

Creation of a WTO-Friendly Farm Safety Net

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Bumper crops have quickly turned the corn and soybean price boom into a bust. New-crop corn and soybean futures contracts are down 40 percent and 35 percent respectively in just a few short months. Of course, those farmers that had the foresight to lock in at high prices are completely unaffected by the drop in price. For them, market volatility has created profit opportunities. But all is not lost for the majority of farmers who did not lock in at those prices. The farm safety net created by the 2002 Farm Security and Rural Investment Act will cushion the financial shock of lower prices.

It looks certain that Corn Belt farmers will receive substantial payments from all three sources of federal farm support in this coming crop year. Iowa farmers will definitely receive more than \$512 million in direct payments because these payments arrive regardless of what happens to price or yield. In fact, direct payments arrive even if a farmer's land remains idle. As indicated by mid-October price levels, Iowa farmers could also receive almost \$700 million in countercyclical payments and about \$900 million in loan deficiency payments. Nationally, corn and soybean farmers should expect to receive more than \$11 billion in total payments, including \$2.7 billion in direct payments, \$3.8 billion in countercyclical payments, and about \$4.6 billion in loan deficiency payments. There is a good chance that corn and soybean farmers will actually be made "more than whole" this year. At current prices, corn and soybean revenue from the



market and the government is projected to be about \$8.8 billion for Iowa farmers. In 2003, total revenue was about \$7.5 billion.

Insulating farmers from market price fluctuations is at the core of complaints by some of our trade competitors. The basis for Brazil's successful case through the World Trade Organization (WTO) against U.S. cotton subsidies was that U.S. cotton production is artificially propped up when prices are low because U.S. cotton farmers have no incentive to cut production even when they cannot cover their variable costs of production.

Most farm groups want to obtain a new WTO agreement in agriculture because much of U.S. agriculture stands to gain significantly from expanded export markets. But U.S. farm programs continue to be a roadblock to reaching an agreement. Is it possible to adjust the programs to make them more acceptable to the WTO while meeting congressional desires for a strong safety net? A close examination of what Congress wants in a farm bill and how current income support mechanisms work will demonstrate that the answer could be

yes if Congress continues to be willing to base payments on historical rather than current acres and yields. If Congress were to make needed adjustments, then U.S. negotiators could once again take the lead as legitimate advocates of freer trade.

PURPOSE OF U.S. FARM PROGRAMS

Most people not on the receiving end of farm program payments would question the broad public purpose being served by them. But Congress keeps passing farm bills, so the legislation must be designed to meet some objective. If we assume that Congress was fully aware of the intended effects of their policy choices, then we can look at what farm programs actually do to discern why we have them.

The primary effect of farm programs working in tandem with crop insurance is to increase average incomes and to greatly reduce the financial risk of the shrinking subset of U.S. farmers who grow subsidized commodities and who own the land they farm. That is, Congress has created a web of programs that together enhance and protect farm sector income. Thus, determining whether farm programs can be modified to enhance the U.S. negotiating position at the WTO while continuing to meet the needs of Congress requires an understanding of each of the three primary components of the farm safety net.

THREE KINDS OF PAYMENTS: DIRECT, COUNTERCYCLICAL, AND LOAN DEFICIENCY

Direct payments evolved from AMTA (Agricultural Marketing Transition Act) payments in the previous (1996) farm bill. AMTA payments were supposed to assist farmers as they made a transition from reliance on subsi-



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IN THIS ISSUE

Creation of a WTO-Friendly Farm Safety Net 1

Pharmaceuticals and Industrial Products in Crops: Economic Prospects and Impacts on Agriculture 4

Agricultural Situation Spotlight: Agriculture on Record Pace 6

Strong U.S. Pork Exports in 2004: The Story Behind the Numbers 8

Recent CARD Publications 11

10 Years of the Iowa Ag Review 12

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dies toward reliance on market prices. As it became clear that there would be no such transition, the name was changed to reflect reality.

Direct payments are fully “decoupled” in the sense that their level is not coupled to a farmer’s current planting decisions or production levels. Because direct payments are decoupled, they are generally viewed as having little or no effect on U.S. production levels. Therefore, they have little or no effect on U.S. exports or imports or on world prices and thus are generally acceptable to the WTO.

Although direct payments are paid to the person who farms a particular parcel of land, their predictability means that they are largely, if not completely, bid into the price of land. And because they arrive regardless of what happens to price or yield, their sole impact on farm finances is to increase incomes of land owners.

Countercyclical payments are not fully decoupled because they increase when season-average market prices fall. However, their impact on farmers’ planting decisions and production levels is small because their level in any year is based on a farmer’s acreage decisions and yields in a historical base period. That is, variations in yield or planted acreage in the current year have no effect on the size of a farmer’s payment.

Countercyclical payments do not, in general, provide support only when a farmer’s income is low. For those farmers who have switched crops since the base period, payments arrive when the season-average price of a non-planted crop is low, so there may be little correspondence between market receipts and payments received from the government. This disconnect can also exist even for those farmers who have not switched crops. For example, this year’s large yields mean that farm incomes in Iowa will be little changed even though prices are low. So the primary effect of countercyclical payments is that they offer some price protection, which

may or may not mean that payments arrive when farm incomes are low.

The fact that countercyclical payments are not based on current production and that they can arrive when a farmer’s income is not low actually makes them somewhat acceptable to the WTO because they do not necessarily insulate farm finances from the effects of low prices. Farmers must look to market prices, not to countercyclical payments, to determine whether or not to plant additional acres of a crop.

There is no redeeming feature of our marketing loan program in the eyes of the WTO because it completely insulates farmers from prices below a set floor price called the loan rate. This program allows farmers to take a loan deficiency payment, which is calculated as the difference between the loan rate and a local price multiplied by harvested production. Our trade competitors complain most bitterly about our marketing loan program because at planting time U.S. farmers know with certainty that the lowest possible price they will receive for their crop will be the loan rate. The reason this upsets our competitors is that these minimum price guarantees most directly interfere with the natural response of farmers to change crops or to cut back on production when production costs cannot be covered. The loan rate program keeps production in place in low-price years. This additional production then expands U.S. exports, thereby further depressing world market prices to the detriment of our competitors.

Because both loan deficiency payments and countercyclical payments vary with price levels, it would seem that replacing the marketing loan program with an expanded countercyclical payment program would be a straightforward modification to U.S. farm policy that would maintain the farm income safety net while meeting the desires of our competitors. A close inspection of such a move reveals that this would indeed

be the case with one exception: those regions of the United States that truly should not be producing crops would no longer have any government incentive to remain in production.

EFFECTS OF REPLACING LOAN DEFICIENCY PAYMENTS WITH COUNTERCYCLICAL PAYMENTS

Congress could replace the marketing loan program with an expanded countercyclical payment program by simply calculating the countercyclical payment rate as the difference between the effective target price and the season-average market price.

For farmers who grow about the same acreage of crops as was used to determine base acreage, such a change would have minimal effects on their farm finances. In major production regions, replacing loan deficiency payments with countercyclical payments would have little or no impact on planting decisions because the crops grown in these regions are most economical to grow even without government support. Furthermore, in these production regions, the variable costs of production per unit are well below loan rates, so elimination of the minimum guaranteed price would have little effect on production. If the effects are so small, why would anybody oppose replacing the marketing loan program with an expanded countercyclical payment program?

In major crop production regions, it is generally the case that low prices correspond to high yields. Thus, countercyclical payments—which are based on a fixed number of bushels—would likely pay out less on average than would loan deficiency payments. In addition, many farmers currently take loan deficiency payments when market prices are at their lowest, near harvest time. Thus, some upward adjustment in countercyclical payment rates would

have to occur if total payment levels were to be held constant.

A seemingly larger concern is the impact on the safety net for those farmers who would respond to the change in policy by choosing to plant different crops. This would create a mismatch between payments and the price received for the crop that is actually grown. Thus, a farmer could be facing quite low prices with no countercyclical payment. Or, conversely, a payment could arrive but the farmer might, in fact, be enjoying a high-price year.

But the fact that farmers might choose to switch crops because of the change in policy indicates a positive impact on the safety net. That is, such farmers could expect to receive the same level of government payments, and the new crop should give them higher market returns: otherwise they would not have made the switch. Regarding the mismatch, Congress has already shown its willingness to live with a mismatch between payments and farm income levels. There is no connection at all between farm financial situations and direct payments. Most Iowa crop farmers have had two good years, but direct payments keep coming. And this year, cash receipts will be quite high because of high yields, but Iowa farmers will likely receive large countercyclical payments. So a lack of coordination between farm finances and receipt of a countercyclical payment should not cause Congress too much trouble.

A potentially greater political hurdle to overcome would be if many farmers in a region decided simply to leave land idle and pocket the direct payment and the countercyclical payment. Landowners might decide to quit farming if there is no crop that could cover production costs, and this could occur for high-cost crops in high-cost regions. For example, some cotton land in parts

of West Texas would likely go idle if cotton farmers were not guaranteed a price by the federal government. Low-yielding wheat areas in western North Dakota are another region where crop production might fall significantly. Members of Congress who represent these regions are the ones who would be most vocal in their opposition to replacement of loan deficiency payments with countercyclical payments.

Of course, such a transition is exactly what our trade negotiators want to see happen when they argue for a lowering of subsidies in the European Union and a lowering of tariffs and other trade barriers around the world. The U.S. negotiating position over the last 30 years could be summarized as follows: “Production that takes place only because of subsidies should be production that does not take place.” It only weakens our negotiating position when we make this argument to everybody but ourselves.

A REALISTIC POLICY OPTION?

Farmers, farm leaders, and politicians all seem reasonably satisfied with current farm programs. This satisfaction suggests that basing a large portion of farm income support on past acreage and yields rather than on current production levels is generally acceptable. Farm groups would likely find the path to an export-expanding new WTO agreement significantly less bumpy if they would push the U.S. negotiating team to offer to complete the decoupling of U.S. farm program payments by replacing our marketing loan program with an expanded countercyclical payment program. Such a move would not significantly alter the financial conditions of U.S. farms and it would increase the credibility of U.S. negotiators when they argue that markets, not government, should determine what and how much farmers produce. ♦

Pharmaceuticals and Industrial Products in Crops: Economic Prospects and Impacts on Agriculture

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That biotechnology has brought changes to agriculture in a very short time is, by now, obvious. For the 2004 harvest, for example, it is estimated that 85 percent of U.S. soybean production and 45 percent of U.S. corn production will come from genetically modified (GM) varieties (89 percent and 54 percent, respectively, in Iowa). While the agricultural sector is still dealing with problematic trade effects caused by less-than-enthusiastic consumer acceptance and restrictive regulations overseas, the biotech industry is actively pursuing an array of R&D efforts that could make the current adoption of GM crops just the prototypical “tip of the iceberg.”

At the risk of oversimplifying, we can distinguish three distinct waves of innovation. The first generation of GM crops has served the interests of the farm sector, modifying genetic inputs to manage agronomic problems such as weeds and insects. The second generation of GM crops seeks to address the interests of end users, by improving nutritional and quality characteristics of food, feed, and fiber. The third wave aims to “biomanufacture” pharmaceuticals, vaccines, and industrial compounds in traditional crops. Needless to say, the prospect of crops intended to deliver plant-made pharmaceuticals (PMPs) and plant-made industrial products (PMIPs) has attracted considerable attention, both for its exciting scientific and technological prospects and for the implications it may have for the agricultural sector.

THE POTENTIAL SCOPE OF BIOMANUFACTURING

To be clear agriculture has long served to “biomanufacture” a wide array of biomaterials, including compounds used in drugs, stimulants, dietary supplements, flavorings, fillers, lubricants, dyes, adhesives, fuels, and more. Yet, these products are either singularly derived from a specifically cultivated natural source (for example, coffee and natural rubber) or they are essentially by-products from major food crops (for example, lubricants derived from soybean oil). In contrast, with modern biomanufacturing, common crop species can be genetically engineered to synthesize and deliver a broad range of unique biomolecules needed for medical or industrial use. In theory, production of almost any kind of biomolecule could be engineered into plant hosts—including nucleic acids, carbohydrates, oils, and secondary metabolites such as vitamins. However, today most R&D is focused on expressing just a handful of valuable proteins, mostly antibodies, vaccines, enzymes, and other pharmaceutical proteins.

Some indication of the number of genetically engineered biomanufacturing crops moving toward commercialization can be gleaned from data on field-trial permits issued by the USDA. These have increased steadily since the first permit (for production of the enzyme amylase) was granted in 1991 (see Figure 1). A high point was reached in 2000, when over 40 permits were sought. The number of field trials took a big dip in 2002 and 2003, because of industry-wide biosafety concerns following the ProdiGene fiasco (more on this to follow). Fieldwork seems to be picking up again in 2004. At present, we estimate that over 25 permits will be granted this year.

Crop biomanufacturing is attractive because of the potentially large

cost savings that could result from using high-yielding and easily cultivated crops. Compared with current fermentation biomanufacturing techniques, crops would have a comparative advantage in both the absolute scale of production and the rate of scalability that could be achieved, resulting in lower cost, faster speed to market, and considerably smaller up-front fixed investments. Other benefits would include purity of the resulting product (with no animal pathogens or cell culture contaminants), ease of storage and transport, and convenience of oral delivery of the product.

THE COSTS OF RISK AND REGULATION

A major issue with crop biomanufacturing is the potentially large risks that may be involved. The essence of the problem is the reliance on crops that until now have been used exclusively for food or feed to produce bioactive compounds which may, under certain conditions, turn out to be toxins, allergens, or to have hormonal effects. Although grown and handled separately, the possibility arises that these compounds, intended for pharmaceutical or industrial use, could end up in food and feed supplies by accident. There is thus a real, objective risk of direct harm to human health and the environment.

Risk specialist Robert Peterson and plant biologist Charles Arntzen, in the February 2004 issue of *Trends in Biotechnology*, argue that, while some of these proteins may be quite novel, few are likely to be highly harmful, and any direct food safety risk they pose is both identifiable and manageable. In short, actual harm is highly unlikely. Yet, the indirect risk from such an eventuality could be catastrophic from an economic point of view. An incident could call into question the very integrity of the food supply. The food industry is particularly concerned, and both

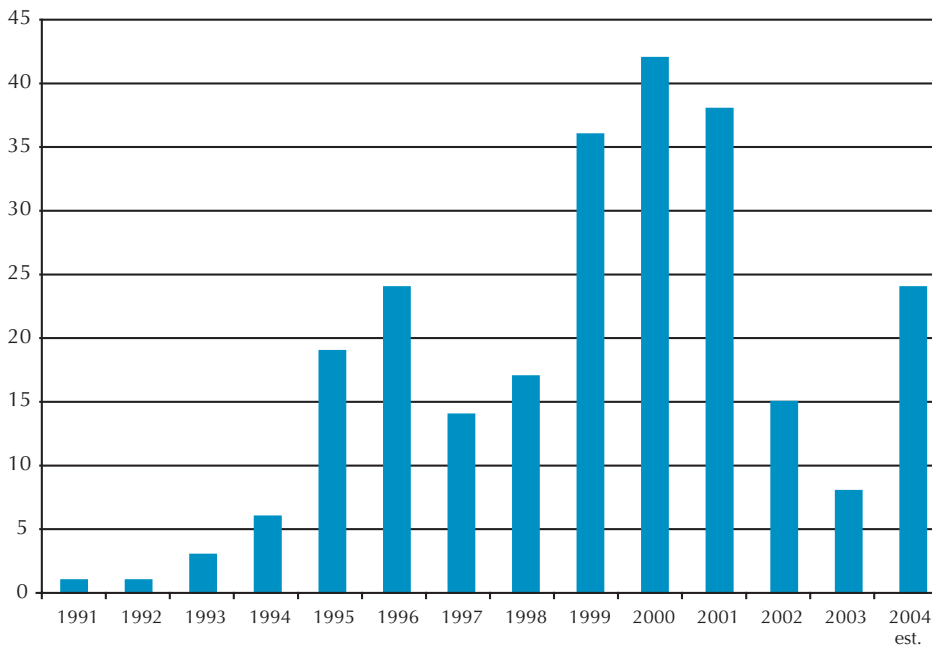


FIGURE 1. NUMBER OF U.S. FIELD TRIAL PERMITS FOR GENETICALLY MODIFIED CROPS FOR PLANT-MADE PHARMACEUTICALS AND PLANT-MADE INDUSTRIAL PRODUCTS

the National Food Processors Association and the Grocery Manufacturers of America have taken strong positions in favor of strict regulation to achieve maximum protection of the food supply (and their members' brand name products) from possible contamination by PMPs and PMIPs. Indeed, the biotech industry should be extremely concerned as well, as any possible realization of undesirable, unintended effects would be seized upon by an already active anti-biotech lobby and could prove crippling for future biotechnology research.

U.S. regulation in this area is undergoing an extensive (and unfinished) review. Current and interim rules, however, implicitly presume a zero tolerance level for the presence of PMPs and PMIPs in the food supply. Such a strict requirement may be impossible to achieve in practice and may indeed impose unnecessary costs without increasing safety. Given that some of the proteins are known to pose little or no risk, whereas others pose indeterminate or high risk, it would seem sensible to regulate them differently. Regulations that impose zero-tolerance across the board may result in unnecessary precautions for low-risk products while diluting the resources and

attention spent on the actual high risks. Yet, the overriding objective of preserving public confidence in the integrity of the food supply may require a stricter, and seemingly less efficient, regulation.

The ProdiGene incident illustrates the potential dangers. In 2002, the USDA found that volunteer corn that was genetically engineered by ProdiGene (a small, privately held biotech company and a leading firm in this technology) to express a vaccine for a viral disease in pigs had contaminated some soybean fields in Nebraska and Iowa. These volunteer plants were left over from field tests carried out (under duly obtained USDA permits) the year before. Despite lack of evidence that such a contamination posed any health risk, the product from these soybean fields (500,000 bushels) was quarantined and eventually destroyed. ProdiGene paid a fine of \$250,000 and had to bear the cost of destroying the contaminated product (\$3 million). The ensuing financial stress on the company resulted in it being sold to a third party, Stine Seed, in 2003.

To avoid contamination of food and feed by PMPs and PMIPs, a failsafe containment and segregation program

must be put in place. That will necessarily entail use of physical separation between pharmaceutical or industrial crops and conventional feed and food crops. One low-cost spatial segregation solution would be not to grow PMP corn in the Corn Belt. The other logical measure often suggested is simply to use plants other than food and feed crops to produce PMP and PMIPs—tobacco, for example, or even duckweed. It is true that, both at the research stage and at the production stage, it is comparatively easier to use corn as the vector for pharmaceutical and industrial traits than to use, say, duckweed. But such an efficiency advantage may pale in comparison with the potential costs that would arise if high-risk pharmaceutical proteins were to end up in the food chain.

MARKET IMPACTS AND THE AGRICULTURAL SECTOR

Demand for biomanufacturing of recombinant proteins is rapidly growing, in both breadth (with more and more new proteins introduced) and depth (with greater volumes demanded of existing proteins). Over one-third of the new drugs approved since 2000 have been therapeutic proteins, with the proportion expected to increase in coming years. Datamonitor estimates annual global sales of therapeutic proteins in final pharmaceutical markets at \$30 billion and growing at 20 percent per year, with sales approaching \$60 billion by 2010. Antibodies represent the most promising therapeutic market for crop biomanufacturing, as demand is growing particularly fast, and significantly higher quantities are needed. The market for industrial enzymes will be an additional source of demand for biomanufacturing, although it is considerably smaller, at about \$2 billion and growing at about 5 percent.

Whether crop biomanufacturing systems can significantly tap this emerging market remains to be seen, as there is significant competition from other sources of biomanufacturing capacity. Today, virtually all recombinant

Continued on page 11

Agricultural Situation Spotlight

Agriculture on Record Pace

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Based on the latest estimates from the USDA, 2004 is shaping up to be a banner year. Between the strong production numbers on the crop side and strong prices for livestock, both major sectors of agriculture are experiencing record or near record events. Several national and state records may fall this year.

STRONG CROP PRODUCTION

The October 2004 crop production estimates have been released and they show that the unusual weather patterns over the spring and summer have actually been very beneficial to commodity agriculture. National corn production is estimated at 11.61 billion bushels, 1.5 billion bushels above last year's record corn production. The national average corn yield for 2004 is projected to be 158.4 bushels per acre. That also tops last year's record yield of 142.2 bushels per acre. These figures represent an 11 percent increase in the record corn yield and a 15 percent increase in the record corn production. The United States has not experienced that large an increase in record corn production since the 1970s. However, this jump in production was not unexpected. Figure 1 shows the range of national corn production from 1960 to 2003 when adjusted for trend and 2004 planted acreage. The data in Figure 1 show that the United States had roughly a 20 percent chance of a corn crop exceeding 11 billion bushels.

Thirteen states, including Iowa and Illinois, are projected to set new record yields or tie existing records. Iowa is currently on pace

for a yield of 180 bushels per acre, passing last year's record corn yield of 163 bushels per acre. Illinois is projected to reach 180 bushels per acre; its record was 164 bushels per acre in 2003. The corn crop estimates also show that nine states will have record corn production. Again, Iowa and Illinois lead the way. Iowa is projected to produce 2.21 billion bushels of corn in 2004, a 282-million-bushel increase over the record production of 2002. Illinois will produce 2.08 billion bushels, 267 million bushels more than its record production last year.

Soybean production, while not as strong as corn production, is also a record nationwide. National soybean production is estimated at 3.11 billion bushels, 216 million bushels above the 2001 record. The national average soybean yield for 2004 is projected at 42.0 bushels per acre, the largest in history. Eleven

states, including Illinois, Indiana and Ohio, are looking at record yields. Ten states are projected to have record productions in 2004. Iowa's soybean crop, while not on pace for a record, is rebounding from last year's low numbers. Estimates for Iowa are for 47 bushels per acre in soybean yield and 477 million bushels in soybean production.

Both corn and soybean prices were fairly strong in the first half of 2004. The December 2004 (new crop) corn futures contract reached its contract high of \$3.36 per bushel in April. The November 2004 soybean futures contract also reached its contract high in the spring, at \$7.88 per bushel in March. So there were good opportunities for producers of both crops to forward-contract or to hedge on the futures market. Both corn and soybean price series have shifted downward as the year has progressed, due in no small part to

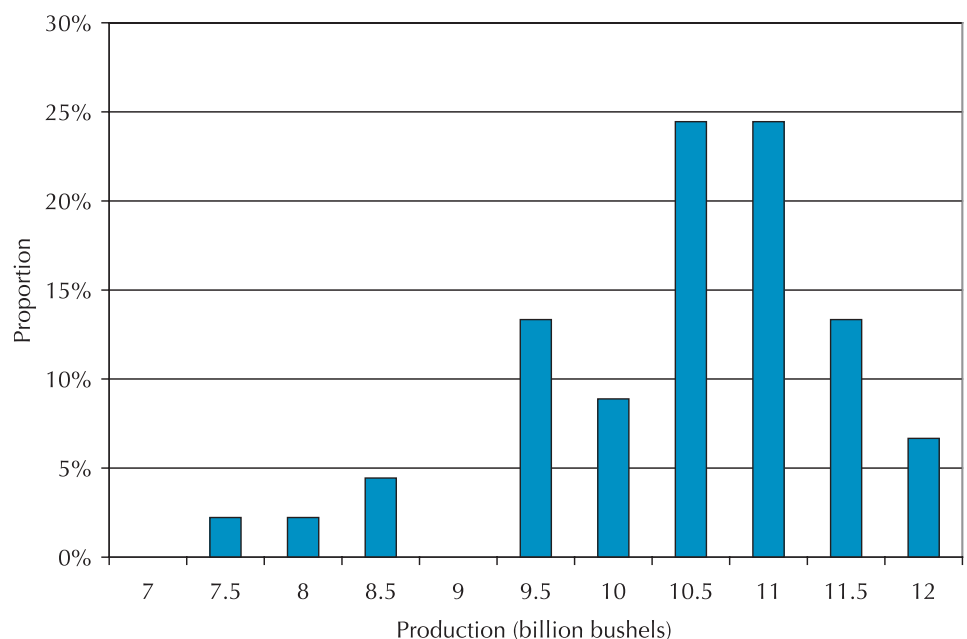


FIGURE 1. U.S. CORN PRODUCTION DISTRIBUTION (HISTORICALLY BASED, ADJUSTED TO 2003 TREND YIELDS AND 2004 PLANTED ACREAGE)

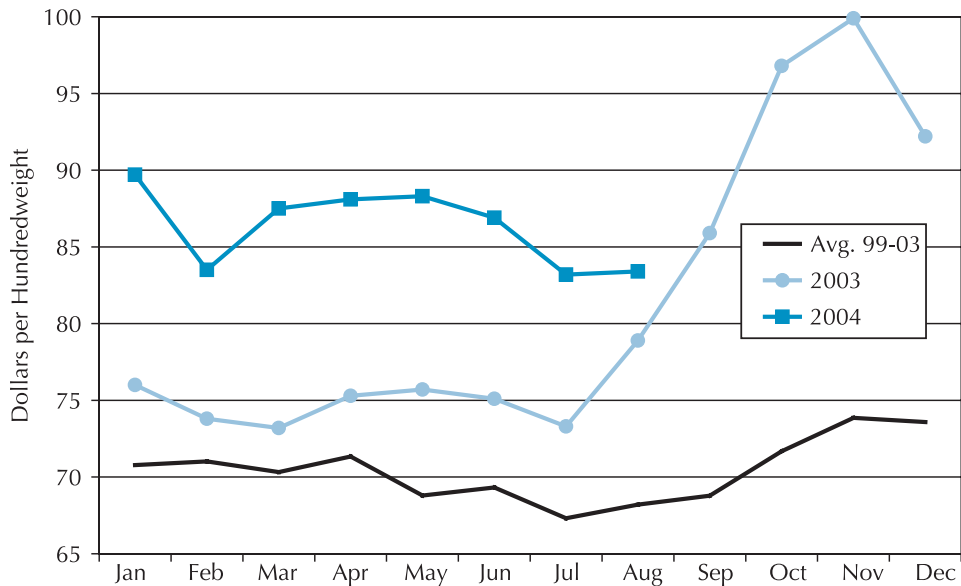


FIGURE 2. BEEF CATTLE PRICES RECEIVED BY IOWA PRODUCERS

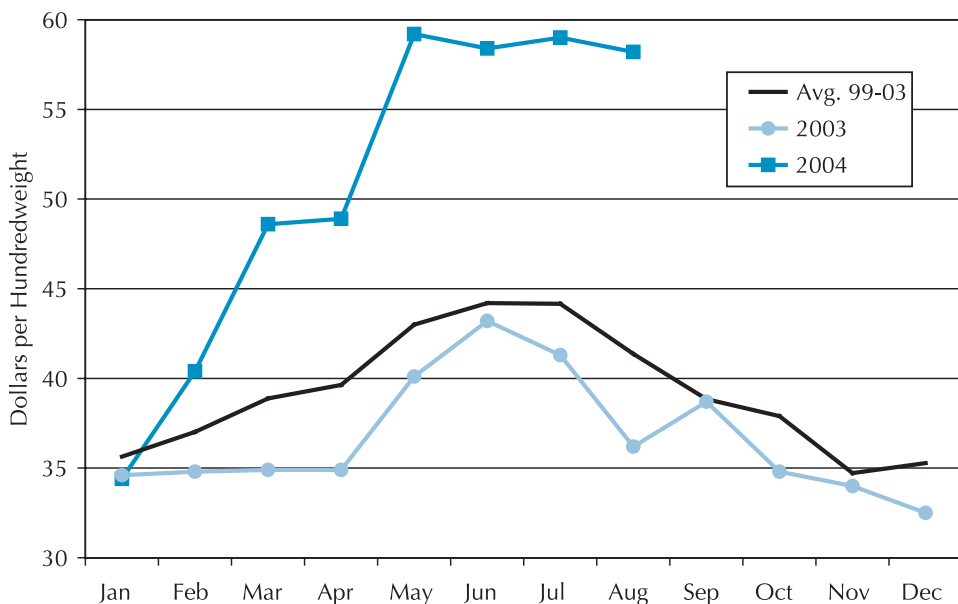


FIGURE 3. HOG PRICES RECEIVED BY IOWA PRODUCERS

the production estimates. Currently (October 12, 2004), the December 2004 corn futures are at a contract low price of \$2.02 per bushel and the November 2004 soybean futures are at a 2004 low of \$5.13 per bushel. But even at these prices, the 2004 corn and soybean crops would be the fourth largest in terms of value, only exceeded by the 1995, 1996, and 2003 crops for corn and the 1996, 1997, and 2003 crops for soybeans.

HIGH LIVESTOCK PRICES

While production is high for crops, prices are high for livestock. Both the cattle and hog industries are seeing record or near record prices. National average prices for all beef cattle, calves, steers and heifers, and cows are all well above their 1996-2003 averages. National calf prices have exceeded \$120 per hundredweight (cwt.) since May 2004. The average price for all beef cattle has

been at or above \$80 per cwt. since August 2003, with the exception of February 2004. Beef cattle prices for Iowa producers have followed this pattern as well. Figure 2 shows Iowa monthly average beef cattle prices for this year, last year, and the average over the last five years. For most of this year, cattle prices have run \$15 per cwt. more than the five-year average. Iowa beef cattle prices have been above \$80 per cwt. since September 2003. Other than for April 2001, Iowa producers have never before seen monthly average prices this high.

Prices have remained strong in spite of the BSE (bovine spongiform encephalopathy) incident of December 2003. While export demand has fallen dramatically, domestic demand for beef has remained strong. Beef supplies have been tight for several reasons: poor feeding conditions in early 2003, the import ban on Canadian beef and cattle, and lower cattle placements in feedlots. August placements in feedlots were at the second-lowest level since 1996. August cattle marketings were the lowest since 1996 as well. Iowa producers have participated in the supply adjustment through reduced placements and marketings this year as compared with last year.

Hog prices are also higher than they have been in quite some time. National and Iowa hog prices have been hovering just under \$60 per cwt. for the last four months. Figure 3 shows Iowa monthly average hog prices for this year, last year, and the average over the last five years. The last time hog prices approached \$60 per cwt. was in the summer of 1997. The highest recorded monthly average hog price for Iowa was \$62.50 per cwt. in August of 1986.

Pork demand, both domestic and export, has been strong. This, in combination with fairly steady hog production, has held prices in place. As of the June USDA *Hogs and Pigs* report, both the U.S. and Iowa mar-

Continued on page 10

Strong U.S. Pork Exports in 2004: The Story Behind the Numbers

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U.S. hog prices have been quite strong this year. Part of the reason for this strength is the large increase in export demand since December 23, 2003, when the U.S. government announced a case of BSE (bovine spongiform encephalopathy) in a Holstein cow imported from Canada. The announcement triggered bans on imports of U.S. beef in many international markets. Canadian beef is also banned in these markets because of BSE, and Australia and New Zealand are unable to provide the volume and type (that is, grain-fed) of beef needed to make up the shortfall. Demand for pork as a substitute meat increased in many of the affected markets.

Also in 2003 and 2004 highly pathogenic strains of avian influenza (AI) occurred in poultry flocks in several countries, including Canada, China, Japan, Thailand, and the United States (Texas). In some cases, the highly pathogenic AI has infected both animals and humans. Outbreaks of both highly pathogenic and low pathogenic AI have resulted in import bans that have increased poultry prices and pork demand.

Through July, U.S. pork exports exceeded 420,100 metric tons, a 26.0 percent increase compared with January-July 2003. U.S. pork variety meat exports reached 127,750 metric tons, up 61.8 percent for the period. Figure 1 shows combined U.S. pork and variety meat exports and U.S. producer prices from January 2003 through July 2004. Although BSE and AI have had major impacts on pork demand, other factors are also driving U.S. pork exports.

GATE PRICE DISTORTS JAPANESE MARKET

Before Japan imposed its ban on U.S. beef because of BSE, Japan was the largest market for U.S. beef and pork. Since the ban, Japan has been unable to source enough beef to satisfy demand. In addition, AI in the domestic poultry flock and bans on poultry meat imports have enhanced pork demand. Japanese imports of U.S. pork were 4.9 percent higher by volume and 15.6 percent higher by value during January-July 2004 compared with January-July 2003. However, this trade has been distorted by a safeguard system that implements higher duties when imports exceed a maximum allowable volume.

Japan maintains a gate price, or minimum import price, for pork. When total pork imports in a given quarter are 19 percent higher than during the previous three-year average for that quarter, the gate price is raised by 24.6 percent. In April-June 2003, pork import volume exceeded the safeguard level. Because official data are not immediately available at the end of each quarter, there is a one-month lag before the gate price is increased. Thus, the higher gate price was in effect from August 1, 2003,

through March 31, 2004 (the remainder of the Japanese fiscal year).

When the gate price returned to normal on April 1, 2004, Denmark, the United States, and other suppliers shipped large quantities of pork to Japan. Higher exports are the norm once the gate price is reduced, but this year Danish export volume was boosted by pork that had been placed in frozen storage under an Aids to Private Storage scheme that removed pork from the E.U. market to help increase prices. The release of this stored pork was timed to coincide with the expiration of the higher Japanese gate price.

The large flow of pork into Japan triggered the pork safeguard for April-June 2004. As noted, the data lag means the gate price did not increase until August 1, giving exporters an additional month to ship pork under the normal gate price. When a higher gate price is implemented, Japanese imports normally decline sharply. Preliminary reports indicate U.S. pork exports to Japan totaled 15,700 metric tons in August compared with 25,318 metric tons in July.

EXPORTS TO MEXICO FLOURISH

Mexico is the big story in U.S. pork and pork variety meat exports. As shown in Figure 2, Mexico's share of U.S. exports of pork and pork variety meats combined increased by 8 percentage points during January-July 2004 compared with January-July 2003. By contrast, Japan's share fell by 9 percentage points.

Taken separately, U.S. pork exports to Mexico totaled 108,030 metric tons, up 77.0 percent, and pork variety meat exports totaled 72,740 metric tons, up 71.8 percent during the January-July period. Mexico also imported 96,863 head of live pigs, an increase of 117.9 percent over January-July 2003.

As with Japan, much of the increase occurred in response to bans on beef and poultry meats. Mexico banned all U.S. beef during most of the first quarter of 2004. U.S. boneless beef and beef from animals younger than 30 months is now allowed into Mexico, but high U.S. prices have dampened this trade, which is running 60 percent behind the 2003 level.

Mexico also banned poultry meat from several U.S. states because of AI outbreaks in 2003 and 2004, which has reduced U.S. poultry exports. When the highly pathogenic strain was discovered in Texas in late February, Mexico temporarily banned imports of all U.S. chicken products. The immediate effect was a decline in U.S. poultry meat exports (including turkey) to Mexico

Continued on page 10

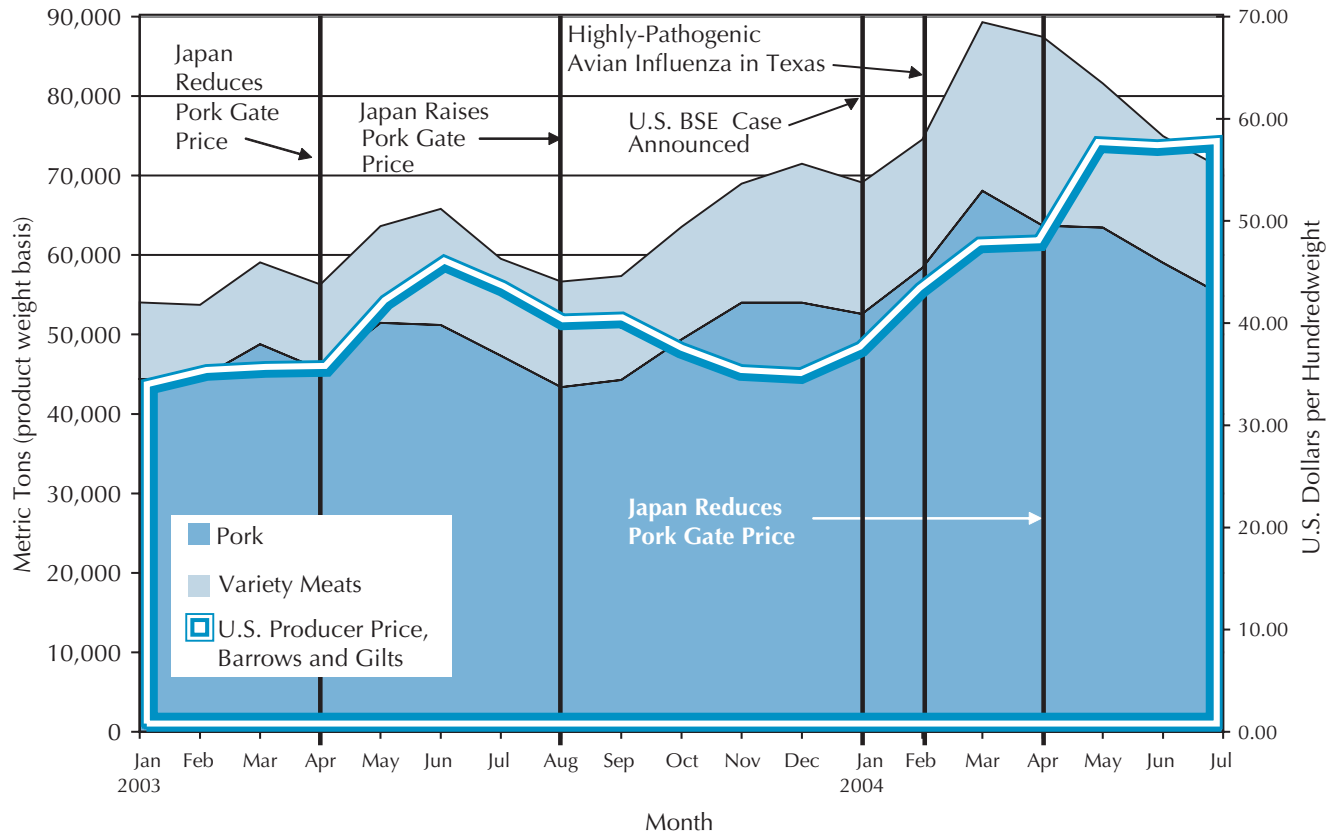


FIGURE 1. U.S. PORK AND PORK VARIETY MEAT EXPORTS AND U.S. PRODUCER PRICES, JANUARY 2003 – JULY 2004



FIGURE 2. SHARE OF U.S. PORK EXPORTS

Strong U.S. Pork Exports in 2004
Continued from page 9

from 22,990 metric tons in February to 16,290 metric tons in March. Bans on poultry meat remain in place for some Texas counties and for several U.S. states where low pathogenic AI has occurred.

Higher pork exports to Mexico can also be attributed to the trade liberalization accomplished under NAFTA. Despite periodic border issues and Mexican pork producers' efforts to block imports, Mexico is beginning to show its full import potential for U.S. pork. The Mexican peso's steady decline against the U.S. dollar makes U.S. pork relatively more expensive in Mexico, but a recovering economy in 2004 is helping offset some of the currency exchange effects.

OTHER MARKETS, OTHER FACTORS

Despite BSE and AI problems of its own, Canadian demand for U.S. pork

has remained strong. As the third-largest market for U.S. pork and the second-largest market for U.S. pork variety meats, Canada imported 34.8 percent more pork and 27.6 percent more pork variety meats than during January–July 2003. This demand tends to fill shortfalls of specific cuts. A weaker U.S. dollar has helped make U.S. pork more competitive in Canada and elsewhere.

Other factors are policy based. In Russia, for example, the tariff-rate quota established in mid-2003 is the primary driver behind the 146.9 percent increase in imports of U.S. pork during January–July 2004. After exporting 14,080 metric tons of pork to Russia in 2002 and 5,460 metric tons in 2003, the United States received a 42,200 metric ton quota for 2004. Through July, the United States had shipped 8,180 metric tons of pork to Russia. Another example is Taiwan, where U.S. pork and variety meat exports have increased sharply in re-

sponse to higher prices because of disease in the domestic pig herd and greater market access under gradual WTO liberalization. Given that per capita beef consumption is one-tenth that of pork in Taiwan, pork imports are more dependent on domestic prices than on demand for pork as a substitute meat.

As shown in Figure 1, pork exports were falling off by May, and producer prices remained high into July. These trends are representative of recent annual movements in U.S. pork exports, which have tended to decline in early summer, and of U.S. producer prices, which normally peak in early summer and decline in the fall. By September, the producer price declined to \$54.30/cwt, down from \$57.50/cwt in July. However, both levels are significantly higher than last year, as good demand, prices, and supply are making 2004 a good year for pork exports. ♦

Agriculture on Record Pace
Continued from page 7

ket hog inventories for 2004 were slightly above last year's levels.

Farrowing intentions over the last half of 2004 were slightly higher than last year's levels as well.

RECORD PACE IN CASH RECEIPTS

Cash receipts data (currently available through the month of June) show that Iowa agricultural sales have been at a record pace over the first six months of the year. Figure 4 shows cash receipts for crops, livestock, and in total for Iowa for this year, the previous year, and an average of the past 10 years. Thus far, current receipts are \$730 million ahead of last year's figure and roughly \$1.25 billion ahead of the average. The surge in cash receipts comes from both crops and livestock. Only in 1996 and 1997 have crop cash receipts been higher than in 2004. The livestock cash receipts have never been higher at this point in the year.

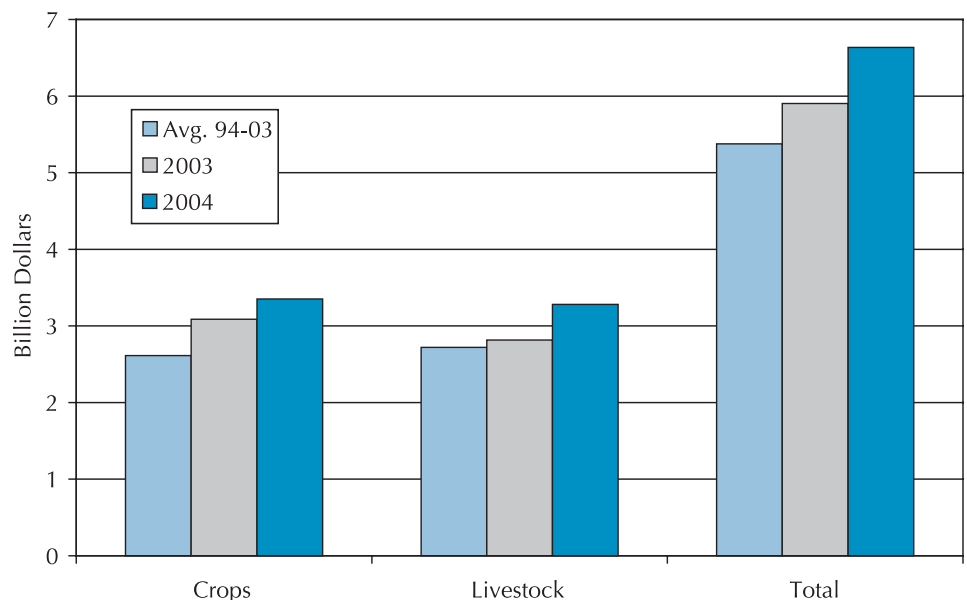


FIGURE 4. CASH RECEIPTS (THROUGH JUNE OF THE YEAR) FOR IOWA PRODUCERS

Iowa agriculture in 2004 is aiming at the record books. Corn yields and production are the highest they have ever been. Livestock prices remain strong. Cash receipts from

both segments of agriculture are high, propelling total cash receipts \$1.25 billion above usual for this time of year. ♦

*Pharmaceuticals and Industrial
Products in Crops*
Continued from page 5

proteins are produced by bacteria, yeast, or mammalian cell lines in closed-vessel fermentation facilities. While they are costly up front, can take several years to build and bring online, and have limited capacity, these methods enjoy the advantage of being familiar to the pharmaceutical industry and they are constantly being improved by new R&D and learning-by-doing. Furthermore, crops are not the only “alternative” platform attempting to enter the market. Biomanufacturing based on other host organisms, including transgenic livestock, algae, and even insect larvae, are being rapidly researched and developed.

Agriculture’s direct contribution to this emerging industry, however, may be limited. While PMPs or PMIPs are highly valued, they often require only a small amount of land to satisfy demand. A recent report by *bio-era* (a research firm in Cambridge, MA) concludes that, in the next 10 years, an optimistic scenario would be perhaps 25,000 acres, worldwide, devoted to crop biomanufacturing. Even under this rosy scenario, it is apparent that biomanufacturing is not likely to affect many large-scale farming operations.

Furthermore, in an effort to comply with the expected stringent regulation, companies developing these crops are likely to maintain a tight control on the entire production cycle of the products, acquiring land or farm

services under contract. And the implicit costs of regulation may induce crop biomanufacturing to locate away from the traditional areas of agricultural production, possibly outsourcing overseas. That is, it is precisely because they have a strong comparative advantage in food and feed production that locations such as Iowa may have a competitive disadvantage in growing PMPs and PMIPs. Ultimately, the returns to agriculture will be for use of the land and for services provided in the growing of the crop, a relatively small contribution to the long process of producing and delivering PMPs and PMIPs to end users.

PROSPECTS AND LIMITATIONS

Whereas the prospects of developing crops genetically engineered to produce pharmaceuticals and industrial products is exciting, there are four major factors that may limit the potential of crop biomanufacturing in the near future. First, both scientifically based risks and perceived risks to the food supply and the environment will drive up costs of regulatory compliance and containment. Considerable fixed-cost investments in land, equipment, and professional expertise will be required to enter the business. Also, the technology’s owners will likely maintain an effective control on the production of such crops in a tightly vertically integrated structure to ensure highly contained growing operations.

Second, the scale of production—while potentially large from the perspective of the biotech industry—is

likely to remain quite small by agriculture’s standards. Third, competition from other biomanufacturing platforms will continue to be fierce, as innovation and development of capacity proceeds on all fronts at a rapid pace. Containment risks will always remain much less of an issue for in-vessel fermentation systems than for agriculture, particularly when food crops are involved. Fourth, competition and industrial structure within the crop biomanufacturing sector may keep margins low. Contract structure for the farm-level production stage will likely entail limited opportunities for primary contract growers to capture the value.

It is of course possible that newer biomanufacturing crops or technologies may prove to be exceptions to any of these four factors. For example, high-volume, high-acreage products, such as specialized bio-energy feedstocks or “functional” nutritional ingredients, that require little or no segregation from the food supply may emerge. With such products, of course, major agricultural producing regions will soon compete globally, just as they do in commodity markets today. ♦

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Recent CARD Publications

WORKING PAPERS

Carriquiry, Miguel. Guaranteed Tender Beef: Opportunities and Challenges for a Differentiated Agricultural Product. September 2004. 04-WP 371.

Carriquiry, Miguel, and Bruce A. Babcock. Reputation, Quality Observability, and the Choice of Quality Assurance Systems. September 2004. 04-WP 373.

Elobeid, Amani, and John C. Beghin.

Multilateral Trade and Agricultural

Policy Reforms in Sugar Markets. July 2004. 04-WP 356 (*Revised*).

Hennessy, David A. On Monoculture and the Structure of Crop Rotations. August 2004. 04-WP 369.

Hueth, Brent, Philippe Marcoul, Roger G. Ginder. Cooperative Formation and Financial Contracting in Agricultural Markets. October 2004. 03-WP 349 (*Revised*).

Jayasinghe, Sampath, and Rakhal Sarker. Effects of Regional Trade Agreements on Trade in Agrifood Products: Evidence from Gravity Modeling Using Disaggregated Data. September 2004. 04-WP 374.

Saak, Alexander E. On the Premium for Revenue Insurance under Joint Price and Yield Risk. July 2004. 04-WP 368.



van der Mensbrugghe, and John C. Beghin. Global Agricultural Liberalization: An In-Depth Assessment of What Is At Stake. September 2004. 04-WP 370.

STAFF REPORT

Fuller, Frank, John C. Beghin, Dinghuan Hu, and Scott Rozelle. China's Dairy Market: Consumer Demand Survey and Supply Characteristics. September 2004. 04-SR 99.

MATRIC BRIEFING PAPER

Clemens, Roxanne. Keeping Farmers on the Land: Adding Value in Agriculture in the Veneto Region of Italy. September 2004. 04-MBP 8.

10 Years of the Iowa Ag Review

In his introduction of the inaugural issue of the *Iowa Ag Review* in December 1994, former editor John Kruse listed the quarterly publication's goals:

- to communicate the findings of analyses, completed or underway, of proposed farm policy changes;
- to provide objective discussion of the issues and analytical results; and
- to summarize the current situation for Iowa agriculture and the potential impacts of international developments.

The *Iowa Ag Review* sprung from the creation of a new Iowa model in the Food and Agricultural Policy Research Institute (FAPRI) baseline analysis of commodities. As a result, the comprehensive analysis provided by FAPRI to farmers, agri-businesses, legislators, and other stakeholders in agriculture could be focused on the implications for Iowa. Naturally, researchers at FAPRI and CARD wanted a vehicle for sharing this information.

The inaugural issue of the *Iowa Ag Review* contained stories on the implications of the GATT agreement, the near-term outlook for the pork sector, implications of the 1995 farm bill, and how record yields were shaping up for Iowa and U.S. corn and soybeans.

Looking at the table of contents for this quarter's issue, some stories mirror those of 10 years ago. We are again looking at record yields in commodities and the effect on prices. We continue to explore the playing field for agriculture in the context of GATT's successor—the WTO. And we discuss the outlook for the pork sector in a year that saw tremendous growth in exports.

As we start our second decade of publication, we reaffirm the objectives given in the inaugural *Iowa Ag Review* to bring timely, objective analysis of the most challenging agricultural questions and policies of the quarter, year, and decade ahead. ♦

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