



## The Impact of Crop Insurance on the Iowa Economy

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During the last several years, federally subsidized crop insurance has become a major issue in both farm risk management and government farm policy. In previous articles for this publication, various aspects of crop insurance, the effects on Iowa farmers, and the costs to both farmers and the government have been examined. This article takes a step back to look at the impacts of crop insurance on the Iowa economy.

Iowa is in a unique position in that the state's economy can benefit from crop insurance not only through its use by agricultural producers, but also through the employment of people and services by the insurance companies that service federal crop insurance. This article outlines the trends in industry concentration, and the revenues and reimbursements that flow from the crop insurance program. Also examined are the historical – and projected – producer participation in crop insurance, along with the costs and benefits of the program.

### CROP INSURANCE FROM THE PRODUCER PERSPECTIVE

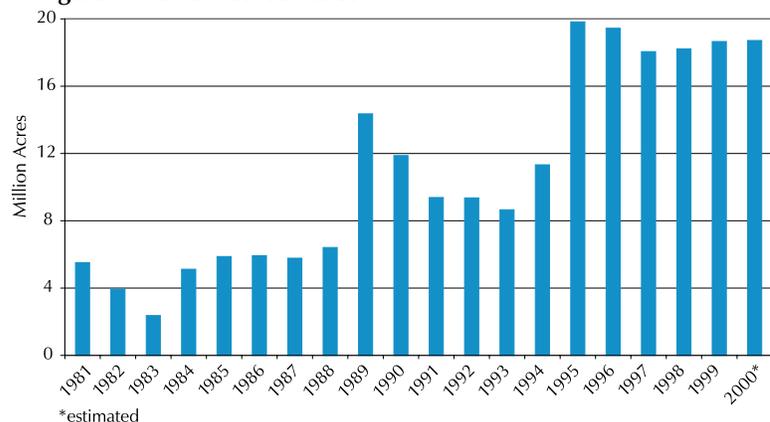
Since the early 1980s, the use of federal crop insurance by Iowa producers has increased dramatically. Figure 1 shows the number of acres insured since 1981. Crop insurance participation has risen from an average of around 4 million

acres in the first half of the 1980s to nearly 19 million acres in 1999. Two years, 1989 and 1995, had quite significant increases in crop insurance enrollment. The 1989 increase was in part a reaction to the drought of 1988. The 1995 increase was partially due to the requirement that farm program participants carry crop insurance. Although this requirement was rescinded the next year, subsequent larger premium subsidies and new insurance products have helped to maintain enrollment in the crop insurance program. Projections for the 2000 crop year show Iowa producers again insuring nearly 19 million acres in the federal crop

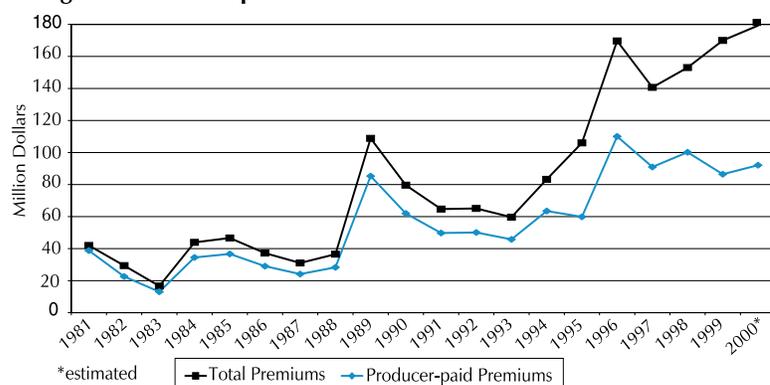
insurance program. The vast majority of this acreage will be devoted to corn (roughly 9.5 million acres) and soybeans (roughly 9 million acres).

The total premiums for Iowa crop insurance have also grown significantly. Figure 2 displays the total and producer-paid premiums for Iowa crop insurance during the last two decades. The patterns are very similar to the growth in insured acreage. The government provides premium subsidies and premium-free catastrophic coverage to help boost participation in crop insurance, and these subsidies have also grown over time. The premium paid by producers fell from an average of \$6.38 per

**Figure 1. Iowa Insured Acres**



**Figure 2. Iowa Crop Insurance Premiums**



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acre in the early 1980s to \$4.75 per acre in the late 1990s.

In 1981, Iowa producers paid 92 percent of the total premium for their policies. By 1998, this percentage fell to 65 percent. With the disaster assistance packages in 1998 and 1999, additional subsidies for crop insurance were put in place for the 1999 and 2000 crop years. In 1999, Iowa producers paid 51 percent of the total premium for their policies. Projections for 2000 indicate that Iowa producers will again pay roughly half of the total premium for their coverage.

Table 1 shows the recent performance of crop insurance in Iowa. Protection in force is the amount of liability in the crop insurance policies. This is equal to the amount that would be paid out in indemnities if all of the policies experienced a complete yield loss.

Since 1993, Iowa producers have more than doubled their protection. From 1993 to 1999, Iowa farmers paid \$557 million for crop insurance. During that time, they received \$571 million in indemnity payments. Thus, Iowa farmers have received a net direct benefit from crop insurance of \$14 million. Most of this benefit came in response to the floods of 1993. In that year, Iowa crop insurance participants received more than \$6 of indemnity payments for each dollar of paid premium. Since that time, Iowa crop yields

have been fairly strong, except for the 1995 corn crop, and insurance payouts have been limited.

The projections for 2000 are based on the assumption that insurance performance is actuarially fair (total premiums equal total indemnities) for Iowa. This implies that producers will receive a net benefit from crop insurance equal to the amount of the premium subsidy. Iowa farmers are projected to purchase more than \$3.25 billion of protection with crop insurance. Producer-paid premiums are projected to be \$92 million. The premium subsidy (and the net benefit, total indemnities less producer-paid premiums) is projected to be more than \$87 million. However, a crop disaster, such as drought or floods, would raise this benefit, while good crop weather would lower it or possibly make the direct benefit negative (i.e., a cost).

In addition to the direct cash benefits, crop insurance can provide other benefits. Crop insurance helps producers manage financial risks in several ways. Insurance indemnities can offset financial losses that would reduce the producer's equity and help maintain his or her cash flow requirements in low yield or low revenue years. Farmers can obtain operating loans easier since they have the ability to assign indemnity payments to

*Continued on page 9*

**Table 1. Iowa crop insurance figures, 1993-1999**

Year	Protection in force	Total premiums	Premium subsidies	Producer-paid premiums	Total indemnities	Net producer payment*
(Million Dollars)						
1993	1,521.45	59.65	13.89	45.76	277.39	231.63
1994	2,060.17	83.26	19.80	63.46	6.14	-57.32
1995	2,626.63	106.03	46.18	59.85	84.95	25.10
1996	3,570.28	169.68	59.62	110.06	51.95	-58.11
1997	3,125.43	140.67	49.70	90.97	14.28	-76.69
1998	3,385.91	153.04	52.85	100.19	84.10	-16.09
1999	3,178.60	169.96	83.52	86.44	52.58	-33.86

\*Net producer payment is equal to total indemnities minus producer-paid premiums.

Source: Risk Management Agency's Summary of Business reports

## A Second Look at Subsidies and Supply

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A previous article in the Iowa Ag Review (Fall 1999, Vol. 5, No. 4) pointed out that because subsidies tend to increase the supply of whatever is subsidized, crop insurance subsidies and emergency disaster assistance will likely increase crop supplies. This supply response will decrease crop prices. That subsidies encourage supply is not controversial; however, some controversy has arisen concerning the estimated magnitude of the resulting price impact.

Some readers thought that the article greatly overestimated the effects on price and wanted a better understanding of the method used to calculate the estimates. The estimates of the price impact of eliminating all crop insurance subsidies and crop disaster assistance programs were based on a number of assumptions, the details of which were not provided because of space limitations.

Actual estimation of the effects on supply from elimination of subsidies would require the elimination of subsidies for a portion of U.S. farming counties and then examination of the changes in production decisions. But clearly, the issue of supply response is not so important that such a drastic experiment is needed.

An alternative method for calculating the effects of subsidy elimination is to compute the price effects under a range of values for the key factors that determine the magnitude of the price change. The two most important factors are the change in supply of corn and soybeans if subsidies were eliminated and the sensitivity of price to the change in supply. Larger supply changes will lead to larger price impacts. If aggregate supply does not change, then elimination of the subsidies will not result in an increase in price. For a given supply change, the price impact is greater when prices are more sensitive to

supply. This sensitivity is measured by the elasticity of demand. The elasticity of demand is the percentage change in quantity demanded of a product due to a 1 percent change in the product's price.

Table 1 shows the change in the market prices for corn and soybeans for a range of values for the demand elasticity and the percentage supply change that would result from elimination of subsidies. The tables show that the largest change in the price of corn or soybeans would occur if supply decreases by 3 percent (approximately 282 million bushels of corn or 88 million bushels of soybeans) and the demand elasticity is  $-0.2$ . In this case, per-bushel market prices would rise \$0.31 for corn and \$0.73 for soybeans. The smallest change in price comes about when the supply change is small and the price is relatively insensitive to the quantity produced.

What are the likely magnitudes of these parameters? There is more information and confidence in estimated demand elasticities than supply changes. Most demand elasticity estimates fall in the range of  $-0.4$  to  $-0.6$  for both crops. Thus, one can say with some confidence that the range of possible price changes from elimination of crop insurance subsidies is between \$0.02 and \$0.16 per bushel for corn, and \$0.04 and \$0.36 per bushel for soybeans. ♦

**Table 1. Price impact (cents per bushel) of eliminating risk management subsidies**

Corn		Percent Change in Supply					
		-0.5	-1.0	-1.5	-2.0	-2.5	-3.0
Demand Elasticity	-0.2	5	10	15	21	26	31
	-0.4	3	5	8	10	13	16
	-0.6	2	3	5	7	8	10
	-1.0	1	2	3	4	5	6
	-1.5	1	1	2	3	3	4
	-3.0	0	1	1	1	2	2
Soybeans		Percent Change in Supply					
		-0.5	-1.0	-1.5	-2.0	-2.5	-3.0
Demand Elasticity	-0.2	12	24	36	49	61	73
	-0.4	6	12	18	24	30	36
	-0.6	4	8	12	16	20	24
	-1.0	2	5	7	10	12	15
	-1.5	2	3	5	7	8	10
	-3.0	1	2	2	3	4	5

# Iowa's Agricultural Situation

## Higher grain prices spell higher feed costs for livestock producers.

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Grain markets broke out of their midwinter slump with the release of the U.S. Department of Agriculture's (USDA) January 12, *World Agriculture Supply and Demand Estimates* (WASDE). The report helped fuel a rally that reversed a six-month down trend in crop prices.

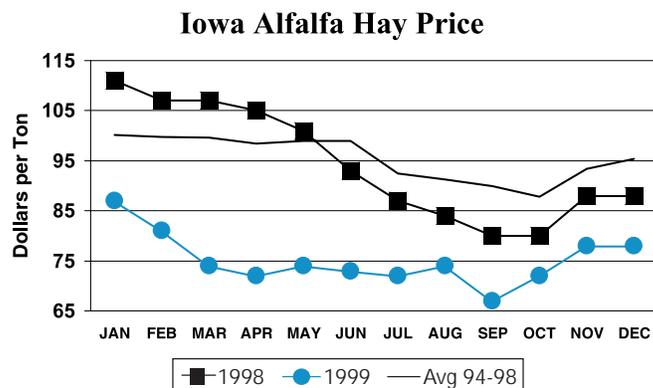
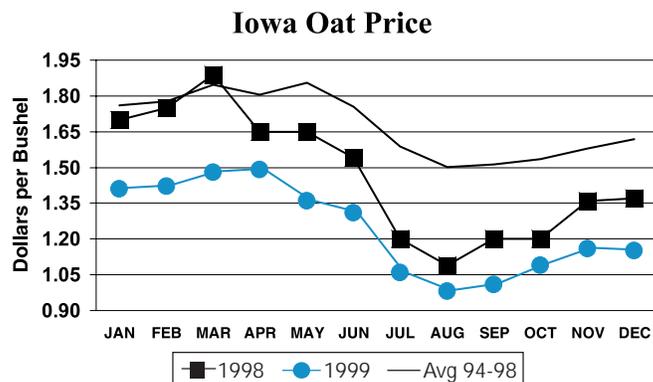
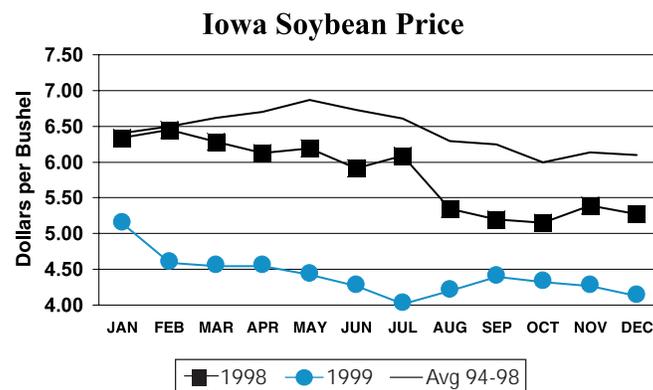
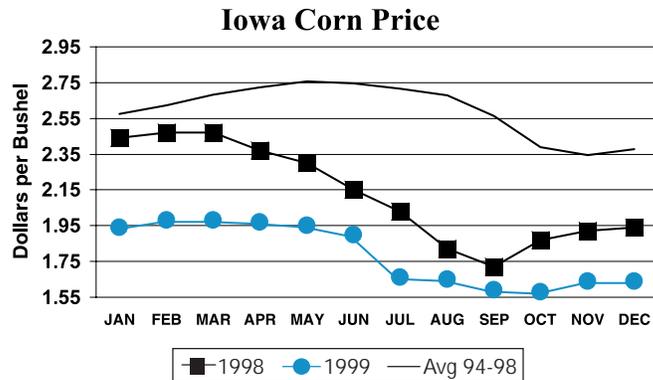
The largest changes came in the U. S. corn supply and utilization estimates. The USDA revised corn production downward by 100 million bushels to a crop of 9.437 billion bushels. Corn exports were increased by 50 million bushels and total use was revised upward by 170 million bushels. This resulted in a downward revision of ending stocks to 280 million bushels. Between the release of the WASDE report and the last week of January, December futures jumped nearly \$0.20 on the Chicago Board of Trade (CBOT). At central Iowa elevators, during the last week of January, corn was trading in the \$4.85 range.

The USDA did not revise the soybean supply and demand estimates to the extent of the corn revisions. The only revision came in a 30 million-bushel reduction in the size of the crop to 2.643 billion bushels. There was some shuffling in the use categories but total use was unchanged. Ending stocks were revised downward 30 million bushels to balance the drop in production numbers. However, soybeans on the CBOT, which had been gaining ground since December 15, have followed the corn rally and have gained nearly \$0.40. In central Iowa, during the last week of January, soybeans were trading in \$4.65 range.

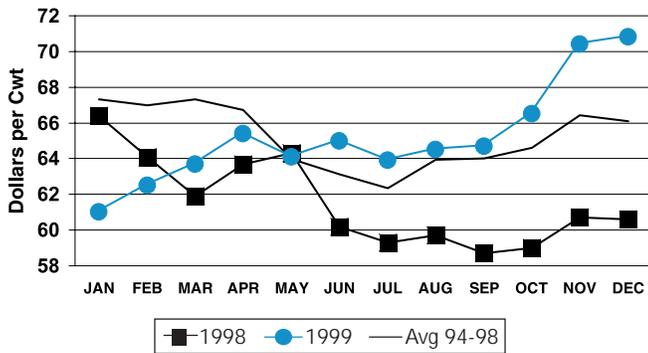
The other market mover has been the weather. The cornbelt and southern plains regions have been experiencing a very mild winter with very little precipitation. Both regions experienced dry conditions last fall and currently have abnormally dry soil conditions. Consequently, a wet spring will be required to replenish soil moisture levels before spring planting.

Many market analysts have indicated that it has been 12 years since the cornbelt has experienced a major yield-reducing drought. Previous weather patterns suggest the occurrence of a major cornbelt drought every six to eight years, so the cornbelt may be overdue. Recently South America has been experiencing hot, dry weather as crops reach the pollination stage in the Southern Hemisphere. The most recent reports are indicating Brazilian soybean production will be down 3 percent from last year to 30.05 million metric tones.

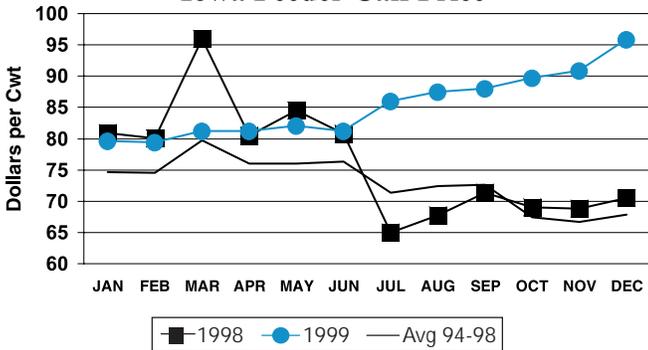
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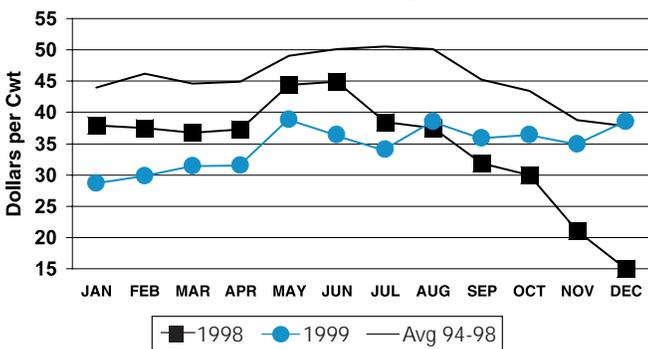
**Iowa Steer and Heifer Price**



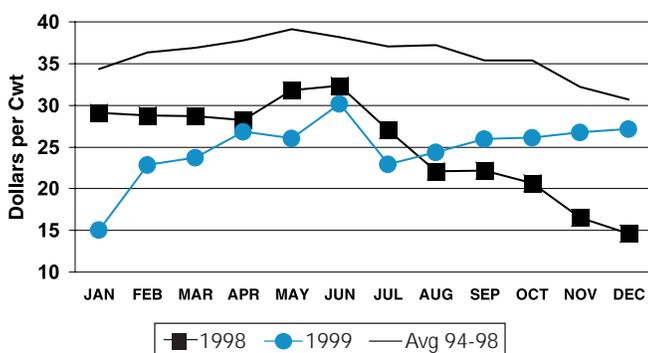
**Iowa Feeder Calf Price**



**Iowa Barrow and Gilt Price**



**Iowa Sow Price**



**Iowa Cash Receipts Jan. – Sept. 1999**

	1999	1998	1997
(Million Dollars)			
Crops	3,171	4,039	4,938
Livestock	3,578	3,749	4,039
Total	6,749	7,787	8,977

**World Stocks-to-Use Ratios**

	Crop Year		
	(Jan. Projection) 1999/00	(Estimate) 1998/99	1997/98
(Percent)			
Corn	19.35	18.59	14.92
Soybeans	13.88	15.33	14.56
Wheat	21.89	22.98	23.79

**Average Farm Prices Received by Iowa Farmers**

	December* 1999	November 1999	December 1998
(\$/Bushel)			
Corn	1.64	1.64	1.94
Soybeans	4.15	4.29	5.27
Oats	1.15	1.16	1.37
(\$/Ton)			
Alfalfa	78.00	78.00	88.00
All Hay	77.00	76.00	87.00
(\$/Cwt.)			
Steers & Heifers	70.80	70.40	60.60
Feeder Calves	95.80	90.80	70.50
Cows	35.10	35.10	32.40
Barrows & Gilts	38.60	34.90	15.00
Sows	27.10	26.70	14.60
Sheep†	30.00	30.10	37.10
Lambs†	73.50	74.00	64.00
(\$/Lb.)			
Turkeys	0.35	0.35	0.37
(\$/Dozen)			
Eggs	0.38	0.40	0.56
(\$/Cwt.)			
All Milk	12.50	12.90	17.30

\*Mid-month

†Estimate

## Research Report

## Risk Assessment for Food Safety: Application and Evaluation of HACCP in Hog Slaughter and Processing

**Principal Investigators:** Helen Jensen, George Beran, Terry Proescholdt (Iowa State University); and Laurian Unnevehr (University of Illinois)

**Collaborators:** James S. Dickson, Patricia Batres-Marquez (Iowa State University)

New federal regulations focus control at the processing plant level. The project described in this article is designed to evaluate the microbial reductions and costs associated with the use of a Hazard Analysis and Critical Control Point (HACCP) system in large pork slaughter and processing plants. The objectives are to measure the efficiency of HACCP systems in achieving lower microbial counts in pork processing, to measure the marginal costs associated with different levels of pathogen reduction in pork processing and to determine implications for mandated HACCP adoption on industry costs. The study considers specific control points or technologies that are used to reduce, control, or monitor levels of microorganisms during the production process in large pork slaughter and processing plants in the upper Midwest.

#### METHODS

HACCP is one approach to improving food safety that helps firms decide where to intervene during processing for control of pathogens. Because control of existing processing may be inadequate to reduce microbial contamination to desired levels, firms may consider additional interventions. We examine four pathogen reduction technologies in pork processing: carcass rinses, sanitizing sprays, steam vacuums, and a hot water pasteurizer.

**Cost Data.** We estimated the cost of individual technologies based on data from input supply firms and local (representative) costs of electricity, water, and labor. We then

draw estimates of pathogen reduction from selected meat science studies. These results were extended by collecting in-plant data. Several large processing plants were contacted about providing data on costs incurred in implementing HACCP regulations and additional antimicrobial controls. A questionnaire on costs was developed. Two firms, with information representing four large processing plants, provided information on the costs of HACCP implementation and operation. In addition, firms allowed collection of in-plant microbial samples.

**Microbial Data.** Initial information on effectiveness on control technologies was obtained from published studies. Additional data were collected in-plant from participating firms by sampling for *Salmonella*, *E.coli*, and Total Plate Count (TPC). The sampling took place over the period June 1997 through February 1999, with samples obtained from one pre-rinse site and two post evisceration sites: pre-rinse and post-rinse. The plants used acetic acid rinses, and the pre-rinse samples were obtained after the last carcass processing before the rinses.

In total, there were 886 observations for *Salmonella*, 824 observations for *E. coli*, and 830 observations for TPC. Samples were collected using Federal Safety Inspection Service procedures. The samples were collected using sponges from three carcass locations (shoulder, mid-line, and ham) from a 100 cm<sup>2</sup> area at each location. All samples were collected during the morning shift and sent to the Iowa State University Veterinary College labs for testing.

**Methods.** First, a simple optimization model was used to find the least-cost combinations to achieve multiple pathogen reduction targets based on available data from published studies of the various technologies and data available on costs of using the technologies. Analysis of the plant samples was next. Statistical analysis was used to determine which variables had a statistically significant effect on the in-plant microbial levels, or prevalence, holding the effects of other variables constant

#### RESULTS AND DISCUSSIONS

Analysis of the plant samples showed that observed conditions varied considerably. In part, this can be attributed to differences in processing technologies used. Some antimicrobial treatments reduced microbial contamination of carcasses. However, there were differences across plants in the effectiveness of controls. Other variables, such as day of the week, had a significant impact on the product contamination levels.

There is strong support for the fact that the cost function for reduced microbial levels is upward sloping in pork processing. Some interventions or combinations of interventions are more cost-effective than others.

Based on survey results of the firms and data gathered from manufacturer sources, costs of individual technologies to reduce pathogens are in the range of \$0.03 to \$0.20 per carcass for hogs. Total costs associated with on-going, recurring costs of HACCP (training, administrative, CCP

and plant costs of testing, and process modification) were estimated to be \$0.1394 per carcass.

Firms have invested significant resources in implementing HACCP and introducing new antimicrobial controls, such as rinses. The effec-

tiveness of these technologies and controls needs careful plant level study of the microbial levels throughout the production process. The cost effectiveness of specific technologies is likely to depend on product control throughout the process. ♦

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- Helen Jensen and Laurian Unnevehr. "HACCP in Pork Processing: Costs and Benefits," In L.J. Unnevehr (ed.) *Economics of HACCP: New Studies of Costs and Benefits*. Eagan Press (in press).

## Dairy policies around the world: What would we gain from getting rid of them?

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Despite the general globalization of agricultural markets, trade and production of dairy products are still highly distorted in most countries. This article discusses the impact of these distortions and the likely gains that would result from reforming existing policies.

Import restrictions are present in many countries, and export subsidies are often used. Dairy imports are distorted by tariff-rate quotas (TRQ), which are a two-tier import tax or tariff system. Imports up to a certain level (the so-called minimum access commitment) are allowed in a country at a relatively low import tax rate. Additional imports (above the quota) are taxed at a higher tariff rate.

Many TRQs are unfilled, and tariffs remain very high, often prohibiting over-quota imports. The multitude of TRQ schedules and nomenclatures is confusing and restrictive. The lack of transparency in the administration of the TRQs may explain why some quotas are unfilled, despite the fact that these quotas are usually very low. Major gains could be realized by defining fewer and more aggregate TRQ categories, and by increasing the transparency and efficiency of TRQ administration.

Domestic dairy policies remain complex and arcane in many countries, often relying on a combination of price discrimination schemes via price pooling and production quotas. The price discrimination schemes rely on the low price responsiveness of fluid milk consumption, charging a higher price for fluid milk, and allowing markets to determine the price of milk used for manufacturing dairy products.

Dairy producers receive a "pooled" price based on the pooled values of deliveries in all milk markets. Because of trade barriers, the price of manufactured dairy products is artificially high. And this higher price stimulates the milk market. Both domestic and trade policies, then, contribute to higher milk prices.

Dairy products are priced artificially high because of trade barriers preventing price arbitrage through trade. In some countries, production quotas limit the expansion of milk production induced by market distortions. These milk production quotas contribute to higher milk prices by restricting supply. Finally, in the European Union (EU) and other countries, dairy prices are also supported by government purchase of butter and milk powder, which has the same qualitative effects as trade barriers.

What is happening in the EU as a result of policy reforms? Based on recent Center for Rural and Agricul-

tural Development (CARD) policy analysis, it appears that reforms of the Common Agricultural Policy (CAP) in the EU under the Berlin Accord's "Agenda 2000" would have small effects on dairy markets because dairy is essentially spared until 2005. The current EU system of domestic producer price support and quota remains little affected.

Export subsidies and large inventories help absorb EU excess supplies of dairy products. No real fundamental and definite reform is planned after 2005 either. By contrast, if enlargement of the EU to include Central and Eastern European Countries (CEECs) occurs in 2003, there would be major repercussions in EU dairy markets, but relatively small effects on world dairy markets.

The EU enlargement is likely to induce lower internal dairy prices in the EU and a major price hike in CEECs. Consumers in those countries would be major losers upon EU accession, whereas major gains would accrue to dairy producers in the CEECs who receive EU prices. Internal EU trade would expand considerably.

World dairy markets would see little effect from CAP reforms and from EU enlargement. However, the cost of the CAP would balloon following enlargement and would probably induce further reforms to contain cost. The reforms currently planned for after 2005 in the Berlin

Accord would achieve “too little too late” to contain the cost of the EU dairy policy.

Another important new trend in dairy markets is the rapid growth in Asian dairy markets, despite very distorted and restricted trade flows. Urbanization and income growth are fueling Asian dairy consumption; and increased access to dairy markets in Asian countries should be a promising source of world dairy market growth. However, Australia and New Zealand would capture the bulk of these new export opportunities in Asia because of their geographic proximity.

What would trade liberalization bring? There is a strong consensus among dairy economists that trade liberalization experienced to date under the last World Trade Organization (WTO) agreement has had moderate effects on world markets and on efficiency in resource allocation.

Further liberalization would improve the allocation of resources in the sense that low-cost producers would expand their production at the expense of high-cost producers. But those gains in aggregate are likely to be only a small share of the value of dairy production. However,

current policies induce major transfers from consumers (losers) to producers (winners) in the EU, Canada, Japan, Korea, and to a lesser extent in the United States.

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*Domestic dairy policies remain complex and arcane in many countries, often relying on a combination of price discrimination schemes via price pooling and production quotas.*

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Inefficiencies in resource allocation induced by current policies are moderate, primarily because of the lack of price responsiveness of supply and demand in many dairy markets. Production quotas have raised prices with limits on output expansion, which partly explains the lack of price responsiveness.

Further, trade liberalization would induce dynamic gains in terms of productivity gains and a larger choice of products for consumers. These gains are hard to quantify and tend to be overlooked by some economists, but they may be as

important as the gains induced by the price discipline of more open markets. For example, the Mexican dairy market had such gains following the trade liberalization that accompanied its accession to the WTO and, more recently, with the North American Free Trade Agreement (NAFTA). Foreign investment, the transfer of dairy technology, and increased competition have induced an improvement in the quality of Mexican dairy products. U.S. and U.S.-like branded products are progressively substituting for more basic local dairy products, such as generic milk powder.

Who would gain the most from global trade liberalization in dairy markets? Producers in New Zealand and Australia would be large “winners” following world dairy trade liberalization. These nations are natural exporters of dairy products. Consumers in the protected markets of Japan, Korea, Europe, and Canada would also be large gainers from global liberalization.

To learn more on domestic and trade dairy policy, visit the CARD Web site at [http://www.card.iastate.edu/about/dairy\\_policy\\_symposium/dairy.html](http://www.card.iastate.edu/about/dairy_policy_symposium/dairy.html). ♦

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*Agricultural Situation*  
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Iowa producers have been active in claiming loan deficiency payments (LDPs) on their crops. Iowa producers have claimed LDPs on 905 million bushels of corn, for an average of \$0.29 per bushel. They have favored the LDP over placing the crop under loan by a ratio of 3 to 1. This compares nationally to an average LDP of \$0.28 and a preference of the LDP to a loan of 5 to 1. Iowa producers have taken LDPs on 347 million bushels for

an average of \$0.92, and overwhelmingly favor the LDP to placing the crop under loan. Nationally, soybean average LDP is \$0.93 and producers favor the LDP to loan at 9 to 1.

In the livestock sector the story has been one of strong demand in the face of large production. Beef production for the year is estimated up 2.6 percent above last year, and pork production is estimated 1.9 percent above last year. Even with the large supplies, prices remained steady through December, with Iowa bar-

rows and gilts averaging \$38.60 per hundredweight (see graph on page 5) and steer and heifers averaging \$70.80 per hundredweight (see graph on page 5). Demand for pork has been strong enough to bring down the record stock levels reached last April. However, cold storage stocks still remain well above the decade average. This could cap any market rallies during the first quarter, as meat production will remain high given the large supplies in the pipeline. ♦

*Impact of Crop Insurance*  
Continued from page 3

lenders. These additional benefits, which are operator and farm specific, are difficult to quantify and there is no attempt to do so here.

### CROP INSURANCE FROM THE INDUSTRY PERSPECTIVE

Iowa's participation in the crop insurance program is not limited to the farmers who purchase insurance. Private insurance companies participate in the federal crop insurance program by selling and servicing the policies. The federal government then serves as a reinsurer for these companies. Of the 18 companies authorized to provide federally-subsidized crop insurance, five have headquarters in Iowa.

American Agrisure, Inc., is located in Council Bluffs. Rain and Hail L.L.C. (Agri General Insurance Company) and Farm Bureau Mutual Insurance Company (Iowa) have their main offices in West Des Moines, and the city of Des Moines is home to the corporate headquarters of IGF Insurance Company and Farmers Mutual Hail Insurance Company of Iowa. These companies represent a substantial portion of the crop insurance industry, and they employ many Iowans to service the crop insurance policies sold in Iowa and the rest of the nation.

Within the federal crop insurance program, Rain and Hail is the largest crop insurer. American Agrisure is the third largest and IGF is the fourth largest. For Farmers Mutual Hail, the 1999 crop year was the first year they offered federally subsidized crop insurance, but the company has been in the crop hail insurance business for more than a century.

To ascertain the financial impacts from the crop insurance companies, projections of national crop insurance participation, premiums, etc., for the 2000 crop

year have been constructed. The Risk Management Agency, the government agency that oversees crop insurance, does not release individual company data on crop insurance. Therefore, the calculations in this analysis are based on assumptions about the percentage of the crop insurance market controlled by these companies. It is assumed that the five Iowa crop insurance companies capture 45 percent of the crop insurance market (as measured in premium dollars) and the same percentage of the total underwriting gains/losses. The two main areas where

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*Crop insurance projections for the 2000 crop year indicate that the five Iowa crop insurance companies will sell just over \$1 billion worth of insurance covering nearly \$14 billion of crop value.*

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the crop insurance companies receive money within the system are reimbursement for administrative and operating expenses, and underwriting costs.

For a company to provide federal crop insurance coverage, it must agree to a standard reinsurance agreement with the federal government. This agreement outlines the provisions for the sale and service of the crop insurance policies and sets the guidelines for company reimbursement.

Crop insurance premiums are targeted to be actuarially fair and, thus, do not contain any charges for the administration or service of the policy. The federal government has set reimbursement rates (to the companies) for administrative and operating expenses and loss adjustment expenses based

on the total premiums of the crop insurance policies sold by each company. The rate varies by the type of policy. For catastrophic coverage (CAT) policies, the private companies receive 11 percent of the total premium that would have been charged (CAT policies are fully subsidized, except for a small fee.).

For the standard buy-up yield insurance policies (APH or MPC), the reimbursement rate is 24.5 percent of total premiums. For the other crop insurance policies (including CRC, RA, GRP, IP, and GRIP), reimbursement rates range from 21 to 24.5 percent of total premiums. These reimbursements are meant to pay the salaries of the employees of the crop insurance companies and the other expenses that accompany servicing the insurance policies. An average reimbursement rate of roughly 20 percent of total premiums across all policies is used in this analysis.

The underwriting gains or losses are the result of the risk-sharing relationship between the insurance companies and the federal government. (The rules governing the calculation of these gains or losses are too detailed to be explored here.) In comparison to the expense reimbursements, underwriting gains or losses can fluctuate tremendously. Factors influencing the underwriting costs include the distribution of losses across insurance companies and the allocation of crop insurance policies (by the companies) across various risk sharing funds with the government.

The historical relationship between the loss ratio (the ratio of indemnities to premiums) and the ratio of overall underwriting gains/losses to premiums for estimating underwriting costs indicate that at a loss ratio of one, underwriting gains are projected to equal nearly 10 percent of total premiums.

Insurance companies can use these gains in a variety of ways: the development of new products, covering additional business expenses, expanding their businesses, reserve for future losses, etc. Also, part of any underwriting gains made by the insurance companies is held in reserve by the government for a period of time to cover possible future underwriting losses.

Crop insurance projections for the 2000 crop year indicate that the five Iowa crop insurance companies will sell just over \$1 billion worth of insurance covering nearly \$14 billion of crop value. They are projected to receive reimbursements of \$200 million for administrative, operating, and loss-adjustment expenses. The

companies are also projected to earn roughly \$100 million in underwriting gains. These figures imply that the Iowa crop insurance companies will receive \$300 million to conduct their business, pay their employees, etc. Not all of this money will reach the Iowa economy since all of the companies have agents, employees, and/or regional offices in other states. And, in addition part of the underwriting gains will be held in reserve. However, assuming 25 percent of these funds are used to pay the salaries of Iowa employees and the services required to conduct business here, an additional \$75 million is added to the Iowa economy through crop insurance.

Thus, (conditional on the assumptions used) crop insurance is

projected to add more than \$160 million to the Iowa economy in the year 2000. More than half of the impact is in the form of direct benefits (insurance payments) to Iowa farmers. The other portion originates from the employment of people and services by the crop insurance companies. Other unquantified impacts on the Iowa economy due to crop insurance would arise from the additional benefits crop insurance can provide producers, such as stronger borrowing power and additional forward contracting capabilities. ♦

## Heartland Environmental and Resource Economics Workshop

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The first Heartland Environmental and Resource Economics (HERE) workshop took place September 19-21, 1999, in Ames, Iowa. The purpose was to bring economists working on environmental and resource problems in the Midwest together in an informal setting. The pleasant setting provided an ideal environment for researchers, students, and other professional environmental economists to exchange research ideas, critically assess each other's work, and to encourage collaborative efforts.

Additional goals of the workshop were to identify important public policy issues relevant to environmental and resource economics in the Midwest and provide a forum for graduate students to obtain feedback on their research, while becoming acquainted with the most current work in the field. Funding was provided by a grant from the U.S. Environmental Protection Agency, as well as support from the Center for

Agricultural and Rural Development (CARD) and the Department of Economics at Iowa State University.

V. Kerry Smith, university distinguished professor and director of the Center for Environmental and Resource Economics Policy (CENREP) at North Carolina State University, delivered the keynote address to formally kick off the workshop at a luncheon on Sunday, September 19. Professor Smith's presentation was entitled "Valuation Vignettes," in which he described some of the most interesting theoretical challenges facing environmental economists in the literature on valuing environmental goods.

The Sunday afternoon session topics included valuing outdoor recreation goods, and innovation and economic growth as it affects the environment. A wide variety of research papers were presented on Monday, covering topics related to fisheries, forestry, wetlands, water quality and quantity, and market-based incentives for the control of environmental pollution. Special luncheon speaker, Joseph Herriges, professor of economics at ISU,

presented his research paper, "Controlling for Correlation Across Choice Occasions and Sites in a Repeated Mixed Logit Model of Recreation Demand." A reception at the Brunnier Art Gallery with special music by the Iowa Collegiate Brass Ensemble brought the day to an end.

The workshop concluded with two sessions on Tuesday morning. The first session focused on international and transboundary pollution issues, and the second session looked at environmental issues related to domestic agricultural production.

More than 40 researchers attended the conference and many indicated an enthusiasm for a return visit to next year's workshop. Funding for at least two more workshops is secured, and several conference attendees indicated a possible interest in having their institutions host the workshop in future years. For more information about the HERE workshop, workshop proceedings, the schedule, and pictures of the event, visit the Web site at <http://www.card.iastate.edu/about/heartlandconf/klingconference.html>. ♦

## Meet the Staff

**C**athy Kling, professor of economics, is beginning her second year as the Resource and Environmental Policy Division head at the Center for Agricultural and Rural Development.

"It is really enjoyable to work on big picture research problems rather than the standard academic research," Cathy says of her work at CARD. However, she also points out that learning to conduct the big picture research while doing academic research is a challenge.

Part of Cathy's research program focuses on valuing environmental goods. In order for society to make good decisions regarding the environment, it is important to consider explicitly the value placed on envi-

ronmental quantities. For example, in conjunction with Joseph Herriges, Cathy has a research project examining the potential use and value of Iowa wetlands to the citizens of Iowa. In her work at CARD, she is undertaking research to examine how agricultural practices affect water quality, wildlife, soil carbon content, and greenhouse gasses. In addition, this past fall, Cathy organized the first Heartland Environmental and Resource Economics (HERE) workshop. (For more information about the workshop, see the story on page 10.)

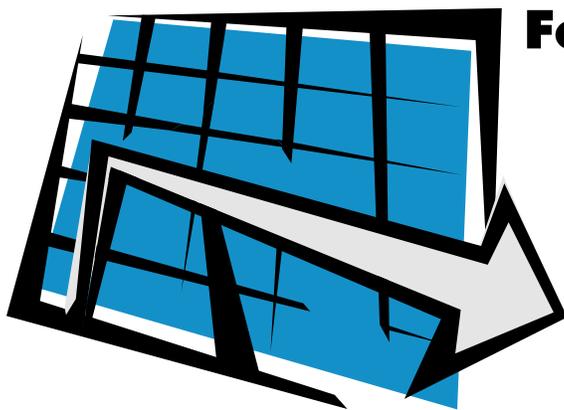
"I enjoy working with the CARD staff, the grad students, and the post docs. They are full of energy and ideas," Cathy says.

Cathy received a bachelor's degree in business and economics from the



*Cathy Kling*

University of Iowa and a doctorate in economics from the University of Maryland. She is married to Terry Alexander, also an economist at ISU, and they have two children, Danny and Maggie. Cathy spends her time away from CARD attending her children's activities, gardening, and participating in outdoor activities which include hiking and bird watching. ♦



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Chad E. Hart, Bruce A. Babcock. "Counter-Cyclical Agricultural Program Payments: Is It Time to Look at Revenue?" CARD Briefing Paper Series 99-BP 28, December 1999.

## STAFF REPORTS

Dermot J. Hayes, Helen H. Jensen, Lennart Backstrom, Jay Fabiosa. "Economic Impact of a Ban on the Use of Over-the-Counter Antibiotics." CARD Staff Report Series 99-SR 90, December 1999.

## WORKING PAPERS

Frank Fuller, A. Ali Koc, Haydar Sengul, Ahmet Bayaner. "Farm-Level Feed Demand in Turkey." CARD Working Paper Series 99-WP 226, October 1999.

Dermot J. Hayes, Roxanne Clemens. "The Market for U.S. Meat Exports in Eastern Canada." CARD Working Paper Series 99-WP 229, November 1999.

JunJie Wu, David Zilberman, Bruce A. Babcock. "Environmental and Distributional Impacts of Conservation Targeting Strategies." CARD Working Paper Series 99-WP 230, November 1999.

Frank Fuller, John Beghin, Samarendu Mohanty, Jacinto Fabiosa, Cheng Fang, Phillip Kaus. "The Impact of the Berlin Accord and European Enlargement on Dairy Markets." CARD Working Paper Series 99-WP 231, December 1999.

Shao-Hsun Keng, Steve Garasky, Helen H. Jensen. "Innovation at the State Level: Initial Effects of Welfare Reform in Iowa." CARD Working Paper Series WP 99-232, November 1999.

Dermot J. Hayes, Frank Fuller. "Optimal Chinese Agricultural Trade Patterns under the Laws of Comparative Advantage." CARD Working Paper Series 99-WP 233, December 1999.

Paul D. Mitchell. "Generation of Simulated Daily Precipitation and Air and Soil Temperatures." CARD Working Paper Series 00-WP 234, January 2000.

Paul D. Mitchell, Walter Riedell. "Stochastic Dynamic Northern Corn Rootworm Population Model." CARD Working Paper Series 00-WP 235, January 2000.

Ferdaus Hassain, Helen H. Jensen. "Lithuania's Food Demand During Economic Transition." CARD Working Paper Series 00-WP 236, January 2000.

Sonya Kostova Huffman, Stanley R. Johnson. "Empirical Tests of Impacts of Rationing: The Case of Poland in Transition." CARD Working Paper Series 00-WP 237, February 2000.

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