

BARNYARDS & BACKYARDS



UW EXTENSION | AGRICULTURE & HORTICULTURE | USDA | RISK MANAGEMENT AGENCY

RightRisk.org resources help evaluate risk strategies

Risk (and uncertainty) is around every corner in commercial agriculture, whether the business includes crops or livestock.

The industry depends on numerous variables outside of most managers' control for a profitable outcome. Weather and natural disasters, unstable markets and prices, human resources, and other uncertainties all contribute to the risky nature of the business.

Agricultural enterprise managers have two basic choices when dealing with risk: ignore it and deal with the consequences or choose to manage it. Think of risk management as creating strategies to increase the likelihood of positive outcomes and reduce the consequences of negative outcomes.

Evaluating Risk Strategies (ERS) is an online course by academic professionals at RightRisk.org to help producers learn how to identify and properly manage risk. Remembering that the only thing certain in life is uncertainty is important. Risk is always present. The more we plan for uncertainty, the better our chances for positive outcomes.

The course outlines five main sources of risk in agricultural operations: marketing, production, financial, institutional, and human resource. **Marketing** (price) risk refers to the inherent uncertainty of prices for inputs (such as seed and fertilizer) and outputs (crops or livestock). **Production** risk includes all uncontrollable variables in the production process. **Financial** risks are the results of borrowing outside capital. **Institutional** risks come from government (rules, regulations, and other policies), and affect profitability. Finally, **human** risk comes from the

human element involved in a business (such as employees).

Estimating risk

A broad range of strategies for identifying risk is outlined. Generally, estimating risk is projecting the probability of an event or circumstance and its potential impact. For example, a dry land wheat farm might expect 20 bushel/acre yields with less than average rainfall, 35 bushel/acre with average rainfall, and 50 bushel/acre with above average rainfall.

The ERS course suggests carrying this approach further by using statistics to estimate possible outcomes and their associated probabilities. These estimates offer the most accurate description of the risk involved. For the wheat farm example, this would mean assigning probabilities, like 50 percent for the average rainfall, to each expected outcome.

Risk management process

Risk management planning should be thought of as circular. ERS outlines risk management as a three-step process. The first step establishes the context, both internal and external, along with objectives or risk criteria. The second step involves risk assessment, including risk identification and analysis. The last step covers implementation.

Following this process allows for evaluation and review of everything involved, from identifying risks to the strategies to address them.

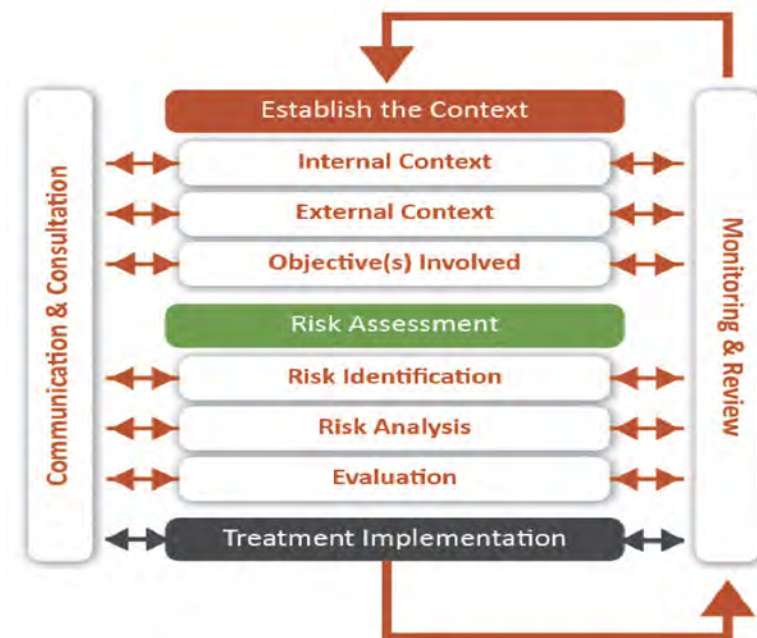
Strategies for risk management

Setting a concise set of goals and objectives is the first step in creating risk management strategies. Goals show the direction of the business and should help begin identifying the resources needed to achieve them. Subsequent risk management planning should outline specific steps and the timeline for reaching the objectives.

The course offers four generalized risk management strategies typical to agriculture: avoiding risk, transferring it, controlling risk, and accepting risk. **Avoiding** risk typically involves not pursuing a strategy viewed as unacceptable, such as avoiding a certain crop. This strategy can limit income potential and must be weighed against the potential benefits.

Transferring involves shifting the risk to a third party for a premium or fee. For most producers, this means insurance or contracting, with the benefit being lowering the potential downside risk in exchange for a premium (or contract) cost.

Controlling risk involves taking action that makes either negative consequences less likely or reducing the consequences if they occur. This



could mean performing regular maintenance on a machine to prevent catastrophic failure.

Remember that the goal should be to manage risk to an acceptable level, not minimize risk. An example would be to pursue strategies that improve expected returns rather than reduce variation in outcomes (such as diversification or increasing cash reserves). **Accepting** the risk is the last option and is sometimes referred to as self-insuring.

Evaluating Strategies

Evaluating risk management strategies and decisions is extremely important to properly gauge their effectiveness and ensure they align with the goals of the organization.

The ERS course discusses how to recognize strategic decisions – a choice that guides future direction. Strategic decisions tend to be longer term and larger in scope than other management decisions. Various aspects of decisions are discussed, including evaluating the differences between a decision and a strategy. Measuring progress and accomplishments, along with quantifying variations in outcomes, is a key part of evaluating a risk management strategy.

The overall success (or failure) of a strategy can be judged once these areas have been addressed. Accounting for all aspects of the strategy – resources, timing, and goals met – when evaluating effectiveness is important.

Strategy success should be gauged periodically and proactively as the strategy is carried-out, making sure to consider the entire approach when assessing whether or not things are still headed in the right direction

James Sedman is a consultant to the Department of Agricultural and Applied Economics in the University of Wyoming College of Agriculture and Natural Resources, and **John Hewlett** is a farm and ranch management specialist in the department. Hewlett may be reached at (307) 766-2166 or hewlett@uwyo.edu.

Eastern Laramie County wrestles with water use today versus conserving for future needs

Nearly 5 million acres in Goshen, Laramie, Niobrara, and Platte counties in southeastern Wyoming overlie the High Plains Aquifer.

Many in this area rely on a mix of surface and groundwater for irrigated agricultural production, but roughly 30,000 irrigated acres in eastern Laramie County depend almost entirely on groundwater. Aquifer levels in this area have been dropping for several decades. As early as 1981, the Board of Control designated the Laramie County Control Area. Within a groundwater control area, applications for new high-capacity wells or any changes to existing groundwater use must undergo an additional layer of review involving public notice and an advisory board.

Aquifer levels in the area continued to decline, so in April 2015, the State Engineer issued a new order implementing spacing requirements for new wells and requiring adjudication and flow meters on all high-capacity wells.

What should be done, if anything?

Communities at risk from declining groundwater levels in Laramie County include Albin, Pine Bluffs, and Carpenter. Farmers in each area depend heavily on groundwater for agricultural production. In 2014, the Laramie County Commissioners convened a steering committee of groundwater users to discuss what – if anything – should be done about the declining aquifer levels. A big question was whether the communities want to **stabilize** aquifer at current levels, **allow** but manage aquifer decline, or **recover** groundwater to an earlier level.

How to achieve their preferred goal was another big question. The committee discussed several possible management strategies. Allocation and a buyout program were two. Allocation would restrict irrigators to pumping only a specified number of acre-inches each irrigation season. (Nebraska already enforces allocations in several districts across the state.) Buyout would ask irrigators to voluntarily relinquish their water rights on some irrigated acres in exchange for a payment. (This type of program existed in Laramie County from 2010 to 2015.) After much discussion, the steering committee was unable to settle on a single goal or management strategy.

Steps toward a solution

Not knowing the economic impacts of the different proposed goals and strategies was one hurdle the steering committee faced. To answer some of these economic questions, our research team at the University of Wyoming estimated the farm-level economic impacts of alternative strategies for reducing overall water use, including allocation and buyout.

Our estimates assume farmers would respond to reduced water supplies by either irrigating the same crops with less water, switching to crops that use less water, or switching to dryland farming.

A key takeaway from our analysis is that each groundwater management strategy

creates economic winners and losers, depending on how the aquifer behaves under individual farms or parts of a community.

For farms already feeling the effects of aquifer depletion – maybe as reduced pumping capacity – the economic impacts of an allocation strategy are lower because their farming system is already well-adapted for limited water. In contrast, farms not yet feeling the effects of aquifer declines – those currently able to fully irrigate on all of their pivots – would experience larger economic impacts from an allocation strategy. Of course, the more hydrology varies within a community, the more difficult to choose one management strategy that benefits – or at least does not harm – all water users in a community.

Another takeaway is a buyout strategy can create economic and hydrologic benefits but a source of funding is needed to support the program. Economic and hydrologic benefits of a buyout program also depend on whether pivots near those enrolled in the program are restricted to historical consumptive use. If there is no restriction, economic benefits to remaining pivots are higher, but hydrologic benefits are lower.

The other big challenge for local water users is not knowing exactly what is going on beneath the surface. The need still exists for a better understanding of the hydrology beneath each community. Even if we fully understand the hydrology, though, water users must agree on what, or even if, groundwater management should be pursued.

They and the State Engineer are the ones to decide the balance between economic net benefits of using water today versus conserving it for the future!

Kaila Willis is a graduate student in the Department of Agricultural and Applied Economics in the College of Agriculture and Natural Resources at the University of Wyoming, and **Kristi Hansen** is an associate professor in the department. She can be reached at (307) 766-3598 or at kristi.hansen@uwyo.edu.



FOR MORE INFORMATION

Evaluating Risk Strategies includes a course e-book, companion presentations, and webinars. Just one of the many risk management courses available from RightRisk.org, topics include estate planning, financial management, management succession planning, crop insurance programs, and RightRisk Analytics tools. Begin by selecting the desired course from the menu at the RightRisk.org homepage.

EVALUATING RISK STRATEGIES

