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Gains For Agriculture In the GATT Agreement

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After more than seven years of negotiations under the General Agreement on Tariffs and Trade (GATT) an agreement was reached and approved by both houses of Congress. This article examines what was accomplished in the process of negotiating the agreement and what benefits it offers the United States.

Contents of the Agreement

The original U.S. proposal suggested that all production and trade distorting subsidies in agriculture be ended by the turn of the century for all GATT members. Nations wanting to support their agricultural sectors could do so with transfer payments not tied to agricultural output. The U.S. proposal was based on the belief that free trade achieves the greatest economic efficiency, and thus maximizes the benefits from trade. Since U.S. farmers are efficient low-cost producers, they could compete in a global environment and gain from agricultural trade liberalization.

While some nations, such as Argentina, Australia, Brazil, and Canada, shared the objectives of the United States, many countries did not. Opposition to the United States' position came from the European Union (EU). The EU sought a GATT agreement that would leave countries free to set their domestic policies without considering the impacts on other nations. The EU also wanted to limit the degree to which import barriers would be reduced, and to set minimum export market shares and prices. Given such divergent objectives, it is not surprising that negotiators took years to find common ground.

In the final text both sides compromised. The cuts in agricultural subsidies of around 20 percent from the 1986-1988 base period are far less than the complete phase-out requested by the United States. The same is true for market access. The United States wanted a full liberalization, but in the end import barriers are converted to tariff equivalents and cut 36 percent with minimum access guarantees in some cases. Elimination of export subsidies was a major objective of the United States. While export subsidies are not ended, they are sharply reduced. Using a 1986-1990 base period, export subsidy expenditures are to be lowered by 36 percent and the volume of subsidized exports by 21 percent.

The European Union compromised as well. Domestic programs were included in the treaty and are reduced. The European Union agreed to convert import barriers to tariff equivalents which are to be cut. Export subsidies are offered by the EU on a wide range of farm goods and these must be scaled down. The original EU view of a managed world farm trade with specific minimum export shares and prices is not included. Nor can the EU adjust its tariff structures to escape its previous GATT commitment to import oilseeds and meals duty-free.

Benefits to the United States and Indiana

The GATT agreement and its process of negotiation are important to agriculture. One reason is that the expansion of world trade which has occurred since World War II and which contributed to world prosperity is furthered by the agreement. A failure to achieve an understanding in the present round of negotiations would have led to increased protection and trade wars. This would have harmed all nations and been especially harmful to export sectors like U.S. agriculture. The decline in U.S. agricultural exports in the early 1980s contributed to the financial stress experienced by U.S. agriculture at that time. The GATT agreement helps keep protectionist pressures at bay.

Another benefit from this agreement is that agriculture has been included. Previous rounds of GATT negotiations have generally excluded agriculture while greatly liberalizing non-agricultural trade. Agricultural commodities are now among the goods most restricted by trade barriers and manipulated by export subsidies.

Furthermore, the agreement recognizes the linkage between domestic farm policies and trade. Trade policies in agriculture flow from the type and level of farm support policies so that the costs of domestic farm programs are partly paid by foreign nations. In the current agreement, domestic farm policies are included in an effort to reduce the international costs of farm programs. While the cuts in subsidies are not large, a precedent is set.

In a sense the negotiations have already accomplished much as many nations have already undertaken farm policy reforms consistent with the agreement. In May 1992, the European Union adopted a farm policy reform in which the type and magnitude of changes reflected the influence of the GATT negotiations. Without the GATT round the EU would have adopted a much different set of farm policy changes. In 1985 and 1990, U.S. farm legislation moved in a direction consistent with the GATT negotiations. Given the changes introduced, the United States already meets most of the cuts required by the agreement. The Japanese began opening their market for agricultural goods and the GATT negotiations played a contributing role. In the late 1980s the Japanese began to liberalize imports of beef, orange juice, and many other agricultural goods. They have announced the beginning of liberalization for rice imports. South Korea also has said that it will begin to liberalize rice imports due to the GATT agreement.

The GATT negotiation process created pressure for reform and the final agreement affected the timing as politicians cited the GATT agreement as the cause of reform.

While the negotiations promoted policy reform, ratification of the final agreement is also important. Previous policy reforms can be undone. Ratification preserves the policy changes, since policy reversals would violate international commitments and be subject to trade sanctions. Ratification brings gains to U.S. and Indiana farmers.

My estimate of the gains for farmers in the United States are $784 million per year. The largest gains are in poultry ($369 million); eggs ($285 million); corn ($240 million); and hogs ($150 million). While not as large in magnitude, gains are also positive for wheat and soybeans, (Table 1).

My estimated gains to Indiana agriculture, after full implementation, are about $63 million per year (Table 1). These gains occur for most commodities produced in the state. For corn producers, revenue and government payments should rise almost $22 million, while soybeans earn $2.2 million more. Hog, poultry, and egg producers should see significant increases in producer revenues. Some losses might be experienced by cattle and milk producers as import restrictions are eased. The loss for cattle producers would be very small. A somewhat larger loss could result for milk producers (-1.3 percent) as Section 22 import restrictions for dairy products are relaxed. Whether that occurs depends on whether the Commodity Credit Corporation buys the additional imports as it has that authority. It should be noted that these estimates exclude the value of policy reforms already made which reflected an anticipated GATT agreement so that the gains are larger than those generated from the final agreement alone.

Table 1. Estimated Annual Gains and Losses to the United States and the State of Indiana due to the GATT Treaty for Selected Commodities.[1]

Commodity	United States	Indiana
	---- million dollars ----	
Corn	239.6	21.6
Wheat	40.6	0.6
Soybeans	24.0	2.2
Cattle	-56.0	-0.6
Hogs	149.7	11.2
Poultry	369.2	20.7
Eggs	284.6	11.4
Milk	-267.7	-4.0
Total	784.0	63.0

1 Changes in producer revenue, including changes in U.S. Government Payments

Conclusion

The GATT agreement required over seven years of negotiations to reach its final form. It is not the comprehensive liberalization of world trade originally sought by the United States. Yet world agricultural trade has become more liberalized and the agreement offers additional benefits. It provides a barrier against further increases in protectionism in world trade and will help expand world incomes. Agriculture is included in the agreement and domestic farm policies must be made subject to GATT rules. Governments will be less able to protect inefficient producers. Future rounds will not have to fight to put these two items on the agenda for further liberalization.

In addition, the GATT process has affected many of the farm policy reforms which have occurred since the round was launched in 1986 and these reforms have improved the trade outlook in agriculture. A ratified agreement locks these reforms in place. The agreement will also provide gains from reforms which still must be implemented to be consistent with the final agreement. For U.S. farmers these gains are estimated to be $784 million annually, and around $63 million for Indiana farmers.

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Impact of Risk and Other Factors on Grain Marketing Behavior

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Crop prices and crop yields are considered the most important sources of risk in farming among large-scale cornbelt cash grain farmers. New forms of crop insurance can be used to manage production risk and several marketing techniques including forward contracting, minimum price contracts, hedging, and options contracts are available to help manage price risk. The purpose of this article is to determine the use of these marketing techniques and to explore the factors, including attitudes toward price risk, which affect grain marketing behavior of large-scale farmers.

The study is based on data obtained through a survey of producers participating in the 1993 Purdue Top Farmer Crop Workshop. Nearly 150 attended the 1993 workshop representing nearly 100 farms in nine Midwestern states. Since there were multiple participants from several farms, the survey was directed toward the participants with primary marketing responsibility.

The average respondent was nearly 41 years of age, which is younger than the average farmer in the North Central region. Likewise, with nearly 3.3 years of post-high school education, the average respondent was more highly educated than the average farmer in the region. The respondents operated an average of 1834 acres, about four times larger the average in the region. Less than 30 percent of the operated acres were owned by the operators.

A total of 62 farms were represented in the study, and none of the farms received more than 67 percent of gross income from livestock. On average, corn and soybeans accounted for 75 percent of gross farm sales. All farms had gross farm sales in 1992 of more than $100,000 with about 39 percent over $500,000. The majority of the farm operations had debt/asset ratios of 20 to 39 percent.

Marketing Methods Used to Reduce Risk

The producers were asked to rate the importance of forward contracting, minimum price contracts, hedging, and options contracts as marketing responses to risk. This information is presented in Table 1. A scale of one to five was used, with one being not important and five being very important. Forward contracting was viewed as the most important marketing response to risk with an average score of 4.23 and 74 percent of the producers indicated this method was used on their farms. Hedging with futures was second, ranked at 3.69 with about 55 percent of respondents using the method. Options contracts and minimum price contracts followed with scores of 3.08 and 2.93, respectively, and with 36 and 19 percent of respondents indicating their use.

Even with the decreasing emphasis on government support programs, these large-scale producers continue to consider participation in government programs important to their farm operations. Participation in government farm programs as a management response to risk scored 3.92 on the same five-point scale, and 71 percent of these producers participated in the government farm program in 1993.

The producers were also asked to indicate the quantity of their 1992 and 1993 corn and soybeans which had been marketed by July 15 of each year. The percentages of producers using each marketing method and total quantities marketed by the 62 producers are presented in Table 2. Forward contracting was the most common marketing method and was used by about two-thirds of the producers, followed in use by hedging, options contracts, and finally minimum price contracts. Use of these marketing methods in 1993 was substantially lower than the use indicated in Table 1.

The percentage of producers using forward contracting decreased for corn while use increased for

Table 1. Percentage Distribution of Importance and Use of Marketing Responses to Risk.

Marketing Response	Not Important 1	2	3	4	Very Important 5	Average Score	Percent Using
Forward contracting	——	——	13.3	50.0	36.7	4.23	74.2
Hedging with futures	5.2	13.8	17.2	34.5	29.3	3.69	54.8
Minimum price contracts	10.3	25.9	29.3	29.3	5.2	2.93	19.4
Commodity options	6.7	28.3	26.7	26.7	11.7	3.08	35.5
Gov't program participation	3.3	5.0	20.0	40.0	31.7	3.92	71.0

Table 2. Percentage of Workshop Participants Using Selected Marketing Methods and Quantities Marketed[2] by Marketing Methods as of July 15 for Corn and Soybeans.

Marketing Method		Corn 1992	Corn 1993	Soybeans 1992	Soybeans 1993
Forward	%	67.2	55.7	50.8	68.9
Contracting	bu.	1047.5	960.0	294.8	317.7
Hedging with	%	18.0	24.6	13.1	21.3
futures	bu.	480.0	348.0	109.0	192.0
Minimum price	%	3.2	4.9	6.6	4.9
contracts	bu.	130.0	85.0	57.5	46.0
Commodity	%	13.1	13.1	8.2	9.8
options	bu.	150.0	145.0	50.0	61.5

2 Quantities are in thousands of bushels

soybeans from 1992 and 1993, probably reflecting the adverse weather in the western cornbelt in 1993 and producers' perceptions of the markets. The percentages of producers hedging corn and soybeans increased from 1992 to 1993, but other changes in the use of marketing techniques were not consistent across crops. Notice that the bushels of corn marketed decreased from 1992 to 1993 for each of the four methods. With the exception of minimum price contracts, the opposite occurred for soybeans.

Attitudes Toward Risk

The producers were asked to describe their risk attitudes in three areas. First, producers were asked to indicate their agreement or disagreement with the following statement: "I am more concerned about a large loss in my farm operation than missing a substantial gain." Almost half, 48.3 percent agreed or strongly agreed, 30.0 percent were neutral, 21.7 percent disagreed, and no respondents strongly disagreed.

For the second area, producers indicated the percentage of expected yields they would give up to have stable yields from year to year with current technology. In essence, this is the premium they would pay for stable yields, thus, we call them "risk premiums." They are shown in Table 3. The majority of producers would give up 10 percent or less yield. However, 19 percent of corn producers and 15 percent of soybean producers were willing to give up 20 percent or more of current yields for year to year stability.

In the third risk attitude area producers indicated how their 1992 net farm income compared to the average of the previous five years. Previous studies have shown that individuals are more likely to take a risky action following a loss. Nearly 63 percent had 1992 net farm incomes which were higher or much higher, while about 26 percent had incomes that were about the same as the previous five years. About 11 percent indicated 1992 net income was below average. As the percentage of expected production forward marketed increases, price risk would decrease to a point, but yield risk would continue to increase. Thus, higher percentages of forward marketing would be more risky and the producers indicating below average net income would, on average, forward market a higher percentage of expected production than the producers indicating above average net income. As it turned out, the respondents indicating a below average net income in 1992 forward marketed a significantly higher percentage of expected production by July 15.

1993 versus Marketing Plan Behavior

This study also explored marketing behavior in 1993 and compared it with their typical long-run marketing plan. We call the producers' long-run marketing plan their "marketing plan behavior." The 1993 marketing behavior is defined as the percentage of expected 1993 production that was marketed by July 15. The quantities marketed using the four methods in Table 1 were summed for each producer and then divided by expected production to determine the percent marketed by July 15. The average percentage, across producers, of expected 1993 production marketed by July 15 was 23.0 percent for corn and 36.8 percent for soybeans.

Marketing plan behavior is defined as the maximum percentage of expected production the producers would typically market by August 1. Designed to capture farmers' long-run marketing behavior, producers were asked to indicate the maximum percentage of expected production they would typically price by August 1. The average response was 58.6 percent for corn and 59.2 percent for soybeans. However, the range of the responses was 10 to 100 percent for both corn and soybeans.

Other Factors That Affect Marketing Behavior

A total of eleven factors were tested to determine their affects upon both 1993 marketing behavior and marketing plan behavior. The statistically significant factors are presented in Table 4. A negative sign indicates a negative relationship between the factor and the marketing behavior. A positive sign indicates a positive relationship. The factors that were not statistically significant in any of the tests include: percentage of income from livestock, gross income, risk premium, and yield variability.

Table 3. Percent of Producers and Their Yield Risk Premiums for Corn and Soybeans.

Risk Premium	corn	Soybeans
0%	18.6	18.3
up to 2%	10.2	16.7
up to 5%	23.7	25.0
up to 10%	28.8	25.0
up to 20%	15.3	11.7
up to 30%	3.4	3.3

Two factors were found to significantly affect marketing plan behavior for each corn and soybeans. One measurement of risk attitudes—attitude toward loss—significantly affected the marketing plan behavior of both corn and soybeans. Producers more concerned with a loss would typically market more by August 1.

Five factors significantly influenced the 1993 marketing behavior for corn while three factors influence the 1993 marketing behavior for soybeans. The 1993 marketing behavior for corn was positively affected by years of education. The producers with more education marketed a higher percentage of expected 1993 production by July 15. In contrast, 1993 corn marketing was negatively affected by the age of the producer as younger producers marketed higher percentages of expected production.

The 1993 marketing behavior for both corn and soybeans was positively affected by the use of options or minimum price contracts. Supposedly, the producers using these techniques have the potential for price enhancement, but have eliminated the implications of downward price movements. Conversely, the 1993 decisions were negatively effected by the change in net income from the previous five years. Those farmers reporting lower than average net incomes in 1992 marketed higher percentages of expected 1993 production by July 15. As stated earlier, marketing higher percentages of expected production is more risky when taking yield risk into consideration. This supports the findings that farmers are willing to take risky actions after losses.

Finally, due to the adverse weather conditions in the western cornbelt in 1993, producers in that region marketed lower percentages of their expected 1993 production.

Summary and Conclusions

Marketing methods for the 1992 and 1993 crops were obtained from a survey of large scale farmers. The large-scale farmers in this study do forward market a significant portion of their corn and soybean crops. Forward contracting was considered the most important of the four marketing responses to risk. In addition, forward contracting was the most common marketing method, being used by nearly three-quarters of the producers. Hedging and options were used by about 55 and 36 percent of the producers, respectively. On average, producers priced 23 and 37 percent of their expected 1993 corn and soybean production by July 15, 1993. The large-scale producers in this study continue to consider government program participation an important management response to risk and nearly 71 percent participated in the 1993 government feed grains program.

Two factors had significant influence on marketing plan behavior for each corn and soybeans. Five factors significantly influenced 1993 marketing behavior for corn while three factors significantly influenced 1993 marketing behavior for soybeans. It was found that risk attitudes had a significant impact on marketing behavior. The attitude toward loss affected marketing plan behavior. This implies that those farmers more concerned about a large loss than missing a substantial gain will typically market a higher percentage of expected production by August 1. The change in net income from the average of the previous five years affected 1993 marketing behavior, indicating that producers are more willing to take risky actions after losses. The producers using options or minimum price contracts marketed a significantly higher percentage of expected 1993 production by July 15, implying these marketing techniques reduce the risk associated with some of the other techniques. Finally, as a result of their location or price expectations, those farms located west of the Mississippi river marketed significantly less of their expected 1993 production by July 15.

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Table 4. Significant factors affecting 1993 marketing behavior and marketing plan Marketing plan behavior for corn was also affected by the expected.

Significant Factors	
Corn	
Marketing Plan	**1993 Marketing**
(Maximum amount marketed by Aug. 1)	**(Amount marketed by July 15, 1993)**
attitude toward loss (+)	age (-)
expected December futures (-)	education (+)
	use of options/min. price contract (+)
	change in net income (-)
	western cornbelt (-)
Soybeans	
Marketing Plan	**1993 Marketing**
(Maximum amount marketed by Aug. 1)	**(Amount marketed by July 15, 1993)**
attitude toward loss (+)	use of options/min. price contract (+)
use of options/min.price contract (+)	change in net income (-)
	western cornbelt (-)

How Export Subsidies Affect Farmers and Others!

Philip L. Paarlberg, Associate Professor

In a recent Purdue survey, a substantial number of Indiana farmers responded that they did not quite know what to think about export subsidies*. That is not surprising as export subsidies come in many forms and produce diverse impacts on U.S. agriculture depending on the type of program. Over the past decade export subsidies have been extensively studied and this article summarizes what has been learned.

What Are Export Subsidies?

From the technical viewpoint of an economist almost any program of state or federal financial assistance that aids producers can be interpreted as an export subsidy. This includes extension and research expenditures, government support for improvements in transportation, commodity programs, food aid, and direct payments for exporting. Actually, countries have agreed not to count as subsidies certain programs with limited impacts on trade and prices. These exemptions include research and extension programs, rural and structural development, and food aid. Indeed many of the recently completed trade negotiations focused on which programs to include and which to exclude. However, many grey areas remain to be resolved as the trade agreement is implemented.

What are the Impacts of Export Subsidies?

The impacts of a subsidy depend on the type of program and the interaction of the subsidized commodity with other commodities. The direction of the effects may be determined by the way the program is designed; so confusion by the public is understandable.

Several types of subsidies will be discussed including: cash subsidies on a commodity; a payment in-kind subsidy; targeted subsidies; and subsidizing either the raw commodity or the processed product from that commodity.

"Indiana farmers indicated considerable confusion over the effects of export subsidy programs on them."

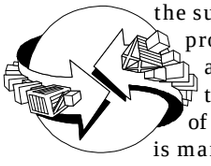
A cash subsidy paid on all U.S. exports of a commodity expands our exports by lowering prices paid by foreign buyers. The diversion of supplies from our domestic market to the export market makes domestic prices rise. The price differences are paid for by U.S. taxpayers. Producers in the United States and consumers overseas benefit from the program, while U.S. consumers and foreign producers are harmed.

When the export subsidy is paid in-kind and/or is targeted to selected buyers, as was the case in the early years of the Export Enhancement Program (EEP), the situation becomes much more complicated. In the case of a targeted subsidy some countries are prohibited from buying at the subsidized price.

This type of program is a form of price discrimination and aims to expand exports in three ways. First, prices for importers obtaining the subsidy are reduced which expands their total purchases. Second, rival suppliers are displaced in the contested market and are forced to redirect their exports to markets which they can less efficiently supply. Finally, lower world market prices force rival exporters to cut their total exports.

The success of a targeted program depends on two factors. The markets receiving a subsidy must not be able to redirect trade flows. This means that the targeted country can not buy at the subsidized price and then resell the goods to other countries at a profit. Such arbitrage undermines the program. Also the ability to effectively use targeted subsidies depends on whether a close substitute is offered by competing exporters. The most effective program is when the targeted market views the commodities as very similar to one another, but nations excluded from the program do not see the goods as very similar. These conditions however, are hard for most agricultural commodities to satisfy.

In-kind subsidies are those where the subsidy payment provides access to additional quantities. Since more of the commodity is marketed world prices fall. The question of who benefits is determined by where in the marketing channel the additional quantities are introduced. If the in-kind subsidy is given to farmers, prices may be lower but the farmer has more to sell. If the increased quantity sold by the farmer exceeds the price decrease, then the farmer's income is higher. Additionally, if a farmer participates in a commodity program that supports farm prices or income, like a target price, there is a clear income gain.



If the in-kind subsidy is given to an exporting firm, that firm benefits as it has more to sell. Farmers, in the absence of a commodity program, may or may not benefit

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** Martin, Marshall A., Bob F. Jones and Jean Rosscup Riepe. "The 1995 Farm Bills Preferences of Indiana Farmers," Purdue Agricultural Economics Report, August, 1994, pp 6-12.*

because domestic farm prices can rise or fall. World market prices fall with the added supply on the market, but the demand expansion can be large enough to raise domestic farm prices. But if the demand expansion is not large, domestic farm prices can fall and reduce farm income. The existence of a commodity program affects these results as they can insulate the farmer from any price decline. However, if domestic prices do not rise above the target price, then the government may save deficiency payments, but participating farmers will not see an income gain.

In recent years there has been interest in subsidizing value-added or processed commodities. Observers note that the share of U.S. agricultural exports that are processed products is lower than the share of processed goods in world trade. Raising U.S. processed agricultural products is seen as a way to stimulate employment and income. In this case the interaction between the bulk commodity as an input and the processed good as an output is critical.

The good receiving the subsidy benefits, whether it is the bulk commodity or the processed good. The critical issue is what happens to the non-subsidized good. A bulk commodity subsidy, like most current subsidies, raises domestic prices for the bulk commodity and lowers foreign prices. Because the bulk commodity is an input into the production of the processed good, domestic processors are harmed while foreign processors gain.

"Farmers benefit from these programs at the expense of taxpayers and consumers."

A subsidy on the processed commodity raises its domestic price and lowers its foreign price. This shifts processing from foreign markets to the domestic market. Demand for the bulk commodity as an input expands at home, but falls overseas. Depending on the relative strength of these shifts in demand, total demand for the bulk commodity can rise or fall. Thus, the bulk commodity's price can be higher or lower as a result of the subsidy on the processed good. Studies of commodity markets made so far suggest that, in general, the bulk commodity's price rises when the processed good is subsidized. However, the price increases obtained are very small.

Summary

Indiana farmers indicated considerable confusion over the effects of export subsidy programs on them. Because the operations of various U.S. export subsidy programs differ, and different types of programs have different impacts, such confusion among farmers is understandable. This article summarizes the impacts of generic subsidy programs and helps clarify some of the confusion. In general, farmers benefit from these programs at the expense of taxpayers and consumers. Economists tend to dislike export subsidies because there are more efficient methods of assisting farmers, such as direct payments. The recent trade negotiations have reduced, but not eliminated, the ability of nations to use agricultural export subsidies in the future.

Mandatory Catastrophic Crop Insurance!

George F. Patrick, Professor

There is a new wrinkle in crop insurance for 1995 crops. Farmers and landlords participating in USDA commodity programs, the Conservation Reserve Program, and certain Farmers Home Administration loans *will be required* to obtain a minimum level of crop insurance in 1995. The Federal Crop Insurance Act of 1994 provides for this minimum level of insurance coverage referred to as the catastrophic coverage level (CAT coverage). The administrative fee is $50 per crop per county with the maximum cost not to exceed $200 per producer per county, or $600 per producer if farms are in several counties.

CAT coverage provides for prevented plantings as well as crop losses. Yield coverage will be based on the Actual Production History Plan (APHP) of the Multiple Peril Crop Insurance (MPCI). Losses in excess of 50 percent of the APHP yield will be paid at 60 percent of the expected market price. Thus, CAT coverage is similar to the recent disaster assistance program levels. However, CAT coverage is an individual farm insurance coverage.

Farmers may obtain CAT coverage from their Farm Service Agency (formerly ASCS) or from private insurance agencies until March 15, 1995. Higher levels of coverage, referred to as "Additional Coverages," are available only through private insurance agents. Both the APHP and the Group Risk Plan (GRP) are available for most crops in 1995.

Farmers with historical yield information for 4 or more years can qualify for insurance yields based entirely on their past experience. All crops which contribute, or are expected to contribute, 10 percent or more of total expected crop receipts must be insured. Crops for which crop insurance has not been available will have coverage under the Non-Insured Assistance Program (NAP).

Additional information will be available through a Cooperative Education Service program on February 14, 1995. Contact your county Extension office for further information about the meeting.

How Accurate are USDA's Corn and Soybean Supply and Use Estimates?

Lee F. Schrader, Professor and Beth Brechbill, Research Assistant

Farmers often ask "Why do USDA estimates of crop supply and use often seem to favor lower prices? Others seem to believe that USDA's estimates are biased. These are concerns which can be answered. To do so, we have analyzed estimates published by USDA's World Agricultural Outlook Board (WAOB) covering the 11 years from the 1983/84 through the 1993/94 crop years for corn and soybeans.

WAOB estimates the supply and use of these crops each month at the time the National Agricultural Statistics Service (NASS) issues its crop reports. The cycle of 19 estimates begins in May, about planting time, and ends in November after the end of the crop year. For example, the first estimates of supply and use for the 1993 crop were issued in May of 1993 (when very little could be known about the crop) and the last was issued in November of 1994 (more than two months after the completion of the 1993/94 crop year). The crop year for corn and soybeans begins September 1 and ends August 31 of the following year.

Estimates analyzed include 19 estimates for each component of supply and use for each of the crops. While there are additional small revisions after the November report following the end of the crop year, we use that estimate as the final figure and measure deviations of the earlier estimates from the November estimate for analysis.

Measures of Accuracy

Two measures of the accuracy of these estimates are relevant; bias and overall accuracy. Bias measures whether, over a period of years, the over and underestimates cancel such that the average of the estimates is equal to the average actual values. Overall error measures how far the estimates miss the final number without regard to direction of the error.

Performance of Estimates

Generally, as you would expect, there is an improvement in the accuracy of the estimates as the season progresses. For example, the average error of the May estimate of soybean production is 171 million bushels and 26 million bushels for the January estimate. Accuracy of

Figure 1. Corn Production Estimates, Bias and Average Error 83/84-93/94.

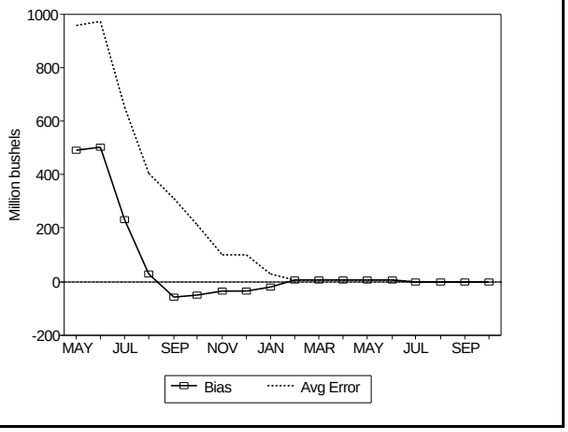
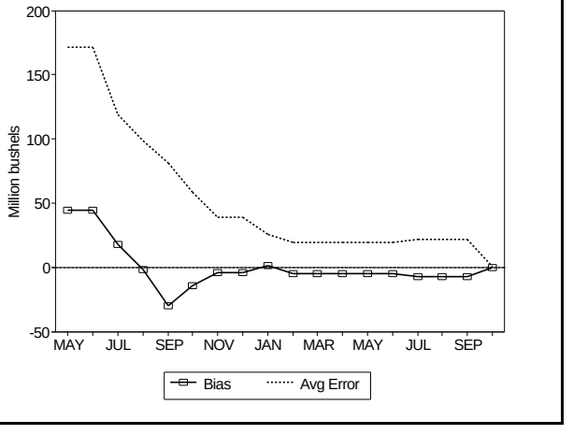


Figure 2. Soybean Production Estimates, Bias and Average Error 83/84-93/94.



the corn production estimate changes from an error of 958 million bushels for the May estimate to 29 million bushels for the January estimate, (Figures 1 and 2).

Production for both the corn and soybean crops tends to be overestimated in the May, June, and July estimates. This upward bias in production estimates in the early months is understandable. At that stage production estimates are based on projected yields given normal weather. The August soybean estimate showed a very small negative bias whereas the August corn estimate appears to have a small positive bias. Subsequent estimates for both corn and soybeans tended to be on the low side or very near the final figure, (Figures 1 and 2). Estimates of total use tended to follow a pattern similar to that of the production estimates.

We looked at each category of use and carryover and make some of the following observations. Soybeans used for crushing tended to be underestimated whereas exports have some tendency to be overestimated. Overall accuracy of the crushing estimates appears to be somewhat better than for export estimates.

There appears to be a small positive bias in estimates of total use of corn. This is because there has been a tendency to overestimate corn used for feed and for export, but a negative bias for estimated food and industrial uses of corn.

Ending stocks are regarded as being closely related to price. During the period examined, soybean ending stocks had a bias to be overestimated by a small amount whereas corn ending stocks were biased toward overestimation in the early months, but tended to show a negative bias later in the season. With the exception of the earliest months in the estimate cycle, there was a tendency to underestimate corn ending stocks from 20 to 75 million bushels, (Figures 3 and 4).

Errors of soybean ending stocks estimates ranged from 88 million bushels in May to 26 million bushels for the August estimate at the end of the crop year. Average corn stock errors ranged from 870 million bushels in May to 55 million bushels by the August estimate.

Figure 3. Corn End Stock Estimates, Bias and Average Error 83/84-93/94.

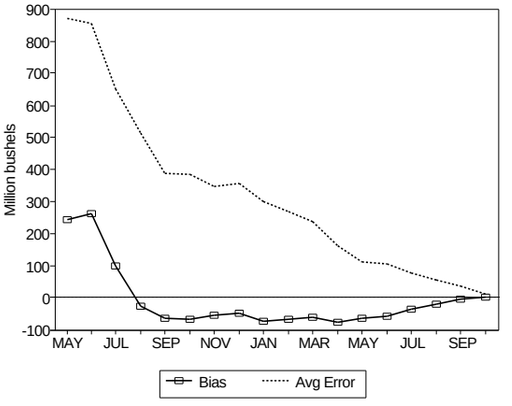
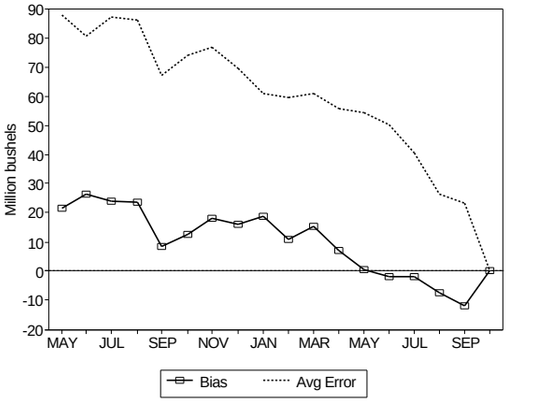


Figure 4. Soybean End Stock Estimates, Bias and Average Error 83/84-93/94.



Little Price Bias

WAOB also provides estimates of season average price. Their price estimates are published as a range and we have, somewhat unfairly, used the mid point of the range for analysis. There is some evidence of a low bias in early season price estimates using this criteria (Figure 5 and 6). Errors decrease as the estimate cycle proceeds reflecting, at least in part, that a shorter period remains unknown.

You will want to note how inaccurate price predictions can be at planting time. The average error of soybean prices was 61 cents per bushel in May. The May corn price

estimate was, on average, off by 33 cents over those years. Price prediction errors remained relatively large even at harvest time. In October as an example they were 48 cents for soybeans and 16 cents for corn.

Comment

The reader must recognize that the results of this analysis depend to some degree on the years chosen. The years 1983, 1988 and 1993 were unusual crop years with major weather problems during the growing season. Accuracy of the estimates does increase as the season progresses. However, the early estimates are subject to large errors and this fact must be recognized by farmers and others who use this information. These errors are likely to be highly related to the uncertainty of the growing season. None the less, price forecasts made before harvest should be taken with a grain of salt.

Price estimates appear to be on the low side for both crops in the early estimates but the biases, even in those months, are *not* statistically significant. Soybean price estimates were on the high side for August through December. Corn price estimates were high for all months except for May and June prior to harvest. Recall that the price estimates are issued as a range, not as a point estimate as used here. Price range estimates are often correct in the sense that the range covers the actual value.

Do these estimates favor lower prices and thus the buyer of agricultural products? Early estimates of production and ending stocks do appear to be biased on the high side which is consistent with the early price estimates being on the low side. However, by September, both corn and soybean production tend to be underestimated which one would expect to favor producer prices. Ending stocks of corn tend to be underestimated, a plus for price, whereas soybean ending stocks estimates have been on the high side. In both cases the bias, even in the early months, is *not* statistically significantly different from zero.

Our analysis indicates that USDA estimates of supply, use, and price are *not* biased toward lower prices. The very early estimates must be recognized as subject to large errors.

The availability of WAOB estimates that are generally in line with estimates of other analysts serve to level the playing field for farmers and small buyers who could not afford to do comparable analyses on their own. The advantage of large traders and large grain users would probably be greater without the WAOB analysis.

Figure 5. Corn Price Estimates, Bias and Average Error 83/84-93/94.

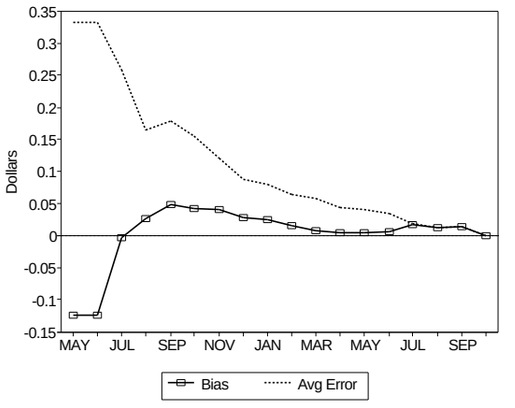
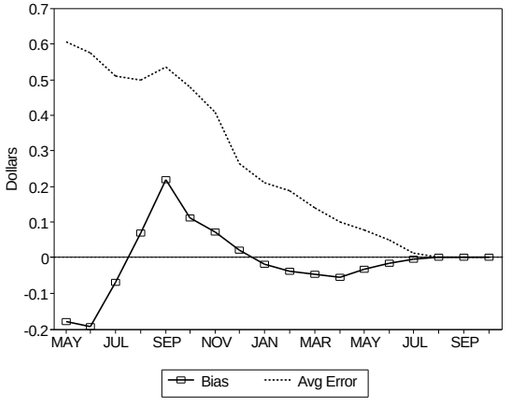


Figure 6. Soybean Price Estimates, Bias and Average Error 83/84-93/94.



1995 Purdue Ag Forum Program

You are cordially invited to the 1995 Purdue Ag Forum, January 16-20, 1995. The program will include five days of informative sessions Here we highlight the Agricultural Economics portion of the program. A registration fee of $10 per person per day will be charged to cover the costs of refreshments and handouts. There is an additional registration fee for the *Positioning Your Pork Operation for the 21st Century* workshop. Registration materials are available at county Extension offices.

Positioning Your Pork Operation for the 21st Century

Wednesday, January 18
Stewart Center
9 a.m. to 4 p.m.

Why is the pork industry changing so rapidly? Do large production operations have lower costs? Will the industry become integrated? Will independent producers have market access? How can midwest producers better ensure their continued success?

This workshop addresses these and other concerns. It is designed to enable existing producers and allied industry managers to explore alternative ways to achieve the latest technologies, to gain advantages in scale of production, and greater coordination in the marketing system.

Participants will have the opportunity to better understand the changes occurring in the pork industry, to examine the costs and returns for implementing various profit-increasing technologies, and to explore how strategic changes could help position their firms for long-term competitiveness. Management strategies related to herd health, genetics, nutrition, building and equipment design, waste handling, marketing and finance will be applied in a systems approach to pork production.

The workshop will feature a number of speakers who will provide background information on current technologies, the potential economic returns, and ways to implement these technologies.

Improving Indiana's long-term position in the pork industry is the goal of the workshop. Attendance may very well help your operation to become, "Positioned for the 21st Century."

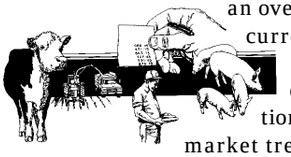
Preregistration through Purdue's Conference Division is requested. (Check with your County Extension office.) The registration fee for this workshop is $25.

Ag Marketing, Policy, and Farm Management

Thursday, January 19
Stewart Center
9 a.m. to 4 p.m.

9 to 10 a.m.: General Session

A panel of analysts will provide an overview of current commodity conditions and market trends. Come to hear their evaluation of market conditions for grain and livestock, as well as advice on pricing 1994 and 1995 farm commodities. Commodity panel members will include:



- Charles Lindy, University of Illinois radio station WILL, host
- Paul Bates, Bates Commodities
- Ray Dowell, R&R Commodities
- Bill Uhrig, Purdue University
- Dan Zwicker, Zwicker Consulting

10:15 to 11:45 a.m.: Four Concurrent Sessions From Which to Select:

A) How to Improve Your Grain Marketing Skills
In this session, you will learn about the role of basis and spreads in making a pricing decision. By concentrating on predictable market factors you can determine the best time to price your grain, how much to price, and how to protect yourself in case of drought. Bill Uhrig, Extension Grain Marketing Specialist, and Dennis Alkire of Alkire Advisory Service will present the information and lead the discussion.

B) Is a Farm Board of Advisors for You?
Who understands your business well enough to counsel you on management decisions, expansion plans, bringing in the next generation, or other strategic decisions? Who could wind down your business efficiently if you became unable to operate it? Should you have a board of advisors? Who should be on it? How should they be paid? What information should you prepare and share? In this session, a panel will discuss issues associated with a board of advisors, and those attending will break into teams to consider opportunities and methods.

C) Managing Your Resources to Meet Environmental Guidelines
Complying with environmental rules is becoming more and more critical to the survival of Hoosier farmers. How can a farmer decide which rules have to be implemented now, which can wait, and which do not apply? This workshop will help you begin to answer those questions. In addition, there will be a discussion of ecosystem management or how your land-use decisions fit into the overall land use for your watershed, basin, or airshed.

D) Hog Production and Pricing Patterns
Hog prices are affected by cost of production, the hog cycle, the season, and demand. A historical evaluation of each of these issues will be presented, with implications for price levels and profits in the future. Included will be a discussion of how long prices and profits may remain low and the influence of the industry's changing structure on prices and cycles.

1:15 to 4 p.m.: Issues in the 1995 Farm Bill
The afternoon session will focus on the 1995 Farm Bill, which will be developed during the 104th Congress. Topics to be discussed by Purdue farm policy specialists include: farm policy issues as viewed by Indiana farmers; farm income support - sectoral equity vs. means testing; implications of capitalized government payments; guaranteed revenue proposals; '95 Conservation Reserve Program changes - fewer acres, more targeting?; and rural development options.

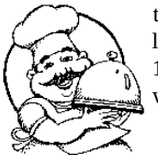
Agricultural Science Forecast

Friday, January 20
Stewart Center
9:30 a.m. to 11 a.m.

- Purdue Food Science Department Head Phil Nelson will showcase the future of food and what it means for the people who eat it and those who grow it.
- Purdue Agricultural Engineering Professor Michael Ladisch will talk about the challenge of taking technology from a Purdue research project that uses corn grits to replace toxic chemicals in industrial drying processes, and putting it into practice.
- Purdue Forestry and Natural Resources Associate Professor Paul Brown will explain how Purdue works to nurture a relative newcomer filling a niche in Indiana's agricultural industry - fish farming.
- Purdue Agricultural Engineering Professor Gaines Miles will discuss the variety of tools available in precision agricultural management systems and how they can help farmers avoid over- and under applying seeds, fertilizer and pesticides.

The Famous Purdue Ag Fish Fry

Purdue Armory
11:30 a.m.



The Purdue Ag Alumni Association kicks off a year-long celebration of its 100th anniversary with the 1995 Fish Fry.

In This Issue

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