



Farm Management

PRODUCTION RISK MANAGEMENT JOHN BERRY Penn State Lehigh County

Risk has always been associated with agriculture. Not only are producers faced with weather risk, but we are also faced with marketing risk. This article will focus on the production risks with some reference to the associated marketing risks.

CLIMATE

There are differing views about changes in the earth's climate with some arguing that we are in a global warming trend and others arguing that is not true. One thing we know for sure — there is yield variation. Yields have been more variable since 1975 than during the previous 25 years. Even though technology will continue to push yields upward, weather will continue to be one of the major risk producers will face in the production of agriculture.

Farm Policy

The evidence indicates that production risks are increasing but there are a number of other reasons why we must learn to manage production and price risk. The two primary factors changing the risk environment the new farm legislation and global trade patterns.

The Federal Agriculture Improvement and Reform Act, better known as the Freedom to Farm Act, became law in 1996. Under the act, crop subsidies are no longer tied to price fluctuations in the market. Instead, producers receive fixed payments over a seven-year period, on a declining basis, ending in 2002. Under the law, the risk

becomes greater because the producer must rely totally on the marketplace, especially as we near the year 2002.

Another factor, sometimes overlooked, is that the Freedom to Farm Act increased the risks of the producer because much of the first two years of payments have been capitalized into higher land rents and higher land values. This means the fixed farm payments are being used to pay higher production costs instead of being used to retire the debt.

Global Competition

Global trading patterns have always been changing but they will probably change faster as we enter the next century. In the '70s and early '80s, everyone thought the Soviet Union was the answer to our world trade needs. Look where they are today!

China is now being looked upon as a major buyer of U.S. agricultural products. There are a number of critical points to consider. The market is indeed large, but can be disrupted at any time. The potential is large but the downside risk is also large.

The stability and policies of governments can greatly impact our ability to sell agricultural products. For example, human rights issues and other political disagreements can quickly disrupt markets. The changing weather patterns referred to earlier can produce production variations in the rest of the globe as well as here. Along with changing global trade patterns, several major grain producing countries are de-emphasizing grain reserves. This, combined

with a similar policy here at home, means increased price volatility.

Managing Yield Risk

Managing yield risk has always been a challenge for the producer. Producers can have the best of prices but if they have little or nothing to sell, the results can be disastrous. Production risk can be controlled somewhat by making sound management decisions.

Managing yield risk can be categorized under these six general headings:

- Capital investments
- Crop production practices
- Crop insurance
- Access to inputs
- Production arrangements
- New technology.

Capital Investments

1) Irrigation. An irrigation system lowers the risk of crop failure in a dry year. However, the total investment cost for a pivot system can be in excess of \$600 per acre including the well, land preparation and the sprinkler system.

2) Drainage. In some areas tile drainage is used extensively to reduce the risk of crop failure in years of excess rainfall but the cost is \$400 to \$500 per acre.

3) Machinery. Machinery capacity in excess of what is needed in a normal year allows the work to be completed in a timely manner if there are delays due to weather, breakdown or other unforeseen events.

For any capital investment, compare the expected returns with the alternative uses of the capital, including other risk management strategies such as the purchase of inputs. Since these investment costs are high, we must also look at strategies which do not require a direct expenditure to reduce risk such as diversification.

Crop Production Practices

1) Crop rotation. Having a crop mix not only has biological benefits but spreads the risk. For example, July is the most stressful month for corn and August is the most stressful month for soybeans. The overall yield risk is then reduced signif-

icantly by raising a 50-50 mix. Crop rotation has the benefit of reducing the amount of chemicals needed. This reduces costs and, probably just as important reduces personal risk by reducing exposure to chemicals.

2) Diversification. There are potential benefits of diversifying into more specialty crops but the risk is that the markets for many of these crops are not yet sufficiently developed to reduce the overall risk. Other issues are acquiring the production expertise and having the necessary equipment for a new crop.

3) Tillage system. No-till can lower production costs. Reduced tillage is a long run risk management strategy. In the long term it will save soil which will allow ground to remain competitive from a soil productivity point of view.

4) Pest management. A critical factor in the effective use of chemicals is the timing of application. Also, it is critical that the correct herbicide is used for the specific variety being sprayed. There have already been cases of Roundup mistakenly being applied to varieties which were not Roundup-ready. An increasing concern with genetically engineered seeds is the risk of chemical drift. One outcome is that custom application costs could increase substantially due to the potential liability problems. Chemical choices are a

complement to rotation decisions. Emerging technologies will alter the choices.

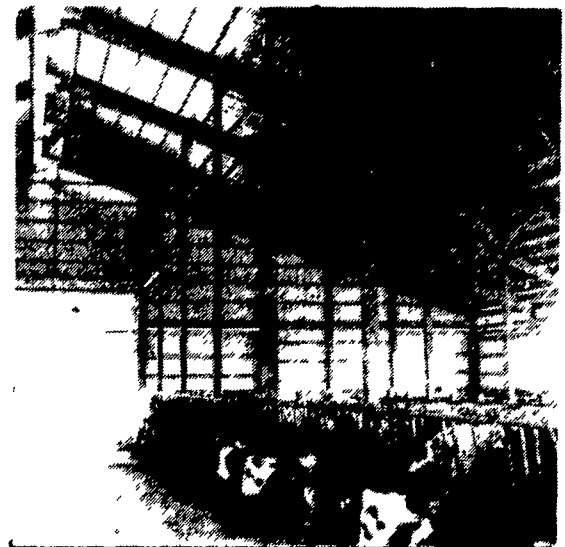
5) Spatial distribution (how far apart the fields are). There are really two aspects to this. Weather conditions can change significantly over a 10- to 20-mile area. If a farm is not concentrated in one area, the risk of a major crop disaster is reduced. Spatial distribution also will probably mean different soil types will be farmed. Having sandy, clay and silt loam soils is a hedge against weather variability. The tradeoff to spatial distribution is higher production costs due to the travel.

Crop Insurance

There are a number of reasons for increased use of MPCI in recent years including the increased costs of production, crop failures in large areas, and pressure from lenders. But the main reason has been the action taken by Congress to eliminate ad hoc disaster relief. There wasn't much incentive for producers to buy MPCI when they knew, under political pressure, Congress would come to their rescue. Congress has now sent the message that MPCI is the basic tool for disaster relief.

By working together, the government and the private insurance companies have brought out new and innovative products

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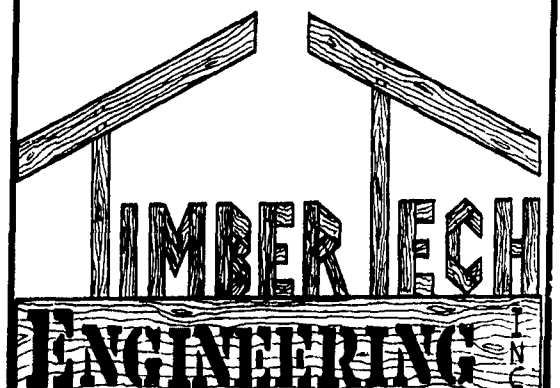
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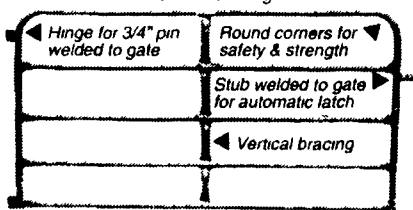
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