COVER STORY

Managing multiple risks in a citrus farming operation

By Ariel Singerman and Stephen H. Futch

Uncertainty can be defined as imperfect knowledge, and risk as uncertain consequences, particularly unfavorable consequences. To take a risk then is to expose oneself to a chance of loss, in some cases expecting a gain in return. Many decisions in agriculture involve risk and uncertainty. Risk management is concerned with reducing the possibility of unfavorable outcomes or, at least, lessening their negative effects.

Even though it is clear that the greatest risk Florida citrus growers currently face is posed by HLB (and the stress it puts on trees and their operations), there are many other risks that can and should be managed effectively.

TYPES OF RISK IN AGRICULTURE

Production Risk

One of the main risks that agriculture is subject to is production risk. Unlike a manufacturing firm that will combine a specific collection of inputs and obtain a uniform quantity and quality of output, a farmer can combine the same inputs every year and yet obtain different outcomes each time. In crop production, risk comes from the unpredictable nature of weather, pests, diseases, etc., and their impact on yield.

Market or Price Risk

Another source of risk for growers is market or price risk. Since any individual farmer is typically a price taker, farmers are exposed to the (supply and demand) forces of markets for inputs and outputs. Thus, commodity prices vary each year and even within a season. In addition, prices of farm inputs and outputs are seldom known for certain at the time that a farmer must make decisions about how much of which inputs to use or what and how much of various outputs to produce. Therefore, market risk includes risks derived from cyclical and seasonal price fluctuations of agricultural products, trade restrictions (market access), subsidies and currency exchange rates.

Institutional Risk

Governments and their policies present farmers with another source of risk, which is referred to as institutional risk. There could be far-reaching implications for profitability from a change in the rules that affect farm production. Recently, increased concern regarding food safety is affecting the requirements on how agricultural products are being grown and processed. Violations to these governmental regulations can result in fines and/or lawsuits.

Human or Personal Risk

Farm operators may themselves be a source of risk for the profitability of the operation. A sudden injury, illness or death of the owner or manager may threaten the existence of the operation. Also family disputes or divorce settlements can divert property, financial assets or cash from a farm. Such risks are called human or personal risks.

Financial Risk

The risks involved in borrowing funds to provide some of the capital for the farm operation is called financial risk. The most significant financial risks are unexpected rises in interest rates on the credit, the unanticipated calling-in of a loan by the lender, and the possible lack of availability of loan finance if needed. Borrowing funds also entails paying the interest charge on the debt before the farm owners can take their reward.

RISK-TAKING ATTITUDE

Farmers, like most people, vary greatly in their willingness to take risks. Therefore, the level of risk that a grower should accept is an individual decision. Good risk management does not mean eliminating all risk, rather managing (i.e., limiting) it to a level that the grower is willing to bear.

Most people, growers included, are risk-averse (avoiders). A person that is risk-averse is willing to forgo some expected return in exchange for a reduction in risk. The acceptable level for the trade-off depends on how risk-averse the individual is.

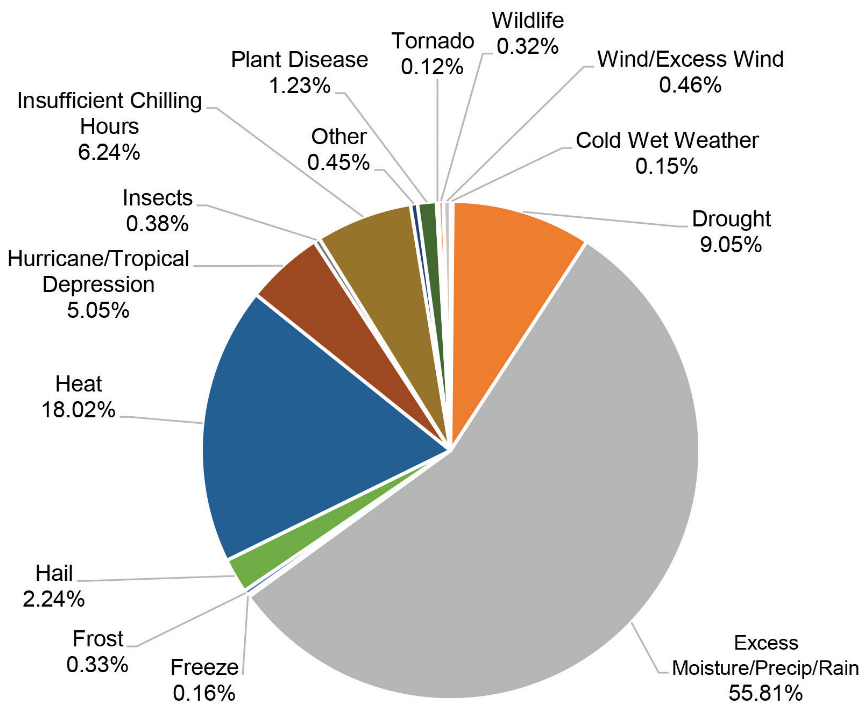

Figure 1. Indemnities (in percentage) by cause of loss for all insured crops in Florida during 2015–16. Source: Risk Management Agency, authors' calculations

TOOLS FOR MANAGING RISK

There are a variety of management tools available to reduce the consequences of risky situations.

Production Risk Tools

1) **Diversification:** Many farms produce more than just one commodity to avoid having their income depend exclusively on the production and price of a single commodity. Thus, diversification reduces income variability, given that the yields of all outputs produced are not low or high at the same time. Some Florida citrus growers have diversified their operations to include early- and late-maturing citrus varieties, blueberries, peaches, row crops or livestock.
2) **Insurance:** There are several types of insurance the grower can purchase to help reduce production risk. By doing so, the grower transfers part of the production risk to an insurance company in exchange for paying a premium. Figure 1 illustrates the indemnities (in percent) by cause of loss for all insured crops in Florida during 2015–16; excess moisture/rain accounted for almost 56 percent of the total. Growers can use several types of insurance against production risks:
   a) **Property insurance** protects the farmer against the loss of buildings and/or machinery due to casualty loss.
   b) **Multiple peril crop insurance** is an insurance program backed by the U.S. Department of Agriculture with policies sold through private insurers. For some crops, production guarantees can be purchased for up to 85 percent of the yield for the insured farm. When yields fall below the guarantee, the grower is paid a stipulated price for each unit of crop loss.
   c) **Revenue insurance** allows growers to purchase a guarantee for a certain level of gross income per acre. If the producer's gross income falls below the guarantee, the insurance company pays the grower the difference as stipulated in the policy.
3) **Share leases** allow for the risk of poor production — low selling prices or high input costs — to be shared between both the tenant and owner. Under a shared lease, the landowner pays part of the operating expenses and receives a portion of the crop instead of a cash rental payment.
4) **Extra capacity** becomes useful when adverse weather conditions delay harvesting. Thus, some growers rely on having excess machinery or labor to help them catch up in those situations. As a consequence, the additional expenses they incur are higher machinery ownership costs and wages.

(Continued on page 20)

(Continued from page 19)

Market Risk Tools

Citrus fruit is typically sold under one of the three following schemes.

1) The fruit may be sold spot to a packinghouse, processor or middleman (also known as bird dog). To avoid selling all of the crop at one time, growers may spread sales to several times during the season to avoid selling at the lowest price.
2) Alternatively, the fruit may be sold (i.e., forwarded) through short-term, long-term or multi-year contracts. In these cases, the grower eliminates price uncertainty because the grower knows the price that will be received for the fruit at harvest. In addition, besides setting a floor price for the farm's output, some of these multi-year contracts may offer the grower part of the rise in price based on a benchmark price.
3) The fruit may be sold under a pool shared with other members, and the returns to the pool are determined after the fruit has been sold. In this case, the price of the growers' fruit is not fixed. This alternative was more widely used in the past, but its use has decreased in recent years.

Financial Risk Tools

1) Fixed interest rates prevent the cost of the loan from increasing when interest rates trend upward. The downside is that they may be higher than variable rates at the time the loan is made.
2) Self-liquidating loans are those that can be repaid from selling the loan's collateral. Personal loans, for example, are not self-liquidating.
3) Liquid reserves refer to holding a reserve of cash or other liquid assets that can be used if needed.
4) Credit reserve, or line of credit, refers to the additional loan funds that can be obtained in case of an unfavorable outcome.

Legal Risk Tools

1) Business organization refers to the legal form the farm adopts for its operation; corporation, limited liability, or cooperative are some of them. Each provides different protection from legal liabilities and damages.
2) Estate planning can provide a smoother transition and result in significant savings in estate and income taxes or lost revenue due to management interruption, in the event of the farm owner's death.
3) Liability insurance protects the farm against lawsuits by third parties for personal injury or property damage occurring on the farm for which the operator or employees may be liable. Liability insurance has two purposes. First, it makes payments on behalf of the farmer to an injured party. Second, it defends the farmer against a third party alleging liability within the scope of the policy's coverage. Even though the risk of a liability claim may be small, the damages awarded may be large.
4) Product liability insurance protects farmers against people who may claim to suffer illness, injury or loss due to the product the farmer sold them. This kind of insurance protects the farmer from being sued if someone says they became ill from consuming their produce. Therefore, if selling fresh fruits, vegetables or other farm products such as meat, cheese or value-added goods, the grower should carry this type of insurance.

Personal Risk Tools

1) Given the unpredictability of health problems and to avoid facing the high cost of medical treatments, managers and farmers should obtain health insurance.
2) Life insurance is to protect the family against losses that might occur as a consequence of the farm owner's death.
3) The sudden death or accident of the farm operator could disrupt the farm operations unless more than one person is informed about the key aspects of the operation. Backup management (key employees, the spouse or other trustworthy person) should be aware of the location of tax, financial and legal records.

CONCLUSION

Florida citrus growers know all too well the risk that HLB has posed to their operation and the industry as a whole in recent years. But there are many other risks a citrus operation is subject to. Growers should carefully weigh the risks and potential rewards of an action prior to making a decision, and whenever possible, use risk-managing tools to lessen the impact of such risks.

Sources: This article draws on material from "Coping with Risk in Agriculture: Applied Decision Analysis" by Hardaker, J.B., G. Lien, J.R. Anderson, R.B.M. Huirne. 2004. CABI, Cambridge, MA, and "Farm Management" by Kay, R.D., W.M. Edwards and P.A. Duffy. 2012. McGraw Hill, New York, NY.

Ariel Singerman is an assistant professor and Stephen H. Futch is a multi-county Extension agent, both at the Citrus Research and Education Center in Lake Alfred.