

How Do Farmers Manage Risk When It Comes in So Many Forms?



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It's often said that farming is a risky business, and farmers would likely argue that this is a gross understatement. While the risks caused by Mother Nature make the most news, there are many other risks involved that farmers must prepare to manage.

In 2011, farmers saw a string of major natural disasters, including early freezes, record floods, droughts, wildfires and hurricanes. Then, 2012 dealt farmers the worst drought in decades, with a majority of the continental U.S. experiencing some level of drought during most of the growing season. And the drought continues in 2013, with more than 60 percent of the continental United States remaining in some degree of drought.

The economic nature of farming, which consists of many people producing one common product with limited buyers, is itself susceptible to risk, since individual producers have very little, if any, influence over the prices they receive for their final products or what they pay for their production inputs. When you add this inability to influence a price to the volatility of the world market—where the price of a commodity changes by the minute—it's easy to understand why farmers are always thinking of ways to manage their risk.

There are also the financial constraints of farming, which is very capital intensive. These constraints are so great that it's becoming increasingly difficult for younger farmers to enter the business without an endowment of working capital from a financial backer, usually a bank.

Thankfully, there are a number of tools available, and widely used, to manage the economic, structural and environmental risks of farming and ranching. While crop insurance is the most ubiquitous risk management tool used by farmers—86 percent of total planted acres in 2012

were insured—there are other tools that many farmers use as well. This article will provide a broad overview of these tools, examining where they are useful, the risks they can and cannot mitigate, and will assess their limits and overall value to farmers.

Agricultural Practices

1. Crop Rotation. Crop rotation is the practice of growing different types of crops on the same field in different years or growing seasons. One of the most common crop rotations in the U.S. is interchanging corn with soybeans.

Advantages: Crop rotation confers various benefits to the soil, as well as replenishing nitrogen, mitigating the buildup of pathogens and improving soil structure.

Disadvantages: Crop rotation does not fully mitigate weather-related risks.

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2. Crop Diversification. Crop diversification is a strategy whereby farmers diversify geographically, or by crops, or both.

Advantages: Crop and location diversification can hedge against localized weather-related crop losses. Growing multiple crops may help reduce income variability by providing different sources of revenue.

Disadvantages: Farming on several tracts of land that are diverse geographically and growing multiple crops can be very capital intensive and reduce economies of scale, thereby raising production costs.

3. Seed Varieties. Hybrid seed varieties have been developed that produce plants that are tolerant to different kinds of stresses.

Advantages: The use of hybrids can mitigate certain weather risks, like drought, repel pests or produce plants that have tolerance to pesticides

and the presence of salt or other compounds in the soil.

Disadvantages: Hybrids tend to be more expensive than regular varieties, and if unnecessary, their use is not cost effective.

4. Irrigation. Irrigation is the practice of bringing water to plants using various methods, including flooding the fields, overhead, pivot-irrigation and drip irrigation.

Advantages: Irrigation can be used to increase yields.

Disadvantages: Irrigation is not always enough to combat a severe drought, and can be very costly due to the cost of pumping and distributing water. Irrigation does little to address other weather anomalies, like hurricanes or hail storms. It can also make a crop more expensive to produce.

5. No-Till Planting. No-till planting is a way of planting crops without breaking the soil through tillage. This practice increases the amount of organic matter and water maintained in the soil while decreasing overall erosion.

Advantages: No-till planting helps the soil retain its moisture content and structure, thus improving the productivity of the soil. It also reduces costs and allows a farmer to farm more acres than under conventional tillage. Precision agriculture often makes no till even more efficient.

Disadvantages: No-till planting can offer some benefit in drought, but does little to address other weather or market-related risks. When a farmer uses no-till, there will be an increased dependence on herbicides. Additionally, organic matter is not fully incorporated back into the soil.

6. Timing of Planting and Harvesting. Farmers must hit the window for the best time to plant to maximize the potential of their crop. The same is true for the harvest. For example, harvesting during a dry spell reduces the costs of drying the grain before storage.

Advantages: Precision timing can optimize yield, reduce the cost of production and harvest and maximize a farmer's bottom line. Correct timing can help a farmer beat the market and lead to price premiums for early harvest.

Disadvantages: This tool is subject to the whims of Mother Nature and offers very limited if any leverage against volatile price swings.

7. Pest management. Farmers and ranchers can use various herbicides to reduce competition from weeds and use insecticides and fungicides to combat unwanted insects and disease in farming operations. They may also employ scouting to detect pests to best time their applications.

Advantages: Insecticides and fungicides can greatly control pests and enhance productivity.

Disadvantages: Pesticides can be "very expensive" and may need to be repeated many times during a given growing season or time period.

8. Use of advisors. Agriculture extension agents or professional crop advisors are present in most states to advise farmers and ranchers on a wide variety of topics, such as marketing, nutrient use or pest management. Usually, this advice is "free" or requires a "small" charge.

Advantages: Advisors offer on-site, practical, professional advice to farmers on issues ranging from financing and planning to production and marketing.

Disadvantages: Private sector, certified crop advisors are paid consultants and thus affect a farmer or rancher's bottom line.

Marketing Instruments

9. Product differentiation. Product differentiation is the process whereby farmers or ranchers manipulate the quality, characteristics or inputs involved in the production of their product in hopes of attaining a premium from the consumer. Examples of this in ranching would be "humane raised" or "free range." Examples in farming would be "organic," "certified natural" or use of specific varieties that improve processing performance (high oil, high fermentable starch, etc.).

Advantages: Product differentiation helps insulate a product from some market fluctuations and helps build a clientele for a specific product or producer.

Disadvantages: This tool does not address losses caused by weather, rising inputs costs or long-term market prices.

10. On-Farm Storage. For storable crops, farmers can invest in on-farm facilities to store their production allowing sales to be prolonged until prices improve.

Advantages: On-farm storage offers farmers some buffer from severe price fluctuations.



Disadvantages: On-farm storage is capital intensive and does little to mitigate against risk from natural disasters before the crop is harvested.

Financial Instruments

11. Crop insurance. Crop insurance is a private insurance policy, purchased by a farmer or a rancher—partially underwritten by the federal government—that insures crops or livestock against price volatility and/or weather losses.

Advantages: Crop insurance is available for 128 different crops and can be modified to address each farmer's specific risks, specific crops grown, and overall tolerance to risk. Crop insurance policies can protect farmers from both market swings and natural disasters.

Disadvantages: Crop insurance can be costly to farmers and farmers must suffer a verifiable loss and meet a deductible to collect an indemnity.

12. Marketing Contracts. Marketing contracts include the various types of contracts between producers of commodities and buyers that lock in prices in advance, including forward contracts. The product is owned and controlled by the producer during the production process. Similar

marketing contracts may also be used by producers to acquire production inputs and reduce input price risk.

Advantages: A producer can use a contract to lock in a price (or a basis) in advance, protecting against large drops in market prices.

Disadvantages: When a producer locks in a price in advance, it helps hedge against loss but may prevent gains should prices rise later. Additionally, if the crop is lost due to a natural disaster, the producer will have to fulfill the contract by purchasing the crop from another farm—at that day's price—or by paying the contract cancellation penalty in cash.

13. Options and futures contracts. Both options and futures contracts are specific types of marketing contracts—that protect against price risk only—between the producer and a specific buyer at a price on a given date. The basic difference between the two is that options give the holder of the contract the right to buy or sell the asset during a given time period, while the holder of a futures contract is obligated to take delivery or deliver the asset by the end of a given time period under the terms of the contract.

Advantages: These contracts remove some of the market risk by locking in a price.

Disadvantages: These contracts do not protect against yield risk. As such, they can leave a producer indebted to the contract holder if the crop is lost. These contracts cover fixed quantities and involve costs, including fees and margin requirements.

14. Production contracts. A production contract is a legally binding agreement made between two parties, generally a producer and a contractor, where the producer transfers ownership or control of the product to the contractor. For example, the producer may agree to sell the output prior to production or agree to produce the output that is owned by the contractor in exchange for a payment. The agreement is for a fixed period of time—either one crop year or several production cycles—and begins prior to production.

Advantages: The contract holder has a guaranteed product at a guaranteed price.

Disadvantages: The production contract guarantees the market for the farmer, but this assured market may come with a lower price and if the farmer fails to perform or suffers a loss and cannot fulfill the contract, the farmer may be forced to settle the contract in some way.

Financial Strategies

15. Share rent and variable cash leasing arrangements. Rather than own farmland, a producer may rent farmland under various rental arrangements. For example, land may be rented just for cash or rented under a flexible-cash arrangement where the landlord may pay some expenses or bear some risk. Or farmland may be rented under a share rent arrangement where the landlord receives a share of production as rent.

Advantages: Renting allows a farmer to avoid land ownership costs and may facilitate adding or decreasing planted acres. Some cash rents provide some protection against loss or price fluctuation. Farmers who share rent land shift some of the production and marketing risk to the landlord.

Disadvantages: While rental agreements can provide some protection against a steep rental or leasing payment should the crop fail, the agreement is partial protection, does not cover any other input costs and may not permit the producer to reap the full benefit of any price increases.

16. Maintaining cash reserves and liquidity. Holding cash or near-cash allows farmers to weather adverse events. Essentially this tool is self-insurance.

Advantages: Quick liquidity or ample cash reserves can shoulder losses, regardless of how they are caused.

Disadvantages: Many farmers lack large cash reserves or can easily liquidate capital.

Conclusion

Most farmers use many of the above strategies to protect against the many risks they face

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during any typical year. The question for the farmer is one of profitability: How many risk mitigation strategies can be employed while maintaining the profitable margins needed to keep the farm running?

Also, most of the strategies above only mitigate fairly specific threats, and not the whole gamut of risks faced by farmers. Crop insurance is the only tool available that helps farmers mitigate both natural disasters and market fluctuations, which is why it's a complimentary risk management tool to all of the above strategies.

This year, nearly 282 million acres (over 86 percent of total acres planted to crops) will be protected by crop insurance, which, along with some of these other strategies listed above, will help farmers and ranchers manage their risks. That statement alone underscores the fact that crop insurance has become the preferred risk management tool for America's farmers, and underpins the stability of the nation's food supply.

This piece greatly benefitted from comments by Keith Collins, Ph.D., Mechel Paggi, Ph.D., Joe Outlaw, Ph.D., Art Barnaby, Ph.D., and Gary Donald Schmitke, Ph.D.