



Ag Decision Maker

A Business Newsletter for Agriculture

Vol. 11, No. 5 www.extension.iastate.edu/agdm March 2007



Energy agriculture - corn ethanol

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Agriculture in the United States is on the threshold of the biggest change in decades. The rapidly expand-

ing corn ethanol industry is the primary driver. Concerns about potential corn shortages are being heard in an industry that has traditionally been plagued by excess production capacity. This is a huge paradigm shift for individuals and businesses involved in production agriculture. Most of these changes are positive for the industry, but there are also challenges.

This change is caused by the agricultural sector entering the energy industry. Although the actual role agriculture will play in supplying energy is still uncertain, a significant contribution by agriculture will require a major change in the agriculture sector. Presented here are some of the impacts this change will have.

A commodity business
Most of agriculture's current contribution to the energy industry is in the form of corn ethanol.

Corn ethanol production is a commodity business requiring the purchase of commodity corn and the sale of commodity ethanol. A characteristic of commodity industries is that they expand production until profits are driven to a minimum. Corn ethanol is probably no exception. Ethanol production capacity will expand until either the price of ethanol is driven down, the price of corn is driven up, or both. Only when rates of return are no better than investment returns in the rest of the economy will ethanol expansion stop. The corn futures market is signaling that at least a portion of this process will be driven by rising corn prices.

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Handbook updates
For those of you subscribing to the handbook, the following updates are included.

2007 Corn and Soybean Loan Rates – A1-34 (2 pages)

Lean Hog Basis – B2-41 (1 page)

Livestock Enterprise Budgets for Iowa -2007 – B1-21 (22 pages)

Live Cattle Basis – B2-42 (1 page)

Feeder Cattle Basis – B2-43 (1 page)

Please add these files to your handbook and remove the out-of-date material.

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Not your traditional price pattern

We have had years of high corn prices in the past, notably 1995, 1988, 1983 and 1974. However, this price pattern is different than previous periods of high corn prices. Price spikes in the past have been either partially or entirely caused a reduction in the supply of corn. Too little rain, too much rain, early frost, etc. have all combined to periodically reduce the supply of corn, leading to rising prices. However, these weather phenomena are usually short in duration (one year) resulting in a return to normal production in the following year and a reduction in corn price. However, the current high price pattern is caused by expanding demand, not reduced supply. So we are in uncharted waters as to how this price pattern will evolve.

History of little significance

People are using historic prices and price relationships to make projections of future profitability and viability of everything from bio-fuels businesses to agriculture in general. However, by all indications, we are entering a new era in agriculture. Where it will take us, no one knows. But the one thing we do know is that agriculture's future will probably not be like its past.

A rising tide lifts all boats

"A rising tide lifts all boats" is often used in economic circles to indicate that a growing economy benefits all people. Whether or not this is true for the economy, I believe it is true for grain production. Stated in a different fashion, "rising corn prices lift all grain prices." This is because high corn prices are not caused by a limited supply of corn acres. Rather, high corn prices over the long term are caused by a limited number of total cropland acres. Corn genetics have greatly expanded the geographic area that can produce corn. However, if we have more acres of corn, it means we have fewer acres of something else. And a shortage of the other crop will drive up the price of that crop. Expanding corn acreage in the Corn Belt will reduce soybean acreage. Reduced soybean acreage will drive up the price of soybeans. Higher soybean prices will expand soybean acre-

age in other areas like the Great Plains. Expanded soybean acreage will reduce wheat acreage. The reduced number of wheat acres will drive up the price of wheat. And on it goes. So grain farmers that don't raise corn will also receive benefits.

Impacts on the livestock industry

Higher feed prices are putting pressure on livestock profits. Economic theory tells us that higher feed prices will eventually be translated into higher meat prices. Because the demand for meat is relatively unresponsive to price changes, consumption will not drop precipitously. However, the transition period will not be pretty.

There is concern that the ethanol industry will cause a reduction in livestock production in the heart of the corn growing area, especially for hogs and poultry. Although distillers grains are a feed by-product of the ethanol process, the total feed supply is reduced sharply. For every pound of corn that goes into the ethanol process, only one third of a pound comes out as distillers grains. Also, taking the oil out of the corn germ eliminates an energy source from the distillers grains.

Substituting ethanol production for livestock production will have a negative impact on rural farm employment because a bushel of corn fed to livestock generates more employment than when it is processed into ethanol. This appears to be true for all species and production methods of livestock. And much of the livestock employment occurs on the farm (although it is decreasing) while all of the bio-fuels employment is off the farm.

However, in the long-term, ethanol and livestock may find ways to co-exist. Research into the use of distiller's grains as livestock feed is yielding interesting results. It indicates that distillers grains can comprise up to half of the ration of cattle (both beef and dairy) whereas a few years ago we thought that distillers grains could comprise only a small portion of the ration.

Research being conducted on finishing cattle on wet distillers grains and corn stalks is yielding en-

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couraging results. Research is also being focused on using increased amounts of distillers grains in hog and poultry rations. The fractionation of corn may create a more refined division of the corn kernel into the portion used for ethanol and the portion used for livestock feed. These changes provide hope that the feed industry and the ethanol industry can co-exist and thrive.

Other dislocations

The expansion of corn production will cause dislocations for other crops. The most obvious one is soybeans. Increasing corn acres in Iowa will result in fewer soybean acres. Soybean acres will probably move to the fringes of the Corn Belt and west into the Great Plains. As a result of this shift, soybean processing plants may be out of position with production. A problem may also arise for feed mills.

Meeting the demand

Can we increase crop production to meet the expanding demand posed by renewable energy and still meet the needs of the food industry? In other words, can we serve two masters – food and fuel? U.S. agriculture in modern times has never been challenged to see how much it could produce. Secretary of Agriculture Earl Butts did encourage farmers to plant fence-row to fence-row in the 1970s. But that expansion was not of the intensity and potential duration that we are seeing today.

There is little doubt that we can increase crop output over the coming years. Some of the ways production will increase are listed below.

- Trend line increases in corn yields will continue. Many analysts believe that the rate of increase in yields will increase.
- Improved crop genetics will increase the amount of corn produced on marginal lands. The corn growing region of the U.S. will expand, especially into the Great Plains. Good hybrids with shorter growing season requirements, reduced disease stress during dry conditions, and drought tolerance are all being touted by the seed industry.

- Conversion of some CRP land and other grassland areas to crop production.
- More research funding will focus on increasing agriculture's production potential through improved inputs, cultural practices, etc.
- Increased usage of tile drainage to increase productivity. Higher grain prices will provide the financial incentive.

Will these be enough to meet the emerging energy demand while maintaining our commitment to food, feed, exports and conservation? No one knows. But U.S. agriculture has never had a challenge like this before. I suspect that we can do more than some people give us credit.

Farmland, the limiting resource

The scenario I describe above would seem to be of great benefit for grain farmers. However, that is not necessarily the case. Profits accrue to the limiting resources in agriculture. Farmers are not the limiting resource, farmland is. We can see this by the line-up of farmers that develops every time a tract of land comes up for sale or rent. Because land is the limited resource in producing grains, it becomes the residual claimant of profits. Farmers bid aggressively to expand their land base and farmland rental rates quickly rise to the point where grain farmer's profits are reduced to levels in existence before the grain price rise. Rising rental rates and expectations of future increases are quickly capitalized into land values. So the biggest beneficiary is the land owner. Granted, many farmers are both farm operators and land owners. However, over half of the land in Iowa is rented, often from an out-of-state landowner.

Crop price volatility

In this new environment grain prices will be influenced by both food factors and energy factors. The demand from the food sector is relatively stable. Changes in demand are driven by changes in population, consumer incomes and consumer tastes and preferences, all of which change slowly. Food supply is also relatively stable, except during

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periods of poor growing conditions or food safety issues. A stable food industry has led to relatively stable crop prices over recent decades.

By contrast, the energy industry is going through a period of monumental change, leading to uncertainty and rapid changes in supply and demand conditions. This will lead to volatile energy prices which in turn will lead to volatile grain prices.

A whole new set of factors will have a direct impact on grain prices. Crude oil pricing decisions by Saudi Arabia, Venezuela, Russia and other exporting countries will have a direct impact on U.S. grain prices. Terrorist and other crude oil supply

disruptions will impact grain prices.

Also, due to the added energy demand from countries such as China and India, the modest surpluses of the past will become even smaller or non-existent. There will be more periods of shortages.

However, in light of all of this uncertainty, one thing is certain: the proper use of risk management strategies and tools will be of critical importance to the welfare of farmers.

Next issue: Energy Agriculture – Beyond Corn Ethanol.



Value of manure nutrients

by Kelvin Leibold, kleibold@iastate.edu and Tom Olsen, tolsen@iastate.edu, Farm Management Specialists

The change in the size of livestock operations has resulted in increased interest in valuing manure and using it as a crop nutrient. Manure, especially deep pit liquid hog manure, is widely accepted as a viable source of organic nutrients. Its use as a fertilizer replacement has increased the interest in putting a value on the use of manure. In part, this interest has supported the growth of the livestock industry in recent years.

Component pricing

The most common method of valuing fertilizer is component pricing. The manure is sampled and tested to determine the nutrient content. Then this analysis is used to determine the value based on commercial fertilizer prices. There can be a considerable range in the projected prices of commercial fertilizer nutrients, depending on material type (dry, liquid, or gas), method of application, and the time of year applied. In addition, the manure would contain other components such as sulfur, iron and organic matter. This method does not take into account nitrogen losses and crop utilization.

Manure nutrient value versus a commercial fertilizer budget

Manure is a fertility package. The nutrient components as applied will not be in the same proportion as a commercial fertilizer recommendation. Value adjustments may need to be made to account for these differences. Some manure components that are in excess of crop needs may be discounted. Consideration also should be given to shortages (especially P and K) if they need to be supplemented commercially.

Bulk commodity market price

Another method used to price manure is to price it as a bulk commodity where you have sellers and buyers. If you are in an area that has an abundance of supply and limited demand, the price will be driven down. If demand outstrips supply, the price will be bid up until it balances out with the demand. The nutrients will have a different value depending on the location and local situation. Transportation and distribution costs become a factor in what the value is worth and how much the buyer can negotiate the price. If there is

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an over abundance of manure in one area and the livestock producers are faced with high transportation costs to move it out of the area, they may be willing to reduce the price in order to avoid significant transportation costs.

Limitations

Some of the concerns with using manure as a source of crop nutrients are soil compaction from application, uniformity of the product, uniformity of application, fixed analysis, impact on planting date, increased weed pressure, or increased disease pressure. The "net present value" of applying phosphorus and potassium on very high testing soils may not equal the cost of the freight. Manure is not always a uniform product. Even from year to year there are differences in manure nutrient analyses because of changing swine diets that include phytase, dried distillers grains and synthetic amino acids. Manure from these rations tends to have lower nutrient analysis, making it less valuable per gallon. This also increases the cost of application per unit of fertilizer, and this highlights the importance of having and using a good manure analysis program.

Conclusion

Manure has a lot of valuable nutrients. It can be very cost effective to haul manure to where it is needed. A producer needs to know the quantity of

manure available, the nutrient analysis of the manure, the crop needs, the current soil test results, and the handling and application costs. The use of manure may result in increased or decreased yields when compared to traditional fertilizers, depending on a number of reasons. Crop producers need to predict how well they can manage manure as a fertilizer source and what the overall impact will be over a number of years. If they can do this, they will be better able to determine the value of the manure in their farming operations.

For information on compliance regulations and application agreements, visit the Manure Management Action Group website: <http://extension.agron.iastate.edu/immag/>.

A Manure Calculator spreadsheet from the Ag Decision Maker web site can assist in calculating the value of manure. This spreadsheet is available at:

<http://www.extension.iastate.edu/agdm/livestock/xls/b1-65manurecalculator.xls>.

For more information on valuing manure, see the full version of this article in the Ag Decision Maker Information File B1-65, Value of Manure Nutrients.

Publications feature the economic impact of agriculture in Iowa counties

Agriculture is a large part of Iowa's economic structure. Now two Iowa State University (ISU) Extension specialists have developed a set of fact sheets that provide county-specific numbers on the role of agriculture plays in the economy of Iowa and each of the state's counties.

"While the statewide numbers are impressive, the report indicates that in many of the more rural parts of the state, agriculture and ag-related businesses are the major activity," said Dan Otto, ISU Extension economist and one of the authors.

"The research points out that agriculture is more than farm-level production. Related activities include inputs and services, agricultural processing and secondary spending with main street businesses. The report is a good reminder of the important relationship between rural communities and agriculture here in Iowa," he said.

The publications offer statistics on the agricultural industry in each of the state's 99 counties along with specific economic analyses of livestock, corn

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and soybean production in comparison to the non-agriculture industry.

The analysis for these publications was drawn from a more detailed report prepared by Otto and Mark Imerman with assistance from Dave Swenson and Liesl Eathington. The report was funded by The Coalition to Support Iowa Farmers and is available at: www.econ.iastate.edu/outreach/agriculture/agri-food/.

The next U.S. Census of Agriculture will be conducted in 2007, and the economists expect to update this series of publications once the Census results are made available.

The publications are available only on the Web at www.extension.iastate.edu/store/. To go directly to the publication, enter PM2023 in the search box in

the upper right corner of the screen, then click on the red "Download in PDF format." This will bring up a map of Iowa and a list of counties. Click on the county name in the list or on the map that you are interested in and a copy of that publication will appear.

A link to these publications is available on the Related Web Sites page on Ag Decision Maker.

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Internet Updates

The following updates have been added to www.extension.iastate.edu/agdm.

Value of Manure Nutrients – B1-65

Ten Ways to Cut Cattle Feeder Costs – B1-71

Managing Family Farm Finances – C3-51

Building Equity in Your Farm Business – C3-60

Obtaining a Business Loan – C5-95

New Ways of Thinking about Your Farm Business – C6-43

Decision Tools

The following decision tool has been added to www.extension.iastate.edu/agdm.

Valuing Manure – Use this *decision tool* to analyze the value of manure nutrient components.

... and justice for all

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