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Prospects for ACRE Payments in 2009

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

U.S. farmers have until June 1 to decide if they want to enroll in ACRE (Average Crop Revenue Election) for the 2009 crop year. ACRE participants must give up eligibility for countercyclical payments and 20 percent of their direct payments. Participants are still eligible for marketing loans, but loan rates are reduced by 30 percent. Perhaps the most important factor that will influence ACRE participation is whether farmers believe that they will receive more payments from ACRE than they will give up. This is a difficult question to answer because the loss in direct payments is the only future payment that is known with certainty. Loan deficiency payments (LDPs) depend on the level of market prices and yields. Countercyclical payments (CCPs) depend on the level of National Agricultural Statistics Service (NASS) season-average prices relative to target prices. ACRE payments depend on both NASS prices and state yields. None of these factors can be known at the time of sign-up. However, a careful examination of how prices and yields affect ACRE payments relative to traditional program payments reveals that unless prices move significantly higher in the next few months, nearly all corn, soybean, and wheat farmers will find that signing up for ACRE will improve their financial position.

Guarantees in 2009

Table 1 provides the data needed to compare payments under traditional programs and under ACRE for corn, soybeans, and wheat. [For details about how ACRE works, see http://www.card.iastate.edu/ag_risk_tools/acre/faq.aspx.] The three rows under each program compare direct payment rates, CCP prices or ACRE prices, and loan rates. Direct payments and loan rates are reduced under ACRE. But the price used to set the ACRE revenue guarantee is much higher than the CCP trigger price. State revenue guarantees are presented next in Table 1. The guarantees are calculated by taking 90 percent of the product of the estimated ACRE price and the average state yield per planted acre from 2004 to 2008, after eliminating the highest and lowest yields during this period. State revenue triggers vary across states because the state average yield varies. Separate irrigated and dryland guarantees are calculated if a state has sufficient planted acreage in each.

The best indicator of the attractiveness of signing up for ACRE is the level of 2009 crop prices relative to the ACRE price. If 2009 crop prices are expected to be lower than the ACRE price, then expected payments at the time of sign-up will be large. But expected large payments do not necessarily lead to actually getting large payments. Actual ACRE payments may turn out to be zero if state yields are good

Table 1. Farm program guarantees in 2009

	Corn	Soybeans	Wheat
Traditional Programs		$/bu	
Direct Payment Rate	0.28	0.44	0.52
CCP Trigger Price[a]	2.35	5.56	3.40
Loan Rate[b]	1.95	5.00	2.75
ACRE			
Direct Payment Rate	0.224	0.352	0.416
ACRE Price[c]	3.90	9.94	6.65
Loan Rate	1.37	3.50	2.06
Revenue Trigger[a]		$/acre	
Iowa	584	449	257
Illinois	590	413	353
Minnesota	534	366	286
Nebraska - Irrigated	600	497	
Nebraska - Dryland	408	379	179
South Dakota	387	310	243
Missouri	466	331	279
Kansas - Irrigated	609		
Kansas - Dryland	285	310	197

[a]The target price for wheat and soybeans increases a small amount in 2010.
[b]The 2010 wheat loan rate is $2.99/bu.
[c]Estimated based on available data as of January 13.

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IN THIS ISSUE

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or if crop prices rise unexpectedly. This uncertainty about future prices and yields illustrates why it will be difficult for farmers to choose a program.

Should Farmers Choose ACRE?

The decision about whether to choose ACRE gets clearer once some standard tools of decision analysis are brought to bear on the problem. First, what should concern farmers is the difference in payments across the two programs. If, for all possible futures, ACRE pays out more than traditional farm programs, then the choice is simple: choose ACRE. But we know the decision is not that simple because if ACRE is not triggered in a state, then the 20 percent loss in direct payments under ACRE means that traditional farm programs would generate greater payments than ACRE. So those farmers who believe that future prices will be higher than the Table 1 ACRE prices and that state yields will be stable should not choose ACRE.

But most farmers know that there is a good chance that future prices could be low, and all farmers know that state yields can fall dramatically. Thus, we need to assess the probability that prices or state yields will drop to levels that trigger ACRE payments. While nobody knows what future yields are going to be, past fluctuations in growing conditions and yields can give insight into the probability that 2009 state average yields will fall below a certain level. A standard measure of variability is the percentage by which the actual yield differs from the trend yield in any year. Figure 1 shows the yearly deviations for corn yields in Iowa and South Dakota from 1980 to 2007. It is clear that yields can fall significantly below trend yields in both states. The figure also shows that if past yield variations can be used as a guide to the future, then the odds of a large yield decline in South Dakota are greater than for Iowa. Over the past 28 years, South Dakota suffered yield declines of 10 percent or more eight times compared to only four times for Iowa.

But ACRE payments are triggered by revenue declines, not yield declines. In addition, price levels determine whether CCPs and LDPs will be triggered. There are two relevant measures of price risk that need to be accounted for. The first is overall price strength in the 2009 marketing year. We could see prices weaken significantly if the economic downturn continues for another year. We should see price strength if oil prices

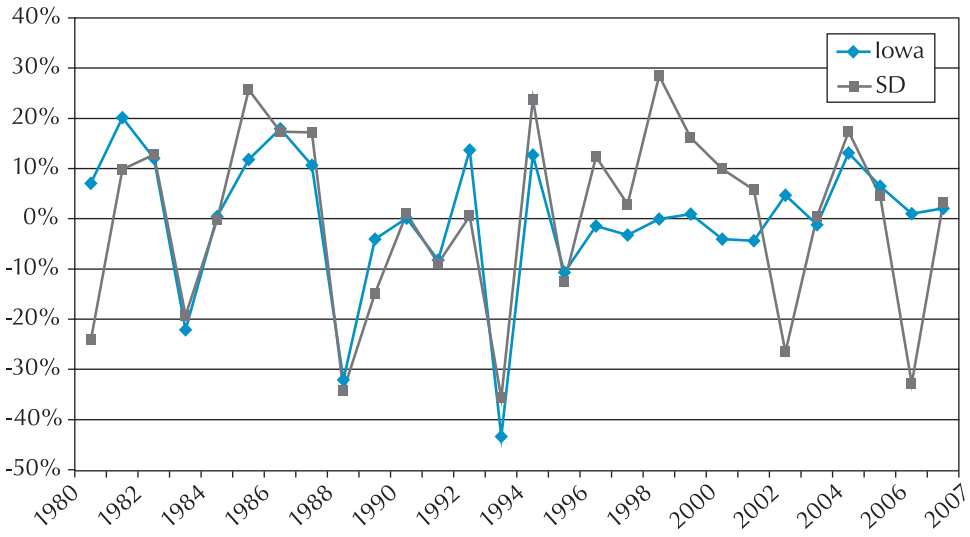


Figure 1. Percent deviation in actual corn yields from trend yields in Iowa and South Dakota

unexpectedly climb, if food demand rebounds, or if there is a crop failure overseas. The second source of price risk is the impact on market prices from the size of the U.S. crop in 2009. Large U.S. crops would mean weaker prices, while a crop failure would send prices much higher.

One way to capture both types of price risk is to use the current level of futures prices as a central estimate of price levels for 2009. Then the difference in payments between ACRE and traditional farm programs can be simulated for many different price deviations around this central tendency, accounting for historical volatilities and the impact of the size of the U.S. crop on prices. The analysis can then be repeated for scenarios for much weaker and much stronger prices in 2009.

Simulation Results

Based on futures prices on January 13, 2009, expected NASS season average prices for the 2009/10 marketing year are $3.88/bu, $9.20/bu, and $5.98 per bushel for corn, soybeans, and wheat, respectively. A comparison of these projected prices with the estimated ACRE prices that will be used to set the state revenue guarantees shows that expected prices for wheat and soybeans are quite a bit lower than the ACRE price while the corn projected price is just a bit below the ACRE price. This implies that if overall market conditions stay where they currently are, wheat and soybeans have a greater chance of receiving ACRE payments than does corn. Simulated payment outcomes are carried out first by centering 2009 prices at levels indicated by the January 13 futures prices. To see what happens to payments under both stronger and weaker price situations, results are also generated for prices that are centered 35 percent higher and lower than the January 13 indicated levels. Results for a number of the Table 1 state-crop combinations are reported in Table 2.

Table 2. Simulation Results

	Expected ACRE Payment	20% of DP	Expected CCP + LDP	An ACRE Payment Is Received	Positive Net Benefit from ACRE
	$ million			(Probabilities)	
2009 Average Prices at Current Indicated Levels					
IA - Corn	242	82	4	32%	30%
IA - Soybeans	296	21	4	53%	52%
KS - Wheat	125	37	3	44%	41%
KS - Dryland Corn	29	7	0	36%	35%
MN - Corn	133	38	2	34%	32%
MN - Soybeans	166	13	2	48%	47%
MN - Wheat	66	9	1	69%	66%
IL - Corn	260	67	3	40%	38%
IL - Soybeans	191	22	3	46%	45%
SD - Corn	69	14	1	39%	37%
SD - Soybeans	61	8	1	44%	43%
SD - Wheat	84	9	1	72%	70%
2009 Average Prices 35% Higher than Current Indicated Levels					
IA - Corn	14	82	0	3%	2%
IA - Soybeans	28	21	0	8%	8%
KS - Wheat	18	37	0	11%	9%
KS - Dryland Corn	10	7	0	13%	12%
MN - Corn	21	38	0	5%	5%
MN - Soybeans	24	13	0	10%	10%
MN - Wheat	16	9	0	26%	24%
IL - Corn	8	67	0	2%	2%
IL - Soybeans	10	22	0	4%	4%
SD - Corn	5	14	0	4%	4%
SD - Soybeans	4	8	0	5%	5%
SD - Wheat	25	9	0	31%	29%
2009 Average Prices 35% Lower than Current Indicated Levels					
IA - Corn	1,706	82	369	97%	93%
IA - Soybeans	1,031	21	231	99%	96%
KS - Wheat	387	37	101	94%	89%
KS - Dryland Corn	117	7	17	89%	87%
MN - Corn	891	38	193	97%	93%
MN - Soybeans	590	13	139	97%	95%
MN - Wheat	131	9	25	99%	97%
IL - Corn	1,643	67	327	99%	95%
IL - Soybeans	872	22	214	98%	94%
SD - Corn	402	14	88	97%	93%
SD - Soybeans	281	8	72	97%	94%
SD - Wheat	212	9	30	99%	99%

Iowa Corn

There are a number of ways that a comparison of payments can be made. The method used here is to report total ACRE payments in a state acting as if all acreage is signed up to the program. These payments are compared to what traditional program payments would be if no acreage were signed up for ACRE. Thus, the results indicate what payments would occur if all of a state's farmers participated in ACRE relative to the payments that would occur if none of the state's farmers moved to ACRE. When 2009 corn prices are centered at $3.88/bu (that is, the average simulated price equals $3.88), average Iowa corn payments from ACRE are $242 million. If all Iowa corn farmers chose traditional programs, they would receive an average of only $4 million in LDPs and CCPs. This suggests that farmers would be better off choosing ACRE. However, to obtain ACRE payments, Iowa corn farmers would have to give up $82 million in direct payments. Thus, unless ACRE payments exceed $82 million, Iowa corn farmers would be better off not choosing ACRE.

The last two columns of Table 2 report some key probabilities. The first of these is the probability that that ACRE pays out on the 2009 crop. As shown for Iowa corn, there is a 32 percent chance that ACRE will pay out. The second column of probabilities is the probability that farmers will receive more in ACRE payments on their 2009 crop than they would receive from the traditional programs. For Iowa corn this probability is only 30 percent, which means that there is a 70 percent probability that Iowa corn farmers would receive more payments under traditional farm programs than under ACRE. Taking these probabilities together, there is a good likelihood that the loss in direct payments will be greater than the gain in ACRE payments. But when ACRE pays, the average payout is much larger than the loss in direct payments. Therefore, at current price conditions, ACRE is similar to a subsidized crop insurance program in which the loss of direct payments equals the farmer-paid premium. A comparison of the expected ACRE payout to the loss in direct payments implies a premium subsidy rate of about two-thirds.

Increasing the average 2009 corn price by 35 percent (to $5.24/bu) greatly decreases the chances of receiving an ACRE payment. The reason is that the ACRE price used to set the guarantee would be much lower than prevailing prices. The probability that ACRE payments exceed the loss of direct payments for Iowa corn decreases from 30 percent to 2 percent. The expected ACRE payment is reduced from $240 million to only $14 million. Thus, if farmers believe that 2009 prices will be much stronger than is indicated by current futures, then they will probably want to wait a year before signing up for ACRE.

If market conditions weaken considerably and the average 2009 corn price falls 35 percent (to $2.52/bu), then expected ACRE payments increase dramatically, to $1.7 billion. CCPs and LDPs increase also, but only to $369 million. The probability that ACRE would result in a payout is 97 percent in this scenario. And there is only a 4 percent chance for Iowa corn farmers that ACRE payments would be exceeded by LDPs and CCPs. So, dramatically lower prices favor ACRE even more than current prices. The reason is, of course, that ACRE provides support at $3.90 per bushel, which is much greater than the CCP trigger price.

Soybeans and Wheat

The overall pattern of results for Iowa corn holds for other corn states and for soybeans and wheat. But soybean and wheat farmers have an even greater incentive to participate in ACRE than do corn farmers because the ACRE prices for soybeans and wheat are higher than those currently indicated for 2009. Minnesota and South Dakota wheat farmers have an extra incentive to sign up for ACRE because growing conditions from 2004 to 2008 were better than average. Hence, the ACRE yield used to set the ACRE guarantee is quite high relative to the average-trend-adjusted yield from 1980 to 2007.

Bottom Line

The conclusion that can be drawn from the Table 2 results is that most midwestern farmers will sign up for ACRE unless prices unexpectedly strengthen in the next few months. If market conditions stay reasonably constant, then farmers who sign up for ACRE will be compensated for their loss in direct payments if prices fall unexpectedly or if statewide growing conditions turn out to be poor in 2009. If prices stay up and growing conditions are good, then the loss in direct payments will not be compensated, but market returns for most farmers will be high. If market conditions deteriorate in the next few months, then all farmers will have quite a large incentive to move into ACRE immediately, as there is a very small probability that payments from LDPs and CCPs will approach the level of ACRE payments.

For More Information

For analysis of more crop-state combinations, see calculators available at http://www.card.iastate.edu/ag_risk_tools/acre/. ◆

U.S. Beef Faces Challenges in Korea Before Reaching Full Potential

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

Negotiations to reach an agreement on import health requirements to reopen the Korean market to U.S. beef took place over the past few years amid enormous political and public resistance in Korea. The expected benefits, however, will make the negotiations well worth the effort for both sides. In 2003, Korean imports of U.S. beef reached $749.3 million before imports were banned when a case of bovine spongiform encephalopathy (BSE) was diagnosed in the United States. U.S. beef began flowing back into Korea in July 2008, and the value of these exports reached $270 million by the end of November. Despite this success, rebuilding exports to reach the full potential of this market will take time. The following is a brief overview of several market conditions that are dampening sales in the early months of renewed trade and longer-term expectations for conditions that would greatly increase demand and market access.

Short-Term Challenges

Exports of U.S. beef were strong when the market opened in 2008, but demand was lower than had been anticipated by many Korean traders. USDA data indicate that beef exports to Korea reached 16,640 metric tons in September but then fell to 5,940 metric tons in November. A number of events have combined to create a challenging market environment that is suppressing demand for U.S. beef over the short term.

As U.S. and Korean negotiators worked toward an agreement to reopen the Korean market in 2008, worsening global and domestic economic conditions became an important factor in the Korean government's decision to lift the ban on U.S. beef. The value of the won was falling dramatically against world currencies such as the U.S. dollar, Japanese yen, and Chinese yuan, making it increasingly difficult for the Korean government to justify banning a lower-cost alternative to domestic beef and pork. An agreement was reached on April 21, and U.S. beef officially re-entered the market on June 26.

Before and after the market reopened in 2008, protesters organized massive demonstrations against U.S. beef, and the issue brought an early end to the terms of several government officials.

The won continued to weaken and by November 24 had reached its lowest level against the U.S. dollar during 2008, with a value of 1,520 won per U.S. dollar compared to about 935 won per U.S. dollar in mid-January 2008. This low value coincided with the reintroduction of U.S. beef by Korea's three major discount retail chains on November 25. All three chains put U.S. beef in all their outlets, a combined total of 295 stores. Initial sales figures were strong, but Korean consumers were much less able to afford beef than they had been the year before.

Another major factor affecting sales of U.S. beef has been public resistance in the form of boycotts and protests. Before and after the market reopened in 2008, protesters organized massive demonstrations against U.S. beef, and the issue brought an early end to the terms of several government officials. For many Koreans, the protests had at least as much to do with nationalism, negative attitudes toward the current government, social conflict, and anti-U.S. sentiment as they had to do with concerns about U.S. beef and food safety. U.S. beef became a focal point for the discontent created by many unrelated issues. The protests made restaurants and retailers reluctant to carry or advertise U.S. beef for fear of becoming targets. And although the number and size of these protests have subsided, they continue to take place in smaller cities and to affect U.S. beef sales. Retailers generally choose to remove U.S. beef from the shelves rather than incite the protestors and inconvenience customers more than absolutely necessary, and many restaurant owners still have not returned U.S. beef to their menus.

Although the reasons for protests were not limited to food safety, genuine concern about food safety has certainly been a factor in consumer decisions about purchasing U.S. beef. In addition to the BSE issue, unrelated food safety problems often raise the level of concern, especially about imported products, which are considered less safe than domestic products. News of problems such as dioxin in Chilean pork and concerns about food imports from China tend to create a ripple effect on sales of imported products.

Although the agreement to reopen the market is consistent with recommendations of the World Organization for Animal Health (OIE) regarding beef animal age, U.S. beef exporters and Korean importers have agreed to a commercial understanding that only beef from cattle less than 30 months of age will be

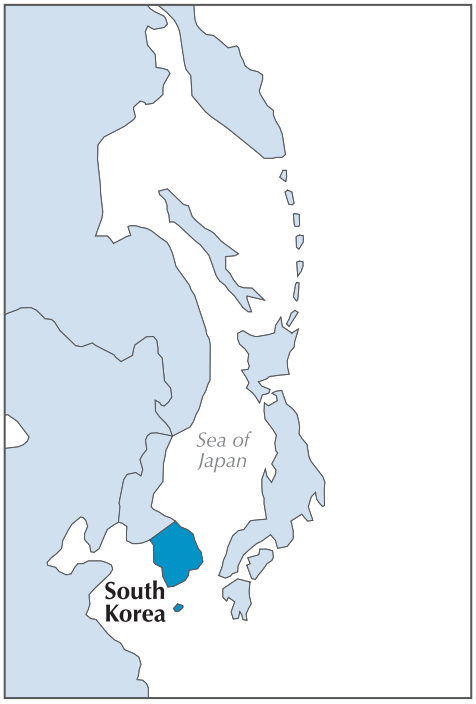
imported into Korea to help build consumer confidence in U.S. beef. Some differences remain between the United States and South Korea concerning specified risk materials, and Korean importers are choosing not to import some variety meats until those differences are resolved.

Finally, many Korean traders greatly overestimated the demand for U.S. beef when the market opened and were forced to place beef into frozen storage as they waited for orders. Storing the beef allowed the importers to delay clearing product through customs and paying import tariffs, but the storage fees, the need to pay letters of credit on stored product, and difficulty in obtaining bank credit created great financial difficulties for many importers, forcing many out of business. Others will stop purchasing U.S. beef until it is profitable to do so.

Long-Term Potential

Despite the many challenges currently facing U.S. beef, longer-term expectations for the Korean market are for strong demand and a major U.S. market share. Global and domestic economic recovery will be a major factor in normalizing the market. Despite the attention the protests against U.S. beef received, many consumers either want to make their own decisions about whether to buy U.S. beef or are undecided. The presence of U.S. beef in the market and programs to educate consumers about the safety, quality, and nutritional attributes of U.S. beef will help to encourage many of these consumers to purchase it as their economic situation improves.

Consumer preference for grain-fed beef and its suitability for use in



Korean dishes will also help drive demand for U.S. beef over the long term. Prior to the 2003 ban, U.S. beef accounted for nearly 50 percent of total beef consumption in Korea. After the ban, Australia filled much of the import void created by the absence of U.S. beef but was unable to supply all the cuts U.S. exporters had been supplying, leaving this demand unfilled. As protests continue to subside, more restaurants and retailers will carry U.S. beef. As this happens, mandatory country-of-origin labeling of imported beef should benefit U.S. beef as consumers gain confidence in U.S. product and buyers replace Australian beef with U.S. beef.

Total beef consumption and demand for U.S. beef are also expected to increase as consumers switch from other protein sources back to beef. Following the 2003 ban on U.S. beef, many consumers switched to pork and chicken because of BSE concerns and high beef prices. Many of these consumers are expected to begin replacing some pork and chicken with beef. For example, the return of U.S. beef to barbeque restaurants is expected to replace large volumes of pork, including U.S. pork.

Finally, as demand increases, ratification of the Korea-U.S. Free Trade Agreement (KORUS FTA) would increase market access. Ratification by both countries is still pending, and many industry experts expect ratification in Korea. Because beef is a sensitive product in Korea, tariff reductions on U.S. beef are scheduled to occur during a 15-year phase-in period. Tariffs on muscle cuts will decline from 40 percent (the current level) to zero in 15 equal annual increments. An initial safeguard of 270,000 metric tons will increase at a compound 2 percent annual rate to 354,000 metric tons over the phase-in period. In year 16 and beyond, tariffs will be zero and the safeguard will no longer apply. Tariffs on U.S. beef offal also will decline from current levels of 18 percent and 27 percent to zero in 15 equal annual reductions, with no safeguards.

Because economic recovery is such an important factor in increasing imports of U.S. beef and the pace at which recovery will occur is unknown, it is difficult to determine exactly when the market for U.S. beef will fully recover. However, the combination of eventual strong demand and ratification of the KORUS FTA will position U.S. beef exporters to more than recover the export volume lost to the 2003 beef ban. ◆

Renewable Identification Numbers and the Renewable Fuels Standard: How They Support Corn and Soybean Prices

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

The Renewable Fuels Standard (RFS) mandates that the nation's fuel supply contain at least 11.1 billion gallons of biofuels in 2009 and 12.9 billion gallons in 2010. Of these volumes, biodiesel must make up at least 500 million gallons in 2009 and 650 million gallons in 2010. Other "advanced" biofuels must make up 100 million gallons in 2009 and 200 million gallons in 2010. If the volumes of biodiesel and other advanced biofuels are exactly met, then the RFS mandates consumption of 10.5 and 12.0 billion gallons of conventional biofuels, the most important of which is domestic corn ethanol and Brazilian ethanol that is not used to meet the other advanced biofuels mandate. The corn and soybean lobbies, together with the biofuels industry, worked hard to get these mandates passed. The biofuels industry wanted guarantees that they would have a market for their product. Corn and soybean farmers wanted to lock in increased demand for their crops. An examination of the linkages between the RFS, energy prices, and crop prices shows how the RFS works in the interest of corn and soybean farmers by creating a floor under their commodity prices.

Impact of the RFS on Biofuels and Crop Prices

Market forces could be used to determine ethanol and biodiesel prices. Fuel blenders use biofuels in their blends if the price is low enough to make it worth their while, and biofuels producers produce biofuels if the price is high enough to cover their costs. The market-clearing price equalizes blenders' willingness to pay for another million gallons of biofuels to the cost of producing the additional million gallons. Existing tax credits and ethanol import tariffs serve to boost the demand for U.S. biofuels so the market-clearing price and quantity of biofuels is greater than if they did not exist. If the market-clearing production of biofuels is greater than the RFS, then the RFS has no impact on production or price. However, market forces along with tax credits and tariffs may not stimulate enough biofuels production to meet the RFS. This situation will occur if blenders' willingness to pay for more biofuels is less than the cost of producing them. The gap between willingness to pay and production costs must be closed somehow if the RFS is to be met.

RINs are bought by those who find it more profitable to buy credits rather than biofuels. RINs are sold by those who generate excess RINs by using more biofuels than required.

The gap can be closed by reducing production costs or by increasing blenders' willingness to pay. Production costs could be decreased through outright subsidies. For example, the cost of corn to ethanol producers could be lowered through price subsidies. This would entail losses to taxpayers and gains to corn farmers. Or blenders' purchases of biofuels could be directly subsidized by increasing the blenders' tax credit sufficiently to increase their willingness to pay for biofuels. This alternative would also involve losses to taxpayers to the benefit of blenders and corn farmers. The alternative that was chosen by Congress was to specify how much biofuels must be used by each fuel refiner, importer, and blender. If these entities choose to use less than their required amount, then they are free to buy credits from others who choose to use more than their required amount. Because each batch of biofuels has a unique Renewable Identification Number (RIN) attached to it, it is easy to keep track of how much biofuels each entity is using. RINs are bought by those who find it more profitable to buy credits rather than biofuels. RINs are sold by those who generate excess RINs by using more biofuels than required.

The supply of excess RINs is greater than the demand for RINs when the market-clearing quantity of biofuels is greater than the RFS. For example, if consumption of biofuels is 12 billion gallons and the RFS is 10 billion gallons, then RINs that represent 2 billion gallons of biofuels have no use. The excess supply of RINS will drive their price down to almost zero. However, a shortage of RINs will occur if the market price of biofuels is such that blenders want to buy more RINs than biofuels. This shortage will cause the price of RINs to increase. An increase in the price of RINs will begin to increase the attractiveness of biofuels relative to RINs, thereby increasing the demand for ethanol. The price of RINs will keep rising until the demand for biofuels grows enough to bridge the gap between

the willingness to pay for ethanol and the cost of producing ethanol. The RFS will be met when this gap is bridged. The market for RINs combined with the authority of the Environmental Protection Agency will ensure that the price of biofuels increases enough to cover the costs of producing enough biofuels to meet the RFS.

The power of the market for RINs ensures that ethanol demand will generate high enough biofuel prices to allow biofuel plants to cover their production costs up to the RFS. Increased demand for biofuels translates directly into increased demand and higher prices for feedstocks. For example, Figure 1 shows that daily movements in nearby corn and ethanol prices on the Chicago Board of Trade are highly correlated, with a correlation coefficient of 0.97. This high correlation suggests that the ability of ethanol plants to pay for corn has largely determined the price of corn in the last year. If this relationship continues to hold, then any RFS-induced increase in the price of ethanol will result in higher corn prices. The market for RINs is the mechanism by which corn prices are supported by the RFS.

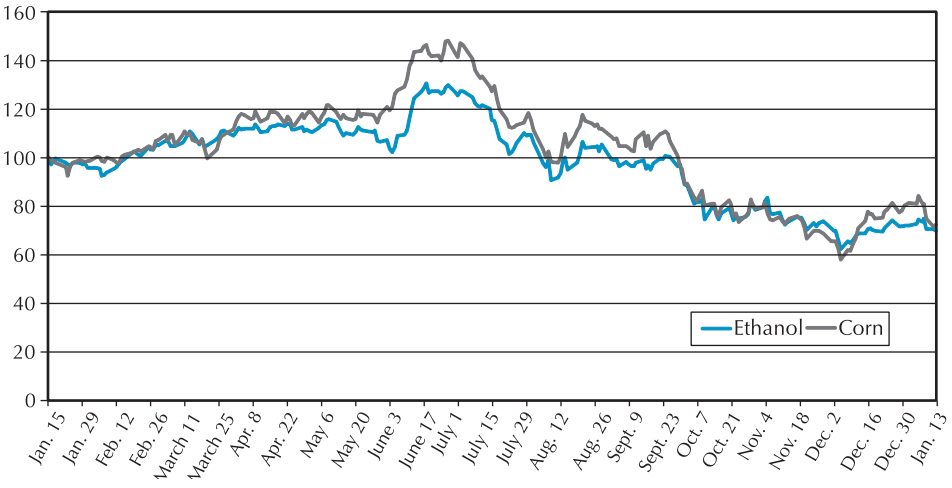


Figure 1. Indices of corn and ethanol prices (January 15, 2008 = 100)

Figure 2. Returns to planting corn after corn minus returns to planting soybeans after corn

Outlook for Corn and Soybean Prices

The amount of corn acreage that will be needed in 2009 can be estimated using the latest USDA data, released on January 12. If food, feed, and exports remain at projected levels for the current marketing year, 11 billion gallons of corn ethanol are needed to meet the RFS, and 2009/10 carryout stocks are set at 1.5 billion bushels, then 12.1 billion bushels of corn will be needed from the 2009 crop. This will require approximately 86 million acres to be planted at an average yield per planted acre of 140 bushels. To get 86 million acres of corn will require that a significant number of corn acres be planted on acres that were planted to corn in 2008. Because yields typically drop when corn is planted after corn, and because it takes more nitrogen fertilizer and higher-priced seed to plant corn after corn, this level of acreage will not be planted unless market prices make it worthwhile for enough farmers to plant corn after corn.

Figure 2 shows the daily changes in the expected returns from planting an acre of corn this spring on ground that was planted to corn instead of planting an acre of soybeans. (See the accompanying article on page 10 for an explanation of this difference in returns.) As shown, there currently is no incentive for any farmer to plant corn after corn. If market prices stay where they are, then this lack of incentive to plant corn will mean that corn acreage will drop to perhaps 81 million acres. At 140 bushels per acre, this would result in production of 11.3 billion bushels, which would mean a drawdown in stocks combined with a rationing of feed and export demand with higher corn prices in the 2009 marketing year. If the foregoing

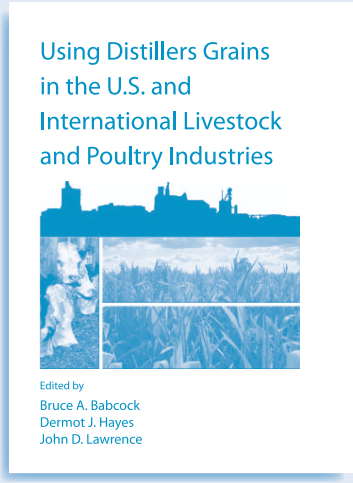
arithmetic is correct, and if market prices really do reflect all available information, then prices will not stay where they are because current prices do not reflect the potential for higher prices in 2009. Either the price of corn will need to be bid up or the price of soybeans will need to drop. Because of worries about the size of the South American soybean crop, future export demand for U.S. soybeans has also helped push soybean prices higher. If South American yields turn out to be low, then it is unlikely that soybean prices would drop by much, which would push the price of corn higher. If South American yields turn out to be good and the world recession continues, the incentive to plant corn on corn could be increased if soybean prices drop more than corn prices.

RINs and Tax Credits

Because tax credits increase the demand for biofuels, they shrink or eliminate the gap between the willingness to pay for biofuels and production costs. If the gap is completely eliminated, then tax credits drive the price of RINs down to zero. If the gap is only partially eliminated, then the price of RINs is decreased by the amount of the tax credit. The current price of 2009 ethanol RINs is about 7¢ per gallon. The tax credit is 45¢ per gallon. Thus, if the tax credit were eliminated, then the price of RINs would rise to approximately 52¢ per gallon.

This direct substitution between the price of RINs and the tax credit calls into question why both are needed. If the RFS is binding, then eliminating the tax credit would not change the demand for biofuels or the demand for corn and soybeans. Thus, the prices of biofuels, corn, and soybeans would all be unchanged. If the mandate is not binding then the tax credit provides support to biofuels and crops beyond that needed to meet the RFS, with resulting increases in feed and food costs.

A straightforward alternative would be to eliminate the tax credit. Taxpayers would benefit. Blenders and fuel users, on the other hand, would likely object to this change because rather than receiving a taxpayer subsidy they would be taxed through higher RIN prices. However, one benefit of this change would be that the cost of meeting the RFS would be fully and transparently reflected in the value of RINs, thus leading to a more informed public debate about the costs and benefits of biofuels. ◆



New Distillers Grains Book Covers Feeding, Handling, and Marketing

Experts at Iowa State University and six other universities provide the latest information on nutrition and performance, economics, trade, and transport when adding distillers grains to feed rations for livestock and poultry. The book, *Using Distillers Grains in the U.S. and International Livestock and Poultry Industries*, is available for download free of charge only on the MATRIC Web site: www.matric.iastate.edu/DGbook

Corn or Soybeans for 2009?

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

Lihong Lu McPhail
lihonglu@iastate.edu
515-294-6291

Increased demand for corn by the ethanol industry has increased corn planted acreage from historical levels. From 2001 to 2006, an average of 79 million acres of corn was planted in the United States, with the highest acreage being 81.8 million acres in 2005. In 2007, corn acreage increased to 93.5 million acres. Figure 1 shows that a large proportion of the 2007 increase in corn acreage came from midwestern farmers reducing soybean acreage in favor of corn.

Corn acreage declined by 7.5 million acres—to 86 million acres—in 2008 while soybean acreage increased by almost 11 million acres. Figure 2 shows that a large proportion of the soybean acreage increase came from a reduction in corn acreage. Other sources of soybean acreage in 2008 included switching from crops other than corn, loss of Conservation Reserve Program land, and an increase in soybean double cropping.

Because most corn grown in the Corn Belt is grown in rotation with soybeans, a large proportion of the expanded U.S. corn acreage has come about because some farmers have chosen to plant corn on land that was planted to corn in the previous year. But planting corn after corn instead of corn after soybeans can reduce yields and increase production costs. Production costs increase because of the need for additional nitrogen fertilizer, increased tillage, and increased pesticide costs to control corn rootworm. Corn rootworm control can be obtained by buying more expensive seed recently developed for that purpose. In addition, by planting corn after corn instead of planting corn after soybeans, a farmer gives up the benefits the following year of being able to plant corn after a crop of soybeans.

To induce farmers to plant adequate corn acreage to meet growing ethanol demand, the price of corn that a farmer should expect to receive must rise relative to the price of soybeans. If it doesn't, then farmers will choose not to expand corn-on-corn acreage.

Calculating Planting Incentives

A simple equation can be used to calculate the incentive to plant corn after corn instead of soybeans after corn. It is simply the difference in expected return this year from planting corn after corn versus corn after soybeans minus the forgone benefits of planting corn after soybeans the following year. Because these forgone benefits exist in the future, they need to be discounted to today's dollars.

The daily value of this incentive to plant corn after corn is graphed in Figure 3 for 2001 to 2006, 2007, 2008, and 2009. Because most farmers do not begin to worry about the following year's crop until they harvest this year's crop, only daily values

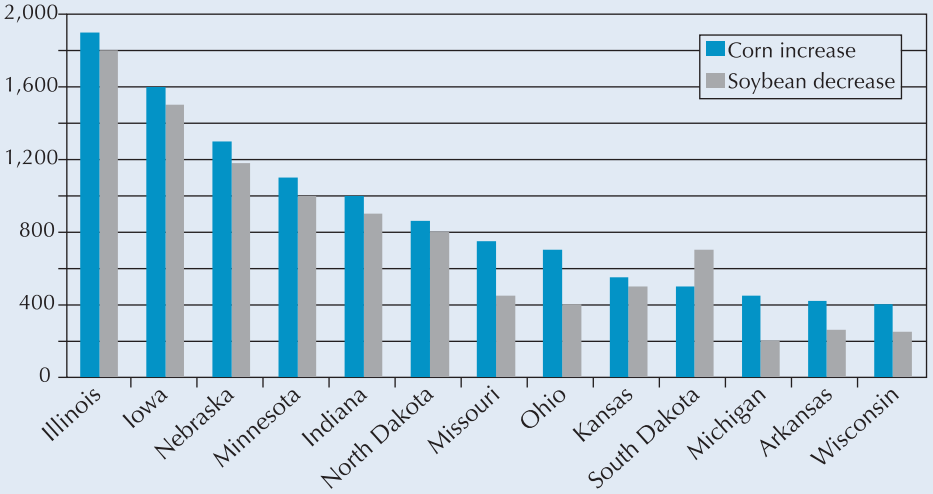


Figure 1. Change in corn and soybean acreage by state in 2007 from 2006

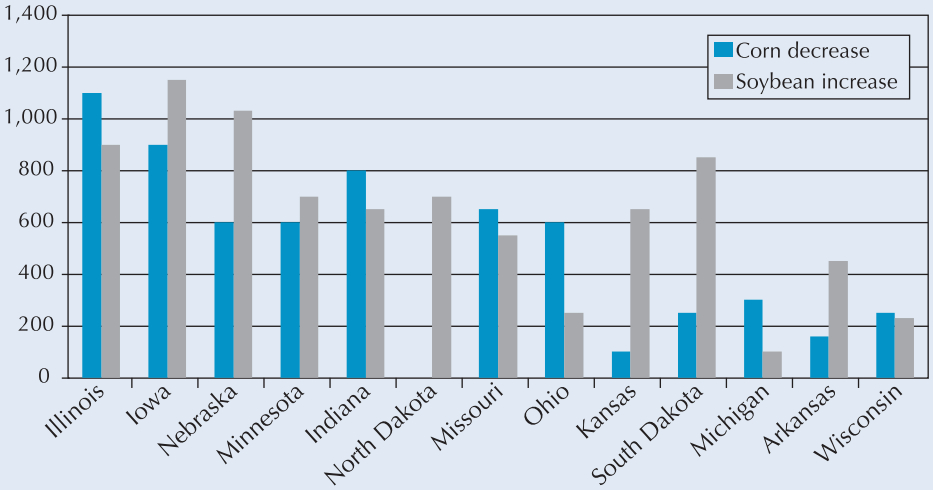


Figure 2. Change in corn and soybean acreage by state in 2008 from 2007

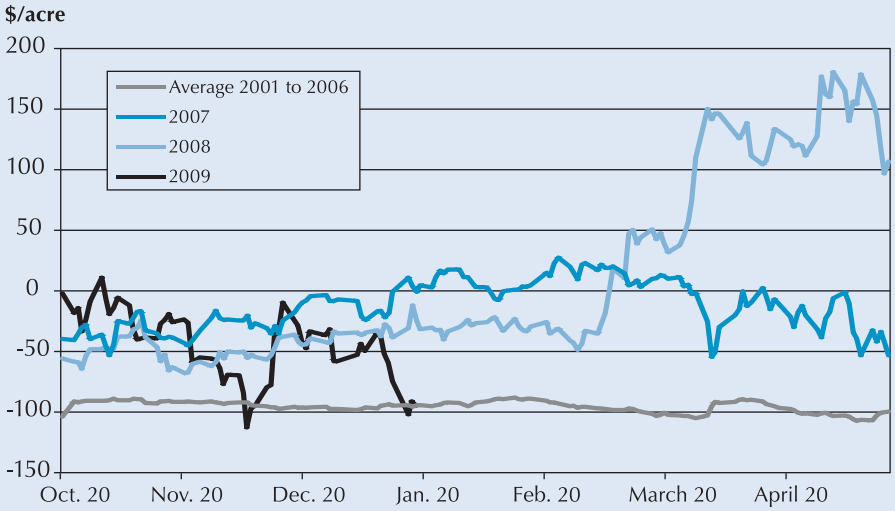


Figure 3. Daily value of incentive to plant corn after corn

after October 20 in the fall before planting are shown. May 20 is about the last day that farmers can choose to plant corn instead of soybeans. Daily values for new crop futures (December for corn and November for soybeans) adjusted for average midwestern basis are used in the calculations.

Figure 3 shows that there was no incentive to plant corn after corn from 2001 to 2006. Consequently, corn acreage averaged 79 million acres, varying from 75.7 in 2001 to 81.8 in 2005. There was no day during this period when the expected return to planting corn after corn exceeded the expected return from planting soybeans after corn. Of course, some farmers chose to plant corn after corn. These farmers must have had some advantage not captured by the measure graphed in Figure 3. For example, access to abundant hog manure induces some farmers to plant continuous corn.

Recent Incentives and Outcomes

Early in January of 2007, the market created a positive incentive to plant corn after corn. This incentive lasted until the beginning of April before it disappeared. Notice also that for most of the period after the 2006 harvest, the disincentive for planting corn after corn was much less than it had been in previous years. This pattern of incentives in 2007 was evidently quite strong given the large movement of soybean acres to corn acres shown in Figure 1.

The incentives to plant corn after corn were negative and lower in 2008 than in 2007 until the second week in March. By that time many farmers who might have considered planting corn after corn had already decided to plant soybeans instead. The market likely responded to a fear of inadequate corn acreage and created a large incentive for farmers to switch their plans toward corn. The lateness of the signal probably prevented many farmers from responding.

The incentives for the 2009 crop started higher than in either 2007 or 2008 but they quickly fell in mid-December to become quite negative. After rebounding somewhat, the latest use data from USDA released on January 12 drove corn prices sharply down. Currently the disincentive to plant corn after corn is about the same as the average disincentive during 2001 to 2006. This suggests that corn acreage will have trouble exceeding 80 million acres in 2009. But projected demand for corn exceeds what can be grown on 80 million acres. Consequently, we should expect significant strengthening in corn prices relative to soybean prices before planting. ◆

Recent CARD Publications

Working Papers

Buying Ecological Services: Nature's Harmonies, Fragmented Reserves and the Agricultural Extensification Debate. David A. Hennessy and Harvey Lapan. November 2008. 08-WP 482.

Determinants of World Demand for U.S. Corn Seeds: The Role of Trade Costs. Sampath Jayasinghe, John C. Beghin, and GianCarlo Moschini. January 2009. 09-WP 484.

Not All DDGS Are Created Equal: Nutrient-Profile-Based Pricing to Incentivize Quality. Jacinto F. Fabiosa. November 2008. 08-WP 481.

A Welfare Analysis of the U.S. Ethanol Subsidy. Xiaodong Du, Dermot J. Hayes, and Mindy Baker. November 2008 (Revised). 08-WP 480.

Welfare Changes from the U.S. Ethanol Tax Credit: The Role of Uncertainty and Interlinked Commodity Markets. Mindy Baker. December 2008. 08-WP 483.

Books and Miscellaneous

Using Distillers Grains in the U.S. And International Livestock and Poultry Industries. Bruce A. Babcock, Dermot J. Hayes, John D. Lawrence, Editors. Midwest Agribusiness Trade Research and Information Center, Iowa State University. 2008. (Available online only: http://www.matric.iastate.edu/DGbook/).

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