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Good Risk Management Requires Planning

We usually and wisely look into the future by exploring the past.

Summary: *Generally, we know the state of the farm financial condition is good. However, we also know that all inputs tied to crude oil prices are a cause for consternation. We've already experienced plenty of volatility concerning oil prices and their effect at the pump and on our economy. Most likely the general impact of rising input costs has yet to hit. And we know historically that the business of how to deal with financial calamity is always an unknown. Thus, our reason for focusing here on managing risk, a major component in good farm management and for that matter of any business.*

The farm debt/equity ratio has been dropping since 1990. Now at about 10 percent nationally, it is the lowest in many years. However, the rising cost reality has yet to hit hard. The University of Minnesota Center for Farm Financial Management projected corn production cost for 2008 to be $489/A (costing land at $134/A). That is 47 percent above the year 2000 cost. Soybean cost was projected at $321/A. That is 38 percent above cost in the year 2002. That projection may underestimate fertilizer costs and includes land at far below newly negotiated cash rental rates.

We don't know the policy direction that will be taken to deal with consternation in the financial markets (especially inputs tied to crude oil prices) and how that will affect agriculture. We do know that the federal debt level will require interest rates that will make treasury bonds attractive to buyers.

The combination of the biofuels market and the impact of huge fund participation in commodity markets continues to be felt. In a climate of extreme uncertainty, it is most likely that farmers will weight planting decisions heavily in the direction of long-run perspectives. In the northern Corn Belt, this meant less corn, more soybeans, and more wheat than in 2007.

Concepts of Risk

Incidence. Of course, we don't know what the future holds, but good management requires that we plan for it. Someone has said: "Even if God Himself guaranteed farmers exactly what was going to happen, 90 percent would still wait to see if He was right." Though widespread as a behavior, it is beginning to change. More and more we are beginning to assess incidence by looking into the future by exploring the past.

One way of exploring the past is memory. Societies not steeped in Western scientific traditions rely heavily on memory. Memory is often relayed and heightened through stories and folklore. Until the advent of data collection and the science of analysis, memory was the only way of reconstructing the past to forecast the future. The point of it all is that memory, while not scientific, is a useful way to evaluate the likelihood of an unfavorable event.

Pictures and charts are good ways to assess crop yield. National, state, and county average yield data are compiled by USDA, NASS, and state statisticians. Predictive mathematical models have become more popular. Computers make it easy to fit equations to masses of data. They can provide quantification to produce precise probabilities of possible events. Accuracy depends on proper assumptions, model, and database.

Impact measures the consequences of suffering harm. It is easiest to consider short-term impact. And that will vary substantially among farms. Consider, for example, an anticipated 200-bu/A corn crop. Priced at $3.50/bu, it has a $700 gross revenue. If farm A has $600/A costs, the margin is $100. If farm B has $400/A costs, the margin is $300. Now, if the actual crop yield drops to 150 bu/A, farm A has a loss of $75/A, while farm B has a gain of $125/A. Farmer A should be more interested than farmer B in reducing risk. While one can generate many examples, the point is simple: impact from farm to farm is different. Therefore, it is critically important for managers to consider impact when planning crops and strategies.

Long-term impacts, such as developing resistant populations of weeds and pests to chemicals, are more difficult to manage. We go to some lengths to provide "refuges" to maintain susceptible populations. We are urged to--and do--rotate herbicides. But we don't know with a high degree of certainty what will be the impact. Other long-term events are beyond individual farm control and of uncertain consequence. Included are environmental change, governmental regulations relating to air quality, water quality, greenhouse gases, habitat, and esthetics, all of which might have a big impact on the way we farm. In many of these areas, we have little idea of what the impact will be. Unfortunately, we are short-changing necessary funding to analyze possible impacts.

Aspects of Risk

I will spend a few moments on two aspects of risk. One is attitude toward risk. The other is categories of risk in crop production that include crop yield, crop inputs, and markets.

Attitude. Two University of Nebraska analysts have developed four categories of attitude in people. I have relabeled them as:

- Cautious: they follow the rules, are organized and want accuracy, want to understand strategies, and want to avoid risk
- Networkers: they are social, volunteer, become board members, tend to act on a hunch, like to know what others are thinking and doing
- Students: they search for data and information, are analytical, are independent decision makers
- Dare Devils: they like thrills, are creative, are quick thinkers, are flexible, see life as a game to be played.

Risk categories. For farmers, there are three categories of risk: crop yield, crop inputs, and markets.

Yield variability is huge in some parts of the country. In others it is relatively minor (Figure 1). One of the ways to reduce yield risk appears to be with genetically-engineered corn hybrids. Data from our nearby University of Minnesota Southern Research and Outreach Center (Figure 2) show that the multi-stacked corn hybrids tend to have lower yield variability as well as higher yield

Figure 1 - MN Corn Performance Test Yields Waseca

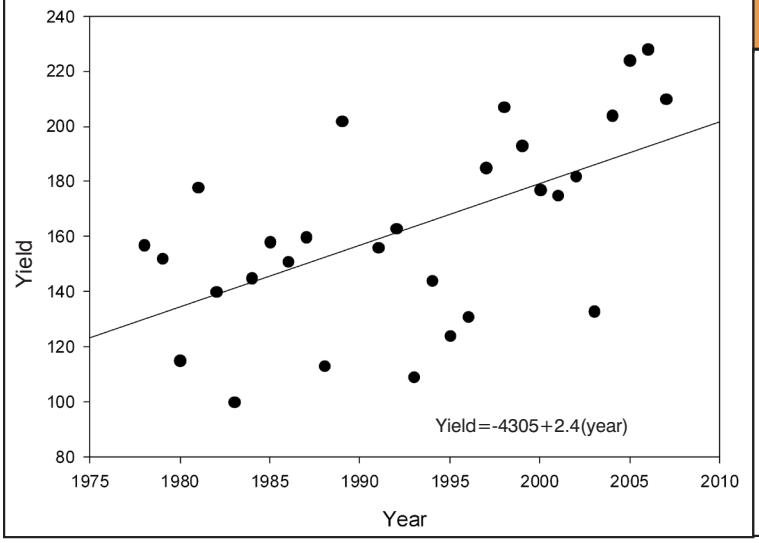
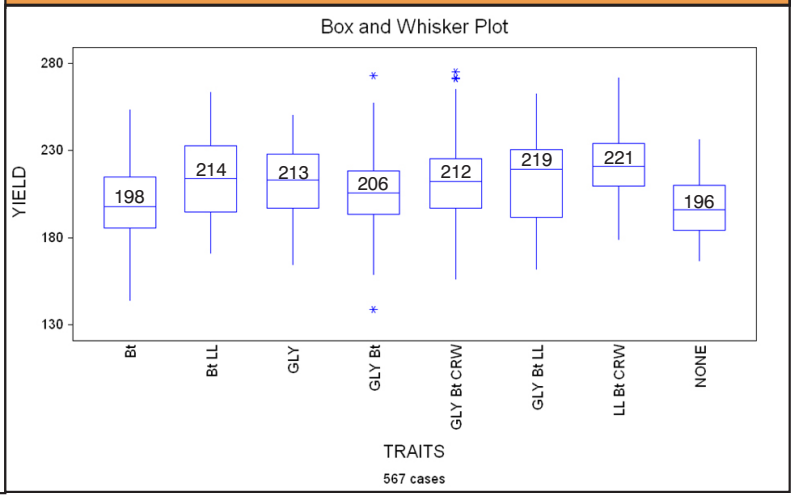


Figure 2 - MN Corn Performance Test - Waseca



averages. Genetic resistance to pests also appears to have benefits, especially in stress-growing seasons.

Inputs. Crop input decisions also have a risk component. Not long ago we had a choice of a few crop varieties, relatively cheap fertilizer, and a couple of herbicides. University of Minnesota varietal trial data were simple guidelines for input selection. However, varietal choices have multiplied, herbicide combinations and rates approach infinity, and fertilizer costs have zoomed. So how do we handle decisions?

Fortunately, we continue to have a good set of crop yield data from university experimental stations in Minnesota, Iowa, and Wisconsin who provide a wealth of statistically reliable data. We like to use three-year data from each site and assemble it all into a spreadsheet to aid comparisons. Essentially, we look for varieties with highest average yields and least variability.

In some respects, with the advent of glyphosate-tolerant corn and soybeans, herbicide selection has again become relatively simple. The great advantage of glyphosate is that it works. There is almost no risk of failure. Other herbicide programs can be quite effective, but are more variable, depending on soil moisture and climate. In the long run, there is rightful concern about developing populations of glyphosate-resistant weeds. We are mindful of it, watch for it, and use glyphosate combinations to address the danger.

Several risks associated with fertilizer programs are cost, optimum application rates, soil fertility management, and environmental. Best management practice (BMP) guidelines have been promoted. Initially they were single-point numbers for NPK rates. As such, these BMP guidelines relate target rates to anticipated crop yield, crop price, and fertilizer cost. It has become a very useful tool to optimize rate and reduce risk of over-fertilizing.

Environmental risks are looming ever larger in fertilizer decisions. Relationships between N, P, and water quality have been of concern for some time. We are now seeing growing concern about fertilizer and greenhouse gas emissions. Our most immediate concern is with total maximum daily loads of nutrients in impaired watersheds (TMDL). Such risks could become opportunities, if properly handled.

Marketing is a major area of farm risk management. Access to markets is one area. Non-GMO corn and low linoleic soybeans are commanding a price premium. Commodity pricing is highly uncertain. There are two kinds of price risk. One is selling below production cost. The other is not selling in the upper range of seasonal price. Westward rail movement of grain, ethanol plants, as well as huge investment fund participation in commodity markets have changed the market. Farming has become very competitive for resources. As we see the future, we need to grow the business to provide adequate income for participants in the future. Part of this growth means adding land base. Competitors who sell crops at a higher price can offer the highest bid for available land. This doesn't mean that the economic environment is cut-throat. It does mean that we need to pay attention.

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