together? How do they affect one another in terms of costs and benefits and in terms of creating new risks?*

When farmers explore these and similar questions, they will be in a better position to decide on the range of risk management strategies that are most effective for their farm. These strategies should take into account their household and farm goals, their attitude toward risk and their unique family, household and farm situations.

An example of combining
risk management strategies

Farmer Joe has been growing food for family consumption much of his life. At times he has managed to produce surpluses of grain which he sold in the local market. The income from these sales slowly built up allowing him to diversify into a higher value farm enterprise; egg production.

Owing to poor rains last years maize harvest failed and some of his chickens died after contracting Newcastle disease. Farmer Joe was worried about what to do over the next season. He needed to take decisions that would not be risky and threaten the family food security. Farmer Joe decided to seek out drought resistant seed for his maize crop. He also decided to vaccinate his remaining layers **(risk reducing inputs: technologies)**. The farmer was also concerned about the price he was likely to receive from the sale of maize at harvest time. He also enquired about the kind of prices he could get for his eggs in different markets **(market price information)**. He decided to sell some of his maize in the local market **(direct sales)** but negotiated an agreement with a local trader who he knew well **(building trust)** for a fixed price at the next harvest season **(forward pricing)**. He also learned that some farmers had formed a producer group for egg marketing and were supplying local schools in the area. The schools were also paying a fixed price with a written agreement drawn up **(contract pricing)** for the eggs bought. Farmer Joe also discovered that the group provided its members with veterinary services and group members assisted each other at peak times in collecting eggs.

Chapter 3

Assisting farmers in managing risk

THE ROLE OF THE EXTENSION WORKER

Assisting farmers in managing risk

As extension workers you have a vital role to play in assisting farmers in making decisions regarding risk management. To be able to provide advice and support, you will need a sound and practical understanding of the risks that farmers in your area are likely to face and the range of risk management strategies open to them. You will need a good understanding of the sources and types of risk and some of the "good practices" of risk management described in this book.

With these skills you should be able to provide farmers with the information that they will need to better assess the risks that they face and their likely consequences. You should be in the position to help identify the most appropriate risk management options, assess their benefits and costs and the impact of the risk management strategies on the farm business.

In order to develop appropriate strategies you will need to consider them in the context of the farmer's location, the unique goals of the farm family and the range of decision-making options open to them. For this to occur, you will need to have a good understanding of the farmer and his or her surrounding environment.

Preparing to develop risk management strategies

In preparing for an in-depth discussion of risk and risk management options, you should have a clear picture of the farms and farm households in your area, in addition to an understanding of their farming activities and practices. The following is a checklist of useful questions that you may find helpful in doing this.

QUESTIONS ABOUT THE FARM SITUATION

Goal setting

_____ Are the goals set by the farmers reasonable and measurable?

_____ Are they likely to be attained?

_____ Are these goals shared by all members of the farmers' families

Farm records

_____ Do farmers keep records?

_____ If not, why not and how do you convince them of the benefits of doing so?

_____ What kind of record-keeping system is appropriate?

_____ What are the crucial records to keep?

Farm management

_____ What understanding of farm management do farmers have?

_____ What improved methods of farm management can they apply?

_____ Do farmers prepare farm plans?

QUESTIONS ABOUT THE FARM SITUATION
(continued ...)

Understanding financial risks

____ What are the available sources of financing and their terms of repayment and interest charges?

____ How is interest to be calculated?

____ Are farmers clear on the terms and conditions of loans?

Finance

____ Do farmers know how to prepare cash flow analyses?

____ Do farmers have a positive cash flow?

____ What would be the financial risks if the farmer makes changes to the farming system?

____ What would be the risks of taking out a loan?

Family living expenses

____ Are family expenses recorded?

____ What alternative enterprises or employment opportunities are available?

____ Are all living expenses included in the farmers' cash flow projections?

____ Are household cash flow profiles positive?

____ In what months of the year could there be a cash shortfall?

Marketing

____ What is the farmer's understanding of marketing?

____ How can farmers learn about new market opportunities?

____ Is a better understanding of marketing likely to enhance income, reduce risk or both?

Marketing plan

____ Do farmers have a marketing plan?

____ Does the market plan cover the entire year?

____ Are all enterprises included in the plan?

____ Does the income from farmers' sales cover cash flow needs?

____ Have farmers calculated production costs and estimated yield to determine the break-even price?

____ Have contingencies been included in the plan?

Policy issues

____ What policies currently govern, limit or otherwise affect agriculture, particularly in your area?

The roles of extension workers are many and varied ...

© FAO/21411/J.Spaull

Extension worker showing women farmers how to prune olive trees – Jordan

© FAO/15828/J.M.Michaud

Extension worker training farmers in basic IPM techniques – Indonesia

© FAO/22210/E.Eliah

Extension workers teaching crop planting techniques – Tanzania

Extension workers explaining about rice cultivation and seeds – Burkina Faso

Extension worker teaching forestry techniques to a farmer – Bolivia

Extension workers identifying disease in rice plants with a farmer – Mozambique

... they may be found assisting farmers in almost any way

Once you have a good understanding of the situation of your farmers, their farm and their households, you are well placed to begin helping farmers to look at risk issues. Depending on the kind of help you are offering them, the questions on the following pages will assist you in opening the discussions with farmers. There are no fixed answers to these questions. You will need to consider them in the agricultural, marketing, economic and social context of your area. Individual farmers will need to consider any questions you ask in the context of their own particular circumstances.

QUESTIONS IN RISK MANAGEMENT

Risk-reducing inputs and new tecnologies

____ What technologies are most suitable for the farmer's household and production systems?

____ What is the economic benefit from the introduction of the new technology?

____ Is the technology consistent with the farmer's objectives and management capability?

____ Does adoption of the new technology reduce the farmer's risk?

____ Would it be more profitable to manage risk by purchasing risk-reducing inputs or by diversifying production?

____ How will this strategy affect risk in other areas?

Low-risk activities

____ What is the existing combination of enterprises?

____ What are the enterprise margins?

____ What are the risks involved?

____ Is there scope to substitute weaker enterprises for less risky ones?

____ What would be the costs and benefits of making these changes?

____ How will this strategy affect risk in other areas?

QUESTIONS ABOUT RISK MANAGEMENT
(continued ...)

System flexibilty

____ What should be the optimum combination of enterprises?

____ What technologies and practices should be used?

____ What should be the optimum combination of resources?

____ What contingency plans could be applied in the event of risk?

Production diversification

____ What is the farmer's knowledge and management capacity for taking on a new enterprise?

____ Is the farmer seriously committed to the new enterprise?

____ Does the farmer have adequate capital to invest?

____ What additional labour is required?

____ Where are the new markets?

____ What is the change in income as a result of introducing the new enterprise?

____ Will the new enterprise provide effective diversification?

____ How will this strategy affect risk in other areas?

Inputs and food reserves

____ Is it feasible to keep a reserve of inputs and food?

____ Is there a problem of perishability?

____ How long can the items be stored?

____ What are the costs and benefits of storage?

____ Is there likely to be an impact of storage on other aspects of the farm business?

____ What are the likely risks?

Share leases

____ What operations could potentially be shared?

____ What would be the added benefits and costs from doing so?

____ Is there likely to be an impact on other aspects of the farm business?

____ What are the likely risks?

QUESTIONS ABOUT RISK MANAGEMENT
(continued ...)

Custom farming

____ Can the farmer cope with the risks involved?

____ If not, in what ways can the risks be divided between farmers?

____ Would farmers in your village or vicinity be interested in this?

____ What would be the benefit of doing so?

____ What would be the benefits to the other farmer?

____ What type of contract is most suitable?

____ Is there likely to be an impact on other aspects of the farm business?

____ What are the likely risks?

Contract farming

____ Is market price information available?

____ Is it regularly collected and of good quality?

____ What are the costs and benefits in pursuing this strategy?

____ Are the terms of the contract understood?

____ Does the farmer require legal advice?

____ How will this strategy affect risk in other areas?

____ What benefits will a contract provide farmers?

____ What flexibility will the farmer need to give up?

Spreading sales

____ In which months of the year are product sales made?

____ For what products are staggered sales feasible?

____ What is the maximum amount that can be sold for each month?

____ What are the benefits of staggered sales?

____ What are the costs involved?

____ Does this require increased husbandry skills? If so, in what areas?

____ What are the opportunities for processing?

____ What are the implications of processing for the farm family?

____ What are the costs and benefits of processing?

____ Is there likely to be an impact of spreading sales on other aspects of the farm business?

____ What are the likely risks?

QUESTIONS ABOUT RISK MANAGEMENT
(continued ...)

Market information and market risks

____ Should the farmers aim at improving quality and attaining premium prices?

____ Should the farmers store their crop or are their cash flow needs such that they should sell directly after harvest?

____ What are the potential costs and returns associated with alternative strategies?

____ Should the farmers organize themselves into a marketing group?

____ Is there likely to be an impact on other parts of the farm business?

____ What are the implications?

Financial reserves

____ Does the farmer have financial reserves?

____ How large are they?

____ Where are they deposited?

____ What is the cost and benefit of maintaining reserves?

____ What is the cash flow situation of the farmer?

____ What is the debt that the farmer can afford to have?

____ How much credit does the farmer need and on what terms?

____ What is the farmer's debt capacity?

Leasing of assets

_____ What is the cash flow situation of the farmer?

_____ Is there an opportunity for leasing assets?

_____ What is the farmer's attitude about leasing?

_____ What assets can be leased?

_____ What would be the costs and benefits of leasing a particular asset?

_____ What is the new cash flow situation?

_____ Is there an impact of leasing on other aspects of the farm business?

_____ What are the likely risks?

Assets; investments; contingencies

_____ What assets does the farmer have?

_____ What is the cash flow situation of the farmer?

_____ Does the farmer have enough cash or savings available to buy more assets?

_____ Does the farmer need to take out a loan?

_____ Does the farmer know when to replace an asset?

_____ Does the farmer have a clear plan?

_____ Does the farmer know if the investment is profitable?

_____ Does the farmer have the skills to do so?

QUESTIONS ABOUT RISK MANAGEMENT
(continued ...)

Assets; investments; contingencies (continued)

____ Does the farmer understand that buying or leasing of assets should be phased?

____ Does the farmer understand the need to take into account contingencies?

____ What effect will any new investments have on the cash flow?

____ How will the decision affect the other parts of the farm business?

____ What are the likely risks?

Liquidity

____ What alternative income sources are available?

____ What are the farmer's cash requirements for inflow and outflow items? What ways can be found to reduce cash expenses?

____ Does the farmer have cash shortfalls? What size of loan is required to cover the shortfalls?

____ What are the cash flow implications of crop failure or low market prices?

____ Does the farmer have a contingency plan for meeting cash needs after a crop failure or a period of low prices?

____ How will this strategy affect risk in other areas?

Insurance

_____ Is crop or weather insurance available?

_____ What would be the implications of a crop loss on the farmer's debt obligations?

_____ What are the major sources of production risk and what type of insurance coverage is needed to protect against those risks?

_____ What are the costs of the various types of coverage?

_____ How will this strategy affect risk in other areas?

Traditional institutions

_____ What traditional organizations exist within the community?

_____ Who are the leaders? How did they evolve?

_____ How effectively do they function?

_____ What are the weaknesses?

_____ Can traditional institutions be strengthened and made to be more effective?

Producer groups and cooperatives

_____ Are farmers organized in a group?

_____ Is it formal or informal?

_____ What are the functions of the group?

_____ What range of services are provided?

_____ Are members satisfied with services provided?

QUESTIONS ABOUT RISK MANAGEMENT
(continued ...)

Human resource management

____ What skills and competencies are needed?

____ What skills does the farm family have?

____ What skills do the hired farm workers have?

____ What employment/labour laws are in force?

____ What kind of communication do farmers have with their workers?

____ What safety measures are in place?

____ How are workers supervised?

____ How will changes in human resource management affect other parts of farm business?

____ Are there any new risks? What are they?

Labour performance and planning

____ What is the health condition of the family and its hired labour?

____ How productive is family labour?

____ Is hired labour easily available in the area?

____ Is sufficient labour available at peak times?

____ Are there months where labour is unavailable?

____ How productive is hired labour?

____ How can productivity be enhanced?

____ How prevalent is the occurrence of HIV/ AIDS and other diseases in the area?

Labour performance and planning (continued)

____ How do changes in labour productivity and supply affect other aspects of the farm business?

____ Are there any new risks likely to emerge?

____ What are they?

Risk management is itself a risk. You, as extension workers, will appreciate that assessing risk and choosing strategies for managing risk is not certain. Risk management operates with unknown variables, from beginning to end. There is uncertainty about many things such as prices, weather, labour disease and pests. Additionally, the strategies themselves are, at best, only estimates about how to cope with the possible range of risks.

The more experienced the farmer and the extension worker are in assessing and responding to risks in farming, the better they will be at making reasonable risk management decisions. It is important that they both understand that even with a lot of experience, the risk management strategies chosen are no guarantee that the farmer will be fully protected from risk. Risk aversion is, after all, risky.

Further reading

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Notes

The following is a list of the publications included in the FARM MANAGEMENT EXTENSION GUIDE series:

1

MARKET ORIENTED FARMING:
An overview
2013, 90 pp.

2

ECONOMICS for
farm management extension
2008, 90 pp.

3

MANAGING RISK in farming
2008, 107 pp.

4

FARM BUSINESS ANALYSIS
using benchmarking
2010, 142 pp.

5

ENREPRENEURSHIP
in farming
2012, 127 pp.

6

The role of the
FARM MANAGEMENT SPECIALIST
in extension
2013, 127 pp.