

Strategies for Risk Management

Agriculture is constantly changing. Change creates unexplored frontiers of knowledge. The lack of certainty about occurrence of future events creates risk. Risk by definition is the “exposure to the chance of injury or loss.” Profit can be viewed as a return for managing uncertain events that create exposure to losses. Many would contend that without uncertainty and risk, there is no opportunity for profit. Farmers of today and tomorrow need to manage this risk.

Sources of Risk

The first step in developing a risk management plan is to identify the sources of risk that may affect your farm business. Farm managers face a multitude of events that create risks, many resulting from change of one sort or another. During the 1980’s, many farmers have learned firsthand about the problems of risk. Adverse weather, ranging from drought to floods, caused yield reduction in several of the Nation’s major agricultural regions. These

events, combined with fluctuating export demand, resulted in wide swings in commodity prices. Declining land values, along with high interest rates, put many farmers out of business and threatened the survival of many others—especially those with highly leveraged farms.

There are many ways to categorize the sources of risk that farm business face. (See Part II, Chapter 4 for an analysis of risk categories.)

Determine Risk-Bearing Capacity

Once a farm manager has identified the sources of risk, the next step in developing a risk-management plan is to evaluate the capacity and willingness to bear risk.

The primary financial document relating to risk-management capacity is the net worth statement (also known as a balance sheet). The statement lists the farm’s assets and liabilities as of a specific date. The difference between the

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value of assets and debts (or liabilities) is called net worth or equity. This amount shows the degree to which the farm debts could be covered if the farm were liquidated through the sale of its assets.

Consider this example. If a farmer had total assets with a market value of \$350,000 and total liabilities of \$178,000, the equity would be \$172,000. With that level of equity, there would be no immediate danger of foreclosure. However, dividing total liabilities (\$178,000) by total assets (\$350,000) yields the farmer's debt-to-asset percentage, which is just over 50 percent. Looking at the situation this way, it becomes clear that the farmer is highly leveraged, and a caution light should go on. By dividing the farmer's total liabilities by the farm's net worth, the result is the debt-to-equity ratio (also known as financial leverage). This example farm has debt-to-equity ratio just over 1 to 1. This leverage ratio indicates that the lender has just as much at risk as does the farmer.

Since the balance sheet measures how liquid a farmer's business is, it can be a useful tool in determining the ability of the farm business to meet financial obligations in a timely manner should an adverse event arise.

Assessing Risk

The third step in developing a risk-management plan is to determine potential loss exposure for each source of risk that can be managed. For each risky or uncertain event, the farmer must estimate the size or magnitude of the potential dollar loss, as well as the probability or chance of this occurrence. Estimates of the magnitude and probability of a potential loss enables the decisionmaker to evaluate the tradeoffs among risk-management strategies.

Alternative Risk-Management Strategies

For each source of risk that is identified, a risk-management strategy should be employed.

Development and evaluation of risk-management strategies under the chances of alternative net returns should be conducted within a risk/return framework. For example, the use of self-insurance can be compared with the use of risk-transfer mechanisms, which would reduce the level of net returns in good years but provide protection in catastrophic years. An alternative risk-management strategy is to avoid a risky situation. This approach eliminates the opportunity for profit but also the risk of loss.

The following discussion separates production strategies from marketing, but it is important to recognize that these areas are interrelated and that both have financial implications. A wise marketing strategy often starts with an assessment of market demand, as reflected in current and predicted prices.

Production and Financial Strategies

Risk management strategies for production and financial risk include diversification, spatial dispersion, enterprise selection, production management schemes, insurance, resource reserves, control of resource services, flexibility, crop insurance, and consideration of Government programs. It is crucial to base these strategies on adequate knowledge, including farm record data, the farmer's managerial expertise, and outside information sources when necessary.

Diversification. Diversification works only if the profits from two or more enterprises do not have a high positive correlation. Corn and soybeans

are often influenced in the same way by growing conditions. For example, drought will probably reduce yields of both, although the timing of the rainfall or lack thereof can influence them a bit differently because of differences in the definiteness of their respective flowering periods. But by adding winter wheat to a row-crop, corn-soybean farm, the farm becomes more diversified. Such a change may reduce risk because winter wheat yields on midwestern farms are not highly correlated with corn and soybeans yields.

However, diversification has risks, too. Diversifying into another crop or livestock enterprise may require new knowledge and skills and increased capital investment. Also, diversification into volatile enterprises, with wide ranges in earnings, would increase risk.

Control of Resource Services. Alternative methods for controlling resources can also be part of a risk-management plan. For example, farmers who rent land for cash retain all of the yield and price risk on their balance sheets. Share renting is an alternative that allows sharing of this risk with landlords. A written contract, regardless of the rental method, clarifies the responsibilities of both farmer and landlord.

Control of Machinery Services. This is another area that has important ramifications for production and financial risk management. Ownership is one method to obtain absolute control over what machinery services are offered and when. The risk-returns trade-off of owning your own machinery may be that this approach costs much more than custom hire or contracting. Contracting for machinery services may allow farmers to reduce their machinery investment and strengthen their balance sheet by avoiding new machinery debt

or reducing old debt. Machinery requirements (and the risk of yield loss) are also influenced by selection of the cultural practices, for example when farmers choose between conventional tillage and alternative tillage practices such as no-till or ridge-till.

Crop Insurance. Purchase of crop insurance is another risk-management strategy. Crop insurance provides a guaranteed yield per acre. If actual yields are less than the guarantee, crop insurance makes up the difference. The indemnity payment is based on the yield loss multiplied by a preselected commodity price. With the potential decline of federally financed disaster payments, crop insurance may become more important as a risk-management tool.

Flexibility. In evaluating risk-management strategies, the farm manager needs to ask how much of an adverse event—such as low yields, low prices, lawsuits—it would take to exhaust the equity of the business. Common mistakes in developing risk-management strategies are to underestimate the probability of occurrence or the magnitude of loss if the event occurs. The farm manager must consider the costs of doing business and family living expenses in evaluating the impact of adverse events on the farm's equity position.

Resource Reserves. Another measure of a farmer's risk-bearing capacity is liquidity. Are dollars available from current assets to meet debt obligations due in the next 12 months? One measure of liquidity is the current ratio—current assets relative to current liabilities.

An important measure for evaluating a farmer's ability to meet forthcoming cash-flow obligations is the projected cash-flow. There are two major types of risk that often cause difficulty in pro-

jecting cash-flows for the upcoming crop year: downside price risk and downside yield risk.

When developing a projected cash-flow budget, farmers should first consider the component parts of the net cash-flow statement in their risk evaluation. With crops that are included and for growers who choose to participate in Government commodity programs, the revenue per acre for the cash-flow equation is calculated by multiplying deficiency payments per bushel by the program yield, and adding that to revenue generated from the commodity price multiplied by the quantity that was produced. New loans are also a cash inflow item. Cash outflow includes the cash expense of producing the crop, principal and interest payments to service debt, and family living expenses.

Deficiency payments run inverse to commodity price, and yields can vary greatly. There is also some variability in costs and interest rates, but for most farmers input prices and quantities are easier to estimate than price and yield.

Living expenses may be adjusted slightly but it is difficult for most families to reduce their cost of living for long.

Government Programs. Farmers who, because of adverse events, produce low-yielding crops will usually have to borrow. Since many farmers are not in a position to significantly reduce family living costs, principal and interest payments, or production costs, the only sources for balancing the cash-flow equation are Government payments and new loans. In order to limit risk exposure on their cash-flow, farmers may enroll in Government commodity programs, which limit downside price risk.

Nonprogram Crops. Farmers producing crops that do not come under Federal commodity programs do not

have Government protection in the event of poor harvests or low prices. The projected yield is even more important when evaluating risk exposure.

Studies suggest that farmers, on the average, overestimate gross income by 10-20 percent when making cash-flow projections. Farmers tend to remember good years and discount bad ones. Accurate farm records of past production and financial performance are the best sources of information for farmers when projecting next year's cash-flow.

Pricing Strategies

The day the product is delivered does not have to be the day the price is established. Some commodities have several pricing strategies that farmers can use to establish their product prices before delivery. These include forward contracting, hedging using the futures markets, or buying price insurance through "put" options. These are all ways to transfer the risk of price change to someone else. Farmers with a cash-marketing strategy are carrying all of the price risk. Farmers who add a storage strategy lengthen the time in which they can establish price, but they also assume all the risk associated with storage.

Each of these strategies has certain costs, such as loss of flexibility and brokerage fees. But farmers need to determine if they can employ these strategies. Each year is different and may require a different strategy. Farmers should not lock themselves into the same pricing strategy each year. Market conditions change and farm managers must be aware of these changes and adjust their strategies to the changing environment.

Some of the pricing strategies mentioned above can also be used for purchasing inputs. Three examples of

strategies to reduce input price variability are forward purchases with contracts that specify terms including price, use of futures contracts to lock in prices for inputs traded on the exchange, and fixed-interest-rate notes. The risk-returns tradeoff again needs to be evaluated. It is possible that some farmers will be better off to self-insure. Farmers always need to consider the impact of such decisions on their balance sheets and cash-flows.

Some events represent large catastrophic losses that seldom occur; others are smaller loss events that occur more frequently. It is important to gauge how each might influence the farm business. In the end, each farmer must decide if a potential loss is sufficient to employ an explicit risk-management strategy or whether the self-insuring strategy is preferable.

Personal Strategies

In addition to the strategies mentioned above, farmers have some general financial risk-management strategies. Farmers need to maintain credit reserves and adequate liquidity. Also, when borrowing money, farmers need to maintain a high proportion of self-liquidating loans. This means borrowing money with interest rates and repayment terms that allow the debt service obligations to be paid from income generated by the activity for which the money was borrowed.

The final and perhaps most important risk management consideration is protection of the farm family's health. Farmers need to carry health insurance. Farmers handle chemicals and machinery that subject them to injury, so they need to be careful but also have some backup managerial capacity.

Realism in Planning

The total environment influencing agriculture provides no shortage of risk for today's farm business manager. Realism in planning is the key to risk management. Having an adequate set of on-farm records to provide data on past performance is a key ingredient. Only with such data can accurate estimates of risk be made. Farmers need to manage risks that can keep them from achieving their goals.