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PURDUE UNIVERSITY

PURDUE AGRICULTURAL ECONOMICS REPORT

NOVEMBER 2007

Farming in the 21st Century

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Farming in the 21st Century is increasingly characterized by new business models and approaches to growth—changes which will require new management strategies for farmers. This discussion synopsizes the reasons for growth and consolidation of farming businesses and the management style these new farm businesses will require.

Farm Consolidation and Market Integration

Most U.S. crops are produced by family-based, relatively small-scale, and mostly independent firms. This had also been the case in previous years for U.S. livestock producers, but now that industry is dominated by larger firms more tightly aligned across the production and distribution chain. Poultry, dairy, and beef feedlot operations consolidated long ago, but pork has been more recent.

What about land-based agriculture—and particularly the commodity crops of corn, soybeans, wheat and cotton? Will they go through a similar transformation process, and as quickly as that experienced by the livestock industries? Other row crops such as potatoes and sugar beets have already experienced considerable consolidation and integration. To best predict, the fundamental drivers of consolidation and structural change must be identified and evaluated (see Sidebar A), and then compared to the general characteristics of today's crop farming sector.

The convergence of four characteristics and management practices suggests a more rapid rate of growth in large crop farms than has occurred historically:

1. Demographics and age of operators (not owners).

2. Technology that modifies or releases timeliness constraints in crop production.

3. New business models such as multi-site production that further alterproduction that further alters timeliness constraints in crop production.

4. Increased use of the growth strategy of acquiring "businesses" rather than specific assets.

Age of Operators

Much discussion of structural change in agriculture has focused on the increasing age of farmers and the expectation that significantly larger amounts of farm property will be transferred to other owners as these farmers retire. But the transfer of ownership of farmland may not be nearly as important and immediate as the transfer of control/operation of that farmland. Since almost 50 percent of U.S. farmland is rented (as high as 85 percent in some Midwest locales), changes in control and operation of farmland may not mimic changes in ownership.

In This Issue

Farming in the 21st Century 1
Making the Most of Yield Monitor Data from On-farm Trials using Spatial Analysis 5
Agricultural Outlook for 2008 in a Nutshell — Managing Great Times and Great Risks — 8

Sidebar A: Drivers of Structural Change for Crop Production

Technology
The role for bio/nutritional, monitoring/measuring, communication, and process control expertise to be more precise and systematic in production

Human Capital
The rate at which managers adopt business management skills in farming, attitudes about time to work vs. leisure, and the career path opportunities of those currently in agriculture, those considering ag careers, and competing opportunities in other areas

Financial
Economies of size/scope and learning, risk and risk mitigation strategies, rental and outsourcing opportunities, financial and capital structure decisions and costs, and ownership and operation of the land resource in particular

Business Climate
The roles of global competitiveness, power and practices of input suppliers and the purchasers of farm products, the availability of product/service substitutes, the potential of new entrants, and the role of government agencies and public interest organizations in shaping the institutional and regulatory environment for the sector

Business/Family Life Cycle
Whether crop production continues to be dominated by proprietorships where the life of the business is profoundly impacted by the life of those providing the labor and capital, or go to a more "corporate" structure less dependent on the entrepreneur or their heirs

Value Chain
How strongly the traditional open market among buyers and suppliers will be challenged with a more tightly aligned vertical coordination system. Drivers of that include the demand and importance of:

- unique and differentiated products
- traceability and identity preservation
- efficiencies of improved flow scheduling
- accurate information flows from users to producers
- quality and quantity availability by processors and others downstream in the distribution channel

In contrast to the past, it is not unusual today for a farm operator at retirement to control a substantially larger acreage than he or she owns. So in reality a larger proportion of the total land becomes available to prospective operators than just that acreage owned by the retiring farmer. Even though only two to three percent of farmland is transferred from the current to a new owner each year, the amount available for new operators each year is substantially more than that – maybe as much as 4-5% per year. Larger scale/more progressive growers, growers and especially growers who excel at relationship management are probably better positioned to buy or rent this land.

New Technology

New technology has dramatically changed timeliness constraints that have been a significant limit on the growth potential for many grain operations. The ability to plant and harvest crops during the limited number of suitable field days in the spring and fall without encountering yield penalties is critical to overall efficiency and profitability. The development of guidance and auto-steer technology combined with larger planting and harvesting equipment (36 row planters and 12 row combines) has dramatically altered the timeliness constraint. For example, if planting 2000 acres in Illinois starting April 1 using a 24-row planter and working 12 hour days, there is about a 70% chance of finishing planting by May 1. If auto-guidance allows 16 hours per day and improves efficiency 5%, chances improve to 85%. With one 36-row planter and guidance, the chances of completion by May 1 exceed 90%.

More sophisticated monitoring and measuring technology that is part of precision farming also enables growth of operations. If crop production processes can only be monitored by people with unique skills, and hiring those skills or developing them in existing personnel is costly, the monitoring process limits the span of control to what one individual (or at least a few) can oversee personally. But if electronic systems can monitor the processes of plant growth (whether it be machinery operations, crop stage or development, or the level of infestation of insects or weeds), fewer human resources are needed for this task and generally larger scale is possible. Also, monitoring technology such as GPS or telemetry can allow more efficient management of employees through better work sequencing and scheduling, and reduce their

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workload through automating the capture and reporting of data. Electronic monitoring and control systems for crop production expand the span of control of a farmer/manager.

New Business Models

In addition to new technology and new operating procedures to relax timeliness constraints, farmers are also using management strategies and new business models to more fully utilize their machinery and equipment. One of those strategies is multi-site production. Growers are increasingly producing in more than one locale, and in many cases are choosing those locales based on both weather patterns and transportation/logistics capacity and systems. They then move equipment from site to site, in essence allowing them to not just increase the utilization and lower the cost of machinery operations, but to again relax the timeliness constraint on size of operation without investing in additional machinery or equipment.

Another newer business model for many growers is the use of operating leases or machinery sharing to cost effectively acquire additional machinery services. Such arrangements have typically been individual agreements between growers and machinery owners (sometimes dealers, sometimes other growers), but increasingly these arrangement are developing through more formalized custom farming agreements or with such entities as Machinery Link that provide operating leases for combines, cotton strippers and power units similar to rental arrangements for automobiles, trucks and other equipment.

Precision farming combined with creative ways to schedule and sequence machinery use including 24 hour-per-day operations, moving equipment among sites and deployment based on weather patterns has the potential to increase machinery utilization and lower per acre machinery and equipment costs as well.

Growth Strategies

Finally, more and more of today's expanding crop farmers are adopting the common business strategy of mergers and acquisitions compared to buying assets as in the past. Thus, farmers are buying businesses or acquiring the package of assets (including leased land) rather than purchasing individual parcels of land or pieces of equipment. And in fact, an increasingly common growth strategy for some growers is to approach a current operator with say 1000 to 1500 acres of farmland, who is near retirement, offer to buy the "farm business," and retain the current operator and his/her machinery to complete the machine operations on that acreage. In essence, the acquiring farmer obtains control of not only the owned but also the rented acreage of the current operator, and also increases his capacity to farm this additional acreage by outsourcing some of the machine and other operations to a skilled farmer who likely is uniquely qualified to farm that particular acreage. This strategy of acquiring businesses rather than acquiring assets usually involves obtaining control over a larger asset base, and thus accelerates the rate of growth and consolidation of large scale operations.

The New Management Model

A consolidation and integration of row crop enterprises similar to that which occurred in the livestock sectors of agriculture dramatically alters the growth opportunities and strategies for farm businesses. Some of the most fundamental changes are in how crop producers view the availability and utilization of agricultural resources, growth strategies, and their role in the management scheme.

Shifts in How Resources are Utilized

The traditional farm business has sourced its labor, capital and management resources as a bundled package—all of these resources historically have been embodied in the family farmer. In essence, the producer and his family members not only provided all of the money to finance the business (combined with modest amounts of debt), but did almost all of the work and made most of the decisions. But that bundled approach to providing resources for farming is changing to a new model where more of the labor is being hired, a broader capital base including outside investors and rented assets is being utilized, and in some cases even some management skills in the form of machinery maintenance managers or crop foremen are being hired.

Growth Not Always Incremental

Many farm businesses are growing at a rapid pace, and if the opportunities become available a farming operation might grow dramatically in size with very few steps, for instance adding 900 acres to a 1500 acre base. These aggressive expansion strategies in many cases exceed the sustainable growth rate of the business during the growth phase, and thus require the rebuilding of working capital and a reduction of the leverage position before the next growth spurt can be absorbed financially.

As noted earlier many expansion/growth opportunities

Sidebar B: A New Management Model for Farmers

Traditional	New
Walk-around, hands-on management	➤ More remote, "in the office" management
Top-down command and control	➤ Team and empowerment structure
Incenting right behavior not critical	➤ Must get incentives right
Operations oriented	➤ CEO mentality—people, money, relationship, strategy
Do it all myself	➤ Leadership, delegate
Little/no compensation—returned to business	➤ Well compensated
Internal expertise and self reliance	➤ Outsource—hire capacity and expertise
Interpersonal relations not critical	➤ Interpersonal skills essential
Organization structure not critical	➤ Organization structure essential
Convergent thinking	➤ Divergent thinking
Monitoring systems embedded in manager	➤ Personal performance monitoring systems critical
Early adoption important	➤ Innovation is important, but must limit the risk
Aversion to risk	➤ Accept risk if downside exposure is limited
Substitute machines for people	➤ Employees critical to business success
Can add activities without giving up any	➤ Trade-offs—can't add without giving up something
Family personal dynamics important or dominant	➤ Business relationships combined with family dynamics
Closed Communication Style	➤ Open communication style
Closed information system	➤ Open access information system to get right messages and incentives
Need not scale or replicate	➤ Must scale or replicate
Skill in hiring people not critical	➤ Selecting and training the right people critical

will be in the form of mergers and acquisitions of existing businesses rather than simply adding a facility or increment to the land or livestock base of the current farming unit. These merger and acquisition types of growth opportunities present new challenges as well as opportunities compared to the more familiar stepwise growth. These challenges include:

- a larger resource commitment
- shorter and often steeper learning curve to reach efficiency goals of the larger business
- inherited problems/challenges of the acquired unit
- resource redundancies from merging similar types of businesses
- different work styles or cultures of the people involved in the previously independent business units

These situations are common in merger and acquisition activity outside of production agriculture, and producers can learn from the successes and failures of mergers and acquisitions in other industries.

A New Role for Farmers

Most farmers excel at technical skills—the ability to use tools, techniques, and specialized knowledge to efficiently carry out production. While technical skills will still be important, the new management model for farmers requires more human and conceptual skills. Human skills relate to the ability to function well in inter-personal relationships. Conceptual skills involve the ability to analyze and diagnose complex situations – drawing heavily on the analytical, creative, and intuitive talents. The new model is more of a general business manager rather than a plant or operations manager (see Sidebar B).

Change Creates Opportunity

A desegregation or separation of resources, as well as the exits from agriculture, will result in unique and possibly unprecedented opportunities to rent land, provide custom farming or other machine operating services, buy/operate/manage livestock facilities, pursue farming careers in foreman or other management positions, and to align and/or integrate in the value chain.

Managing the growing farm business requires a new skill set and a different style of management than most farmers have experienced during their farming careers. Developing this skill set will not be easy for many because of the abstract

nature of the concepts and tasks involved. For those who are able to do so, growth will be more an opportunity and less a challenge.

A Final Comment

The rate of consolidation to larger size and scale crop farms is expected to accelerate in the next decade as new technology and management practices are adopted by grain farmers. And lenders and the capital markets will reinforce these trends as they fund those growers who adopt strategies such as multi-site operations, machinery sharing and other techniques to manage the operating risk and improve efficiency. Like livestock operations, grain farming in the future will likely move to a more consolidated industry with large scale farms increasingly dominating the industry. To be successful in this new farming regime, farmers must transform their management focus from operations to strategy, from being a plant manager to a CEO.

For More Information

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Making the Most of Yield Monitor Data from On-farm Trials using Spatial Analysis

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Our three-year Purdue University study tracked farmers' use of yield monitor data and its use in making management decisions. Case studies were utilized, instead of a survey with a larger number of farmers, because of the desire to better understand which data was used and what were the salient characteristics of the decision making process. Participants included five farmers conducting their own on-farm trials. The farmers were located in Indiana, Illinois, Kentucky and Ontario, Canada. Results indicate that farmers with access to a spatial analysis of their on-farm trial data made decisions more quickly and had more confidence in their management decisions than when other sources of crop yield data are used.

Case Study Farms

One reason farmers cite for not conducting on-farm trials is that trials take too much time and interfere with other farming operations. Precision agriculture technology has reduced the time requirements and costs of conducting on-farm research. Combine yield monitors and global positioning systems (GPS) allow low-cost site-specific yield measurements to be collected. The increased amount of site-specific data from yield monitors and other sensors has created both data handling problems and an opportunity for new analysis techniques.

Case study farmers were initially identified as innovators who sought out better analysis techniques. They were selected based upon their expertise in conducting on-farm trials with yield monitors. All five farmers have at least six years experience mapping yields and annually test production practices using on-farm trials.

The five farmers were included in a multiple case study consisting of two groups. Three farmers were introduced to spatial analysis over the three-year project period. This group is referred to as the "experimental group". This group learned about spatial statistics and they received spatial analysis reports on some

* *This study was funded by a USDA-Sustainable Agriculture Research and Education (SARE) Graduate Student Research Grant.*

of their on-farm trials from university staff involved in the USDA/SARE project. The case study "control group" comprised two farmers that did not receive a spatial analysis for their on-farm trials. For many topics such as adoption of new technology, use of precision agricultural methods, and conducting on-farm trials, the two groups of farmers were very similar. The experimental group includes Farmer D, Farmer F, and Farmer W, while the control group includes Farmer P and Farmer T.

Farmer D

Farmer D produces irrigated corn, soybean, popcorn, green beans, and seed corn in Illinois. Illinois River bottom soils and variable topography influences yield response to inputs. Farmer D is a graduate of Illinois State University. Manual GPS lightbar navigation has been used for four years; however, no automated guidance has been used. Variable rates of lime, phosphorus, and potassium have been made over the past five years. Farmer D has been using computers and the Internet for 10 years. His first yield monitor was purchased off the back of a flatbed trailer at an auction in 2000, and he began collecting georeferenced yield data the following year.

Farmer F

Farmer F grows corn and soybean under strip-till production in Indiana. Farmer F is a graduate of Purdue University and has been using computers for more than 12 years and the Internet for nearly 10 years. Manual lightbar navigation was used for four years prior to adopting automated guidance four years ago. The highest level of GPS accuracy, RTK-GPS, has been used for automated guidance the last three years and is currently used on four tractors. Yield mapping has been used for seven years. Variable rate applications of lime, phosphorus, and potassium have been used for four years.

Farmer W

Farmer W produces corn and soybean in Kentucky. Farms are rolling hills with eroded hilltops and depression areas prone to reduced yields in wet years. Farmer W has been practicing no-till production for 20 years; however, many fields were extensively tilled prior to Farmer W's management practices. Lightbar navigation has been used for nine years and automated guidance for two. Farmer W and his wife have advanced degrees in Agricultural Economics from Purdue University. Farmer W stated that the first piece of farm machinery purchased was a personal computer in 1986 with the Internet and email being used for the last four years.

Farmer P

Farmer P grows corn and soybean in Kentucky. A graduate

Table 1. Experimental Group Farmers' Response to Selected Spatial Analysis and Decision Making Questions

Question	Farmer D	Farmer F	Farmer W
How has your involvement changed the process of steps in which you make decisions?	Feel better and more confident about answers, which is very important. Added validly to results and more likely to take action rather than sitting on the fence	Not a lot.	Think about on-farm trials differently and always thinking about what other experiments can be done. Spatial analysis allows statistical validity.
How has your level of confidence in on-farm trial results changed?	Gone up a lot	Gone back up after some failures prior to this project.	Confidence increased because of analysis rigor
How has your level of confidence in your farm management decisions made from on-farm trial data changed?	Gone up a lot	A little nervous the first year implementing lower soybean seeding rates, but very confident now.	More confident
What specific changes have you made to your production practices?	Lowered soybean seeding rates across the farm, questioning P and K fertility rates, and making my hybrid selection much faster	Lowered soybean seeding rates to 130K seeds per acre on most soils and 150K on eroded hilltops.	Eliminated one company's line of hybrids
What is the role of Extension?	Supporting role like in marketing clubs, maybe develop yield monitor data analysis clubs by facilitating and setting up farmer peer groups	Doubtful local Extension would facilitate spatial analysis or farmer peer groups or have a role. Farmers contact individual professors for specific issues.	Recommendations on experimental designs

of University of Kentucky, Farmer P has been using computers for farm management for 27 years, with the Internet over the past ten. Manual lightbar navigation was used four years ago with automated guidance used on equipment for the last two years. Variable rates of lime and seeds have been used for eight and 10 years, respectively. On-farm trials have been a management practice for 10 years.

Farmer T

Farmer T grows corn, soybean, dry edible beans, and wheat in Southwest Ontario. The farmer was considered to be an innovator with the first automated boom sprayer in Ontario and mapping yields for 13 years. Manual lightbar navigation has been used for four years and automated guidance for two years. Variable rates of nitrogen, phosphorus, and potassium fertilizer have been used for eight years. Farmer T earned a B.S. from the University of Guelph, and an advanced degree in Agricultural Economics from Purdue University. He began using computers and the Internet extensively 17 years ago.

Results

All five farmers commented on their experiences analyzing on-farm trial data and collaborating with a third party analyst. Three of the five farmers suggested that in the future a small number of farmers would conduct their own spatial analysis of on-farm trial data. Many more farmers, however, are expected to outsource their spatial analysis to a third party. These farmers typically expect third-party spatial analysis services to assist in the design of the experiment, offer advice on collecting quality data, and provide a final report with a farm management recommendation.

A useful spatial analysis report could be short and contain only the final recommendation, or it could include details on statistical significance and interpretation. In order for the report to be useful, a quick turn around time (such that early order discounts may be secured or the decision can be implemented for the next production season) is essential. Farmer F stated that the final production recommendation is all that was needed once the relationship between the farmer and analyst was established. However, a more lengthy report may be useful in building credibility early in a relationship. Farmer D asked for more detail on statistical analysis and interpretation of statistical results. Farmer W asked for more information but stressed that timely recommendations were more important than report details.

The farmers of the experimental group were able to provide an opinion about the impact of spatial analysis on their confidence in on-farm trial results, how this type of analysis influenced their farm management decisions, and the impact on their production. Farmer D and Farmer W stated that the participation in the USDA/SARE project changed the process with which they make decisions (see Table 1). All three experimental group farmers had increased confidence in their on-farm trial results and the farm management decisions based upon those trials relative to before spatial analysis. Farmer F stated that his confidence in on-farm trial results have rebounded after earlier failures. Farmer W stated that the analytic rigor associated with spatial analysis led to increased confidence in on-farm trial results.

All three experimental group farmers made decisions faster with spatial analysis. Farmer D added that he makes more decisions now than before using spatial analysis. In the past, Farmer F said, he was somewhat hesitant to implement changes indicated by on-farm research, but he has more confidence now that his decisions can be based on the spatial analysis. Each experimental group farmer has made changes to their production practices based upon spatial analysis of their on-farm trial data, including Farmer D and Farmer F lowering seeding rates, and Farmer W ending use of one company's corn hybrids.

Each of the three experimental group farmers commented on the role of the university Land Grant Extension system in yield monitor data analysis. They suggested that Extension may facilitate yield monitor data analysis clubs and provide assistance with experimental designs. The farmers saw campus Extension Specialists as a primary source of information in dealing with the technical issues (e.g., selecting treatments, designing experiments, and spatial analysis), but expressed doubts regarding whether Extension has the capacity to work directly with large numbers of farmers in conducting trials and analyzing the resulting data. They saw the university having a key role in providing spatial analysis training regardless of whether the analyst was a farmer or a third-party service provider.

Conclusions

Farmers who had access to spatial statistical and economic analysis through the USDA/SARE project had more confidence in both their on-farm research data and farm management decisions than before this project. Farmers exposed to production recommendations based upon spatial analysis also made decisions more

quickly and some made more decisions than they would have without spatial analysis.

Precision agriculture not only provides farmers with new opportunities, but also creates new challenges for those that advise farmers, including university Extension and private consultants. Case study farmers indicated that some innovative farmers may conduct their own spatial analysis, however many farmers will probably outsource their spatial analysis needs to a third party. If demand by farmers for spatial analysis increases, Extension may need to increase the number of training opportunities for private consultants performing spatial analysis for farmers.

More Information

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Agricultural Outlook for 2008 in a Nutshell*
— Managing Great Times and Great Risks —

Overview

Great financial times, but more uncertainty seems to be hallmarks for 2008. Agriculture is experiencing the best times since the 1970s. It's finally a boom for Indiana farmers and agribusinesses. Farm incomes are up. Landowner equity is way up due to a 17% increase in land values. Most farm families are in the strongest financial position in 50 years.

Better crop prices are being driven by a worldwide surge in the use of grains and oilseeds for biofuels that has eliminated grain surpluses. Furthermore, world economic growth has been robust and is spurring added food demand, and a reduced value of the U.S. dollar is making the U.S. a haven for the world's food buyers.

High crop margins and farm incomes mean strong demand for inputs. Input prices will rise sharply in 2008 raising crop input costs. Cash rents (that were not adjusted in line with the crop price jump in the fall of 2006) are expected to increase by 15% or more. Higher input costs and rents may reduce potential margins. Added to cost of production concerns, volatile crop prices and little government safety net at the current higher price regime means crop margins may have both—high return potential, but will also expose producers' margins to downturns. That's the high risk business environment agriculture will experience in 2008. (A longer version of the Ag Outlook for 2008 is online at: http://www.agecon.purdue.edu/extension/prices/index.asp. If paper copy is desired call: 1-888-398-4636, Ext. 44216).

Economy Slowing, But Not Stalling

Larry DeBoer

The U.S. economy is completing its sixth straight year of expansion. But it experienced its slowest growth since 2003. The strengths in the coming year are based on strong world economic growth and a weak U.S. dollar that will stimulate exports. The housing sector will be a negative. The concern is whether the problems in housing will spread to other investment spending, and to consumers. Will the decline in housing wealth reduce consumer spending? Expect GDP to rise 2.6% above inflation. The unemployment rate probably will increase, perhaps to 4.9% by July 2008. Core inflation may continue to moderate, but expect an increase in oil and food prices. The inflation rate should remain near 2.5% over the next twelve months.

Perhaps the Fed will cut interest rates a quarter-point or two in coming months. Expect the interest rate on 3-month Treasury bills to be about 4.2%

** This "Nutshell" version is reduced from Ag Outlook 2008 most of which was drafted in early September. The editor has kept the main points in each segment by the Purdue faculty and staff authors noted with each title. Gerald A. Harrison, Editor,* ***Purdue Agricultural Economics Report****.*

by this time next year. The spread between long-term and short-term rates will increase. Expect the 10-year Treasury bond interest rate to be around 5.0% by this time next year.

Odds of a recession may be one in five. The economy should grow slowly, but it's unlikely to stall.

2007 Agricultural Trade Reflects Strong World Demand

Philip Abbott

USDA's most recent trade forecast predicts another record year for fiscal 2007 for U.S. agricultural exports, at $79 billion. Agricultural imports continue their rapid growth as well, and a record at $70.5 billion is foreseen. While import growth is expected to exceed a 10% annual growth rate, higher prices for grains and oilseeds have led the even more rapid advance in exports providing an agricultural trade surplus of $8.5 billion.

Poor weather in Australia, Europe and Canada is dramatically affecting the recent wheat export value. Export values are because of higher prices due to biofuels demand around the globe, strong world economic growth, and a very weak dollar. Until recently, both export and import expansions were led by higher value product trade, such as meats, and horticultural products in the case of imports. Over two-thirds of the current export expansion is from greater grains and oilseeds export values.

A high U.S. trade deficit, at 6.25% of GDP, continues to fuel expectations for a weak dollar in the longer term. A weak dollar means grain and oilseed prices don't seem as high elsewhere. Thus, agricultural exports have not reduced substantially in the face of higher prices. If foreign markets are slow to reduce their purchases in the face of high prices, this may mean more adjustment in crop usage will have to occur in the U.S. or that crop prices will have to move even higher.

New Farm Bill on Deadline

Allan Gray

On July 27th the House of Representative passed its version which in many ways resembles the 2002 Farm Bill particularly in the commodity title. The three-tiered system of support provided to commodity producers that includes direct payments, counter-cyclical payments, and marketing loans remains largely unchanged. There is an option for producers to choose between the counter-cyclical payment system used over the past five-years; with increases in target prices for wheat and soybeans; or a new counter-cyclical system that is based on changes in national revenue targets which incorporates changes in yields and prices to determine the amount of support the producer would receive. In addition, it would eliminate the three-entity rule used for determining payment limitations while making both the operator and the spouse eligible for a payment limit.

There would no longer be a payment limit for marketing loan gains or loan deficiency payments and the payment limit for direct payments would be increased from $40,000 to $60,000 per person. In addition, anyone making more than $1,000,000 in adjusted gross income would no longer be eligible for government support payments; the limit would be $500,000 if less than 75% of the person's income comes from farming.

The House version of the Bill also makes some changes in the conservation title—maintaining the Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP) while modestly increasing funding for the Grasslands Reserve Program (GRP). Funding for the Environmental Quality Incentive Program (EQIP) would see modest increases funding while reserving 60% of the funds for livestock operations. It also contains provisions to allow no new contracts under the Conservation Security Program (CSP) and instructs USDA to devise a new CSP to be implemented in 2012; essentially eliminating this program from the 2007 Farm Bill.

Finally, the House version contains provisions for increasing spending for Fruit, Nut, Vegetable and Vine producers and biofuels. The Bill increases funding for fruits and vegetables in school lunch programs and increases spending on research and market promotion for fruits and vegetable. Funding is provided for loan guarantees, grants, and feedstock subsidies for cellulosic ethanol and biodiesel.

By October, the Senate has made little progress on a version of the 2007 Farm Bill. If the politics get too contentious, Congress could extend the 2002 Farm Bill for one or two years.

Food Price Inflation Perks Up

Corinne Alexander

For 2007 and 2008 food price increases for all food on average are expected to be in the 3.5% to 4.5% range. Food prices rose 4.2% from August 2006 to August 2007, well above the 1997-2006 average annual food and beverage retail price increase of 2.5%.

Price increases are due in large part to: tightened supplies of eggs, chicken and beef in response to increased feed costs; strong demand for food products; higher energy costs and a strong world demand for food. World demand is spiked by: the reduction in supplies of grain and oilseeds for food; strong world economic growth; a weak U.S. dollar which moderates prices of U.S. Ag exports and adverse weather. The rapid increase in biofuel production is just one of the contributing factors for high food prices.

Milk Prices Record High

Mike Schutz

The US All Milk price reached an all-time record of $21.70 for both July and August. Though milk supply responds to increased profits; but strong demand should prevent a dramatic drop in prices well into 2008. Expect milk prices to remain over $18.00 for the rest of 2007 and above $15.50 through the first half of 2008, strong prices, historically.

Higher feed costs may have had some impact in holding back production per cow, feed costs contribution to higher milk prices paled in comparison to the effects of an increasing demand for dairy products. Global demand for U.S. dairy proteins (e.g., whey powder and nonfat dry milk) has been especially strong in 2007 reflecting reduced supplies of milk and whey powder from Europe and Australia and a weaker US dollar.

The U.S. supply of milk is expected to respond to the increased milk prices. Expect a 2.6% increase in milk production for 2008. Currently, increases in production have been slowed due to: forage availability especially in the Eastern Corn Belt and Upper-Midwest; evolving milk handler and retailer attitudes about use of Posilac™ in dairy herds and extreme summer heat over a wide swath of the US.

If and when consumer demand weakens for milk, small stocks of butter and cheese will allow the industry to easily divert lost fluid milk sales to manufactured products.

In Indiana, construction continues for ConAgra's ReddiWip™ production in Indianapolis and the Nestlé's plant in Anderson. Both should modestly increase demand for milk and cream locally, possibly providing small price increments for regional dairy producers.

Beef Cattle Industry Seeing the Green $

Chris Hurt

Reduced beef supplies mean cattle producers should expect a record price year in 2007 and again in 2008. Choice Nebraska steers averaged $85.40 in 2006, but are expected to reach a record $91 this year. For next year prices should set a new record, perhaps around $93 per hundredweight.

The size of the nation's breeding herd dropped slightly in the mid-year update to 32.9 million head. Cow-calf producers have shown little interest in expansion and brood cow numbers remain near their cycle lows since 2004. Beef heifer retention was also down 6% at mid-year — females slaughtered rather than increasing breeding herds.

Nearly stable beef production in combination with growing exports and a growing U.S. population mean that the supplies of beef available per person will decline in 2007 and 2008. Per capita supplies will drop by 1% in 2007 and are expected to drop by an additional 2% in 2008.

Record high finished cattle prices and a large corn crop are expected to contribute to very strong calf prices this fall as well. Kentucky steer calf prices are expected to average in the $105 to $120 range this fall—stronger than the final quarter of 2006 when 500-550 pound Kentucky steer calves averaged $106/cwt.

Profits for cow-calf producers look bright. The industry is at the low point in the production cycle, there is little interest in expansion, exports are now growing, there is a large corn crop this fall, and massive increases in distiller's grains will increase feed supplies. On the downside forage crops and pastures have been ravished in some areas and an uneasy U.S. economy could loom as threats.

Hog Margins Squeezed by Feed Costs

Chris Hurt

Pork production is moving upward by 3% in 2007 and about 2% in 2008. Thus, per capita supplies are expected to increase by 2% in 2007 and again by about 1% in 2008. As a result, hog prices are expected to ease modestly in 2008.

Barrow and gilt yearly average prices have been surprisingly stable since 2005 ranging between $47 and $50 liveweight. For 2007, prices are expected to average about $49, perhaps $48 in 2008 due to higher per capita supplies.

While yearly average hog prices have been in a narrow range, costs of production have been more volatile with unstable feed prices. Costs of production was near $40 per live hundredweight in 2006,

but rose to near $47 in 2007 and are expected to rise further to near $49 in 2008. Higher feed prices have largely eliminated profit margins.

Hog prices this fall and winter are expected to average in the $42 to $45 range then move back toward the $48 to $52 level for averages next spring and summer. With costs of production moving upward to the very high $40s – pork producers may operate at losses this fall and winter, but at near breakeven next spring and summer. Financial losses may stimulate some modest cuts in the breeding herd.

Huge National Corn Crop

Chris Hurt

In 2007, producers responded with 19% more corn acres. USDA's October estimates the nation's corn crop at a record 13.3 billion bushels based on 154.7 bushels per acre. Yields were about 3 bushels above trend with a total crop that is 2.8 billion above last year. Indiana yields were estimated at 158 bushels per acre — ranging from 135 bushel in east central to 171 bushels in the west central and northwest sections of Indiana.

Record usage due to the huge growth in ethanol production is expected in the 2007/08 marketing year. Total usage will grow to 12.6 billion bushels with ethanol use expanding to 3.2 billion, or 25% of total usage and exports at 2.35 billion bushels due to tight world stocks. U.S. corn stocks are expected to increase to 2.0 billion bushels with an average U.S. price of $3.20/bu. received by farmers.

Ethanol producer margins are expected to narrow and reach breakevens or even losses. This will likely slow down some plant construction and may result in fewer bushels moving into ethanol use. How much ethanol plants can pay for corn appears to be a factor that may limit corn's upside price potential. Prices above $3.50 may result in some ethanol plants running at less than capacity.

Corn prices for Indiana producers are expected to average about $3.30 per bushel in the coming year. Seasonal price increases are anticipated with prospects for corn prices to reach $3.60 to $3.90 late in the storage season. Gross storage returns may be around 60 to 70 cents per bushel. Returns to on-farm storage space after deducting interest costs are expected to be 45 to 55 cents per bushel for storage into late-spring or early-summer of 2008.

Soybeans Supplies Shift From Surplus to Short

Chris Hurt

The 15% drop in national soybean acreage and average yields of 41.4 bushels per acre will result in a crop of only 2.6 billion bushels or 19% below last year. The large reduction in production means that soybeans will move from record surplus inventories of 573 million bushels as of September 1, 2007 to tight supplies by next spring and summer. Expected ending stocks for the 2007/08 marketing year are only 215 million bushels, the tightest since the 2003/04 marketing year. For Indiana, USDA reports a disappointing average yield of 43 bushels per acre.

Domestic crush is expected to remain high as the use of soy meal remains strong and the use of soy oil for biodiesel continues to grow. U.S. exports will have to be reduced by about 13%. World market must rely more heavily on South America where soybean acreage is expected to rise by 4% with production up by 2%.

Large, fall soybean stocks have depressed the basis, but basis should improve by 40 to 50 cents as a stock surpluses turn to a shortage by next spring and summer. The new Louis Dreyfus crushing facility in Kosciusko County will increase soybean demand and providing basis gains for central and northern sections of Indiana.

Indiana soybean prices may average $8.50 to $9.50 this marketing year. On-farm storage returns after interest is deducted may provide 55 to 65 cents of return per bushel for the grain bin and the producer's time. Returns above interest and storage charges are expected for commercial storage. Some storage charges may be high enough to eliminate a positive storage return.

Strong export sales could mean soybeans would follow a pattern similar to wheat where foreign buyers have not slowed purchases even in the face of record high wheat prices. If the same "buy at any price" attitude were to develop in soybeans, or if South American weather becomes threatening to their crop, then soybeans could be in for a more bullish upward pattern.

Soybean acreage could grow by 8% to 10%. Nevertheless, some 2008 crop futures could exceed $10 per bushel.

Wheat: Record Prices Mean Wheat/Double Crop Beans

Chris Hurt

U.S and world 2008 wheat inventories will be low due to poor yields in Australia, Canada, portions of Europe and below normal yields in the U.S. Tight stocks mean record

high wheat prices. Wheat supplies have tightened and its price moved sharply above corn such that wheat is no longer a partial feed grain, but priced only as a food grain.

Wheat prices in Indiana were $5.00 to $5.50 around harvest, but moved upward to well over $8.00 per bushels. Strong world economic growth rates and the weak value of the U.S. dollar keep wheat buyers coming back to the U.S. This is reflected in extremely strong export sales.

Most Indiana producers sell wheat at or near harvest. For those still with wheat in storage should look to December to sell — a favorable pricing time, historically.

U.S. average prices of wheat for 2007/08 are expected to reach a record $6.00 to $6.50 per bushel. Worldwide acreage is expected to increase for next year's crop and assuming normal yields, wheat prices are expected to move lower and average closer to $5.75 to $6.25 per bushel.

Budgets for 2008 suggest that producers in the southern one-third of the state who can effectively produce wheat and then double crop soybeans should strongly consider this crop mix. Projected returns are currently $60 to $100 per acre higher than single crop corn or soybeans for that part of the state.

Crop Input Costs Swell for 2008

Alan Miller

Prices of several important crop inputs are expected to increase in 2008 as farm incomes rise. But changes in crop acres and production practices will also strain the supply of some inputs. There is a lot of uncertainty about to what extent optimism will translate into additional product sales and higher prices. With uncertainty comes price volatility, so farmers will really have to stay on top of their purchasing management for 2008 and are advised to line up supplies early.

Purdue's cost estimates for 2008 are rising more than would be indicated by higher input prices, as they reflect changes taking place in crop production practices in Indiana. Purdue's 2008 "Crop Cost and Return Guide" is available at: http://www.agecon.purdue.edu/extension/pubs/ID166_2008.pdf. In particular, Purdue's cost estimates for 2008 reflect the recent rapid adoption of biotech corn seed by Indiana farmers and changes recommended by Purdue's Extension Crop Production Specialists including adopting a regional approach for determining the economically optimal amount of nitrogen fertilizer to apply. These adjustments, as well as rising input prices, contributed to significantly higher estimates of the variable costs per acre for producing corn, soybeans and wheat in 2008 relative to 2007.

Fertilizer costs will increase from 4% to 20% in 2008 as compared to prices reported by the USDA for April 2007. Price increases will vary with the type of product. Natural gas prices are expected to average 9% higher in 2008 than in 2007, which will tend to prop up ammonia prices and other N fertilizer prices.

Chemical prices are forecast to creep up by 2% to 6% in 2008. Prices for many seed varieties are expected to increase significantly. This is particularly true for corn varieties carrying biotech traits. News from the seed industry suggests that seed prices will increase from 15% to 25% overall for 2008. Increased technology fees, higher crop production costs, and the high cost of research and development are among the factors contributing to higher seed costs. Wheat seed prices appeared to be up around 30% to 35% this fall.

Diesel fuel prices are likely to average around 5% higher in 2008 than in 2007, with crude oil up about 7%.

Crop insurance premiums followed crop prices higher in the spring of 2007 and will likely remain at the relatively higher level in 2008. The average net premium paid across all insured corn acres in Indiana and across all product types was $22.88 per acre according to information from the USDA Risk Management Agency. The average net premium paid for soybeans was $11.31 per acre across all product types. The Revenue Assurance (RA) and Crop Revenue Coverage (CRC) products insured about 58% of Indiana's 4.2 million insured corn acres. Group Risk Income Protection (GRIP) insured about 28% of the corn acreage. RA and CRC insured about 54 percent of the insured soybeans and GRIP insured about 24%. Current corn and soybean prices would likely indicate comparable premiums for corn in 2008 but higher premiums for soybeans.

Demand for new farm machinery is forecast to remain strong. As a result farm machinery prices are expected to rise at least 5% to 6%. Farm wage rates are expected to increase 4% to 5%.

Rethinking 2008 Land Leases

Luc Valentin

Higher crop prices and rising variable costs impact margins and rent that can be paid in opposite directions. Producers must also consider farm machinery and labor costs when determining their ability to pay rent.

However, there is little doubt that farmland leases and particular cash rents will be renegotiated to a higher level despite the usual uncertainty in the farm economy.

Understanding and sharing returns and risks should be the focus of landlords and tenants. The higher the expected return, the higher the risk for the tenant/producer.

A cash rent agreement may provide the lowest expected return to the landlord, but also the lowest risk level. A crop share lease may have the highest expected return and the highest risk — though a few landlords may take even more risk and settle for a custom farming agreement. Between these extremes is a flexible lease where the landlord accepts price and/or yield risk in search of a better return for the land.

For the tenant the situation is opposite. The less risky situation is the share rent agreement where the risks are split between tenant and landlord. It may also have the lowest potential income. With cash rent, the tenant bears all the risks, but may also have higher returns over a period of time.

The acceptable agreement may be a flexible cash lease. Amended rules for farm bill payments indicate that if the flexible component in the lease is not based on the land to be leased the landlord will not be held to be a "producer" for farm bill payment purposes. If in doubt about a flexible cash lease, it may be advisable to have the local FSA Office review the flexible terms in the lease. The "flexible lease rule" regarding farm bill payments is in Notice DCP-172 available online at: http://www.fsa.usda.gov/Internet/FSA_Notice/dcp_172.pdf . Lastly, look for the web-based tool dealing with evaluating lease alternatives online at the Purdue Ag Econ web site at: http://www.agecon.purdue.edu/extension/

Land Prices and Rents Expected to Move Higher

Craig Dobbins

The June 2007 Purdue Land Value and Cash Rent Survey found that Indiana farmland values and cash rents moved sharply upward. Cash rent for average quality farmland increased by 9.4% to a value of $139 per acre. Average farmland in Indiana increased 16.6% to a value of $3,688 per acre both compared to one-year earlier.

In addition to indicating larger margins, projected crop budgets also indicate that the variability in this margin is also much greater. A University of Illinois study indicates that for the tenant to have the same chance of a return the tenant's risk premium in this new environment needs to be more than twice as large as the risk premium in the period from 2001 to 2005.

Cash rents for 2008 are expected to move higher. Budget projections indicate rent increases of 10% to 25% could occur since many rents were set before the sharp rise in crop prices last fall. These cash rents may need "catching up". For those cash rents that were adjusted last year, or for areas hit hard by dry weather this summer, the changes will be lower. In this environment, it is important budget individual situations and to develop a risk management plan.

Rising farmland values are likely to continue upward by 5% to 15% for 2008 due to:

- Expectation of improved crop returns
- A limited supply of farmland on the market,
- An increased demand from farmer and others wanting to invest in farmland
- Modest long-term interest rates and
- A strong liquidity position of buyers.

The negative side of the land market includes uneasiness in financial markets that could push long-term interest rates higher and the supply of land may be up as some owners may think it is time to sell, but for now, there are more buyers than sellers.

Finance and Agribusiness Outlook

Mike Boehlje and Chris Hurt

The financial performance of farm and agribusiness firms has been very strong in 2007. The Indiana farm sector is in the midst of a boom in their financial wellbeing as well. Indiana farm income was $1.5 billion in 2006, about 25% higher than the yearly average for the previous ten years. Purdue estimates for 2007 are for farm income to reach $2.2 billion or an additional 45% above 2006. In addition, these strong farm incomes are not expected to fade in 2008 and to thus remain near $2.2 billion.

Higher incomes are only one measure of the improving Indiana farm financial situation. Another is increasing levels of financial equity. In 2007, the equity position of Indiana farms improved by an estimated $8.3 billion.

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Thus, the equity increase in 2007 was the equivalent of about 7 years of average income ($8.3 billion divided by $1.2 billion average annual income for the previous ten years). The large increase in equity is mostly driven by 17% higher land values in 2007.

Can these good fortunes continue for Indiana's farms and agribusinesses? What are the risks? Perhaps the greatest immediate risk is margin reduction in 2008 due to higher input costs and rising cash rents. But, prices for commodities could move upward given low world stocks.

In general, the business climate and financial outlook for the farm and agribusiness sector is very favorable for the next 1-2 years. But be cautious as both cash costs and price variability increase in the future.

Producers are encouraged to focus on "margin management" implying careful consideration of costs and revenues. Price inputs and crops with a view to locking in margins. Crop and/or income insurance will be a critical tool in protecting margins. Constant evaluation of margin levels and the risks to margins is required. Managers should develop trigger points when margins are jeopardized and a plan to deal with the margin threats.

Conservatism and diversification are also advised. Conservatism means not taking major positions based on a "hoped for outcome". Diversification keeps producers and agribusiness managers from having too many financial eggs in one basket. The objective is to increase the odds of survival by managing downside risks while still leaving an acceptable amount of opportunity in place for favorable outcomes.

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