

## **Indiana Grain Production Sector**

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**Review 2004 to 2008:** Indiana's grain production sector is in a period of dramatic adjustments to major world drivers of change. The drivers include short crop production in some key growing areas of the world, rapid world income growth, especially in developing economies where increasing incomes result in increased food demand, a weakening U.S. dollar, and a world shifting increasing portions of crops to fuel production. As a result, the economic environment has shifted from major crop surpluses to one of basic commodity shortages, with growing concerns for food security and record high grain prices.

As a result of these dynamics, the Indiana grain sector has had wide swings in planted acreage, sharp increases in crop prices, sharp increases in production costs, surging land values and cash rents, record incomes for crop producers, but with much greater variability and heightened uncertainty for the future.

New grain and soybean processing is a major change factor in the state. Ethanol plant development is the key driver for corn use. In 2007 and 2008, a total of 10 new plants have/will open with capacity to use an additional 275 million bushels of corn, or 28 percent of the record high 2007 production. Total corn processing capacity in the state by the end of 2008 is estimated at 550 million bushels.

Corn demand for the state's animal sector has seen modest growth from an estimated 152 million bushels in 2004 to 170 million bushels in 2008. This growth has been primarily due to a 14 percent increase in market hog numbers from 2004 to 2008 and from small growth in dairy and poultry numbers.

For soybeans, a major new processor opened in 2007 with a capacity to crush an additional 50 million bushels per year, or 24 percent of the reduced 2007 state crop.

**Situation for 2009 to 2012:** In the next few years, the crop production sector is expected to continue to adjust to forces already in motion. The largest annual increase in ethanol production capacity will be put in place in 2008. By the end of the year, most of the corn ethanol plants under construction in the U.S. will be completed. There will then be a lull in new plant openings in 2009 and 2010. This is expected to be true for both Indiana and the nation in total.

The years of 2009 and 2010 are viewed as a period where crop production catches up to the new demands associated with the corn ethanol plants built in 2007 and 2008. It may take until the 2010 crop for world production to reach levels which are in better balance with world demand.

This period from 2008 to 2010 will be one of adjustments for both crop producers and end users. This means that the domestic animal sector, the industrial sector (starches, etc.), foreign buyers, and of course the food sector will be changing. Food prices will continue to adjust higher and final consumption patterns among end-users will also adjust.

The crop production sector will have strong incentives to increase output in the next few years. That expansion will have both “extensive components” as some previously uncropped lands come into cultivation, and also “intensive components” as greater levels of inputs and technology are used to increase crop yields. Further development and implementation of specific attribute crops is expected as well.

The years of 2008 to 2010 are also expected to be a period of important research and development of new generation ethanol crops and ethanol extraction processes from cellulose.

In the 2010 to 2012 period, the focus for energy crops is expected to shift toward the commercialization of cellulosic crops for fuel production. While corn residue is expected to be one of the first raw materials to be exploited in Indiana, there will also be new potential demands for cellulose from pasture lands, woodlands, and forest.

The economic environment for crop producers will be full of opportunity and risks. Crop and input price variability is expected to be extreme. Adding to the uncertainty is the importance of energy economics and uncertainties that come with the direction of energy markets. Indiana’s crop producers are “head-long” into the energy business which has a history of volatility and huge cyclical swings.

### **Implications:**

1. **Land Use-Extensive:** The landscape of Indiana will likely be changing. Of the 15 million acres in farms in the state, there is land that can be added to the cropping base. There are 450,000 acres of pasture or grazing land in the state that is considered crop land. Portions of this land can be converted to cropping, particularly wheat production. Secondly, there are currently about 300,000 acres of Conservation Reserve Program (CRP) acres in the state. Contracts on about 125,000 of those acres will be maturing by 2012. Third, there is an additional 425,000 acres of grazing land on farms that is considered non-crop land, and finally Indiana farms have 1.2 million acres of woodlands (cellulose).
2. **Land Use-Intensive:** High prices for crops will continue to stimulate increases in input use that increase yields. This includes both more inputs such as fertilizer and chemicals, but also products such as seed genetics with multiple traits, and precision equipment for site-specific farming. The approach will be to maximize returns from each smaller area within a field in order to maximize total returns. More double cropping can be anticipated such as the

traditional wheat/double-crop soybeans, but also new concepts of double cropping such as corn/corn residue cropping.

3. **Technology:** A dynamic period means opportunity for the discovery and application of new technologies. High income for many agribusinesses is stimulating larger investments in research. The Federal Energy Bill has also established the pathway for major expansion of bioenergy over the next two decades and is bringing larger funding for public research as well. This means increased needs for education and training in understanding and implementing these new technologies.
4. **Infrastructure:** The changing Indiana landscape will mean needed changes in infrastructure such as transportation. Corn ethanol plants are already altering the needs for these services. Growing volumes of ethanol will have to be transported to East Coast markets raising questions of the most feasible and economic way to do this: rail, truck, or pipeline. Movement to more identity preserved crops may mean the need for more specialized storage and tracking systems. Anticipated development of cellulosic ethanol will require development and implementation of new handling, storage, and transportation systems.
5. **Rural Renewal Opportunity:** Higher incomes on crop farms, greater interest in going back to the farm, added job opportunities from grain and animal product processing facilities in non-urban communities will create growth opportunities in rural areas. While many citizens will view these opportunities as positive, these opportunities will foster environmental and social issues that need to be addressed.
6. **Risk Management:** The risks of doing business in crop production have increased sharply. These include concerns over availability for inputs such as fertilizers and seed. But also for availability of supplies of corn for ethanol plants or for animal industries. They extend into marketing institutions where grain elevators recently have been unable to provide contracting service to their farmer customers due to the excessive risks involved. Those marketing risks may extend further into changes in futures markets that may have allowed larger positions and greater trading activity from hedge funds and other non-traditional participants. Such massive changes in the crop/animal industry dynamics are putting some animal producers near financial ruin. Lenders are voicing concern they are seeing from agribusinesses ranging from animal producers to grain elevators.

#### **Actionable Strategies:**

1. Examine Indiana's current land use and how that may be changing in the future. Identify and quantify the land that could be in transition. Identify constraints to land coming back into crop production. Identify externalities from land moving into production such as soil

- erosion, water quality, flood control, wildlife habitat destruction, etc. Does the state have a role along with other USDA agencies and Purdue to enhance these opportunities?
2. Technology development remains a key to the degree Indiana will participate in the gains of this era. Indiana is home to several small regional seed producers, as an example. What is the state's role in helping these companies (and others) develop and commercialize the technology that will be needed to enhance the productivity of the grain sector for producers and processors?
  3. Also of critical importance will be education of citizens in understanding and implementing these new technologies and crafting public policies that will provide an appropriate balance between competing interests. What is the state's role in this identification and educational mission?
  4. Agriculture and rural communities are ripe for further renewal. How does the state foster this opportunity for rural communities?
  5. Larger and changing risks imply the need to examine the state government agencies that interface with individuals and companies that face these increased uncertainties. These might include financial lenders, state government agencies and programs such as the Grain Buyers and Warehouse Licensing Agency, and Grain Indemnity Corporation. Does the state need a reexamination of these programs?

#### **Specific Programs:**

1. **Land Use Study** – An examination of current and probable land use with a focus on land that may be in transition into either traditional or new energy crops. A specific focus should be on how to reduce externalities that may be created such as erosion, water quality, and wildlife habitat.
2. **Cropping Systems Management Education** – An integrated program with Agricultural Economics, Agronomy, Entomology, Botany & Plant Pathology, and Agricultural and Biological Engineering to address production and management issues of farms.
3. **Farm Change Panel** - A randomly selected group of commercial farmers that provide data on yields, input usage, and production costs to monitor changes occurring in Indiana's grain production sector.
4. **Risk Management Education** – Educational programming for agricultural financial lenders, input suppliers, grain buyers and farmers on the importance of risk management and tools such as futures markets, crop insurance and diversification to reduce economic impacts of risk.