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## Ethanol, Oil and Corn

Richard K. Perrin

*University of Nebraska-Lincoln*

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# CORNHUSKER ECONOMICS

UNIVERSITY OF  
**Nebraska**  
Lincoln

February 14, 2007

University of Nebraska–Lincoln Extension

Institute of Agriculture & Natural Resources  
Department of Agricultural Economics  
<http://www.agecon.unl.edu/Cornhuskereconomics.html>

## Ethanol, Oil and Corn

Market Report	Yr Ago	4 Wks Ago	2/9/07
<b><u>Livestock and Products,</u></b>			
<b><u>Weekly Average</u></b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight . . . . .	\$88.34	\$87.03	\$89.69
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb . . . . .	139.47	116.06	117.90
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb . . . . .	112.86	*	99.26
Choice Boxed Beef, 600-750 lb. Carcass . . . . .	145.92	152.50	143.34
Western Corn Belt Base Hog Price Carcass, Negotiated . . . . .	58.75	56.67	64.33
Feeder Pigs, National Direct 50 lbs, FOB . . . . .	54.26	*	68.27
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean . . . . .	57.80	62.33	63.37
Slaughter Lambs, Ch. & Pr., Heavy, Woolled, South Dakota, Direct . . . . .	79.00	*	88.37
National Carcass Lamb Cutout, FOB . . . . .	219.71	240.44	240.14
<b><u>Crops,</u></b>			
<b><u>Daily Spot Prices</u></b>			
Wheat, No. 1, H.W. Imperial, bu . . . . .	3.95	4.50	4.36
Corn, No. 2, Yellow Omaha, bu . . . . .	1.91	3.65	3.84
Soybeans, No. 1, Yellow Omaha, bu . . . . .	5.41	6.66	6.98
Grain Sorghum, No. 2, Yellow Columbus, cwt . . . . .	2.79	6.07	6.23
Oats, No. 2, Heavy Minneapolis, MN, bu . . . . .	2.05	2.88	2.64
<b><u>Hay</u></b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton . . . . .	130.00	135.00	135.00
Alfalfa, Large Rounds, Good Platte Valley, ton . . . . .	65.00	87.50	92.50
Grass Hay, Large Rounds, Good Northeast Nebraska, ton . . . . .	52.50	82.50	90.00
* No market.			

When will ethanol plants stop being built? Ethanol plants *under construction* in Nebraska will have the capacity to grind over 40 percent of the Nebraska corn crop by the end of 2007, and nearly 60 percent by the end of 2008. Nationally, capacity for these years will be roughly 25 percent and 35 percent of the crop. The plants under construction will bring total annual ethanol production to 11 billion gallons or so, well over the renewable fuels standard of 7.5 billion gallons by 2012.

By the end of 2008, ethanol will have replaced about seven percent of the country's gasoline consumption and will use about a third of the corn crop. Many more new plants are planned, with ultimate production expected to as much as double. This would comprise about a third of the 35 billion gallon renewable fuels target recently proposed by President Bush.

Plant construction has been fueled by the high ethanol prices and low corn prices. Ethanol has been in strong demand because of mandated reductions in Methyl Tertiary Butyl Ether (MTBE). When quantities demanded for this purpose last spring exceeded ethanol plant capacity, the price of ethanol soared. But the replacement of MTBE is nearly complete, so further increases in ethanol production will only find a market if ethanol is priced to be competitive with gasoline. What does that mean for ethanol price, and what does it mean for corn price?

If petroleum were priced at \$50/barrel, wholesale premium gasoline (ethanol has similar octane properties) would average about \$1.57/gal. Ethanol has only 66 percent as much energy per gallon as gasoline, so if motorists would be willing to pay on the basis of energy content, they would pay only 66 percent as much for a gallon of ethanol as for a gallon of gasoline. But ethanol blenders receive the Federal Volumetric Ethanol Excise Tax Credit (VEET) subsidy of \$0.51/gallon when they blend the fuel, so to be



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competitive with gasoline at the wholesale level, wholesale ethanol would have to sell for an average of about  $\$1.57 \times (.66) = \$1.04$  plus \$0.51, or \$1.55/gallon. (In recent years, the annual average wholesale price has ranged from \$1.12 to \$2.59/gallon). Plant operating costs are in the vicinity of \$0.55/gallon, plus another \$0.30 or so capital costs, not including the cost of the corn feedstock. The current direct federal subsidy to ethanol producers is \$0.10/gallon (for up to 60 m. gallon/yr), and some plants also qualify for state direct subsidies. Thus, to be able to cover all operating and capital costs, the maximum a plant could pay for corn would be about  $\$1.55 - 0.85 + 0.10 = \$0.80$ /gallon. Given that it takes a net purchase of one fourth bushel of corn per gallon of ethanol,<sup>1</sup> this translates to \$3.20 per bushel of corn. This logic can be extended to other prices of petroleum, with results shown in the figure below.<sup>2</sup>

With petroleum at \$50 and corn under \$3.20 (see the solid line in the figure below), there is an incentive to build ethanol plants. If corn prices rise above \$3.20, plants won't be built, but existing plants would continue to operate up to about \$4.30/bushel, where they could no longer cover operating costs (the dashed line). Thus the solid line indicates a long-run support level for corn prices, based on petroleum price.

In the short-run, however, it is quite possible that corn production, less quantities demanded for other purposes at these prices, would *exceed* the capacity of ethanol plants.

Then corn prices would fall, quite possibly to the \$2-3 range. On the other hand, production shortfalls could well lead to the high corn prices indicated by the dashed line.

Recall that these predictions are based on a continuation of current subsidies. Without them, the same calculations indicate that corn prices would be lower than those shown by \$2.44/bushel ... clearly, corn competes with petroleum only if ethanol is subsidized!

Richard K. Perrin, (402) 472-9818  
 Roberts Professor  
 Dept. of Agricultural Economics  
 University of Nebraska–Lincoln  
[rperrin@unl.edu](mailto:rperrin@unl.edu)

<sup>1</sup> One bushel of corn produces about 2.7 gallons of ethanol, plus about 17 lbs. (dry matter) of distillers grains. The market value of the latter is very close to the value of corn, on a dry matter basis, so the net cost of feedstock is equivalent to  $(1/2.7) \times (1 - 17/(56 \times .9)) = .370(1 - .337) = .245$  bushels of corn.

<sup>2</sup> Plants that qualify for such direct state subsidies as Nebraska's Ethanol Production Incentive Credit (EPIC) payment of \$0.18, would be willing to pay more for corn than the levels in the figure.

