



The Biofuel Revolution and You

Feeding & Feedstuffs

Experts predict the explosion in biofuel production will have major repercussions for the beef industry.

Story & photos by
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John Lawrence, Iowa State University (ISU) agricultural economist and director of the Iowa Beef Center, has no doubt that the pending biofuel revolution will affect every aspect of the U.S. beef industry. Geographic shifts in cattle populations, competing demands for once plentiful commodities, rising farmland prices, and a greater dependence on adaptability and self-reliance are just a few of the consequences of the new order.

“We are looking at the most significant change in agriculture in 50 years,” Lawrence says. “The world you operate in today is different than what it used to be, and those strategies that worked before may not work now.”

Corn will be king

Lawrence sees the greatest

driver in today’s interdependent ag economy as the price and availability of corn.

The U.S. Department of Agriculture (USDA) reports that in 2006 farmers planted about 78.6 million acres of corn. Nationally, corn production for that year was 10.9 billion bushels (bu.), at an average yield of 138.5 bu. per acre.

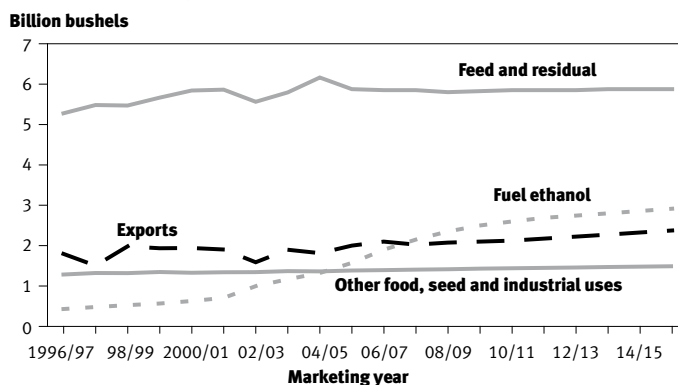
The Renewable Fuels Association reports that 2.1 billion bu. of the 2006 corn crop was diverted into ethanol production at 106 ethanol plants across the country. By the end of 2007, another 1.4 billion bu. of corn will be needed to feed 53 new or expanded ethanol plants. Once operational, U.S. plants will require 3.5 billion bu. of corn a year and will be capable of producing nearly 9 billion gallons (gal.) of ethanol annually. This represents roughly 25% of the 12.5-

billion-bu. harvest projected for next year.

Lawrence notes that these figures represent only the opening ante by

an exploding ethanol industry. With U.S. demand for gasoline hovering around 140 billion gal. per year and the potential of profiting from corn-

Fig. 1: Baseline projections of corn usage



Note: Feed and residual corn use is calculated by subtracting the other three categories plus ending stocks from total supply. Thus, the term “residual” refers to a statistical residual.

Source: U.S. Department of Agriculture.

based ethanol only improving with rising oil prices, he says he believes market forces will drive an unprecedented expansion.

Ethanol profits up

The Iowa Renewable Fuels Association (IRFA) reported in 2004 that the five-year-average after-tax return on investment for a typical dry-mill ethanol plant was 23%. That rate of return has sweetened substantially in light of crude oil jumping threefold in three years, from \$25 per barrel in September 2003 to \$75.35 per barrel in April 2006.

Based on fall 2006 gasoline prices, production improvements and projected government tax incentives, some economic analysts are projecting returns that double, triple and even quadruple the 2004 figure.

In response, Wall Street investors are plowing billions into ethanol plants. This includes some high-profile investors such as Bill Gates, who has recently dropped \$84 million into Pacific Ethanol Inc., a company poised to control a considerable share of the ethanol industry.

"The National Corn Growers Association (NCGA) lists plants in operation, plants under construction and plants being planned," Lawrence says. "If they all go on line, they are expected to produce 16 billion gallons of ethanol, which would require between 5.3 and 5.6 billion bushels. This year we are harvesting around 11 billion bushels."

Competition for farmland

Lawrence speculates that if prices remain high, more growers will plant corn in 2007. He notes that this, too, might have a negative effect on the beef industry, as fewer acres are available for forages and pasture.

"A particular piece of pasture ground might not be profitable for \$1.80 corn, but that could easily change with \$3 corn," he says. "In the Midwest we are going to lose pastures and alfalfa ground to corn."

North Dakota State University animal scientist and beef feed specialist Vern Anderson says we are already seeing feed corn prices rise dramatically as ethanol plants lock in their supplies. "Corn prices are going through the roof," he says. "Last week (Nov. 6-10, 2006) corn in Kansas feedlots was \$3.50, in Missouri it was \$3.80, and in the Texas Panhandle it was \$4.20."

Anderson sees additional competition for cropland coming from a dynamic biodiesel industry that will need soybean and canola acreage to fuel its growth.

Shortages becoming a reality

In spite of a projected increase in corn production next year from 11 billion bu. to 12.5 billion bu., Lawrence predicts that in the near future beef producers in some areas will not have the luxury of knowing that local suppliers always have feed corn available.

"We will have instances where elevators and communities will physically be out of corn," he says. "That's why it is

so important to plan ahead and make sure you have enough to get you through."

Lawrence stresses that having possession of your feed source will take precedence in times when corn is scarce. "For a livestock producer operating in a biofuel world, having physical control of your feedgrain will be very important," he says.

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More corn will be harvested for ethanol production. In spite of a projected increase in corn production next year from 11 billion bu. to 12.5 billion bu., ISU's John Lawrence predicts beef producers in some areas will not have the luxury of knowing that local suppliers will have feed corn available.

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This means actually developing a feeding strategy that involves a guaranteed source of corn. Lawrence warns that hedging tools and verbal agreements lose their edge when the competition for a commodity heats up.

“You might have corn contracts, but you can’t feed paper,” he says. “And a promise from a dealer might not cut it when there are three ethanol plants and 10 feeders lined up to buy what is left.”

Whether it is locating or building additional storage to hold extra feed corn or calculating the costs of operating within a corn-scarce economy, Lawrence notes that it all takes time to make the appropriate adjustments.

“I just want livestock producers to think about their options,” he says. “For example, what if you have to buy six months of grain? Who is going to finance that? How does this change your finances?”

The big flip

Terry Klopfenstein, a University of Nebraska (NU) animal scientist, has spent the last three decades studying the role of ethanol byproducts in livestock feeding. He says one of the greatest challenges facing the beef industry in the new bioenergy economy is how to adjust to a totally new feed-price structure.

“We are moving out of a feeding situation where energy — especially in the form of corn — has been cheap, and protein — in the form of soybean meal

— has been more expensive,” he says. “Historically, we are talking two to two-and-a-half times the price per ton.”

In the near future that paradigm is going to flip, Klopfenstein says. “Instead of cheap energy and expensive protein we are going to see cheap protein in the form

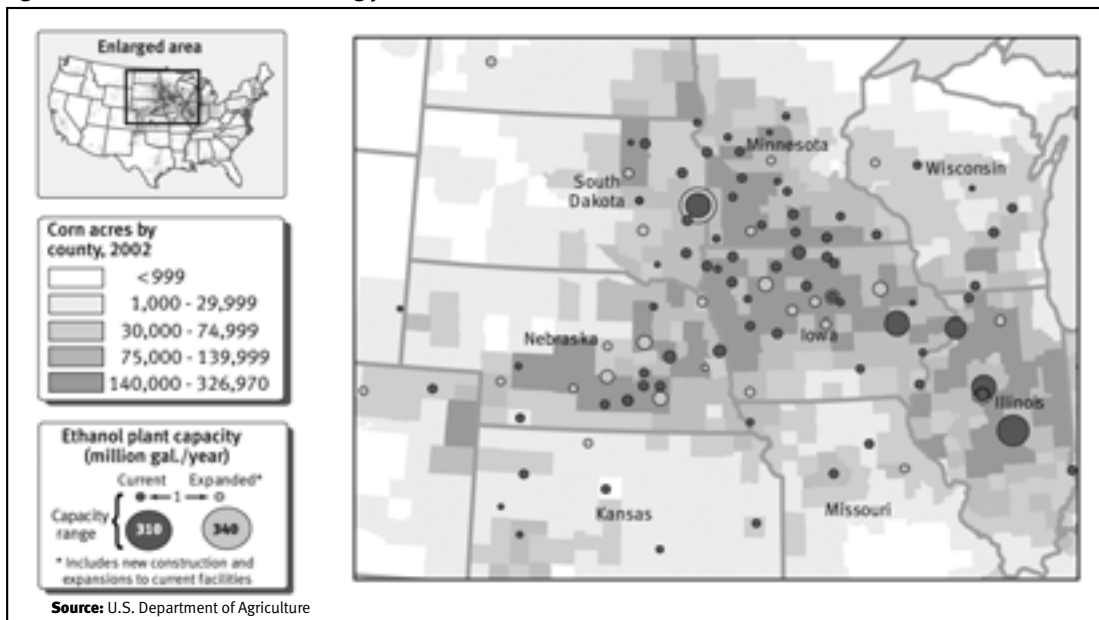
of distillers’ grains and expensive energy in the form of feeder corn.”

The imbalance will be exacerbated by the increased availability of high-protein oilseed meal and soybean meal produced by a rapidly growing biodiesel industry.

New geographic realities

Those who will benefit most from the new feeding scenario will be those livestock feeders who are located closest to ethanol plants. The reason for this is that plant operators prefer to sell their distillers’ grains in a wet form — up to

Fig. 2: U.S. ethanol sector is increasing production



80% moisture — rather than incurring extra energy costs drying the product. Buyers cannot afford to haul high-moisture byproducts any distance. An added advantage that beef feeders have when they purchase moist distillers' grains is that they get little competition from other animal protein sectors. Poultry and swine operations can only feed the byproduct dried.

Klopfenstein predicts that corn-producing states like Iowa and Nebraska will see a major increase in feedlots, while corn-importing states will see a drop in feedlot activity.

In corn-producing states like Iowa, Lawrence also sees a shift from small feeder operations (fewer than 1,000 head) to larger ones. He attributes this to both depressed feeder-cattle prices and the concentrating of livestock in locations that are in close proximity to reliable sources of low-cost distillers' grains.

While the shift in cattle populations is already under way, it is still in its early stages. "The industry really hasn't had time to react," Lawrence says. "It takes one to two years to set up a feedlot."

Adaptation and self-reliance required

For those beef producers who do not have access to low-cost biofuel byproducts, there are feeding strategies that will help reduce reliance on high-priced feeder corn, Anderson says. Ranchers who raise crops have the option of growing their own feed. For example, in the Dakotas, Montana and the Northwestern states, dry peas are emerging as a viable alternative to feeder corn.

"Growing and finishing cattle can utilize peas as both a protein and energy source," Anderson notes.

Studies conducted at North Dakota State University have shown that when rolled peas are substituted for corn, performance is equaled or improved.

An added bonus is that the field peas are a nutrient-dense feed that is often undervalued, he adds. "If corn is \$2.50 a bushel and soybean meal is \$200 per ton, then peas should be worth \$4.15 per bushel and not the \$3.50 that has been established as its current value."



Feedlots will buy less corn and more distillers' grains. NU's Terry Klopfenstein predicts that corn-producing states like Iowa and Nebraska will see a major increase in feedlots, while corn-importing states will see a drop in feedlot activity.

For those who have access to pasture, Anderson suggests winter wheat grazing or low-cost forage. "One strategy is to delay moving cattle into feedlots," he says. "They are kept on grower diets that are high in forage for a longer period of time."

Calves that would normally be shipped into feedlots after weaning at 550 to 650 pounds (lb.) would be kept on wheat pasture or forages for up to 900 lb.

Another strategy, Anderson says, is to introduce other coproducts into the diet. "Some beef producers might have access to soybean hulls, vegetable byproducts, wheat midds or barley malt," he says. "It will be a matter of seeking out local alternatives to corn."

He adds that it makes sense to consult with a nutritionist who can properly evaluate an unfamiliar byproduct and help

integrate it into an appropriate ration.

Anderson warns that today a beef producer must learn very quickly about all his feeding options, do his math and act upon the appropriate one while it is still feasible. "Otherwise you are paying for the privilege of feeding cattle," he says. "And that won't last long."

