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Introduction to Managing Risk on Specialty and Organic Crop and Livestock Operations

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Introduction

Producers include specialty and organic crops and specialty livestock in their farm's enterprises for many reasons. Nevertheless, over the longer term, specialty and organic crop and livestock enterprises have to be managed in ways that ensure the farm remains profitable. On many farms specialty and organic enterprises are included because they allow the farm's human resources to be used more effectively. A specialty livestock operation (for example, producing cheese from goat's milk) may be introduced because a family member (child, spouse) has particular skills and interests in the enterprise and the time to manage the operation. The enterprise itself may have the added benefit of serving as a financial risk management tool because revenues from the operation are relatively stable. Increasingly, many farms are choosing to focus substantial amounts of their available resources, or even the whole farm or ranch, to specialty and organic crop and livestock enterprises.

Several factors have led to these developments. First, and foremost, because of higher incomes, perceived health concerns (for example, increased interest in farm-to-table traceabilty of food products and locally produced foods), and a shift to interest in more diversified diets among US consumers, market demand for specialty and organically produced foods has increased. Second, in response to increased consumer demand, on the farm and beyond the farm gate production and distribution systems have emerged or are emerging that enable farmers and the food distribution system to deliver those products to consumers more effectively and efficiently. These include both local markets (for example, farmers' markets and road side stands) as well as major integrated processing and distribution entities (for example, Whole Foods). Nevertheless, specialty and organic product farm enterprises typically face all of the risks associated with any agricultural enterprise and some additional potential sources of risk that are specific to those enterprises.

Here we examine the risks associated with specialty and organic farm enterprises and discuss in general terms the various private and federally supported risk management products and programs that can be used to address them. Specific federal risk management initiatives such as agricultural insurance, managed by the USDA Risk Management Agency (RMA), and other programs managed by the USDA Farm Service Agency (FSA) such as the Non-insured Crop Disaster Assistance Program (NAP) and disaster aid programs for livestock are discussed in two complementary Agricultural Marketing Policy Center policy issues papers: *Risk Management for Specialty Crop And Specialty Livestock Operations through Farm Service Agency Programs* and *Risk Management Agency Products* and *Risk Management for Wyoming Crops, and Livestock Produced Under Organic Practices Through The Use Of Risk Management Agency Products And Farm Service Agency Programs.*

Types of Risks

All farm crop and livestock enterprises involve three types of risk: production risks, price risks, and revenue risks. Crop and animal forage production is affected by weather, pests, plant diseases, invasive species, competing vegetation (weeds, etc.), and, especially in semi-arid production environments, range fires. Farms use many "in the field" strategies to mitigate the effects of these potential sources of production loss, including the use of chemical herbicides to control weeds (for example leafy spurge) and invasive species such as volunteer grain and chemical pesticides to control for insect and other infestations. Some standard chemically based pest and weed control techniques cannot be used by organic producers, or used only under very strict guidelines (as discussed in AMPC Policy Issues Paper 51). However, integrated pest management tools that rely on biological and other non-chemical controls are available to organic crop and livestock forage producers.

Farmers and ranchers face two forms of price risk. Market prices for their crops are unknown at the time they plant them; similarly, market prices for their livestock and livestock products such as feeder cattle are also unpredictable and volatile. Prices for many key inputs - fertilizers, energy (oil, gasoline, electricity), hired labor, etc. - can also vary in unpredictable and challenging ways. For example, since 2005 anhydrous

ammonia and urea fertilizer prices have ranged from about $400 a ton to over $800 a ton.[1] Both forms of price risk require risk management strategies as both affect the financial performance of a farm enterprise and the long run profitability of the farm's operations.

Production volatility and price volatility for crops and livestock are the major causes of year-to-year variability in farm and ranch gross revenues (changes in government programs, which provide an estimated three to four percent of total cash income for the US agricultural sector, can also result in gross income volatility). A major goal for many producers is to use risk management products to reduce farm revenue risk by reducing the volatility of their total revenues from all enterprises while maintaining the highest possible average gross revenues, net of investments in risk management tools. Using risk management products typically requires out-of-pocket outlays and so farm and ranch managers have to compare the costs incurred in reducing price, yield and revenue volatility with the benefits they obtain in terms of lower year-to-year variability in their total cash receipts.

Financial risk derives from volatility in gross revenues and production costs that cause volatility in net farm revenues and, in some years, negative net farm income (the difference between total revenues and variable costs of production). Unexpectedly low or negative net farm incomes raise concerns about a farm's ability to service any debt (either operating loan debt, debt associated with farm machinery and equipment, or mortgage debt associated with land and/or farm buildings). In the limit, the concern is that a financial problem becomes sufficiently severe to lead farm failure either through bankruptcy or foreclosure by a lending institution. Reductions in crop and livestock product prices and unexpected shortfalls in crop yields are therefore sources of financial risk In addition, similar financial problems can arise from unexpected increases in the prices of major inputs or the incidence of pest infestations, weed infestations, animal disease and other events that require unexpected or atypically large expenditures on pest and weed controls or veterinary services to assure adequate production and to maintain livestock herds. These types of risk confront all farm operations.

Two additional types of risk may also be of concern for producers of specialty and organic crops and livestock. The first is contract risk. Crops like corn and wheat are typically sold to country elevators owned and operated by major corporations and, for the most part, there are several buyers to whom farmers can sell their crops. Similarly, for livestock such as beef cattle and milk from dairy cows, most buyers (major feed lots; dairy cooperatives, etc.) are well established and well-funded. Entering into a forward contract in that context is unlikely to lead to failure to perform on the part of the buyer in terms of contract price and other contract terms. Moreover, quality is typically readily measured through grades and standards usually established by federal statutes. So disputes over quality are less likely to occur. Further, farmers and ranchers have access to well-functioning futures and options markets for such commodities and price discovery is relatively transparent. This may not be the case for many specialty crops. Buyers may not be well-established, quality may not be readily determined using objective measurement criteria such as grades and standards, and price discovery may be extremely difficult. Thus producers with specialty and organic products may face a substantial risk with respect to contract default on the part of buyers.

Legal risk is the second type of risk that may be of more concern for some specialty and organic crop and livestock producers. The issue concerns food safety and quality standards. Where crops and livestock products are marketed directly to the consumer through road-side stands, farmers markets, and other marketing environments, the farm or ranch will be clearly liable if consumers suffer from food borne illness deriving from mishandling or production and processing problems at the farm level (for example, botulism or salmonella resulting from errors in processing or storing farm

[1] Detailed information on fertilizer prices is reported Agricultural Marketing Policy Center Briefing Paper #110, *Fertilizer Prices from the 1960s to 2014: A Brief Overview*, by Monique Dutkowsky, Gary W. Brester, and Vincent H. Smith, available at www.ampc.montana.edu/documents/briefings/breifing110.pdf.

produce). Similar concerns exist with respect to marketing local produce through distribution outlets such as food coops that specialize in meeting consumer demands for local foods and, therefore directly serve as outlets for local farms producing specialty and organic products. To mitigate such risks, on a per unit of output basis, farms and ranches may have to spend considerably more on quality controls than if their produce is marketed through conventional channels.

An additional type of risk for organic producers concerns organic certification. It is costly to establish, although government programs do exist to help farmers and ranchers manage the three year transition period involved in obtaining organic certification for a crop or livestock enterprise (see Agricultural Marketing Policy Center Issues Paper #52 for more details on organic certification processes). However, producers must ensure that the production processes required for organic certification are maintained. Certification can be adversely affected by volunteer seeds, failure of various barriers to prevent accidental flow of chemicals into organic fields, etc. Loss of organic certification can impose significant costs on a producer and is a substantive risk that requires careful management and the expenditure of resources by organic producers.

Managing Alternative Sources of Risk for Specialty and Organic Crop Producers

Identifying a source of risk is the first, and in some ways most important step towards managing that risk. The next steps involve developing strategies to manage that risk. Here we examine ways of managing each of the major types of risk discussed above: output risk, price risk, revenue risk, contract risk, etc.

Output Price Risk Management

Output price risk is a major concern for most crop and livestock operators but can be managed in several ways when futures and options markets exist for the commodities they produce. Most crop and livestock producers are concerned about "downside" price risk; that is, they are concerned that prices at harvest and/or post-harvest time, when they want to market their crops, or at the time they want to market their livestock, will be lower than they anticipate when they planted their crop or, in the case of livestock, when cattle or hogs are born or purchased.

Downside price risk can be managed with a futures contract through which the grower (or livestock producer) can lock in a price for their commodity. There may be a genuine production risk issue with delivery on the contract if the market price at harvest time exceeds the futures contract price and, for whatever reason, the producer has insufficient commodity or commodity of insufficient quality to meet the contract delivery specifications. The standard recommendation has therefore long been as follows: only use futures markets to protect against lower prices (to hedge) for a portion of the crop you expect to obtain. In that way you protect yourself against output risks that could lead to failure to have adequate resources to cover futures contract obligations. Similar concerns exist with forward contracts that do not have Act of God clauses (clauses that excuse delivery if crop yields are poor because of weather and other "Act of God" events) and specify the exact amount of the commodity that must be delivered in the forward contract.

However, downside price risk can also be addressed through a put option for a commodity. Under a put option, the producer obtains the option to sell a specified amount of a commodity at the specified price on a specified future date. To obtain the put option the producer has to buy it and, on a per unit basis, the price of the option is typically very close to the difference between the price of the commodity in the option and the expected price of the commodity at the time the option expires (typically the price per unit in the futures contract on the day the option is purchased by the producer that has the same delivery date as the option termination date). As the contract is for an option, the farmer does not have to exercise the option. If the price of the commodity has gone up over the period between when the producer purchased it and the harvest time expiration date all a farmer loses in letting the option expire is the price he paid for the option. So there is no production related risk of failing to deliver on the contract. But, as previously noted, farmers do incur a cost in buying the option (which also includes brokerage fees). If the commodity's price goes down below the price specified in the option, then the option

becomes valuable and assures the producer the option price, net of brokerage fees.

Neither futures contracts nor options contracts are directly available for many organic products such as organic wheat or organic livestock. However, the prices of organic commodities such as organic corn or wheat in spot markets may be closely linked to the prices of their non-organic counterparts. The use of futures and/or options contracts for those non-organic counterparts may therefore provide risk management through what are effectively cross hedging strategies. The same may hold true for specialty crops or livestock such as niche market grains. However, developing effective and reliable cross-hedging strategies for those commodities may be challenging because of limited information available on prices for the specialty crop or livestock and the extent to which those prices are related to the prices of commodities for which futures and/or options contracts are available.

Another price risk management option for many specialty and organic products is simply storage. When a commodity can be stored in a relatively inexpensive or very inexpensive way, storing the commodity and waiting to market the commodity until prices are relatively attractive may be an optimal approach. However, storage is not a feasible price risk management tool for many specialty and organic products (for example, fruits and vegetables with very short shelf lives) and does involve costs. In addition, prices can fall as well as increase over time; so in and of itself storage also involves price risks. Finally, for some livestock, the USDA RMA provides price insurance products.

Contracting as a Price Risk Management Tool

Forward contracting for delivery at a pre-specified price is one price risk management tool that is often sought by specialty and organic commodity producers. Such contracts, however, may involve both production risk (as discussed above) and contract failure risk. The latter is the risk that the buyer will renege on the contract or attempt to renegotiate contract delivery terms at the time the product is scheduled for delivery. Producers of specialty and organic crops should therefore carefully assess the financial condition and reputation of any buyers with whom they enter into forward contracts to minimize the risk of contract default on the part of that buyer. The same sets of concerns apply when specialty and organic producers use small scale, niche market distribution outlets for their produce such as local coops or specialty food stores. Care should be taken to ensure the buyers have adequate resources to pay for the produce they receive and market.

Managing Input Price and Input Availability Risk

The prices of important inputs can also be volatile. Energy prices move up and down as the price of oil moves up and down, as do nitrogen fertilizer prices (as the major input into nitrogen fertilizer production is natural gas). One approach to handling input price risk is to have adequate storage for inputs and to purchase those inputs in bulk quantities in periods when prices are relatively low. This strategy comes at a cost. First, financial resources are tied up in assets that provide no direct financial return. Second, it is not always possible to identify the period in which prices will be atypically low and, moreover, any purchase of inputs prior to when they are needed involves the risk that the prices of those inputs may fall even further between the date of purchase and date of use. Often, having the input available when it is needed is as important as the price at which it is purchased. For example, if seed is not available when planting conditions are optimal, or harvesting equipment or labor is not available when the crop needs to be harvested, then yields can be adversely affected. Hence, storage of inputs and investments in harvesting capacity resources are often important input risk management strategies in relation to ensuring access to them when they are most needed.

Managing Output Risk

Crop and livestock production is subject to output risks associated with plant and animal diseases, pest infestations and, especially, weather, which by itself accounts for about 90 percent of the observed variation in crop yields and has adverse effects on livestock production. Weather effects on livestock operations include impacts on the availability and price of forage and direct impacts on animal health and feed conversion rates. In addition to managing output volatility through the use of inputs to control plant disease, animal disease, pest infestations and weed infestations, most crop producers have access to

federally subsidized agricultural insurance products managed by the USDA Risk Management Agency (RMA). Many of these products are specifically designed for specialty and organic crops (for example, grapes and almonds in California, oranges in Florida and Texas, cranberries and blueberries in Maine, etc.) and either offer farmers with coverage for losses when their own yields fall sufficiently below expected levels, or yields for the crop in their county are unexpectedly low. When RMA managed insurance products are not available for a specialty crop, producers may be able to obtain some protection through the NAP program managed by the USDA Farm Service Agency (FSA) or by requesting a Written Agreement insurance contract from RMA (a tool that is rarely used). As discussed above, FSA also manages four livestock disaster aid programs that address livestock forage losses and livestock mortality losses. Details of these USDA RMA and FSA risk management tools and their relevance for specialty and organic commodity risk management are provided in AMPC Policy Issues Papers 50 and 51.

Managing Revenue Risk

Revenues from individual farm enterprises such as the production of a single specialty or organic crop can be volatile as a result of both price and production risks. Those risks can be mitigated, although not completely eradicated, by a farm manager through production related strategies, the use of futures, options and forward contracts, other marketing strategies, and participation in crop or livestock specific federal crop insurance and disaster aid programs. However, a farm manager is likely to be more concerned about the volatility aggregate revenues from all sources of farm household income, including on-farm and off-farm enterprises, than about the revenue from a single crop or livestock enterprise.

Farms and ranches typically have multiple enterprises – a mixture of multiple specialty crops, or a specialty crops and commodity program crops like wheat and corn or cotton, or crops and livestock enterprises. The objective is to have a mix of enterprises whose revenues and returns are relatively “uncorrelated” and, therefore, stabilize the flow of farm incomes from one year to the next: ‘uncorrelated” means that when revenues from one enterprise decline, revenues from another enterprise or enterprises do not decline, or increase, or decline less sharply.

A major enterprise that provides stability to overall farm household incomes is off-farm employment for a spouse, other relative, or the operators themselves (according to the 2012 USDA Agricultural Census, over 90% of farm households have some off farm employment income). Off farm employment may consists of driving a school bus, being a nurse, physician, school teacher or county agent, a computer programmer, or many other activities, and is a core element of many farm financial and risk management plans.

Managing Farm Financial Risk

Substantial fluctuations in gross farm revenues and net farm incomes create challenges for many farm households in funding household consumer and related purchases (off farm food purchases, utilities, college tuition fees, etc.) and meeting interest and principal payments on debt. Failure to make debt and interest payments out of net farm income on a one time basis is not necessarily a major issue if, strategically, the farm is organized to cope with such events. To avoid defaults on debt related interest or principal payments, a farm several strategies. As discussed above, one is to have off-farm income that can be used for such purposes. Another is to maintain a relatively a low debt to asset ratio (the current average debt-to-asset ratio for all US farms is about 12% according to USDA), which ensures that through additional borrowing against land and other fixed assets, or the use of liquid assets (for example, cash held in checking accounts or bods that can be sold fairly rapidly) debt related obligations can be met. When the operation is fundamentally financially sound, many lenders will also work with a farm to restructure interest and principal payments. However, the evidence suggests that most farms manage financial risk by working to ensure that their farm businesses are not highly leveraged (they work to avoid high debt-to-asset and other undesirable financial ratio values).

Summary

Wyoming and other farmers and ranchers in the Northern Great Plains are increasingly interested in economic opportunities associated with specialty and organic crop and livestock production. As a result they are also increasingly interested in understanding the risks associated with those enterprises and the tools that are available for managing those risks. Many of the risks associated with specialty and organic crop production – output price volatility, input price volatility, production variability, and the resulting year-to-year variability in revenues and costs – are common to all farm and ranch enterprises. However, as discussed in this analysis, some of the private sector tools for managing such risks (such as futures and options contracts) are not available or directly applicable for all specialty and organic crops and livestock. Contracting for output price is an option, but has its own risks, especially with respect to delivery requirements and concerns about buyer defaults. In addition, organic producers also face risks associated with maintaining or losing their organic certification and have to manage those risks. As described in general terms here, through the programs of the Farm Service Agency (for example, NAP and disaster aid programs) and the Risk Management Agency (for example, a range of agricultural insurance programs), USDA provides specialty and organic crop and livestock producers with several important risk management products and programs. These programs, as they apply to specialty and organic crop and livestock production, are described in much more detail in Montana State University Agricultural Marketing Policy Center Policy Issues Papers 51 and 52.