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Ethanol and Feed Cost Implications

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Much has been made of the USDA Planting Intentions Report that showed corn farmers intend to plant over 90 million acres this spring. After the report May corn futures dropped about 50 cents, from about $4.00 to about $3.50. Prices have now recovered about $0.20 of the losses, and May futures are now trading at about $3.70.

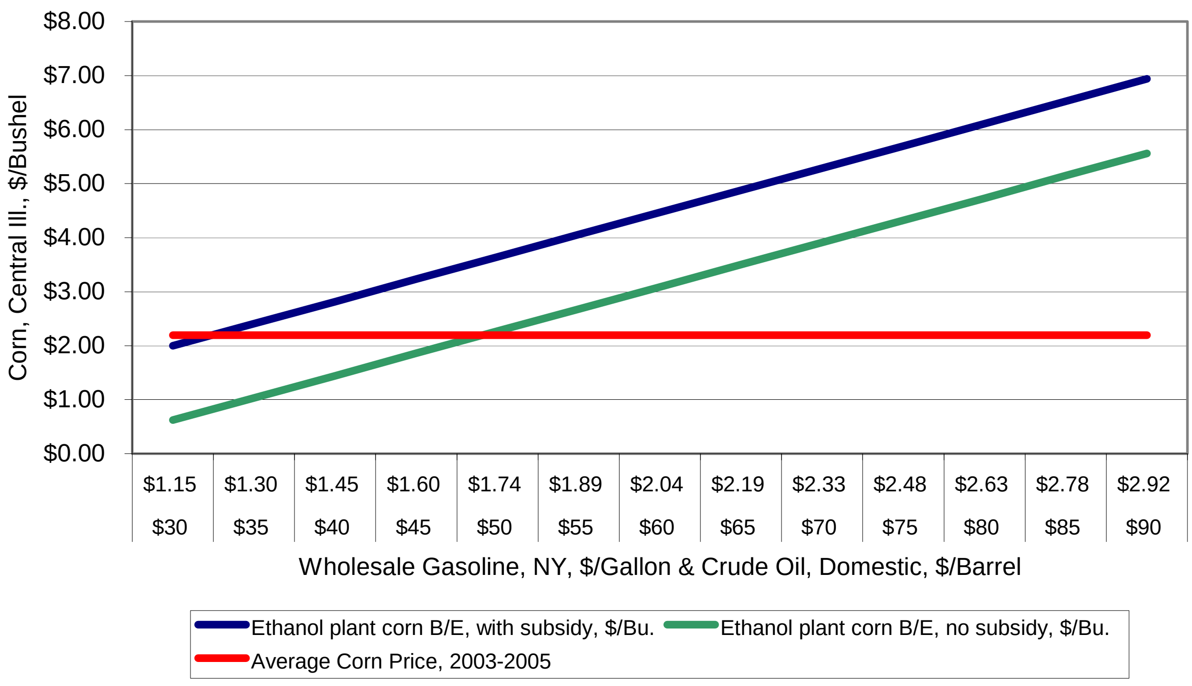
Given the magnitude of the corn crop that would be possible from 90 million acres why did futures prices not drop even more? In a word the answer is ethanol.

To understand the impact of ethanol on corn prices you need to understand what corn is worth to an ethanol plant. The upper limit of corn value to the ethanol producer is set by these major factors:

1. The wholesale price of gasoline, and indirectly crude oil
2. The cost of converting corn to ethanol, including a profit for the ethanol plant
3. The offsetting value of by-product feeds produced by the ethanol process
4. Subsidies from federal and state governments to ethanol producers

Except for state subsidies all of this information can be summarized in the chart below:

Corn Breakeven (B/E) for Ethanol Production
With and Without the $0.51/Gallon Federal Ethanol Subsidy



The chart was constructed using USDA survey[1] results for costs of ethanol production plus an assumed $0.20/gallon return for management and invested capital. The by-product value was assumed to be in proportion to corn prices. The corn value with the federal subsidy is the minimum value of corn to an ethanol producer. There are also

[1] Hosein Shapouri and Paul Gallagher. USDA's 2002 Ethanol Cost-of-Production Survey. USDA, AER 841. Office of the Chief Economist, Office of Energy Policy and New Uses. July, 2005

state subsidies not in this analysis, and an additional $0.10/gallon federal subsidy for smaller ethanol plants.

The difference between the two lines is $1.38 per bushel. This is simply the $0.51 subsidy times an average ethanol plant yield of 2.7 gallons per bushel of corn. The subsidy has the effect of raising the value of corn to the ethanol producer by this amount. State subsidies would make corn even more valuable.

With crude oil under $50 the ethanol industry - without subsidies - was not viable with corn prices of over $2.00. At $60 per barrel of oil (near current prices) corn at $4.47 will still earn an ethanol plant a return of at least $0.20 per gallon. Without any subsidies the plant could still afford to pay $3.09 per bushel of corn and earn that same profit. If oil goes to $75, with the subsidy corn is worth at least $5.70 to the ethanol producer, $4.32 with no subsidies.

Implications: As long as crude oil stays near current levels, or higher, ethanol production does not need subsidies to be able to afford corn at prices of up to $3.00. With corn under $4.00, crude oil over $60, and the subsidy program in place, ethanol plants will continue to be built until higher corn prices discourage further construction. In fact, ethanol production will expand until corn prices are high enough offset the effects of the subsidies, and ethanol producers will be no better off for them. In the end this is effectively a massive crop subsidy program, not an energy subsidy program.

Why will ethanol production continue to grow? To reach the goal of 100% of U.S. gasoline fuels blended with 10% ethanol (E10) will take about 20 billion gallons of ethanol per year. We would need 7.4 billion bushels of corn per year for that much ethanol. USDA forecasts that ethanol will use 2.15 billion bushels of corn from the 2007 crop. The difference between today and full E10 production is at least 35 million **more** acres of corn, or 125 million acres per year. Corn will thus displace other crops to some extent, also raising soybean, wheat and cotton prices.

We simply do not have the productive land for enough feed, exports, food use and this level of ethanol. Higher corn prices will stop ethanol growth long before the ethanol market reaches saturation. U.S. consumers will pay the price, not only at the gas station, but also at the grocery store.

In summary, the ethanol industry may represent one of the greatest challenges ever faced by the U.S. meat and poultry production sector. Even without subsidies current oil prices imply that corn is worth more to the ethanol producer than it has historically been worth for food production. With subsidies ethanol production is going to cause major downward adjustments in U.S. animal agriculture production and crop exports.

Animal agriculture is now competing not only with other meats, but also oil companies and the deep pockets of the Federal government. It hardly seems like a fair fight.