



Farm Policy Amid High Prices: Which Direction Will We Take?

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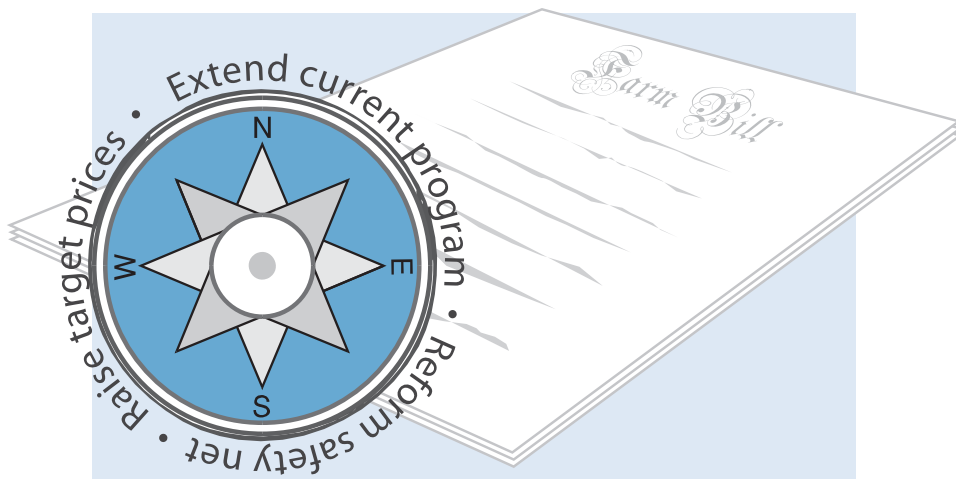
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Increased demand for corn from ethanol plants, short wheat crops, and stagnant South American soybean yields have led to \$3.00 corn, \$5.00 wheat, and \$6.00 soybeans. These high prices suggest that producers of these commodities should not expect any loan deficiency payments or countercyclical payments for either their 2006 or 2007 crops. If futures prices are any indication, then farmers might not see any payments from these programs for at least three or four years. High prices will not affect direct payments, of course. So \$2.1 billion in annual aid will flow to corn farmers, \$1.15 billion will go to wheat farmers, and soybean farmers will receive \$608 million for both crop years despite the high prices.

A lack of payments is good news for farmers, our budget deficit, and our trading partners. Farmers get to enjoy the benefits of high prices; the budget deficit will be relatively smaller; and our commodity programs will have minimal impact on world prices. However, high prices pose a dilemma for farm groups and their supporters in Congress. The current set of programs was designed to generate payments to offset low prices. What should be done with our current programs if we are entering a period of high prices?

Although it is hazardous to forecast how Congress is likely to respond to high prices, past experience suggests a probability of near zero that Congress will declare the end of farm subsidies. Three more likely options for Congress are



1. Declare victory over low prices but keep current programs and associated target prices in place just in case this victory is short-lived.
2. Keep current programs but raise target prices for all crops or for those crops that would not otherwise receive payments.
3. Change farm programs so that they provide a better financial safety net, with payments arriving when they are needed.

Before turning to a more detailed look at each of these options, it might be instructive to see how Congress responded with changes in farm legislation in earlier periods of high prices.

Responses to High Prices in Previous Farm Bills

The commodity price boom in the mid-1970s resulted in support levels that were far below market prices. Congress responded with farm legislation in 1973, 1977, and 1981 that increased loan rates and target prices. Before the boom, corn loan rates were \$1.35/bu. At their peak,

loan rates hit \$2.55/bu. Target prices for corn increased from \$1.38/bu to a peak of \$3.03/bu. The most common justification for this rapid increase in price supports was to combat rising production costs.

In 1995, Congress was again faced with a choice about what to do in a period when market prices were above price support levels. At that time, strong export demand, a weak dollar, and production problems resulted in high prices in 1995 and 1996. Prices were also expected to remain strong for several years. Congress responded quite differently with the 1996 farm bill. Rather than raise target prices, Congress eliminated the deficiency payment program and funded the direct payment program, assuring farmers of payments during what was expected to be a strong price period.

The graph on page 2 shows the history of total support levels and market prices for corn through 2005. (The pictures for wheat and cotton are similar.) The run-up in market prices during the 1970s was closely followed by a run-up in support levels. The run-up in prices in ➡

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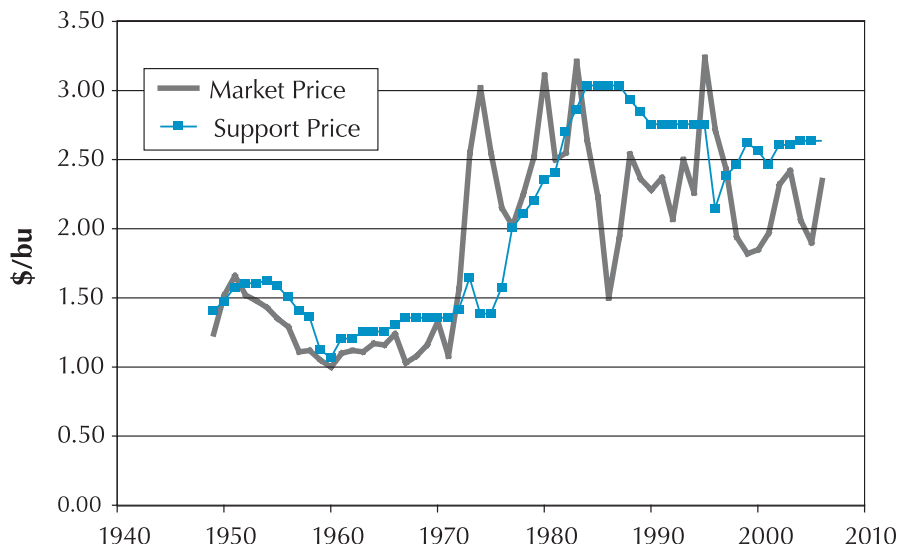
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History of market prices and support prices for corn through 2005

the mid-1990s actually resulted in a brief decline in support, until the market loss assistance payments were paid out in 1998. The maintenance of support levels in 2002 is clearly revealed.

It is interesting to consider what U.S. agriculture would look like today had Congress simply left support prices at their 1970 levels. The overall pattern of market prices for corn would look largely as it does in the graph, with some exceptions. High government support prices in the early 1980s undoubtedly expanded planted acreage, but annual set-asides somewhat counteracted these effects. The large buildup of stocks in the mid-1980s kept prices from rising higher than they otherwise would have in the drought year of 1988. And prices would not have risen as high as they did in the drought year of 1983 except for the large acreage reduction effort that year. But, especially since 1996, the overall pattern of prices and production have been largely unaffected by the billions of dollars in federal support given to corn farmers over this period. That is, if government had chosen to wean farmers from support in 1972, the U.S. Corn Belt would look mostly like it does today. The large run-up in commod-

ity prices in the 1970s would have occurred. And we still would have had the farm crises in the mid-1980s, high prices in the mid-1990s, low prices in the late 1990s, and bumper corn crops in 1994, 2004, and 2005. Ultimately, what we have to show for the billions of dollars that have been spent supporting corn farmers are perhaps a bit higher corn production, somewhat higher land prices and wealthier landowners, and some cases in which farmers' transition out of agriculture was made easier by payments. Whether these accomplishments are enough to justify the costs is an open question, but it is important to keep these long-run impacts in mind as we decide what to do with the next farm bill.

Three Alternative Paths

Extend the 2002 Farm Bill

For all the domestic and international criticism aimed at the 2002 farm bill, extension of its commodity provisions would represent a move to a free-market program regime for corn, soybeans, and wheat. The impact of the biofuels boom on the demand for corn should mean that market prices for all three commodities could remain above levels that trigger countercyclical and loan deficiency payments at current target

prices and loan rates. Direct payments would still flow to producers, but these payments have little effect on planting decisions.

Maintenance of current target prices and loan rates would also give Congress and farmers assurance that a repeat of the late 1990s could not occur. Elimination of the deficiency payment program in 1996 left only the nonrecourse loan program and AMTA (Agricultural Market Transition Act) payments to cushion the blow of low prices. Congress felt that this was an inadequate cushion and passed emergency payments beginning in 1998 and made permanent this level of support with the countercyclical payment program in 2002. Maintenance of current programs at current target prices would mean that if prices were to return to the low levels of the late 1990s, then farmers would be assured of large payments.

Depending on the intricacies of budget scoring, holding the line on target prices could free up funds for use in other areas of the farm bill, such as conservation, research, energy, nutrition, and rural development, where a good case can be made for spending scarce public funds on programs that serve broad public interests.

The most vocal advocate for extension of current provisions of the farm bill is the American Farm Bureau Federation. It will be interesting to see if Farm Bureau's position will change this winter given that its farmer members who grow corn, soybeans, and wheat will be receiving few payments over the next few years.

Raise Target Prices

An alternative to simply extending current provisions is to keep current programs but to "rebalance" target prices. Soybean and wheat growers have received almost no support from countercyclical payments since this program's inception, and corn farmers should not expect to see any

A more fundamental question that should be addressed before target prices are raised is what exactly is supposed to be accomplished by commodity programs.

support for the next few years. But rice and cotton producers likely will continue to receive both marketing loans and countercyclical payments.

Already, the National Association of Wheat Growers is advocating a 24 percent increase in the wheat target price. The two justifications they give for this proposed increase are that the current target price is too low given current market prices and that wheat farmers have simply not received their fair share of payments. The American Soybean Association in an October 12 press release asks "Congress to correct inequities under the current Farm Bill where target prices for oilseed crops are disproportionately low compared to other program crops."

A rebalancing of target prices requires some idea of what should be in balance. Should target prices be set so that per-acre payments are equalized? Should they be set to reflect past market prices? Should target prices reflect production costs somehow? Or should they be balanced to minimize their impact on planting decisions? When target prices are rebalanced, should cotton and rice prices be lowered or should we only consider increasing support levels?

A more fundamental question that should be addressed before target prices are raised is what exactly is supposed to be accomplished by commodity programs. Does a lack

of payments to wheat and soybean farmers (and corn farmers in the future) somehow mean that farm programs are failing? Or does it mean that wheat and soybean farmers do not need public support because market prices are high enough?

Using payment flow to farmers regardless of market conditions as a metric of success of farm programs is consistent with what we know about the long-term impacts of farm programs discussed earlier—higher land prices, wealthier landowners, and easier transition of farmers out of agriculture. That is, if all farm programs are supposed to accomplish is to make land prices higher than what market returns would otherwise dictate, then an increase in target prices to assure continued payments would be justified.

Improve the Farm Safety Net

Rarely if ever do we hear anyone argue that increased land prices are the goal of commodity programs. Rather, we most commonly hear leaders talk about the need for a secure farm safety net to help farmers withstand unexpected financial stress. The biggest source of financial stress to wheat and soybean producers since passage of the 2002 farm bill has been low yields caused by multi-year drought, not low prices. And legislators from wheat country have been the strongest advocates of a new disaster assistance program.

The growing support for yet another disaster assistance program is evidence that Congress has failed to make subsidized crop insurance the centerpiece of a farm safety net. Despite billions of dollars in premium subsidies, billions of dollars subsidizing agent commissions, and billions of dollars subsidizing the risk-taking of crop insurance companies, Congress seems poised to spend billions more on some sort of disaster package.

Continued on page 13

Feeding the Ethanol Boom: Where Will the Corn Come From?

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By the end of September 2006, there were 105 ethanol plants in the United States, with a combined production capacity of 5 billion gallons of ethanol. According to the Renewable Fuels Association, there are currently 42 new ethanol plants under construction and 7 plant expansions underway. These will add 3 billion gallons of ethanol production capacity to the United States. Beyond this, there are currently more than 300 business proposals for additional ethanol plants, which if built would create over 20 billion gallons of ethanol. So to say that the ethanol industry is booming may be an understatement. And the ethanol industry expansion is heating up corn futures prices and making corn a more lucrative crop to plant.

In testimony before the Senate Committee on the Environment and Public Works, USDA Chief Economist Keith Collins outlined a sce-

nario for the year 2010 in which 90 million acres of corn are needed to fulfill ethanol, livestock, and export demands. Dr. Collins indicated that corn prices would need to be in the \$3.10–\$3.20 range to attract that many acres to corn. As of October 12, December 2007 corn futures were at \$3.15 per bushel, with December 2008 and 2009 at \$3.05 and \$3.13, respectively. So the price signals are already there to induce a substantial increase in corn acreage. But where will that acreage come from?

Shifting Location of Acreage

The last time this country planted over 90 million acres of corn was in 1944. In 1932, over 113 million corn acres were planted. In that year, Texas was the sixth largest and Georgia was the tenth largest corn producing state, with nearly 10 million corn acres between them. So a historical analysis would indicate the possible return of corn acreage in the Southeast and Great Plains. But corn acreage in the Southeast and in the western Great Plains is much lower

today than it was in the 1930s and 1940s. A sizable amount of the land planted to corn during those earlier decades is no longer in agricultural production. In 2006, Georgia corn producers planted 280,000 acres and Texas had 1.75 million acres. Total cropland in Georgia is now less than 5 million acres. Meanwhile, the upper Midwest is devoting the same amount or more acreage to corn than was the case in the 1930s and 1940s. Iowa, Illinois, Indiana, Michigan, Wisconsin, and Minnesota have more corn acreage today than they did during the 1930s. Given the decline in the agricultural land base in the Southeast, additional corn acreage will likely have to come from where corn is already plentiful, the upper Midwest and the eastern Great Plains.

Conservation Reserve Program Tightens Up

One potential pool of acreage is in the Conservation Reserve Program (CRP). In an earlier *Iowa Ag Review* ("CRP Acreage on the Horizon,"

Table 1. Corn versus soybean acreage

| State | 2000-2006 Average | | Percentage of Acreage in Corn | If the States Followed a 2/1 Rotation | |
|--------------|-------------------|----------|-------------------------------|---------------------------------------|----------|
| | Corn | Soybeans | | Corn | Soybeans |
| | (acres) | | (%) | (acres) | |
| Illinois | 11,421 | 10,236 | 53 | 14,438 | 7,219 |
| Indiana | 5,657 | 5,571 | 50 | 7,486 | 3,743 |
| Iowa | 12,386 | 10,450 | 54 | 15,224 | 7,612 |
| Kansas | 3,314 | 2,850 | 54 | 4,110 | 2,055 |
| Kentucky | 1,217 | 1,279 | 49 | 1,664 | 832 |
| Michigan | 2,221 | 2,036 | 52 | 2,838 | 1,419 |
| Minnesota | 7,214 | 7,257 | 50 | 9,648 | 4,824 |
| Missouri | 2,864 | 5,050 | 36 | 5,276 | 2,638 |
| Nebraska | 8,307 | 4,743 | 64 | 8,700 | 4,350 |
| Ohio | 3,371 | 4,493 | 43 | 5,243 | 2,621 |
| South Dakota | 4,350 | 4,179 | 51 | 5,686 | 2,843 |
| Wisconsin | 3,636 | 1,610 | 69 | 3,497 | 1,749 |

Spring 2006), we outlined the potential release of substantial CRP acreage in 2007 and 2008 and noted that USDA was working on re-enrolling much of that acreage. Originally, 26.4 million acres of CRP land could have re-entered crop production between 2007 and 2009. However, following USDA's aggressive re-enrollment and extension program for CRP, now only 7.7 million acres are scheduled to be released from CRP during that period. Most of this acreage is in the western Great Plains and is more likely suited for wheat than for corn. So while some CRP land can be brought into corn production in the short term, CRP acreage will only be part of the shift.

In 2006, U.S. producers planted nearly 80 million acres of corn, 10 million acres shy of the projected demand for 2010. Both the Food and Agricultural Policy Research Institute (FAPRI) and Informa have recently projected 2007 corn acreage at roughly 83 million acres. In both cases, the corn acreage mostly comes at the expense of soybeans. FAPRI projects 71.3 million acres of soybeans in 2007; Informa gives 71.8 million acres; and both of these projections are down from the 2006 crop year total of 74.9 million acres. These results also suggest that the

upper Midwest and the eastern Great Plains will be where additional corn acreage is found.

Potential from Shifts in Crop Rotations

The most likely source of new corn acreage will come from shifts in crop rotation from soybeans to corn. In most of the Corn Belt, corn and soybeans are planted in a two-year rotation. Planting corn two years in a row usually results in a 10 to 20 percent yield decline in the second year. This well-known yield effect drives many producers to a "standard" corn-soybean rotation. Over the 2000–2006 crop years, many states exhibited this rotational pattern, including Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, and South Dakota. However, if ethanol's demand for corn shifts the corn-soybean price ratio even more in favor of corn, then planting corn after corn will look more economically attractive. One possible option is for producers to move to a three-year rotation—two years of corn followed by one year of soybeans. Producers could capture the relatively higher corn prices more often while still capturing some of the agronomic benefits of rotating soybeans into the crop mix.

Table 1 shows the potential shifts in acreage if some of the major corn-producing states move to a 2/1 rotation between corn and soybeans. Iowa and Illinois would add nearly 3 million acres of corn each. Those 6 million acres would move the United States much closer to a national total of 90 million corn acres. If all of the states listed in Table 1 shifted rotations and all other states held to their historical average corn acreage, this would push the U.S. total to over 97 million corn acres.

These numbers show that the potential is there for the United States to reach a 90-million-acre corn crop in the near future and that most of the "new" corn acres most likely are in corn production now. Given the crude oil price outlook for the next several years, ethanol's expansion is apt to continue for some time. Even under higher corn prices, ethanol returns still look promising. And as Dr. Collins pointed out in his testimony, given fuel prices and the demand outlook, ethanol plants will likely compete for corn even at record high corn prices. The full need for additional corn acreage will depend on many factors, including fuel prices, fuel demand, and the demand for corn for livestock feeding. ♦

Recent CARD Publications

Working Papers

Agricultural Production Clubs: Viability and Welfare Implications. Corinne Langinier and Bruce A. Babcock. August 2006. 06-WP 431. (Available online only).

Does Health Information Matter for Modifying Consumption? A Field Experiment Measuring the Impact of Risk Information on Fish Consumption. Jutta Roosen, Stéphan Marette, Sandrine Blanchemanche, and Philippe Verger. October 2006. 06-WP 434.

Economies of Feedlot Scale, Biosecurity, Investment, and Endemic Livestock Disease. David A. Hennessy. September 2006. 06-WP 433.

How to Promote Quality Perception in Wine Markets: Brand Advertising or Geographical Indication? Chengyan Yue, Stéphan Marette, and John C. Beghin. August 2006. 06-WP 426.

Optimal Design of Permit Markets with an Ex Ante Pollution Target. Sergey S. Rabotyagov, Hongli Feng, and Catherine L. Kling. August 2006. 06-WP 430.

Pharmaceutical and Industrial Traits in Genetically Modified Crops: Co-existence with Conventional Agriculture. GianCarlo Moschini. August 2006. 06-WP 429.

A Study of the Factors that Influence Consumer Attitudes Toward Beef Products Using the Conjoint Market Analysis Tool. Brian Mennecke, Anthony Townsend, Dermot J. Hayes, and Steven Lonergan. August 2006. 06-WP 425.

U.S. Universities' Net Returns from Patenting and Licensing: A Quantile Regression Analysis. Harun Bulut and GianCarlo Moschini. September 2006. 06-WP 432.

Water Quality Modeling for the Raccoon River Watershed Using SWAT. Manoj K. Jha, Jeffrey G. Arnold, and Philip W. Gassman. August 2006. 06-WP 428.

MATRIC Briefing Paper

Global Prospects for Dairy in Argentina and Chile: Evidence from Field Visits and Model Simulations. Frank H. Fuller, John C. Beghin, Michael Boland, Bruce A. Babcock, and William Foster. August 2006. 06-MBP 11.

Agricultural Situation Spotlight

Getting More Corn Acres from the Corn Belt

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There is no doubt that the ethanol boom will mean a significant increase in corn acres over the next two to ten years.

Chad Hart argues elsewhere in this issue that much of the increase will likely come from Corn Belt states for the simple reason that the Corn Belt is where most suitable agricultural land is located. An additional 12 million acres—representing more than 5 billion gallons of ethanol—could be grown in Iowa, Illinois, Indiana, Nebraska, Minnesota, and South Dakota if two acres of corn were planted for each acre of soybeans. But will farmers be willing to sacrifice the agronomic and economic benefits of a corn-soybean rotation? The benefits of planting an acre of corn on ground that was previously planted to soybeans include

- higher yields
- lower nitrogen fertilizer expense
- lower pest control costs
- lower tillage costs if corn after soybeans facilitates conservation tillage
- more timely planting and harvesting

Estimating the Costs of Rotation Changes

It is difficult to put a dollar amount on the change in pest control costs, tillage costs, and the timeliness of planting and harvesting because the change in these costs are quite specific to a particular farm situation.

For example, farmers who have spare corn planting and harvesting capacity would find it quite easy to plant more corn acres, whereas farmers who already have difficulty planting their current corn acreage in a timely manner may need to invest in additional capacity. A move away from a corn-soybean rotation may increase tillage costs for a farmer who currently no-tills corn if the additional plant material from a previous crop of corn prevents no-till planting. And the change in pest control costs will vary dramatically across years and sites because of fluctuations in pest pressure. But typically, many farmers should expect to apply a soil insecticide to control corn rootworm. Alternatively farmers can plant a corn hybrid that expresses a toxin for rootworm control. Either action can serve to reduce the decline in corn yields when corn is planted after corn.

Of course, farmers will not move away from a corn-soybean rotation unless they can make more money. There are two financial aspects to such a move. A corn-corn-soybean rotation means that twice as many corn acres will be planted as soybean acres. If returns to corn are greater than returns to soybeans, then the direct impact of such a move will be to increase farm returns. If not, then no farmer will even consider the move away from a corn-soybean rotation. The second financial impact is that corn returns on ground that was previously planted to corn will be lower than corn returns on land that was previously planted to soybeans. It is not a simple calculation to determine if a move away from corn following soybeans will increase returns, but a recent analysis may prove helpful.

Estimating the Break-Even Corn Price

The most important factor in this calculation is the decline in average corn yield that will occur. Data from a long-running (since 1979) rotation and fertilizer experiment at Iowa State University's Northeast Iowa Research and Demonstration farm in Nashua (Floyd County) were used to estimate the average yield decline when corn is planted after corn instead of soybeans. A study using these data ("On Monoculture and the Structure of Crop Rotations," David Hennessy, forthcoming in the *American Journal of Agricultural Economics*) estimated that the average yield decline was 16.1 bu/ac or about 12 percent of the average yield over the study period. Combining this yield decline with the approximately 50 pounds of additional nitrogen fertilizer needed to grow a crop of corn that was planted after corn rather than soybeans and the additional costs involved in growing a corn crop relative to a soybean crop allows for the break-even price of corn to be calculated. We use a farm in Floyd County in the calculations as an example and set farm yields at 2006 county trend yields of 163 bu/ac for corn and 47 bu/ac for soybeans. The break-even corn price depends on the prices of soybeans and nitrogen fertilizer. Table 1 reports how high corn prices must rise to induce this farmer to move away from a corn-soybean rotation. These "break-even" corn prices are calculated for soybean prices ranging from \$4.00 to \$7.00 per bushel and nitrogen fertilizer prices of 10¢ to 50¢ per pound (\$200 to \$1,000 per ton).

As shown, a \$1.00-per-bushel increase in the price of soybeans increases the break-even corn price by about 38¢ per bushel whereas

Table 1. Break-even corn price (\$/bu) needed to induce a move away from a corn-soybean rotation with a 12 percent yield drag

| Price of Nitrogen Fertilizer (\$/lb) | Price of Soybeans (\$/bu) | | | |
|--------------------------------------|---------------------------|------|------|------|
| | 4.00 | 5.00 | 6.00 | 7.00 |
| 0.10 | 2.54 | 2.92 | 3.31 | 3.69 |
| 0.30 | 2.62 | 3.00 | 3.39 | 3.77 |
| 0.50 | 2.70 | 3.08 | 3.47 | 3.85 |

Table 2. Break-even corn price (\$/bu) with an increased cost/reduced yield drag trade-off

| Additional Cost and % Corn Yield Drag | Price of Soybeans (\$/bu) | | |
|---------------------------------------|---------------------------|------|------|
| | 5.00 | 6.00 | 7.00 |
| \$20/ac; 6% yield drag | 2.87 | 3.20 | 3.52 |
| \$40/ac; No yield drag | 2.76 | 3.05 | 3.34 |

Table 3. Break-even corn prices if soybean yields are boosted by 12 percent following two years of corn

| Additional Cost and % Corn Yield Drag | Price of Soybeans (\$/bu) | | |
|---------------------------------------|---------------------------|------|------|
| | 5.00 | 6.00 | 7.00 |
| \$0/ac; 12% yield drag | 2.56 | 2.85 | 3.15 |
| \$20/ac; 6% yield drag | 2.48 | 2.73 | 2.98 |
| \$40/ac; No yield drag | 2.42 | 2.64 | 2.86 |

a 20¢ increase in the price of fertilizer increases the break-even corn price by 8¢ per bushel. With \$6.00 soybeans, the price of corn must be greater than about \$3.40 per bushel to induce this farmer to move away from a corn-soybean rotation. Next year's corn crop is trading on the Chicago Board of Trade for \$3.24/bu. The soybean crop is trading at \$6.49. With an expected basis of 40¢ per bushel, it appears that current prices do not give enough inducement for corn farmers in Floyd County to plant more corn acres in 2007 than they would otherwise have planted before the recent price increase.

Agronomic problems, such as increased weed, disease, and insect pressure are greater when corn is planted after corn. But it is often

possible to manage around these problems through greater crop monitoring, increased applications of pesticides, and careful selection of proper hybrids. Of course, it is also the case that more intensive management usually increases costs. To see the change in the corn price that it will take to move farmers away from a corn-soybean rotation, Table 2 presents the break-even prices for different combinations of reduced yield drag on corn and the increased cost of obtaining this reduction. The price of nitrogen fertilizer is fixed at 30¢/lb.

A comparison of the Table 1 and 2 results demonstrates that reducing yield drag by incurring additional costs reduces the corn price at which it begins to pay to move

away from a corn-soybean rotation. But at a soybean price of \$6.00/bu, the break-even corn price is still above current market prices for next year's crop.

Adding Soybean Yield Factors into the Equation

Before concluding that the price of corn must rise further before Corn Belt farmers will move to plant more corn, we should consider the impacts on soybean yields if a soybean crop is planted after two years of corn rather than after a single year. The same study by Hennessy that reports a 12 percent average yield drag on corn also reports that soybean yields increase by 18 percent when a soybean crop is planted after corn rather than after soybeans. This explains why Corn Belt farmers rarely plant soybeans after soybeans. More useful for our analysis here is that the study also reports a statistically significant soybean yield increase when a soybean crop is planted after two years of corn. The estimated yield increase is 12 percent above the yield level that would result when a soybean crop is planted after a single year of corn. Using this yield boost significantly reduces the break-even corn prices, as reported in Table 3.

A 12 percent yield boost for soybeans dramatically reduces the corn price that is needed to move more farmers away from a corn-soybean rotation. The Table 3 results indicate that at current new crop (2007) futures prices and a 40¢/bu basis, farmers have an incentive to plant more corn acres.

Not every farmer should expect a 12 percent boost to soybean yields when planting soybeans after two years of corn instead of after one year of corn. But if the study's results can be extrapolated widely throughout the Corn Belt, then we should expect a significant number of acres to move to corn at current price levels. ♦

Strong Export Growth in “Other” Markets for U.S. Pork

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U.S. pork exports have nearly tripled during the past 10 years, reaching 907,000 metric tons in 2005. Exports now account for 13 percent of U.S. pork production. Japan, Mexico, and Canada have underpinned U.S. exports since 2000, when Canada replaced Russia as the third-largest importer of U.S. pork. But U.S. exports to other markets also have made sizeable contributions toward U.S. export success (see Figure 1). Although the individual markets that make up these “other” importers are much smaller than the top three, cumulative exports to these markets have grown quickly. The five markets shown in Figure 2 showed especially strong growth from 2003 to 2005.

South Korea

As shown in Figure 2, South Korea is the largest of the “other markets.” U.S. exports to South Korea increased seven-fold between 1996 and 2005, more than doubling between 2003 and 2005 alone. Whereas exports gradually increased as a result of scheduled Korean market liberalization and strong demand between 1997 and 2004, recent growth is largely attributable to consumer substitution of pork in place of beef and poultry due to the 2003 ban on U.S. beef because of bovine spongiform encephalopathy (BSE) and consumer concern over avian influenza. Growth has remained strong through the first half of 2006, but future imports will depend in part on how long it takes for U.S. beef to begin flowing into the market now that the ban has been lifted, and on how rapidly Korean pig producers downsize their inventories if pork demand (and price) weakens.

China

In December 2001, China joined the World Trade Organization. Also during 2001, China imported 6,250 metric tons of pork for the year. Four years later, China imported 37,340 metric tons and was the fifth-largest market for U.S. pork. Some of this growth has come at the expense of exports to Hong Kong, as more pork is being shipped directly to China rather than transshipped through Hong Kong, but cumulative exports show net growth. Some of the recent growth can be attributable to increased demand due to substitution of pork for poultry because of avian influenza outbreaks in China. Although this market should have long-term potential for U.S. pork products, export levels will be sensitive to China’s

sanitary and inspection requirements and to changes in domestic production as the Chinese pork sector gradually modernizes.

Russian Federation

As shown in Figure 2, the Russian Federation has been an erratic market for U.S. pork. Although U.S. exports increased by almost 480 percent during the 2003-05 period, some of this growth offsets a large decline in exports in 2000 following the devaluation of the ruble. Since 2000, sanitary issues, foot-and-mouth disease outbreaks in Brazil, annual tariff-rate quotas on meats, concerns about avian influenza and BSE, and policies directed at improving domestic production are among the factors that have both driven and limited opportunities in this market.

Romania

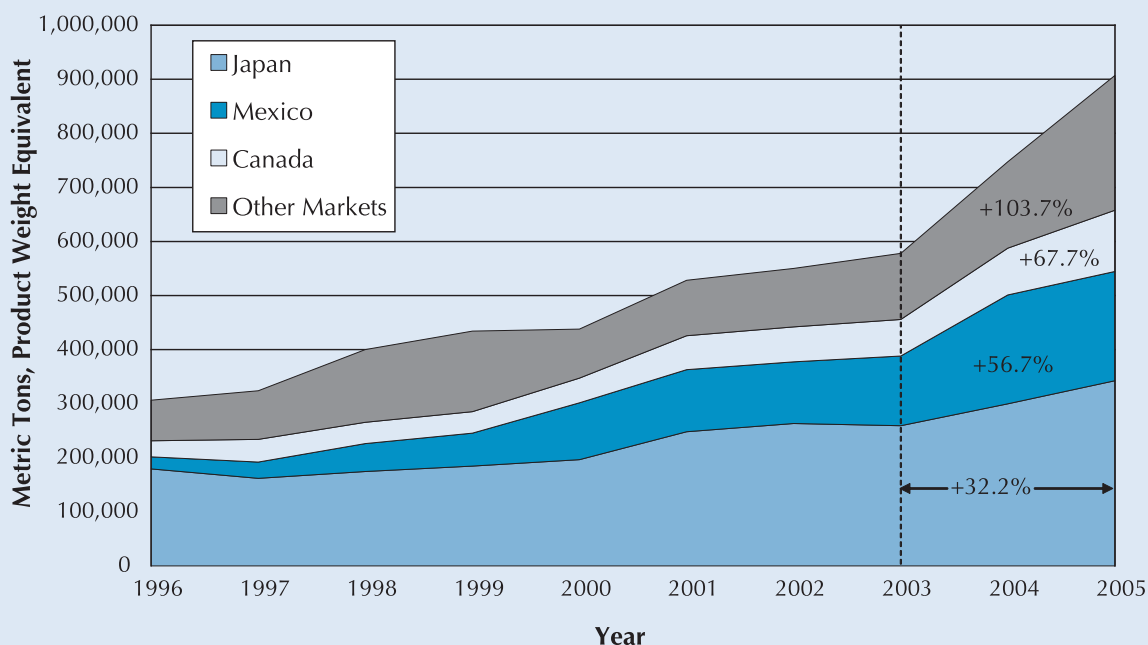
Growth in U.S. pork exports to Romania has been rapid and dramatic, with exports increasing from zero in 2001 to 25,380 metric tons in 2005. Pork was Romania’s top agricultural import in 2004 and 2005. The United States became the third-largest supplier of pork cuts to Romania, and Romania became the seventh-largest importer of U.S. pork. However, Romania will join the European Union in January 2007, and implementation of E.U. animal health and certification requirements was scheduled to begin October 1, 2006. These changes will limit future U.S. export opportunities.

Australia

Australia, the fifth market shown in Figure 2, was opened to U.S. pork on January 1, 2005, as a result of a free trade agreement. The agreement created an immediate market for U.S. pork, although Australian pork industry challenges to the new regulations temporarily disrupted the ramp-up in imports. Given that the challenges were unsuccessful, imports from the United States should become more stable and export growth will level off and become responsive to changes in Australian production and demand.

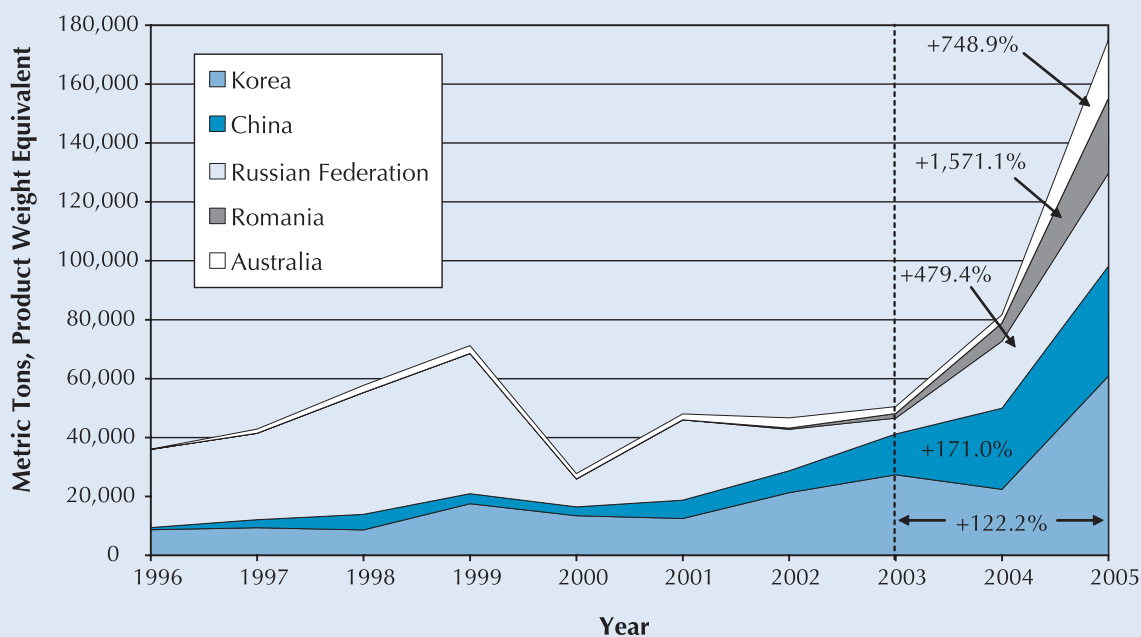
Changing Market Conditions

As noted, reasons for recent strong demand for U.S. pork vary among countries. Whereas trade agreements can establish policy frameworks for long-term, stable trade patterns, factors such as animal and poultry diseases, government policy in importing countries, and shifts in currency valuations and exchange rates can create greater market volatility. This volatility makes export growth more vulnerable to changing market conditions. ♦



Source: USDA Foreign Agricultural Service Online (<http://www.fas.usda.gov/ustrade/>).

Figure 1. Total U.S. pork exports, 1996-2005, and percent growth for 2003-05



Source: USDA Foreign Agricultural Service Online (<http://www.fas.usda.gov/ustrade/>).

Figure 2. U.S. pork exports to selected pork markets, 1996-2005, and percent increase for 2003-05

The Costs and Benefits of Conservation Practices in Iowa

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Over the last two decades, conservation on cropland to improve water quality and provide other environmental benefits has been of growing interest. Federal government expenditures on conservation and environmental programs have been 80 percent higher under the current (2002) farm act than under the previous one, and several new programs, including the Conservation Security Program and the Grassland Reserve Program, were also introduced in 2002. As the expiration date for the current act draws near, it is apparent that the total expenditures and priorities of conservation programs will again be at the heart of legislative debates. The likelihood of tight fiscal budgets over the coming years suggests that competition for federal funding of conservation programs will be at least as intense as in the past. Hard questions concerning the impacts of these programs on water quality and the environment will need to be answered if such funding is to be maintained or increased. However, there are currently no easy and clear answers to these questions.

The USDA is undertaking a multi-agency national effort, the Conservation Effects Assessment Project (CEAP), to quantify the effects of conservation expenditures on the environment. With funding from this project, CARD, in conjunction with a group of interdisciplinary researchers at Iowa State University, is currently working on several detailed watershed studies in Iowa to address these questions. As a complement to these projects, we are also assessing the “state of conservation” on Iowa’s cropland by collecting and analyzing the records of a

variety of conservation programs and other data on the use of conservation practices in the state. We report some of the findings from this effort here, as well as some preliminary estimates on the water quality benefits that the current slate of conservation practices is likely to have provided to the state.

The Usage and Costs of Conservation Practices

Federal programs account for most conservation funding in Iowa, as indicated in Figure 1, which shows the 2005 funding of major conservation programs in the state. The largest conservation program is the Conservation Reserve Program (CRP), which enrolls about 2 million acres of land for retirement at a total annual payment of around \$196 million. The Wetland Reserve Program offers landowners the opportunity to restore and enhance wetlands on their property. The Environmental Qual-

ity Incentives Program (EQIP) and the Conservation Security Program (CSP) are the primary programs providing financial assistance for conservation on working land. Even though the CSP was established as an entitlement program, limited funding has restricted its current implementation to a few selected watersheds. In 2005, about 2,000 contracts were approved in Iowa, covering a total of 680,000 acres.

Two major state programs are the Iowa Financial Incentive Program (IFIP) and the Resource Enhancement and Protection program. The latter program provides funding to help address local water quality. The IFIP provides cost-share and incentive payments for conservation practices. Even though this Iowa program is much smaller than its federal counterpart, EQIP, in terms of total spending in the state, it historically provided more funding for some important practices such as

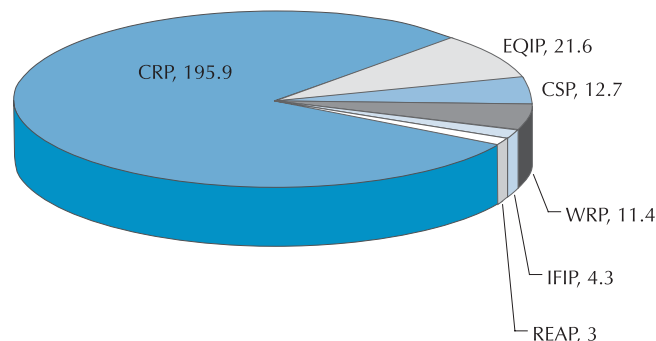


Figure 1. Funding (million \$) of major conservation programs in Iowa, 2005

Table 1. Selected conservation practices under EQIP and IFIP (1997-2005)

| Program Name | Practice Name | Unit Type | Total Installed |
|--------------|------------------|-----------|-----------------|
| EQIP | Grassed Waterway | acres | 1,200 |
| | No-Till | acres | 55,300 |
| | Terrace | feet | 4,921,400 |
| IFIP | Grassed Waterway | acres | 8,100 |
| | No-Till | acres | 13,800 |
| | Terrace | feet | 26,240,100 |

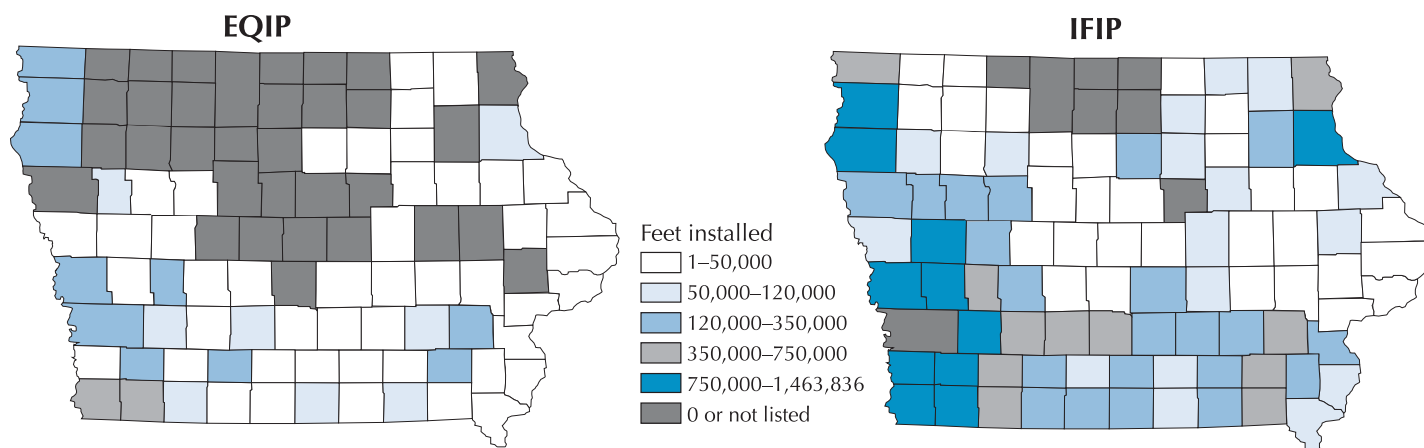


Figure 2. Terraces installed under EQIP and IFIP (1997-2005)

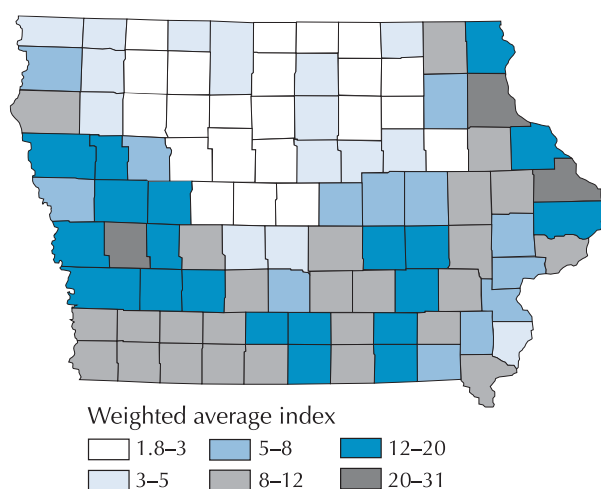


Figure 3. The erodibility index, 1997

grassed waterways and no-till (Table 1). For most practices, the coverage of conservation practices largely matches the environmentally vulnerable areas around the state, as shown by the similarities between the patterns in Figure 2 and Figure 3. The erodibility index in Figure 3 indicates the potential for soil to erode in particular geographical regions. Land with an index score equal to or greater than 8 is considered highly erodible. For some practices, the adopted acreage is much larger than the acres receiving payments

from conservation programs. The best example is no-till. There were about 5 million acres under no-till but only 69,000 acres were under either EQIP or IFIP over the period from 1997 to 2005. The reason is that farmers choose to adopt no-till without participating in a particular program that pays them to do so.

Using several sources of information, including the National Resource Inventory data and information from the Conservation Tillage Information Center, we estimated the total use of several major conservation practices in Iowa, which are listed in the first column of Table 2. We also calculated average costs of conservation practices from the program data. By combining these two types of data, we obtained rough estimates of the statewide coverage and costs of these practices. The results are presented in Table 2. The first two practices, terraces and grassed waterways, are structural practices whose primary costs are incurred when the structure is first installed on the field. In contrast, the estimates for the remaining practices are recurring annual costs to compensate for lost profits or increased expenses associated with the farmers' activity. If we divide the structural costs over the lifespan of

Table 2. Total estimated usage and costs of selected conservation practices

| Selected Practices | Usage Estimates (million acres) | Cost Estimates (million \$) | |
|-----------------------|------------------------------------|--------------------------------|-------------------------------------|
| Terraces | 2.00 | 765.57 | } 872.27, total structural costs |
| Grassed Waterways | 2.23 | 106.70 | |
| Contour Farming | 5.15 | 30.89 | } 413.39, total annual payments |
| Contour Stripcropping | 0.24 | 3.55 | |
| No-Till* | 5.22 | 104.31 | |
| Much-Till* | 8.29 | 82.86 | |
| CRP | 1.89 | 191.78 | |

*The costs of no-till and mulch-till were assumed to be \$20 and \$10 per acre, respectively.

the practices (25 years for terraces and 10 years for grassed waterways), then the corresponding total annual payment would be \$41.29 million. Thus, the combined total costs for the practices in Table 2 amount to about \$450 million per year. If lower costs were assumed for the tillage practices, then total costs would also be adjusted down.

Water Quality Impacts

To examine the effects of these practices on the environment, we calibrated and ran a watershed-based water quality model, the Soil and Water Assessment Tool, to answer the hypothetical question, what would water quality be if we removed all conservation practices on the land? In essence, we undertook the hypothetical experiment of removing all existing conservation practices from the landscape and compared the water quality outcomes of the landscape with and without current conservation practices. The difference between the current water quality and that predicted by the model in the absence of conservation practices provides an indication of the water quality benefits that the investment

in conservation practices described in Table 2 yields. Figure 4 presents a preliminary estimate of this difference, delineated by watershed, for nitrate loading and sediment yield. According to the figure, the effects differ by watersheds and by which environmental indicators are used. Most areas reduced sediment by 20 percent and nitrate loading by about 10 percent.

Targeting Conservation Dollars

It is obvious that the next farm bill will shape conservation efforts in Iowa, since the vast majority of conservation funding in Iowa comes from federal programs. Because CRP is by far the largest conservation program in the state, whether Iowa will be competitive in getting federal conservation dollars may depend on what changes, if any, will occur in the CRP. Given the limited resources from the state government, it is probably efficient to spend state funding to leverage federal money. For example, the state can assist farmers in the enrollment process and help them become eligible or more competitive for federal programs. Alternatively, the state can set up programs that are likely to

pull in more federal support. Finally, the state may want to reconsider programs that provide a pure substitute for federal funding.

The usual question of where and how to spend limited funding is still relevant. Programs are increasingly targeting watersheds, as reflected by the recent implementation of conservation programs such as the CSP. Targeting by watershed is dramatically different from site-specific targeting, which was often used in the past. Given that it can be very difficult to pin down the sources of water pollution, however, policymakers should carefully examine how to prioritize watersheds and how to allocate money within a watershed. Our preliminary simulations suggest that not all watersheds have the same potential for environmental improvements. ♦

Hongli Feng is an associate scientist, Philip Gassman and Manoj Jha are assistant scientists, and Joshua Parcel is a research assistant, all in the Resource and Environmental Policy Division at CARD. Catherine Kling, professor of economics, is head of the division.

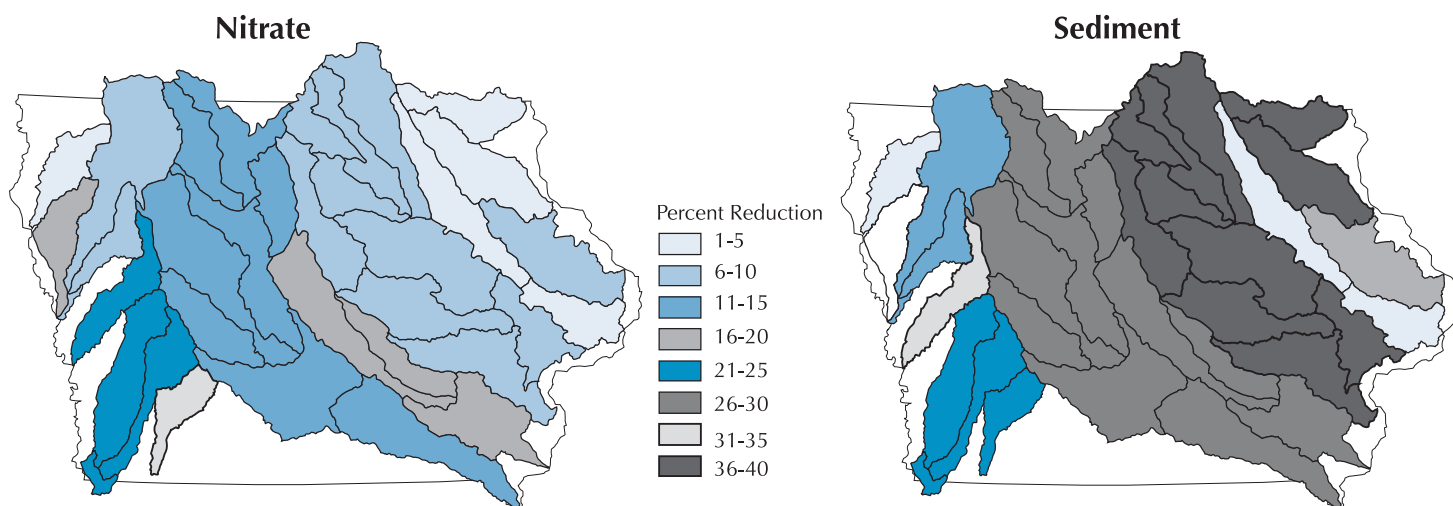


Figure 4. Impacts of conservation practices by the 13 watersheds located primarily in Iowa

Farm Policy Amid High Prices
Continued from page 3

The third alternative approach that Congress could take with the 2007 farm bill is to change farm programs to eliminate any holes in the farm safety net. There are three such holes that could be filled: uninsured acreage, the large crop insurance deductible, and the impact of multi-year losses on crop insurance guarantees.

Uninsured acreage could be remedied by simply extending insurance protection to all who desire it by making it part of the farm bill. High deductibles are necessary in a crop insurance program because they discourage cheating. However, the most popular crop insurance program among Illinois corn producers in 2006, Group Risk Income Protection (GRIP), has low deductibles because it insures county revenue rather than farm revenue. Also, because GRIP bases its guarantee levels on long-term trend yields, two or three consecutive years of low yields in a county have no impact on a farmer's guarantees.

A farm policy that simply gave a GRIP-style policy to producers

A farm policy that simply gave a GRIP-style policy to producers would thus provide the basis for a sound safety net that would eliminate any economic justification for disaster assistance programs.

would thus provide the basis for a sound safety net that would eliminate any economic justification for disaster assistance programs. The cost of giving GRIP to producers would be relatively modest compared to running GRIP through the crop insurance program. On a per-acre basis, taxpayers currently support GRIP in the crop insurance program with subsidies

to premiums, delivery costs, and reinsurance costs at such a level that farmers could be given a GRIP-based policy at the 94 percent coverage level in the farm bill at an equivalent cost. If this were done, then the one remaining safety net hole would be variations in farm yield not reflected in county yields, also called yield basis risk. This remaining risk could be largely covered by new crop insurance products offered by crop insurance companies.

A growing number of groups, including the American Farmland Trust and the Chicago Council on Global Affairs, advocate reform of farm policy around some sort of revenue insurance program. Somewhat surprisingly, the National Corn Growers Association is also considering supporting this kind of reform. The groups' proposals vary, but they all have in common the idea that commodity programs should be designed to deliver a sound financial safety net for farmers and that rural America would be better served by greater emphasis on the other titles in the next farm bill. ♦

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