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**1 P.M. (EDST), THURSDAY, MAY 17, 2007**

## **Study Warns U.S. Near Tipping Point in Corn-Based Ethanol**

WASHINGTON – A major new study officially issued today conservatively estimates that increased corn prices driven by rapidly expanding U.S. ethanol production already have increased U.S. retail food prices by \$14 billion annually.

Further, the study finds that the increase in U.S. retail food prices could reach \$20 billion annually under a scenario in which crude oil prices range from \$65 to \$70 per barrel and U.S. corn prices reach \$4.42 per bushel, compared to the \$2 per bushel that existed in mid-August 2006.

Under the high-price crude oil scenario, the study projects that U.S. ethanol production could reach 30 billion gallons by 2012, consuming more than half of U.S. corn, wheat and other coarse grain production and triggering higher meat prices for consumers, reduced production across-the-board for all segments of the meat sector, and even greater reductions in grain and meat exports.

“We recognize the importance of the United States diversifying its energy sources to enhance energy security,” said J. Patrick Boyle, president and chief executive officer of the American Meat Institute (AMI), one of the study sponsors. “But this study clearly shows that we are reaching a tipping point, and that over-reliance on corn-based ethanol to meet stringent government mandates would further drive up retail food prices, reduce domestic meat and poultry production, and erode our vital meat and grain export markets.”

The study does indicate that corn yield gains ultimately would provide sufficient additional corn stocks to moderate grain price increases if corn-based ethanol production peaks at 14 billion to 15 billion gallons annually by 2010, when existing ethanol plants

and those already under construction come online. The study projects that under this scenario, corn prices would peak at about \$3.43 per bushel in 2009 before leveling off at \$3.16 per bushel by 2016. Ethanol production at that level would equate to approximately 10 percent of U.S. gasoline consumption.

Importantly, the study also finds that cellulosic ethanol likely will not be a panacea to achieving U.S. ethanol-production mandates, meaning the vast majority of ethanol growth for the foreseeable future likely will come from corn. Specifically, the study found that neither corn stover nor switchgrass planting as replacement feedstocks for ethanol makes economic sense on U.S. acres capable of growing corn. It concluded that because of high conversion, handling, logistics and capital costs and constraints, cellulosic ethanol would be viable economically only if the U.S. government funneled approximately \$270 per acre in subsidies to entice producers to convert from corn to switchgrass.

The study finds that the fragile U.S. corn stocks situation would be susceptible to any supply disruption resulting from drought, reduced yields or shifts in cropping patterns. Specifically, it states that if the United States was producing 14.7 billion gallons of ethanol annually and sustained yield losses comparable to what occurred during the 1988 drought, U.S. corn and soybean prices would increase to \$4.75 and \$8.50 per bushel, respectively. That would trigger a 60 percent decline in U.S. corn exports and corn stocks, the study projects, and a 50 percent increase in feeding of U.S. wheat to livestock.

“From a grain and feed sector standpoint, we support the goal of greater U.S. energy security, and of using biofuels as a partial means to attain that goal by diversifying our energy sources,” said Kendell W. Keith, president of the National Grain and Feed Association (NGFA). “Biofuels also offer U.S. agriculture a way to diversify its markets. But this study shows that any supply disruptions in the United States or other major foreign grain-producing countries could result in major ripple effects on multiple users in the short run, triggering some herd liquidation, higher costs for grain processing sectors

(such as corn refining, oilseed processing and flour milling) and steep reductions in U.S. grain and meat exports.”

The study was conducted by the Center for Agricultural and Rural Development at Iowa State University, Ames, Iowa, to provide a realistic assessment of how large the U.S. biofuels sector could become, and to estimate the likely impacts it could have on crop markets, the livestock and poultry sectors, exports, and grain-based wholesale and retail food prices. It was funded in part by AMI, Grocery Manufacturers/Food Products Association, National Cattlemen’s Beef Association, National Chicken Council, NGFA, National Pork Producers Council and National Turkey Federation.

The study evaluated two crude oil price scenarios: one in which crude oil prices ranged from \$55 to \$60 per barrel, which the study projects would result in U.S. ethanol production reaching about 15 billion gallons annually; and the other in which crude oil prices ranged from \$65 to \$70 per barrel, which the study projects has the potential to increase U.S. ethanol production to nearly 30 billion gallons annually. Importantly, the study did not expressly project the impacts of higher federal mandates on renewable fuels production and use. But the ethanol production levels evaluated in the two crude oil price scenarios roughly mirror some legislative proposals being considered in Congress.

The study projected the following U.S. commodity impacts if season-average corn prices over a 10-year period ending in 2016 increased to \$4.42 per bushel (which the study projects would occur if crude oil prices ranged from \$65 to \$70 per barrel), compared to the \$2-per-bushel corn price that existed in mid-2006:

- **Pork:** Production costs would increase by 36.8 percent, production would decline by 9.2 percent, retail prices would increase 8.4 percent and exports would decline by 21 percent, reversing 15 consecutive years of pork export growth.

- **Poultry:** Broiler exports would decline by 15 percent, while turkey exports would fall by 6 percent. Wholesale broiler prices would increase by 15 percent, retail prices would increase by 5 percent and domestic consumption would decline by 4 percent.
- **Beef:** Retail beef prices would increase 4 percent and production would decline by 1.6 percent. Significantly, since the study projects that the price of distillers dried grains with solubles will closely track increasing corn prices, the impacts of such price increases are nearly as significant for beef and dairy as they are for hogs and poultry.
- **Corn:** U.S. planted acreage would increase by 44 percent, from 78 million acres in 2006 to 112.5 million acres. Meanwhile, U.S. corn exports are projected to decline from 2.4 billion bushels currently to as low as 911 million bushels – a 63 percent decline.

However, there is considerable uncertainty over how high corn prices would need to reach to sustain the 112.5 million acres of corn plantings the study projects would be required to produce 30 billion gallons of ethanol under the high-price crude oil scenario. That uncertainty is caused by the fact that prices of other competing crops would be expected to increase dramatically to compete for limited acreage, and because the United States has never experienced the market impacts of such a large, “permanent” corn price increase. If U.S. corn prices increase to even greater-than-projected levels, retail cost impacts on meat, milk and eggs could be greater than projected in the study.

- **Soybeans:** Soybean planted acres would decrease significantly from approximately 75 million acres in 2006 to 57.3 million acres. Projected season-average soybean prices would increase from approximately \$6.10 per bushel in 2006 to \$7.25 per bushel by 2008, and then rise to as high as \$8.07

per bushel by 2016. U.S. soybean exports would decline by about 300 million bushels to 594 million bushels – a 33 percent drop.

- **Wheat:** Similarly, planted wheat acreage would decline significantly – to 42 million. U.S. wheat exports are projected to decline to 483 million bushels. Projected farmgate wheat prices are estimated to reach \$5.27 per bushel.

The study also examines the impacts that removal of some acres from the Conservation Reserve Program (CRP) and eliminating the current tariff on ethanol imports would have on U.S. agriculture.

The study notes that the CRP, as the largest source of available U.S. tillable acres, could play a useful role in “alleviat(ing) some of the financial stress on livestock producers” (during the early years of rapid ethanol growth), as well as mitigate short-term disruptions in grain supplies. However, it finds that shifting 11 million of the 36 million CRP acres into crop production would have only a mild tempering impact on long-term constrained supplies of basic commodities, adding just over 1 percent to corn supplies and reducing long-term corn prices by 2.2 percent (7 cents per bushel) under the low-price crude oil scenario.

In addition, given the study’s finding that corn prices could increase to a level that caused 15 million acres of wheat land to be diverted to corn production under a high-price crude oil assumption, additional land coming out of the CRP could relieve some of the economic stress on the U.S. wheat sector and keep the United States competitive in global wheat exports.

In assessing the impacts of the ethanol sector on retail food prices, the study measured only the direct effect of higher feed costs. It did not consider such “second-round” impacts as demands from employees for higher wages to compensate for higher food costs. Nor did it consider ancillary food-cost impacts on other land-intensive crops, such as vegetables.

Also not within the scope of the research study were several important unintended consequences that could result from a sharp increase in the quantity of corn used for ethanol. These include the impacts of additional plantings on environmentally sensitive land in major crop-producing countries; the availability of grain-based humanitarian food aid to respond to world hunger needs; and the availability and cost of healthier oils currently being used to replace trans fats and saturated fats for cooking and in many foods.

Concerning the current 54-cent-per-gallon ethanol import tariff, the study found that its elimination would increase imports of foreign-produced ethanol by 136 percent. But the volume increase would be relatively modest – rising from 314 million gallons annually to about 743 million gallons. However, the study notes that “under free ethanol trade, ethanol imports could play a bigger role in attenuating the negative impact of short crops under an ethanol mandate as blenders could source the ethanol more cheaply abroad.”

The study is available from Iowa State University’s website at:  
<http://www.card.iastate.edu/publications/synopsis.aspx?id=1050>.

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