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Cheap Food and Farm Subsidies: Policy Impacts of a Mythical Connection

Bruce A. Babcock
babcock@iastate.edu
515-294-6785

Until recently, U.S. corn exports destined for Canada faced a $1.65-per-bushel tax. This tax, or import tariff, was Canada's response to claims made by Canadian corn farmers that they are the victims of subsidized and dumped U.S. corn. The Canadian International Trade Tribunal just ruled against the import tariff.

The claim of injury to Canadian corn producers was based on the notion that U.S. corn farmers consistently sell their corn for less than it costs to produce it. That is, cheap U.S. corn is "dumped" in Canada. It was further argued that the reason why corn farmers can sell for such a low price and remain in business is that U.S. subsidies keep them afloat. Implicit in this argument is that if U.S. corn subsidies were eliminated, then U.S. corn production would decrease and the U.S. and Canadian prices of corn would increase. This story is certainly consistent with many arguments made in the United States by supporters of U.S. farm programs. For example, Hembree Brandon writes in the *Delta Farm Press*:

> *They [farm payments] really are a food subsidy assistance in disguise, and he [Ken Cook] and every person in this county (sic) who buys food and eats three squares a day are beneficiaries of it—U.S. citizens pay far less for food than anyone on the planet. They are also a food security subsidy in disguise. God help the U.S. if it becomes as dependent on offshore food as it is offshore oil. (December 10, 2004)*

Implicit in Mr. Brandon's argument is that U.S. farm production would decline without U.S. farm payments, with resulting increases in commodity and food prices.

The argument by Canada that their producers are harmed by low prices resulting from U.S. corn subsidies is similar to Brazil's argument made in their World Trade Organization (WTO) dispute against the U.S. cotton program. Brazil successfully made the case that cotton payments increased U.S. production and lowered world prices to the detriment of Brazilian cotton producers. The WTO panel ruled that the United States needed to eliminate its export subsidy program, called Step 2, and it needed to eliminate programs that increase production and suppress world prices.

What does all of this portend for U.S. corn farmers? If U.S. farm programs really are a "cheap food" policy in disguise, then Canadian corn farmers would seem to have a valid argument that they have been harmed by U.S. subsidies. Is this argument valid? If so, then is the U.S. corn program as vulnerable to a negative WTO panel ruling as was cotton?

Farm Programs and Cheap Food

U.S. farmers often justify farm program payments by linking the payments to the small share of U.S. disposable income that is spent on food. Those who make this linkage attribute high productivity and high production at the farm level to program payments. The availability of less-expensive raw ingredients then decreases production costs of food processors and manufacturers, leading to lower food prices. If this story is true, then a removal of farm program payments should lead to higher food prices. Logically, the largest increases should show up in food products in which currently subsidized raw ingredients (corn, wheat, or soybeans) make up the largest share of total production costs.

A reasonable formula for approximating how the price of a food item would change because of a change in the price of a raw ingredient is to multiply the percent change in the price of the raw ingredient by the share of the price of the food item that is represented by the cost of the raw ingredient. For example, corn

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represents perhaps 38 percent of the cost of producing a market-ready hog. The cost of a market-ready hog represents 28 percent of the final retail price of pork. This means that corn represents approximately 10.64 percent of the retail price of pork.

Suppose that the removal of farm programs caused the price of corn to increase by 5 percent. The price of pork would then increase by about 0.53 percent. That is, pork chops that cost $3.00 per pound with farm subsidies would increase in price by less than two cents per pound. If corn prices were to rise by 10 percent with the removal of subsidies, then pork chops would cost only three cents per pound more than they currently do. Because corn represents a smaller share of the final value of beef and dairy products, retail prices for these products would go up by a smaller amount (in percentage terms) than the price of pork.

It is difficult to come up with examples in which subsidized U.S. commodities have a greater than 10 percent share of final retail value. And at this maximum share, it would take a doubling of commodity prices to increase consumer prices by 10 percent. But no credible analyst has ever estimated that farm payments result in such a large supply expansion that their withdrawal would cause commodity prices to double. The idea that U.S. commodity policy is really a cheap food policy is a myth.

Supporters of farm programs who incorrectly justify them as providing cheap food to U.S. consumers should realize that they are providing ready ammunition to those countries who want to attack U.S. farm subsidies as being harmful to their domestic producers. After all, U.S. and world prices move together because the commodities that receive U.S. subsidies are widely traded on international markets. If farm payments reduce U.S. prices, then they also reduce world prices, which means that farmers around the world are hurt by U.S. farm payments. Given the very large commodity price changes that would be required for a cheap food policy to be a reality, does use of this rationale for U.S. farm programs really serve U.S. producer interests?

A concrete example of how this type of argument can be used against U.S. producer interests is the compelling argument that Brazil used in the cotton case that was obtained directly from supporters of the U.S. cotton program. In testimony about the impacts of stricter payment limits, supporters of lax payment limits argued that stricter payment limits would cause a significant decrease in U.S. cotton production. Put another way, cotton payments cause cotton acreage to increase, which is exactly what Brazil was arguing.

Do U.S. Subsidies Decrease Commodity Prices?

Even if farm subsidies do not lead to cheap food, they can lead to cheap commodities, which potentially makes U.S. farm programs vulnerable to further WTO panel judgments.

One of the key lessons of Economics 101 is that it is a simple matter for government to get more of anything it wants: simply subsidize its production. Although final 2005 payments have not yet been determined, payments to U.S. corn producers are expected to average 26.7 percent of market revenue over the three crop years 2003, 2004, and 2005. Total corn payments over these three years are expected to be $20.5 billion. Experts supporting Canada's position in the ongoing corn tariff case point to this 26.7 percent subsidy rate as prima facie evidence that U.S. corn payments increase production, thereby lowering world corn prices. But, as is so often the case, reality is more complicated than a simple application of a les-

son learned in an introductory economics course.

The first nuance is that 31 percent of U.S. corn payments over this period (direct payments) are specifically designed not to influence U.S. corn plantings. These payments do not depend on prices, production levels, acreage levels, or even whether farmers plant a crop. The one restriction is that farmers cannot plant fruits, tree nuts, or vegetables on land that qualifies for these payments. This "fruit and vegetable exclusion" is relatively unimportant for corn, because the majority of corn land is best suited for feed grain production. If we remove direct payments from the calculations, then corn payments drop to 18.5 percent of market revenue—still a large number.

The second nuance we need to account for is that 43 percent of the payments remaining after direct payments are removed are also designed to have minimal influence on planting decisions. Farmers cannot change the size of countercyclical payments for corn by changing acreage or production levels, so these payments provide no direct incentive to plant more corn when market prices are expected to be low. However, countercyclical payments increase when market prices drop, so they do provide some price protection to farmers. Thus, although nobody knows for sure, most economists believe that these payments provide some incentive for farmers to plant corn. Analysts with the Food and Agricultural Policy Research Institute assume that $10.00 of expected countercyclical payments per acre provides the same production incentive as $2.50 of expected market revenue. Accordingly, if we remove 75 percent of countercyclical payments, then corn payments drop to 11.7 percent of market revenue—still a significant number but fast becoming less significant.

Supporters of farm programs who incorrectly justify them as providing cheap food to U.S. consumers should realize that they are providing ready ammunition to those countries who want to attack U.S. farm subsidies as being harmful to their domestic producers.

There is near unanimity among economists that increases in expected marketing loan gains and loan deficiency payments will increase planted acreage because they are paid on all current production. However, it would be a mistake simply to conclude that farmers increased corn acreage from 2003 to 2005 because farmers expected an 11.7 percent average boost in revenue from corn payments. We have to look at market conditions at the time that farmers decide what to plant to determine the influence of the programs.

As previously discussed in this publication, producers obtain the largest benefit from the current set of farm programs in bumper-crop/low-price years. We had back-to-back bumper crops in 2004 and 2005, with 2004 being the largest increase over trend yields in history. By definition, bumper crops are unexpected. Thus, the size of the payments that arrived was also unexpected. An additional surprise factor in 2005 was the large and negative impact of Hurricane Katrina on local prices at harvest time. Most corn farmers took advantage of these low prices to lock in large windfall payments. Thus, we also need to reduce the 11.7 percent payment rate by the degree of "surprise" before we can conclude that U.S. commodity programs significantly changed farmers' acreage decisions.

This discussion is not an attempt to minimize the impacts of U.S. farm subsidies on farmers' acreage decisions. Rather, it is meant to illustrate how complicated estimation of the impacts actually is. Farmers base their decisions about what and how much to plant on numerous factors, including rotation considerations, production costs, expected market prices, availability of crop insurance, and expected benefits from farm programs. The complicated nature of these decisions makes it quite difficult to determine if U.S. farm programs for crops other than cotton are vulnerable to a WTO case against them on the basis of price suppression. The role that these programs play in farmers' planting decisions varies across crops, regions, and crop years. Simple "rules of thumb" that use total payment levels as a guide or the belief that the programs work as a cheap food policy are inadequate measures of the impacts of farm payments on U.S. supply and international commodity prices. ◆

Note of Disclosure: Professor Babcock was an expert witness testifying for a major Canadian corn importer in the inquiry by the Canadian International Trade Tribunal. In addition, he provided modeling assistance in 2003 to Professor Daniel Sumner, who was an expert witness for Brazil in the cotton case.

Agricultural Situation Spotlight

Do Ethanol/Livestock Synergies Presage Increased Iowa Cattle Numbers?

Bruce A. Babcock
babcock@iastate.edu
515-294-6785

Chad E. Hart
chart@iastate.edu
515-294-9911

Increased ethanol production in Iowa and other Corn Belt states has led some to believe that the Midwest will no longer need to export any of its corn to other states or other countries. Farmer-advocates of more ethanol see such a future as making them free from reliance on unpredictable export markets, free from reliance on aging Mississippi River locks and dams, and free from worrying about the impacts of trade agreements and foreign competition. But such a future would not make the Corn Belt free of the need to export distillers grains, an ethanol by-product.

Efficient Use of By-products

A 50-million-gallon ethanol plant uses roughly 18.5 million bushels of corn. At the 2006 Iowa state-trend yield of 160 bushels per acre, this represents 116,000 acres of corn (80–90 percent of corn acreage in an average Iowa county). On a dry basis, 315 million pounds of distillers grains must be marketed.

The best use of this by-product is as feed for dairy and beef cattle. But Iowa has large numbers of hogs and poultry, not cattle. Without some resolution of this mismatch, most distillers grains from Iowa will continue to be dried and shipped to other states.

Dairy cattle can be fed a diet with 20 percent of their dry matter intake in DDGS (distillers dried grains with solubles), which translates into 13 pounds of DDGS or approximately 40 pounds of wet distillers grains per cow per day. Thus, an ethanol plant produces enough feed for roughly 60,000 dairy cattle.

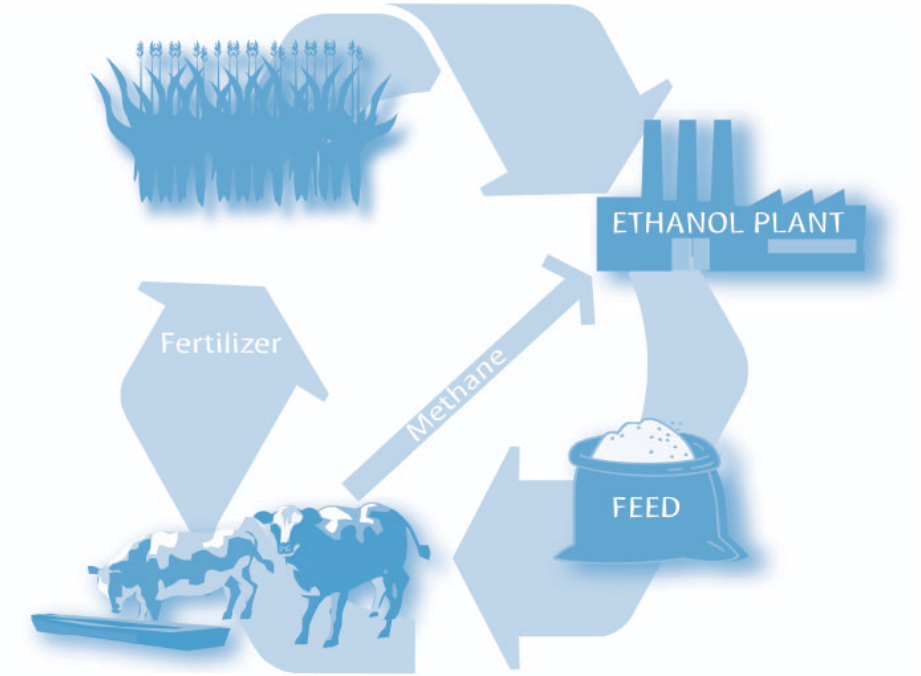


Figure 1. Possible synergies of ethanol and livestock co-production

Iowa currently has only 190,000 dairy cows in the state. Current Iowa production levels of 900 million gallons of ethanol would require 1.08 million dairy cows. This number of dairy cows would produce 15 percent of total U.S. milk production, so this increase is not beyond the realm of possibility.

There are at least three synergies that could occur from bringing dairy cattle (or beef cattle) into Iowa to consume the DDGS, as illustrated in Figure 1. The first would occur if the dairy cattle were located close enough to the ethanol plants so that the distillers grains would not have to be dried. This would save the ethanol plant about $5 million in drying costs. The second synergy would be that 1.08 million dairy cattle generate vast amounts of valuable manure that can fertilizer crops and add to soil tilth. In most states where dairy cattle are located, the manure is a waste by-product rather than a valuable replacement for imported fertilizer. The third possible synergy is if the dairy farmer and the ethanol plant worked together to capture the methane from the manure before it is applied to farm fields. Recent estimates of the Iowa Department of Natural Resources indicate that the manure from one dairy cow over one year can generate 3,170 kilowatt-hours of energy if the methane is captured from the manure. The manure from 60,000 dairy cattle could produce enough methane to meet 25 percent of the natural gas requirements for a

50-million-gallon ethanol plant that does not have to dry the distillers grains. Capturing the methane from the manure would also help reduce odor problems for the dairy farm.

Will Iowa Encourage Growth of Livestock?

Whether Iowa embraces a future that includes a large increase in livestock depends on the strength of the financial synergies just described as well as the political environment in the state. High energy prices increase the value of locating more cattle in Iowa. But the current political environment works against more livestock. Many politicians and farm leaders must be asking themselves why they should lead the charge for more livestock when it is so much easier just to promote more ethanol production.

As shown in Figure 2, the top two uses for corn are domestic livestock feeds and exports. Ethanol has just passed the sum of all other uses, which includes seed, sweetener, and food. Given the planned expansion of ethanol production, exports will soon drop to the number three position. At first glance, this seems like a beneficial move for U.S. corn producers. After all, corn that is used domestically saves on transportation costs, boosts local basis, and creates domestic jobs. However, there are several reasons why ever-increasing reliance on ethanol markets may not be in the long-term best interest of Iowa's corn farmers.

One unforeseen impact of replacing exports with increased fuel use is that it will make the price of corn more sensitive to changes in quantity produced. Export demand is relatively price sensitive: a relatively small drop in price can result in large changes in exports. Domestic feed and fuel demand are price insensitive in that it takes a large drop in price to stimulate a significant increase in demand. By making total corn demand less price sensitive, the domestic price will drop by more in bumper crop years and will increase by more in short crop years. A future free of government subsidies would mean that corn farmers would have to rely on forward contracting and the purchase of put options to protect themselves against downside price risk. Similarly, livestock feeders and ethanol producers would have to use futures and call options to protect themselves against increased price volatility.

A second impact of greater reliance on ethanol production is increased vulnerability to changes in technology or government policy. Currently, the low-cost feedstock for U.S. ethanol plants is corn. But the high price of oil combined with ethanol tax credits and the obvious widespread availability of cellulose has increased investment in technologies that could result in cellulose becoming the low-cost feedstock for ethanol. If this happens, the impacts on corn prices could be dramatic. Vulnerability also arises because ethanol profitability largely depends on a combination of government tax credits and import tariffs. What would happen if in five years the price of oil were to decline and, in a fit of budget cutting responsibility, ethanol tax credits and ethanol import taxes were eliminated? After all, what is bestowed by government action can certainly be taken away.

Iowa is basking in the current economic benefits of the ethanol boom. But there are risks to corn farmers from ever-greater dependence on ethanol as a determinant of the price of corn. Technology changes, as do governments. It may be wise in the long run to support the industry that will be with us when corn-based ethanol is replaced by the next great thing. After all, the growth in consumption of meat, eggs, and dairy products should continue to outpace growth in income and population, unless human nature changes dramatically. ◆

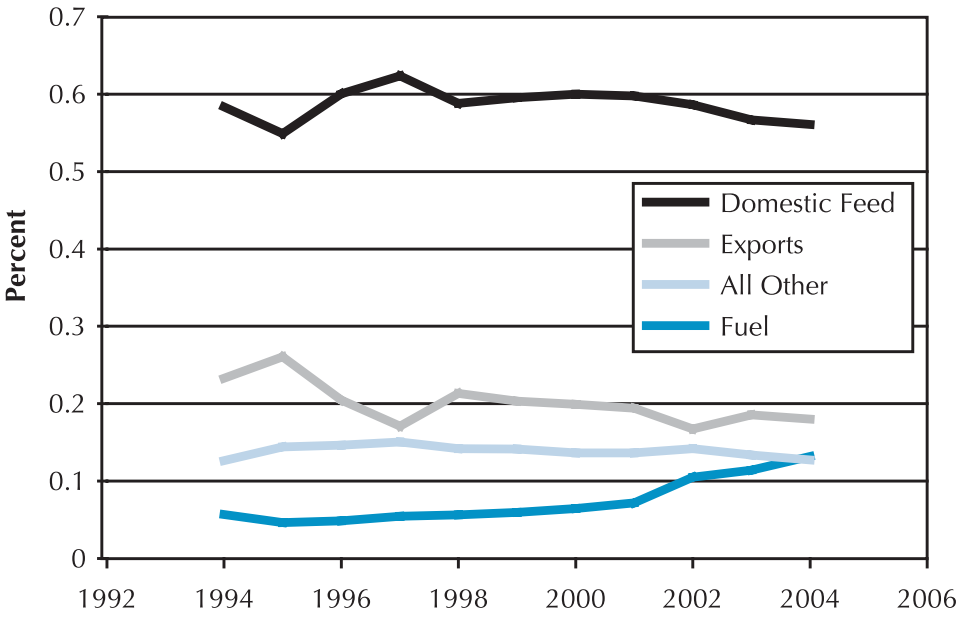


Figure 2. Utilization of U.S. corn

Policy and Competitiveness of U.S. and Brazilian Ethanol

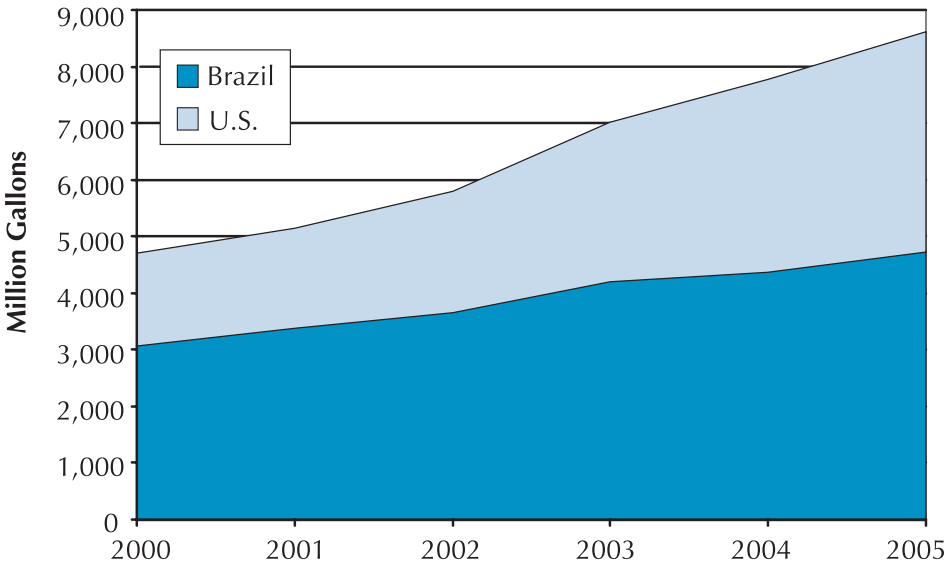
Simla Tokgoz
stokgoz@iastate.edu
515-294-6357

Amani Elobeid
amani@iastate.edu
515-294-6175

Increased interest in biofuels can be attributed to environmental, economic, and geo-political factors. Harmful emissions, high crude oil prices, and the growing dependency on foreign oil supplies all provide incentives for pursuing alternative fuel sources. However, the rising importance of ethanol can also be attributed to the desire by countries to develop new markets for agricultural products. This push is currently policy driven, for example, in the United States through the U.S. energy bill. Even Brazil, an established producer and consumer of ethanol, used mandates to encourage the use of ethanol when it launched its ethanol program, the National Alcohol Programme (PROALCOOL), in the mid-1970s.

Ethanol can be produced from a variety of feedstocks, such as cereals, sugarcane, and cellulosic material. The value of feedstock is an important component in total production costs for ethanol. Ethanol in Brazil is produced from low-cost sugarcane and therefore can compete on a production-cost basis with gasoline without any subsidies. However, in general, renewable fuels are still more expensive to produce than fossil-based fuels, and so both production and consumption have been encouraged for the most part by government policy intervention through either mandates or market incentives.

Many countries are taking an increased interest in ethanol as an alternative fuel, with the United States and Brazil currently leading the way. Ethanol production in both countries has been increasing rapidly in recent years, as seen in Figure 1.



Note: Ethanol represents only non-food ethanol, both fuel and non-fuel.

Figure 1. Ethanol production

The U.S. Ethanol Market

The Energy Policy Act of 2005 mandates a minimum renewable fuels consumption of 4 billion gallons in 2006, increasing to 7.5 billion gallons in 2012. The majority of the mandate most likely will be met by ethanol.

In 2005, U.S. ethanol production capacity was 4.3 billion gallons from 95 ethanol refineries. Capacity expansion totaled 0.2 billion gallons, while capacity under construction was 1.8 billion gallons. Ethanol production consumed 1.6 billion bushels of corn (about 14 percent of U.S. corn production) in 2005; 2.6 billion bushels of corn are expected to be used by 2010 (about 22 percent of an 11.9 billion bushel crop). Thus, ethanol production has already exceeded the 2006 target of the renewable fuel mandate. A federal tax credit of 51¢ per gallon on all ethanol, available to ethanol refiners, has also contributed to increased ethanol production. Despite the rapid increase in production, consumption of ethanol has been outpacing production for the past few years, which has led to increased imports in the United States, as shown in Figure 2.

U.S. trade policy on ethanol includes an ad valorem tariff of 2.5 percent as well as an import duty of 54¢ per gallon. The tariff is meant to ensure that the benefits of the domestic U.S. ethanol tax credit do not accrue to foreign producers. The other important trade policy that affects ethanol is the Caribbean Basin Recovery Act (CBERA) that groups Central American countries with Caribbean countries. This Act created the current import rules for ethanol under the Caribbean Basin Initiative (CBI).

Under this agreement, if ethanol is produced from at least 50 percent agricultural feedstock grown in a CBERA country, it is admitted free of duty. If the local feedstock content is lower, limitations apply on the quantity of duty-free ethanol. The amount of ethanol that can be imported duty-free that is produced from non-CBERA agricultural feedstock is restricted to 60 million gallons or 7 percent of the U.S. domestic ethanol market, whichever is greater. In this case, ethanol must be dehydrated in a CBI country. Dehydration plants are currently operating in Jamaica,

Costa Rica, and El Salvador, where hydrous ethanol produced in other countries, historically Brazil or Europe, can be dehydrated. Table 1 shows the tariff rate quotas (TRQs) and fill rates for ethanol imports from CBI countries. The TRQ for 2006 is 268.1 million gallons.

The Brazilian Ethanol Market

Brazil is currently the world's largest producer of ethanol. The Brazilian government provides support to ethanol production through both market regulation and tax incentives. In terms of market regulations, an official blending ratio of anhydrous ethanol with gasoline of between 20 and 25 percent in transport fuel is imposed. There are also credit provisions for ethanol storage, in the form of a lower excise tax for ethanol than for gasoline and through the use of strategic reserves. Imports of ethanol to Brazil are subject to an ad valorem duty of 20 percent.

In 2005, production of sugar and ethanol in Brazil totaled 28.7 million metric tons and 4.8 billion gallons, respectively, continuing a record trend for the past few years. The record production has resulted in sugar exports of 18.2 million metric tons and 0.6 billion gallons of ethanol in 2005. In Brazil, a large number of plants are dual plants and can switch easily between the production of sugar and ethanol based on relative prices. Thus, sugar and ethanol prices tend to move closely together, whereas in the United States, movement in ethanol prices is affected primarily by gasoline and government regulations.

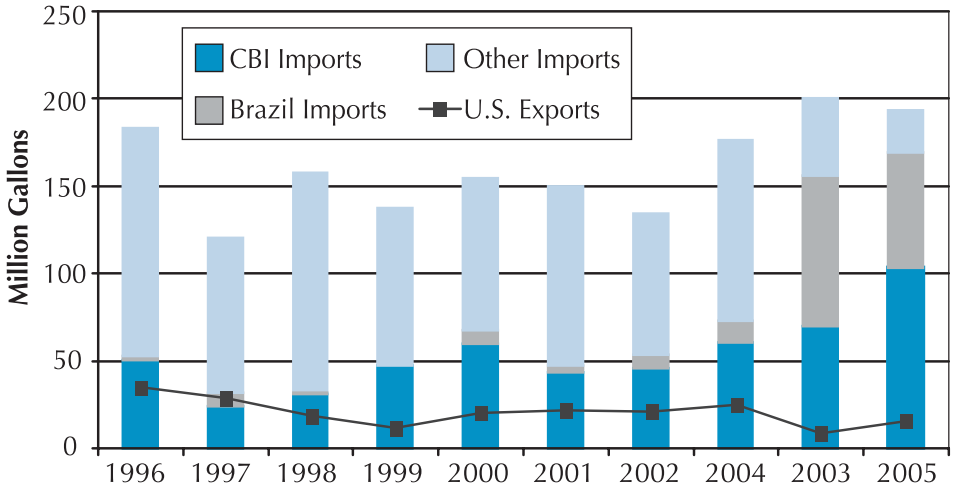


Figure 2. U.S. ethanol imports and exports

Table 1. U.S. Caribbean Basin tariff rate quota (million gallons)

Year	TRQ	Entered	Fill rate (%)
2000	92.3	59.9	64.9
2001	112.7	43.3	38.4
2002	120.3	45.5	37.8
2003	132.5	60.9	46.0
2004	186.9	69.9	37.4
2005	240.4	103.3	43.0

In the past few years, relative prices of sugar and ethanol have favored more sugarcane diverted to ethanol production rather than to sugar. With the increased demand in ethanol both domestically and internationally, the share of sugarcane used in ethanol production is expected to rise steadily.

Increased demand for ethanol in Brazil has been driven by the popularity of flex-fuel cars that can run on gasoline, ethanol, or a combination of the two. Ethanol and flex-fuel vehicles enjoy some tax incentives not offered to gasohol cars that run on blended gasoline. The sale of flex-fuel cars has increased dramatically (by 585 percent in 2004) since their introduction in 2003. The share of flex-fuel cars reached 22 percent in 2004, 40 percent in 2005, and is expected to rise to 60 percent in 2006.

If both ethanol and sugar prices remain competitive in the near future, Brazil is expected to continue to increase sugarcane production for both ethanol and sugar. The country has enough land to easily double sugarcane area harvested. Sugar production is expected to increase by 21.5 percent between 2005/06 and 2015/16 while exports are projected to increase 22 percent during the same period. In terms of ethanol, production is expected to increase by 37.5 percent while ethanol exports are expected to nearly double by 2015/16.

Competitiveness of the United States versus Brazil

The cost of ethanol per gallon of fuel from sugarcane in Brazil, at $0.83 per gallon of fuel, is lower than the cost from corn in the United States, at $1.09 per gallon (see the OECD report "Agricultural Market Impacts of Future Growth in Production of Biofuels," available at http://www.oecd.org/dataoecd/58/62/36074135.pdf). In addition to higher costs of production, there are high costs in

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CRP Acreage on the Horizon

Chad E. Hart
chart@iastate.edu
515-294-9911

The Conservation Reserve Program (CRP) is a voluntary environmental program for agricultural producers aimed at protecting environmentally sensitive land, improving water quality, limiting soil erosion, and promoting wildlife habitat. The CRP has existed since 1985 and has protected at least 30 million acres nationwide each year since 1990, pulling some acreage out of crop production. Currently, roughly 35.9 million acres are enrolled in the CRP. Producers bid to participate in the CRP and bids are evaluated based on the environmental benefits and financial costs of the CRP contracts. Acreage bid into the CRP program is under contract for a set number of years and is planted to "resource-conserving vegetative covers," such as native grasses and trees.

Figure 1 shows when current CRP acres were last enrolled. The largest enrollment year for these CRP acres occurred in 1998, when nearly 18.5 million acres entered or re-entered the program. Many of these acres could possibly come back into crop production in the next few years. In 2006, less than 2 percent of all CRP acreage could come out of the program. But as Figure 2 shows, a majority of CRP acres enrolled in 1998, 16 million, could come out of the program in 2007. In Iowa, over 25 percent of all CRP land could be put into production. That amounts to over 500,000 acres.

The release of these acres from the CRP could have a tremendous impact on crop production and profitability. Figures 3 and 4 show where current CRP acreage and where the acreage eligible to leave CRP in 2007 are located throughout the country. While the Great Plains has most of the CRP land, areas in the major producing regions of corn, soybeans, and cotton have also participated in the program. The acreage that could be released in 2007 is throughout the major wheat-producing regions, the western and southern Corn Belt, the Texas panhandle, Alabama, and Mississippi. Strong crop prices, especially for wheat, cotton, corn, and/or soybeans, could pull acreage out of the CRP and into production. Table 1 shows a breakdown of the U.S. acreage eligible to exit CRP in 2007 by the major crop produced in each county. Wheat is the

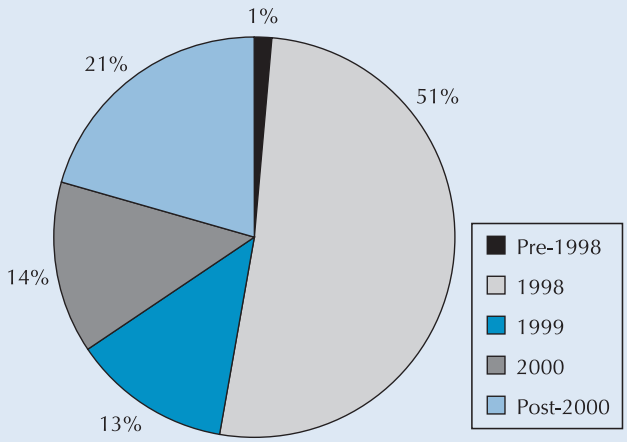

Figure 1. CRP acreage percentage enrollment by year

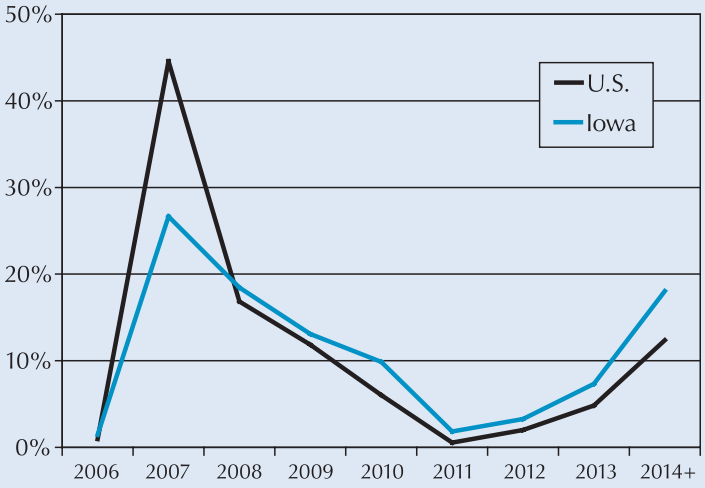

Figure 2. Timing of expiration of CRP contracts

Table 1. 2007 expiring CRP acreage by major crop

Crop	Acreage
Barley	289,189
Corn	1,934,847
Cotton	1,457,010
Oats	27,493
Rice	3,797
Sorghum	70,780
Soybeans	2,597,217
Wheat	9,301,772

major crop alternative for over half of the acreage, 9.3 million acres. If wheat prices are strong going into the fall of 2007, it is conceivable that many of the 9.3 million acres could come back into wheat production. Soybeans, corn, and cotton also have over 1 million acres currently in CRP that could emerge by the 2008 crop year.

Realizing this, USDA has begun notifying participating producers about their eligibility to extend their current CRP contracts for 2 or 5 years or to re-enroll in the CRP under a 10- to 15-year contract. Also, USDA has opened a general CRP sign-up this spring to maintain acreage in the program. So while USDA is working on maintaining acreage in the CRP, it remains to be seen how successful this initiative will be and how much acreage will return to crop production. ◆

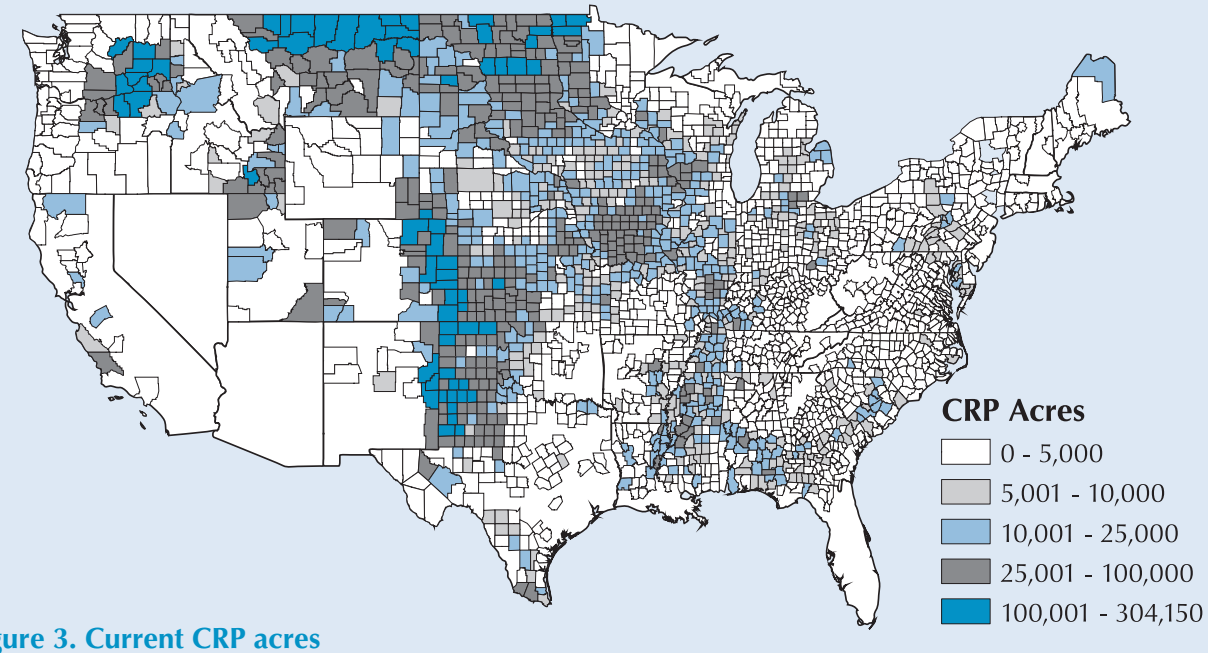

Figure 3. Current CRP acres

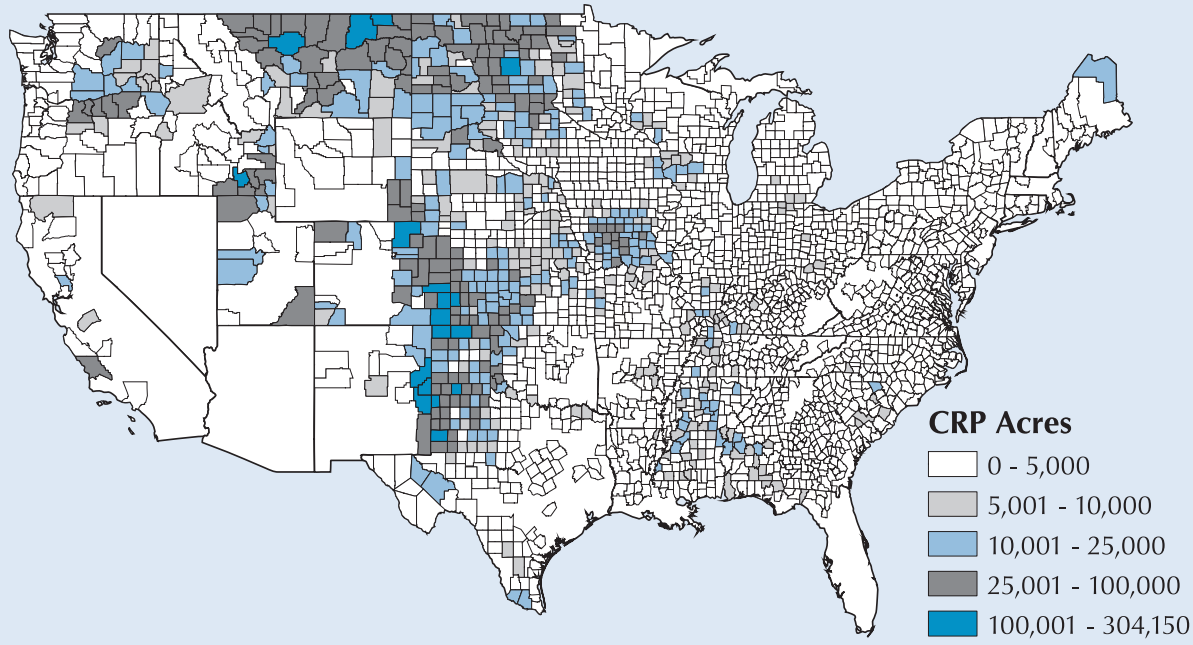

Figure 4. Acres with expiring CRP contracts in 2007

Mexico's Improving Pork Sector Creates Positives for Imports

Roxanne Clemens
rclemens@iastate.edu
515-294-8842

Patricia Batres-Marquez
sbatres@iastate.edu
515-294-6291

Helen H. Jensen
hhjensen@iastate.edu
515-294-6253

Personal income growth and increased urbanization have Mexican consumers putting more pork into their shopping baskets. In response to this strong demand, the Mexican hog industry has consolidated into larger and more efficient operations and adopted improved genetics and management practices. Pork production in Mexico has increased by 23 percent between 1995 and 2005. However, this increased production has not kept pace with demand, so imports have surged to supply the shortfall. In 2005, Mexico imported 201,795 metric tons of U.S. pork, 118,140 metric tons of U.S. pork variety meats, and more than 122,000 live U.S. slaughter hogs.

The changes in domestic production and imports have accompanied important structural changes in the Mexican pork industry that include disease prevention and eradication, improvements in slaughter and processing plants, and consumer education. Some of these changes have been driven by Mexico's strong desire to export pork to the United States, Japan, and other countries; others result from efforts to improve the quality and safety of the pork supply.

On the export side, classical swine fever (CSF) has been a major factor in preventing Mexico from shipping pork to other countries. However, through eradication, prevention, and control programs, Mexico has regionalized several CSF-free states that are recognized by importing countries, including Japan and the United States. Japan is currently Mexico's largest export market for pork. Mexico has exported a growing volume of pork to Japan for several years, but exports under a bilateral free trade agreement began in April 2005 with a low-tariff quota of 38,000 metric tons in JFY 2005 that will increase to 80,000 metric tons by JFY 2009. And, given that Mexico is pork-deficit, any exports will create demand for additional imports from the United States and Canada.

More Federally Inspected Plants

These exports would not be possible without slaughter and processing facilities that meet international standards, and the Mexican government has committed resources to improving the availability and quality of federally inspected (Tipo Inspección Federal, or TIF) facilities and encouraging producers to use these facilities rather than using municipal plants or traditional slaughter methods. In 1999, Mexico had 33 TIF slaughter plants; by 2005, the number had grown to 160. The number of TIF plants that process pork is also increasing rapidly, especially in large metropolitan areas. In addition to the construction of new plants, many existing plants are undergoing extensive remodeling to meet sanitation, space, and temperature requirements.

The Mexican government's emphasis on developing TIF plants may have indirect benefits to the U.S. pork industry because a large percentage of TIF plant capacity in Mexico is underutilized.

Because slaughter and fabrication in TIF plants are more expensive than in non-TIF plants, the Mexican government has used economic incentives to encourage construction, remodeling, and use of these plants. In 2003, for example, domestic producers received $7 per head, on average, in government payments for hogs slaughtered in TIF plants. This assistance covered the higher costs associated with meeting higher quality standards required by TIF plants compared to non-TIF plants. In 2004, the Mexican government provided a cost differential of about $4.63 per animal for TIF slaughter of domestic hogs. Implemented on a regular basis, programs like this would likely have a significant effect on promoting the use of TIF plants, which would improve the overall safety and quality of pork in Mexico.

The Mexican government's emphasis on developing TIF plants may have indirect benefits to the U.S. pork industry because a large percentage of TIF plant capacity in Mexico is underutilized. A recent study estimated that, on a country-wide basis, between 40 percent and 45 percent of TIF slaughter capacity is not used (this includes slaughter capacity for pork and other species). Given that all imported slaughter hogs must be processed in TIF plants, the increase in the number of TIF plants and the high level of unused capacity would be expected to encourage larger imports of live U.S. hogs so long as prices are favorable to imports.

Retail Sales Shifting Toward Supermarkets

Changes at the retail level may also benefit the pork industries in both the United States and Mexico. Although traditional markets continue to hold the largest market share for meat sales in Mexico, large supermarkets and superstores have increased their share of food sales as rising incomes and

urban location allow more consumers to shop in these stores. In 2005, an estimated 40 percent of all food sold in Mexico was sold in supermarkets and 60 percent was sold in traditional markets. Within five years, these percentages are expected to be reversed, with supermarkets accounting for 60 percent of total food sales and 40 percent being sold in traditional markets.

Increased supermarket sales will guide future changes in the Mexican industry. For example, to help pull TIF-processed meat into supermarkets, the Mexican government introduced a program that rewarded processors and retailers for promoting federally inspected meat and educating consumers about its benefits in terms of quality and safety. Under this promotional program, the government provided a one-to-one match for money spent promoting meat slaughtered and processed in TIF plants. This match was available to anyone in the pork supply chain, and the promotions targeted consumers through highly visible marketing materials at meat counters and displays in supermarket meat cases.

Overall Demand Benefits U.S. Exports

As with the movement toward TIF processing and slaughter, this type of program has potential benefits for imported product. Because U.S. live hogs must be slaughtered in TIF plants, the pork from these animals enters the Mexican retail and manufacturing sector as TIF-certified. In addition, imported U.S. pork that is cut, further processed, or fabricated at a TIF plant receives the TIF certification seal and is not differentiated from domestic product. To the extent that such promotions increase overall demand for pork in supermarkets, they benefit imports of U.S. live hogs and pork through overall increased sales and by educating consumers about the safety and quality associated with pork processed in federally inspected facilities and sold in modern retail outlets. This type of program also complements programs by the U.S. Meat Export Federation to educate Mexican consumers about the desirability and value of these same attributes in imported U.S. pork.

One result of the TIF promotional program has been that many retail outlets and TIF processing facilities now purchase meat only from TIF facilities. The resulting increase in demand for meat from TIF plants has encouraged managers of non-TIF plants to upgrade their facilities and apply for TIF certification in order to retain access to the important retail and processing sectors in metropolitan areas of Mexico. In addition, some importers who previously had not done further processing are upgrading their facilities and applying for TIF certification so they can add value to imported pork by cutting, packaging, and other processing before selling it to processors or end users.

Industry sources have indicated that the higher cost of TIF-processed pork relative to pork from non-TIF sources and to substitutable product (poultry meat for example) continues to limit retail sales and the use of TIF-certified pork in manufactured products. With an estimated 40 percent of the population living below the poverty level in Mexico, the demand for very inexpensive sources of protein throughout the country remains strong. However, the Mexican government's support of programs to improve supply and demand of pork processed at TIF plants has encouraged the domestic industry to improve product safety and quality. Mexican consumers and the Mexican pork industry are the major beneficiaries of these programs, but U.S. pork should see some long-term benefits from overall improvements in Mexico's pork processing and retail sectors. ◆

Roxanne Clemens is managing director of the Midwest Agribusiness Trade Research and Information Center (MATRIC). Patricia Batres-Marquez is an assistant scientist in and Helen Jensen leads the Food and Nutrition Policy Division at CARD.

U.S. and Brazilian Ethanol
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the United States of transporting supply from the Midwest to major population areas. This has led to an increase in competitiveness of Brazilian ethanol imports despite the steep tariffs. Furthermore, volatility in U.S. ethanol prices, which sometimes leads to spikes, provides Brazil the opportunity to export ethanol to the United States. For example, in October 2005, the Brazilian ethanol price was $1.38 per gallon. Adding freight and the import tariff, the price for ethanol would be about $2.12 per gallon (including the 16¢-per-gallon transportation cost), which is below the $2.47 per gallon U.S. price for the same month. Consequently, Brazil was able to export 5.2 million gallons to the United States, up from zero exports in August and 2.7 million gallons in September 2005. In total, Brazil exported 86.5 million gallons of ethanol in 2004 and 65.9 million gallons in 2005, becoming the major source of U.S. ethanol imports. These imports may increase in the future, because of the projected expanding demand for ethanol in the United States. ◆

Simla Tokgoz and Amani Elobeid are international commodity analysts (grain and sugar, respectively) with the Food and Agricultural Policy Research Institute at CARD.

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Iowa State University
578 Heady Hall
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