Iowa Ag Review

A Publication from the Center for Agricultural and Rural Development, Department of Economics, College of Agriculture

March 1996 | Quarterly | Vol. 2, No. 2

What's Inside?

ISSN 1080-2193

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Possible Results of Freedom to Farm: A FAPRI Analysis of the Congressional Compromise on Agriculture

(William H. Meyers, 515/294-1184)
(Darnell B. Smith, 515/294-1184)
(Steven L. Elmore, 515/294-6175)

Late last year, U.S. House and Senate conferees reached agreement on language for the Agricultural Reconciliation Act of 1995 (ARA-95). President Clinton later vetoed this as part of his refusal to approve the Balanced Budget Act. The agricultural package, because of its similarities to the 1995 Roberts-Emerson proposal, was called "Freedom to Farm" by some. FAPRI evaluated the ARA-95 proposal soon after the Congressional compromise was reached.

The Farm Bill passed by the Senate on February 7, 1996, contains many of the same provisions as ARA-95 (see the article on Senate bill provisions, page 5, for details). Because of the overlap in provisions, the analysis of ARA-95 provides some background for what may happen under the Senate version if it is subsequently passed by the House and signed by the President. The assumptions were spelled out in the December issue of *Iowa Ag Review*; here are some highlights of this analysis.

The ARA-95 would establish seven-year fixed payment contracts with farmers and ranchers to be signed in 1996. Eligible payments would not be influenced by current crop planting, production, or prices. These payments would be allocated among farmers by making payment on 85 percent of a calculated base acreage times program yields. Estimated contract payments per unit of output are shown in Table 1. Assumptions were made on eligible contracting acres, so per unit payments would vary from these estimates according to actual crop base acres enrolled.

(Continued, page 6)

Recent CARD Publications

Staff Reports

95-SR 78. Livestock and the Environment: A National Pilot Project. *Livestock Series Report 4.* **Edward Osei, P.G. Lakshminarayan, Shannon Neibergs, Aziz Bouzaher,** and **S.R. Johnson**. December 1995.

Working Papers

95-WP 143. U.S. Food Expenditures Away from Home by Type of Meal. **Helen H. Jensen** and **Steven T. Yen**. December 1995.

95-WP 144. Determinants of Household Expenditures on Alcohol. **Steven T. Yen** and **Helen H. Jensen**. December 1995.

95-WP 145. Problems of Rational Land Use in Ukraine. **Viktor F. Saiko**. January 1996.

95-WP 146. An Allais Measure of Production Sector Waste Due to Quotas. **Lilyan E. Fulginiti** and **Richard K. Perrin**. January 1996.

95-WP 147. An Evaluation of Soil Test Information in Agricultural Decision Making. **Bruce A. Babcock, Alicia L. Carriquiry,** and **Hal S. Stern**. January 1996.

95-WP 148. Impacts of Agricultural Practices and Policies on Potential Nitrate Water Pollution in the Midwest and Northern Plains of the United States. **JunJie Wu, P.G. Lakshminarayan,** and **Bruce A. Babcock**. February 1996.

96-WP 149. Temporal and Spatial Evaluation of Soil Conservation Policies. **P.G. Lakshminarayan** and **Bruce A. Babcock**. February 1996.

96-WP 150. CRP Targeting for Wildlife Habitat: A New Indicator Using the 1992 National Resources Inventory. **P.G. Lakshminarayan**, **Bruce A. Babcock**, and **Robert Kellogg**. February 1996.

96-WP 151. Support Prices as Policy Tools in Dairy Industry: Issues in Theoretical Modeling. **V. Premakumar** and **Sudhir Chaudhary**. February 1996.

96-WP 152. HACCP as a Regulatory Innovation to Improve Food Safety in the Meat Industry. **Laurian J. Unnevehr** and **Helen H. Jensen**. February 1996.

Briefing Papers

96-BP 10. Pork Production in Iowa: *An Industry at the Crossroads*. **Dermot Hayes, Daniel Otto,** and **John H. Lawrence**. January 1996

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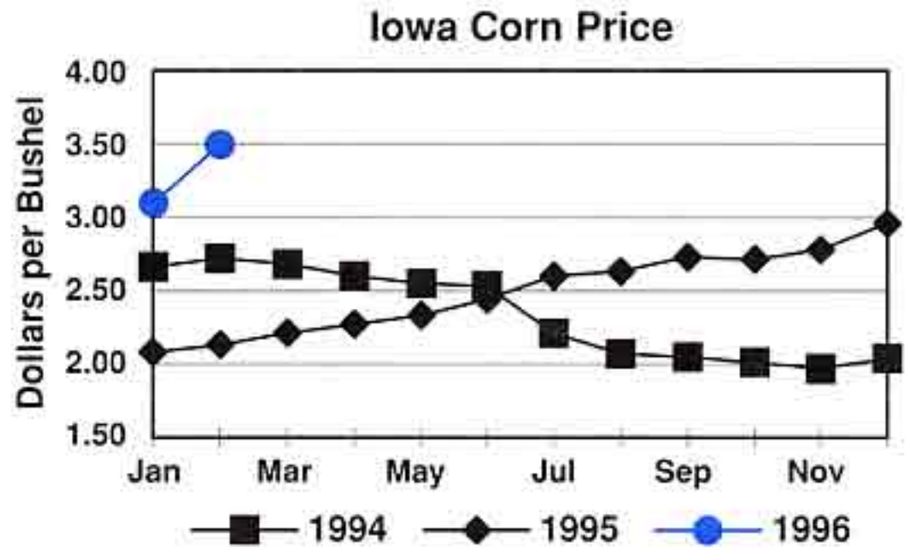
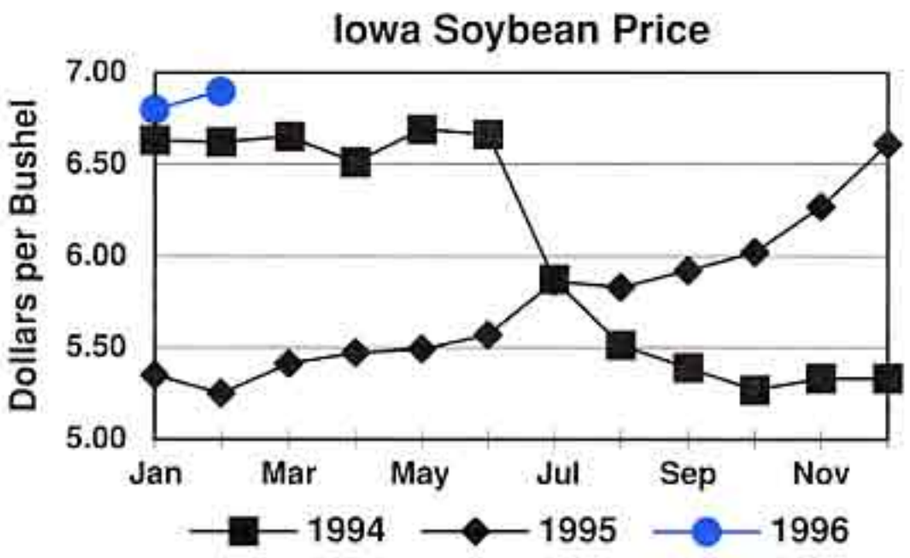
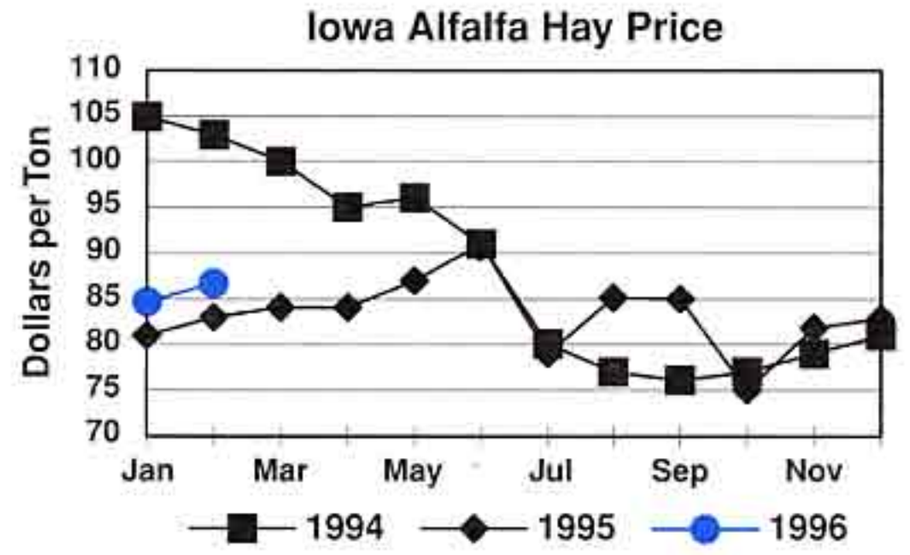
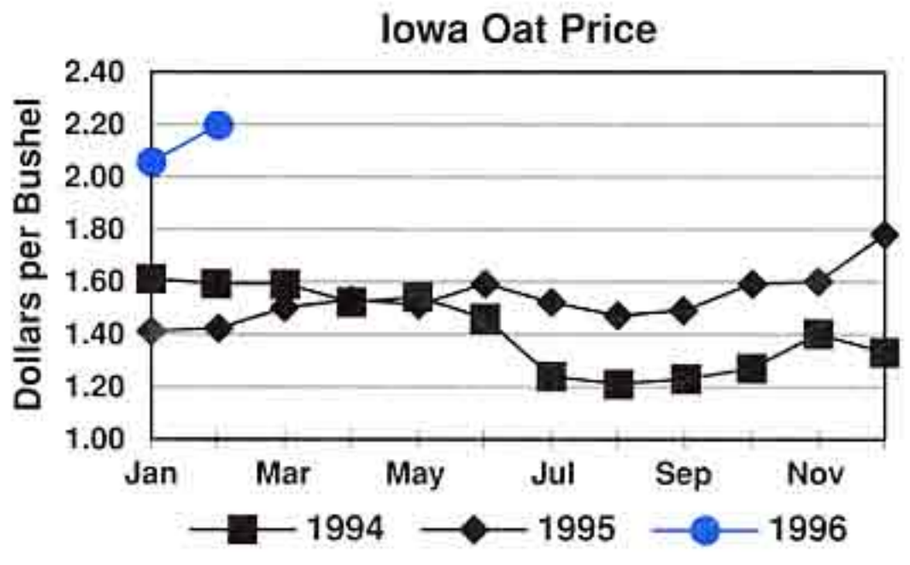








The Current Situation In Iowa

Stocks-to-Use Ratios and Grain Price Volatility

(Steven L. Elmore, 515/294-6175)
(Darnell B. Smith, 515/294-1184)

Speculation in the agricultural community early this year focused not only on a new farm bill but also on the abnormal world grain market conditions. Much of the market speculation centered on the fact that we currently have high prices driven by strong demand and low supply. This has caused stockholdings of grain to be drawn down. An indicator of the stock situation relative to consumption can be found in the stocks-to-use ratio. This indicator is useful for evaluating grain price movements and potential movements. This article briefly explores the market relationships that underlie this ratio. It also serves as an introduction for a new addition to the indicator section of this publication.

The "stocks" in the ratio are the world ending stocks and the "use" is the total consumption for the particular commodity. The total stocks portion of the ratio is normally described in three parts; "free," farmer-owned reserve (FOR), and commodity credit corporation (CCC) stockholdings. For simplicity we combine FOR and CCC in what we call government stocks. Free stock accumulation occurs when individuals believe prices will rise later in the year (speculative demand) or if they need additional carryover for feeding animals or for processing (transactions demand).

Government stock accumulation has stemmed from a variety of programs. Historically, the primary policy objectives of these programs were price enhancement and stabilization (e.g. when prices are thought to be low, market supplies are reduced by accumulating government stocks). Over time, government stockholdings increased dramatically, especially for wheat and corn, leading to changes in government stock programs. Figure 1 shows the growth in corn stocks from 1976 to 1986 and the impacts of changes in stocks programs from 1986 onward.

In the 1985 Farm Bill, loan rates for program crops were drastically reduced and linked to a moving average of past prices. The purpose and effect of these changes was to remove the accumulation of Commodity Credit Corporation (CCC) stocks as a major mechanism for price enhancement and stabilization. The farm program changes in 1990 included a reduction in the use of the Farmer Owned Reserve (FOR)

program for price stabilization and the expanded use of marketing loans to prevent forfeiture to the CCC of crops under loan. These policy reforms greatly expanded the dependence of the market on free stocks and diminished the role of government stocks.

The degree of U.S. government involvement in the stockholdings process over time can be seen in the share of world ending stocks of corn (Figure 2). This involvement has declined in the 1990s with a significant effect on the world stockholding situation. Note that world carry-over stocks of corn, soybeans, and wheat are at their lowest levels in recent history, with the largest changes attributable to the United States (Figure 3). The season average corn price for this marketing year will likely be the third highest on record. Thus, simple observation indicates an inverse relationship between corn stocks-to-use ratios and market price especially over the 1990s.

While it appears that when this ratio is low, market price tends to be high, this representation is too much of a simplification to provide insights about market fundamentals. For example, the primary consumptive uses of corn (livestock feed and industrial products) are somewhat inflexible to intra-year market price changes. In years when there are crop shortfalls and high prices, livestock producers and product makers cannot quickly or easily reduce their corn use. Exports may adjust more quickly, unless there is also a shortage in world markets as occurred for corn this year.

In these situations, consumption outpaces production and a drawdown in stockholdings occurs. Alternatively, in good crop years when it is thought to be more profitable—even with storage costs—to keep grain and wait for a higher price, free market stockholdings will accumulate.

Another aspect of prices and the stocks-to-use ratio deals with inter-year and intra-year price variability. High prices this year will induce an inter-year supply response that, in turn, may lead to increased production, stock accumulation, and lower prices. Some would argue that inter-year volatility is actually reduced with a increased market orientation because producers around the world would have greater production flexibility and could respond in a timely manner to market signals. While the direction of change is uncertain, it is clear that markets are more volatile when carry-over stocks are lower. Whatever else occurs, future price movements in these markets are very much dependent upon weather and realized

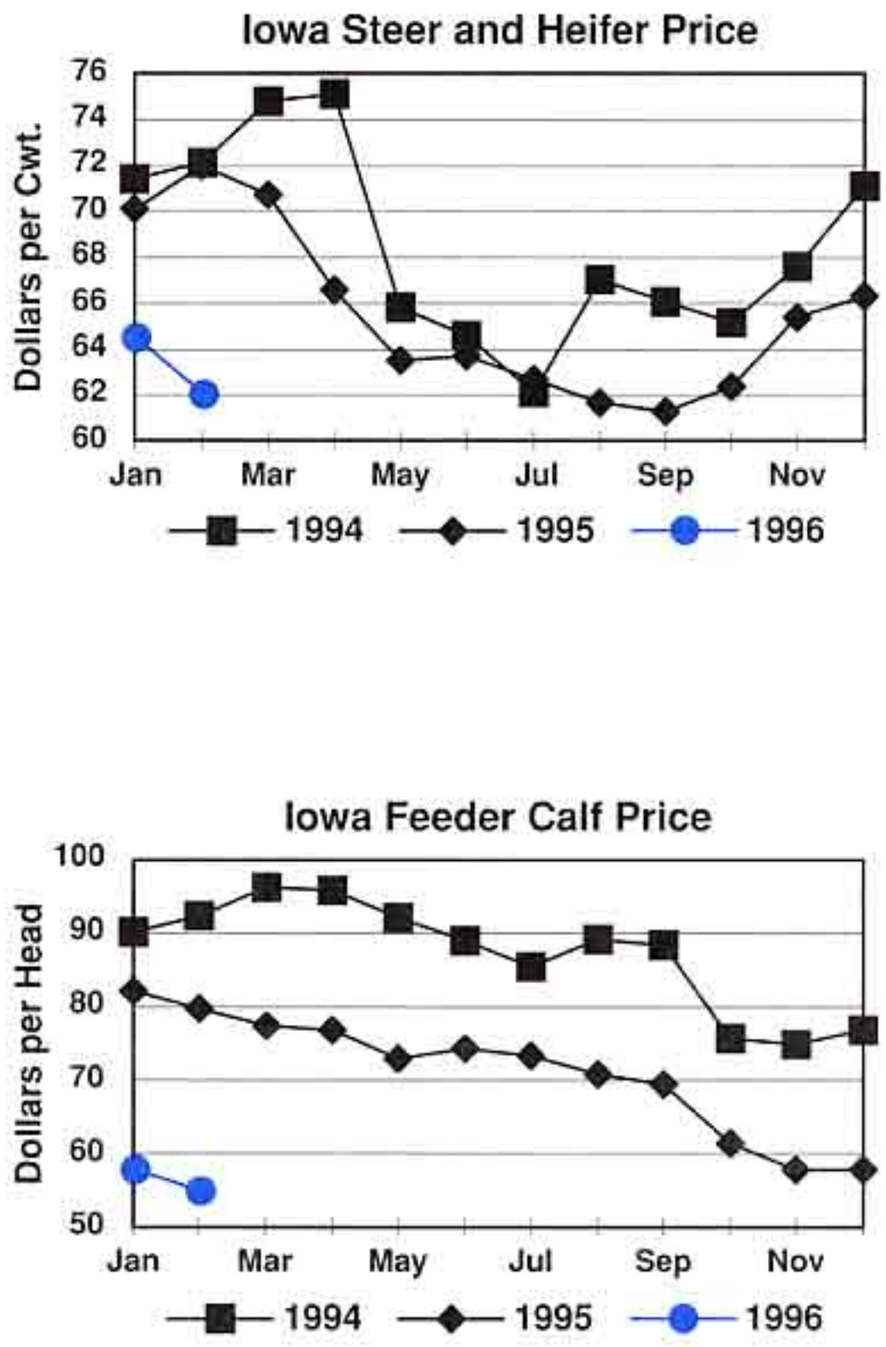


Figure 1: U.S. Ending Stocks of Corn and U.S. Price of Corn

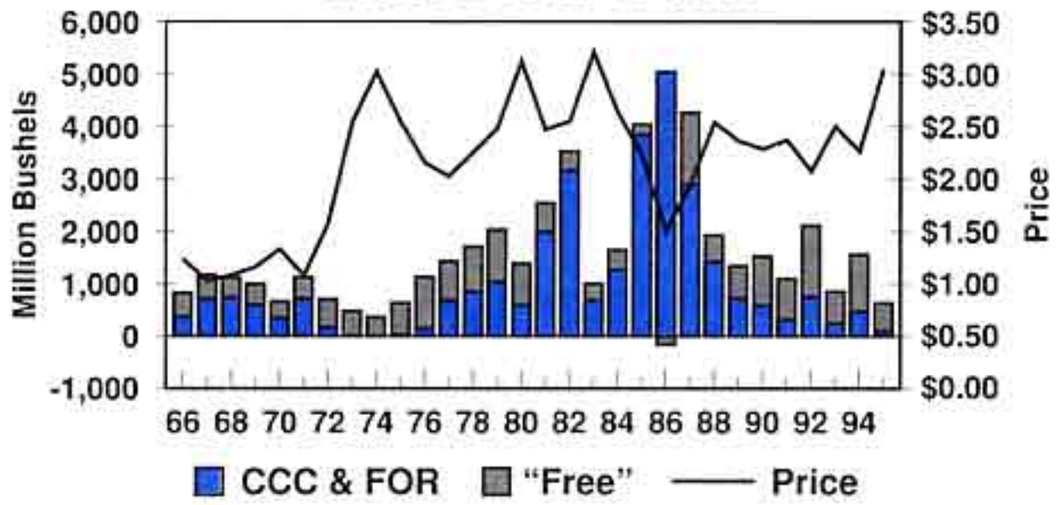


Figure 2: Ending Stocks of Corn, U.S. and Rest of the World

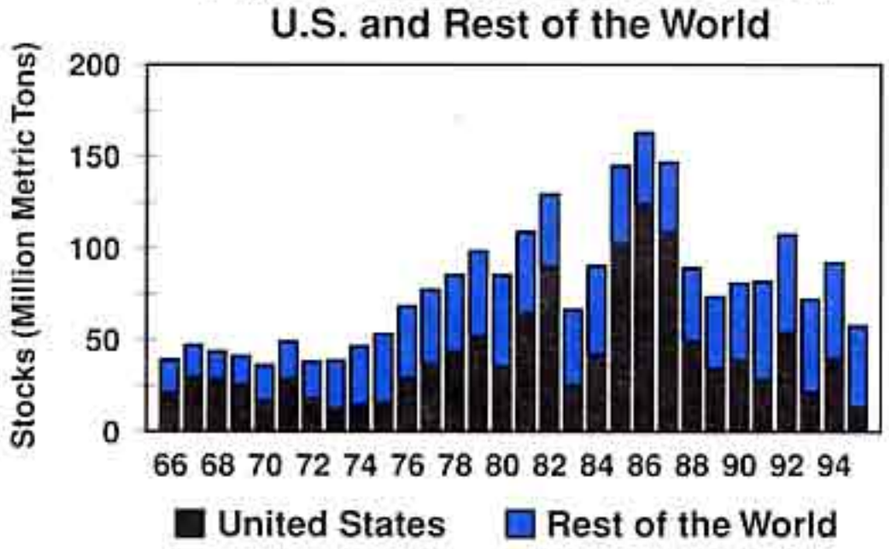
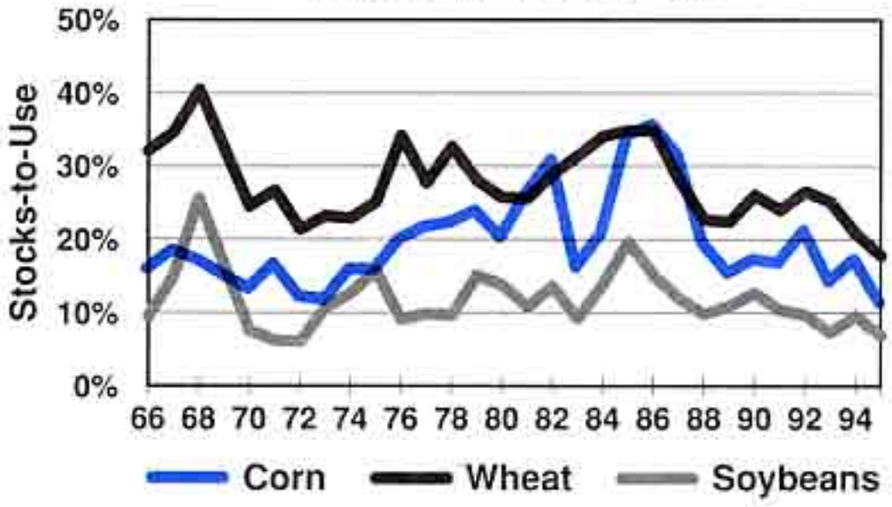


Figure 3: World Stocks-to-Use Ratios from 1966-1995



yields. Given the current historic lows in the stock-to-use ratio, prices will be very sensitive to weather developments throughout the growing season.

Because of the usefulness in monitoring changing market conditions, the *Iowa Ag Review* will include a world stocks-to-use table in the Agricultural Economic Indicators section that is published in each issue. The information comes from U.S. Department of Agriculture and provides the last two month's projections for the current crop year's stocks-to-use ratio. The table also provides the last crop year's stock-to-use ratio. We hope that this information will be of use to our readers.

Agricultural Economic Indicators

Iowa Cash Receipts

	1995	1994	1993
		(Million Dollars)	
Crop			
Jan - Nov Total	5,451	4,405	3,783
Livestock			
Jan - Nov Total	5,276	4,764	5,309

Average Farm Prices Received By Iowa Farmers

	Jan 1996	Dec 1995	Jan 1995
		($/Bushel)	
Corn	3.10	2.96	2.08
Soybeans	6.80	6.61	5.35
Oats	2.06	1.78	1.41
		($/Ton)	
Alfalfa	85.00	83.00	81.00
All Hay	83.00	81.00	78.00
		($/Cwt.)	
Steers & Heifers	64.50	66.30	70.10
Feeder Calves	57.90	58.00	82.10
Cows	30.20	31.60	39.10
Barrows & Gilts	42.90	44.60	38.20
Sows	32.70	32.80	26.00
Sheep	23.50	24.00	30.90
Lambs	73.00	73.70	63.70
		($/Lb.)	
Turkeys	0.41	0.40	0.37
		($/Dozen)	
Eggs	0.65	0.65	0.36
		($/Cwt.)	
All Milk	13.20	13.50	12.00

World Stocks-to-Use Ratios

	Crop Year		
	1995/96 February Projection	1995/96 January Projection	1994/95 February Estimate
		(Percent)	
Corn	10.5	10.8	17.1
Soybeans	14.4	14.7	19.9
Wheat	17.5	17.7	20.7

Senate 1996 Farm Bill Highlights

(William H. Meyers, 515/294-1184)
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(Steven L. Elmore, 515/294-6175)

The Agricultural Reform and Improvement Act of 1996 (ARIA-96), passed by the Senate on February 7, contained changes in provisions from ARA-95 (see front page article on ARA-95), plus numerous additions. Even though the Senate bill is not yet law, its provisions illustrate new paths that the Congressional leadership are taking for U.S. agricultural policy. Important modifications in programs or provisions are highlighted below. Note that the new term for transition payments is "flexibility contract payments."

Differences Between ARA-95 and AIRA-96

- Price Support Authority from the 1938 and 1949 bills was not eliminated, only suspended—ARA-95 had specified elimination. Since "permanent law" provisions would be left in place, Congress would be forced to reevaluate farm programs at the bill's expiration.

- The authorization for the Farmer-Owned Reserve (FOR) program was suspended rather than eliminated as in ARA-95. Thus, the FOR would be restored after 2002, unless other action is taken.

- The soybean loan rate would be variable and could be set at higher rates. ARA-95 pegged the rate at $4.92 per bushel. Under ARIA-96 the rate would range from $4.92 to $5.26 per bushel, using 85 percent of the five-year "Olympic" average. For the current year, the calculated rate would be close to $4.96. (The rate would likely rise to the $5.26 cap by 1997 based on strong futures market prices and projections).

- Rice flexibility contract payment allocations would rise 17 million dollars per year above the level in ARA-95. This would mean a 3.6 percent increase in 1996, and an additional 5.0 percent raise in 2002. The contract payment rate structure remained unchanged for wheat, corn, sorghum, barley, oats, and cotton.

- CRP would be reauthorized under both programs, although ARIA-96 explicitly authorized new enrollments. The cap for the Conservation Reserve Program would be set at 36.5 million acres. The Secretary of Agriculture would be able to enroll new acreage equal to the quantity of land under any CRP contract that terminates.

New Provisions Under ARIA-96

ARIA-96 contains many additional provisions, not only from ARA-95 but also from the Food, Agriculture, Conservation, and Trade Act of 1990 (FACTA-90). Some highlights include:

- New commodity program provisions are the ones getting the most press attention and are spelled out in the cover story.

- Expands the Environmental Conservation Acreage Reserve Program (ECARP); combines programs and specifies the purchase of easements on 170,000 to 340,000 acres, and allocates $35 million a year for that purpose.

- Environmental Quality Incentives Program–a new cost-share program to help livestock and crop producers improve the environment. $200 million per year is authorized.

- Includes two optional conservation programs that essentially combine payments across programs to achieve conservation and environmental goals:

  Conservation Farm Option combines the flexibility contract and CRP payments. The producer would receive both the payments in return for pursuing conservation practices that protect soil, water, and wildlife in environmentally sensitive areas.

  Flood Risk Reduction contracts—producers on frequently flooded farms could combine flexibility payments and crop insurance subsidies. Producers agree to forego other commodity programs and comply with conservation requirements.

- The "Fund for Rural America" is established to provide additional funding to rural development and research. Funding was authorized to total $300 million over the first three years.

The Senate farm bill, ARIA-96, includes the Freedom-to-Farm concept of decoupled payments and planting flexibility. It is especially noteworthy that 1938-1949 price support authority was not eliminated and, also, that the bill cites production flexibility contracts rather than market transition contracts. This could be interpreted as Congressional intent not to eliminate commodity programs, but simply to reform and improve as the bill's title and changes in provisions would suggest.

CARD/FAPRI Analysis

Possible Results of Freedom to Farm: A FAPRI Analysis of the Congressional Compromise on Agriculture

(Continued from page 1)

All loans are marketing loans. The loan rate levels would continue to be calculated by the current formula (85 percent of the five-year "Olympic" average), but would be capped at the current rates. Wheat and feed-grain loan rates could still be reduced based on stock-to-use triggers as in current law, but the seldom-used discretionary reduction for "market competitiveness" has been eliminated. The maximum corn loan rate would be $1.89/bushel, while wheat would have a $2.58/bushel maximum. The soybean loan rate would remain at $4.92/bushel. The cost of interest on CCC loans to producers would be one percentage point higher than under current law. Authority for the Farmer Owned Reserve (FOR) would be eliminated.

TABLE 1: Contract payments by crop for the duration of the Agricultural Reconciliation Act.

	Crop Year Payments*						
	96/ 97	97/98	98/ 99	99/00	00/ 01	01/02	02/03
	(Dollars per Bushel)						
Corn	0.27	0.37	0.40	0.39	0.35	0.28	0.28
Wheat	0.68	0.64	0.68	0.66	0.60	0.48	0.47
Sorghum	0.35	0.46	0.47	0.45	0.41	0.33	0.32
Barley	0.31	0.29	0.31	0.30	0.27	0.22	0.21
Oats	0.05	0.05	0.05	0.05	0.05	0.03	0.03
	(Dollars per Pound)						
Cotton	0.08	0.08	0.08	0.08	0.07	0.06	0.06
	(Dollars per Hundredweight)						
Rice	1.74	2.69	2.90	2.80	2.56	2.07	2.00

*estimated by FAPRI

There would be no provisions for annual acreage idling. Farmers could plant any crop on 85 percent of base acres, except that this land could not be used for fruits and vegetables or for unlimited haying and grazing. The remaining 15 percent of base could be used for unlimited haying and grazing or for fruits and vegetables.

Eligibility for a contract would require program participation in at least one of the last five years. Conservation plan and wetland protection compliance would continue to be required for participants. Purchase of federal crop insurance would not be required, but agricultural disaster assistance would be waived by those not purchasing catastrophic coverage insurance.

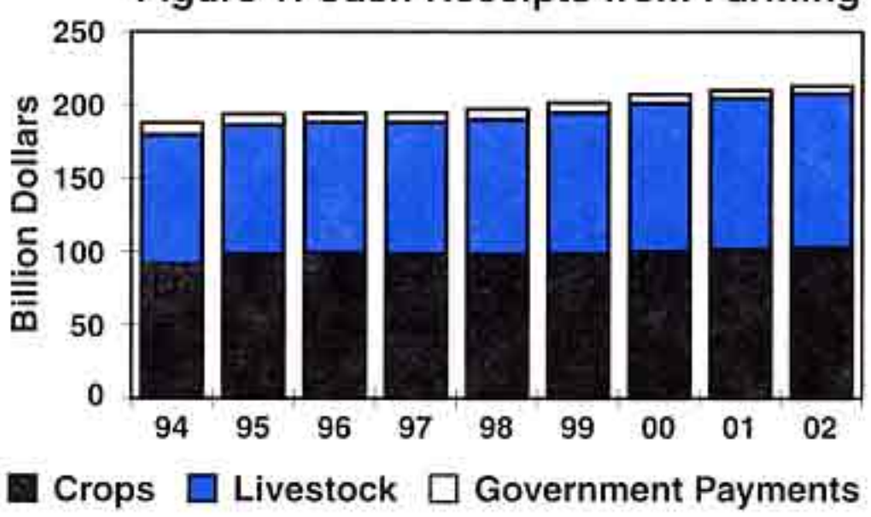
The CRP acres are capped at 36.4 million acres. But no specifics were listed on new contracts or on the extension of current contracts. It is expected that about 25 million acres would remain in CRP by 2002.

The EEP expenditures would be capped at levels below those specified in the GATT agreement. Expenditures would be: FY1996/97, $350 million; FY1997/98, $350 million; FY1998/99, $500 million; FY1999/2000, $550 million; FY2000/01, $579 million; FY2001/02, $478 million; FY2002/03, $478 million. The Market Promotion Program would continue under current regulations but with 10 percent lower funding.

Farm Income

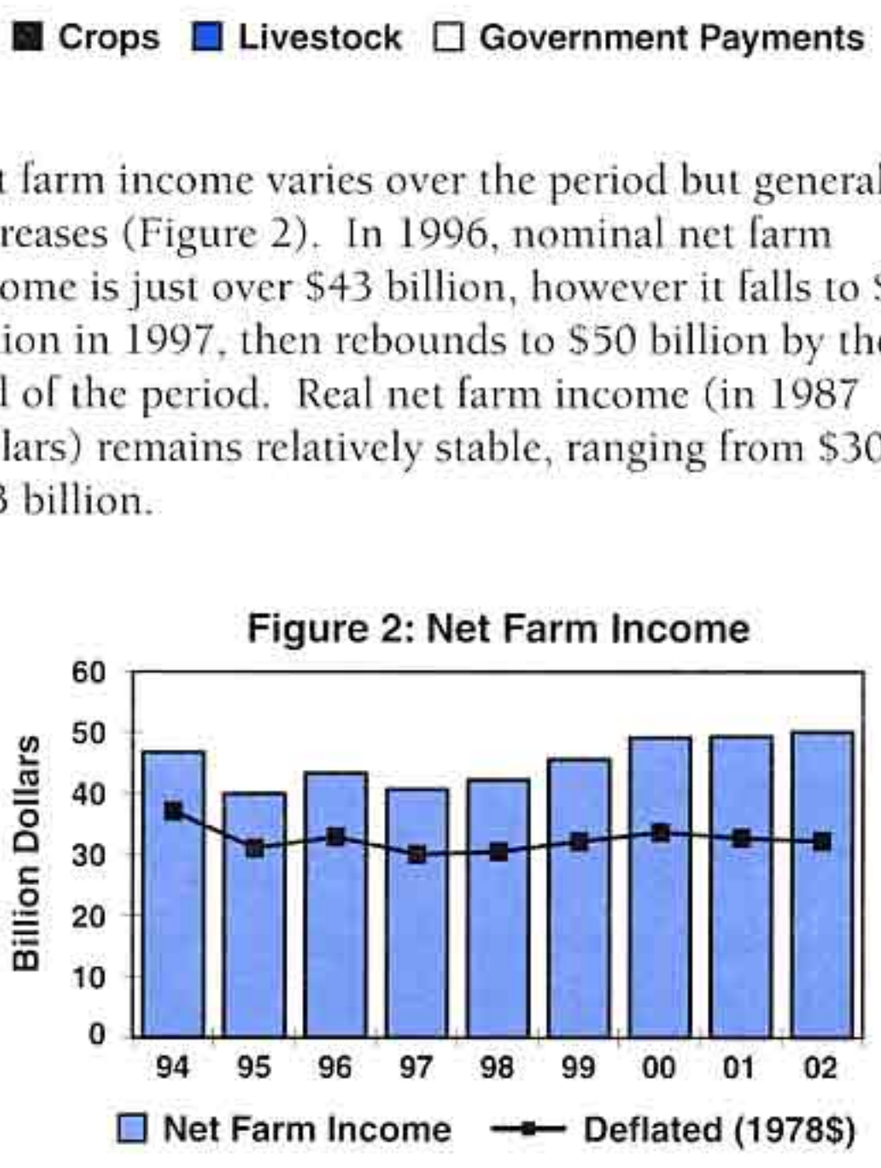
Under ARA-95, farm receipts compared to 1995 levels would rise 11 percent, fueled by a 3 percent rise in crop receipts and a 19 percent rise in livestock receipts (Figure 1). Government payments would contribute 3 percent of gross cash income in 1996 and fall slightly to 2 percent by 2002.

Figure 1: Cash Receipts from Farming



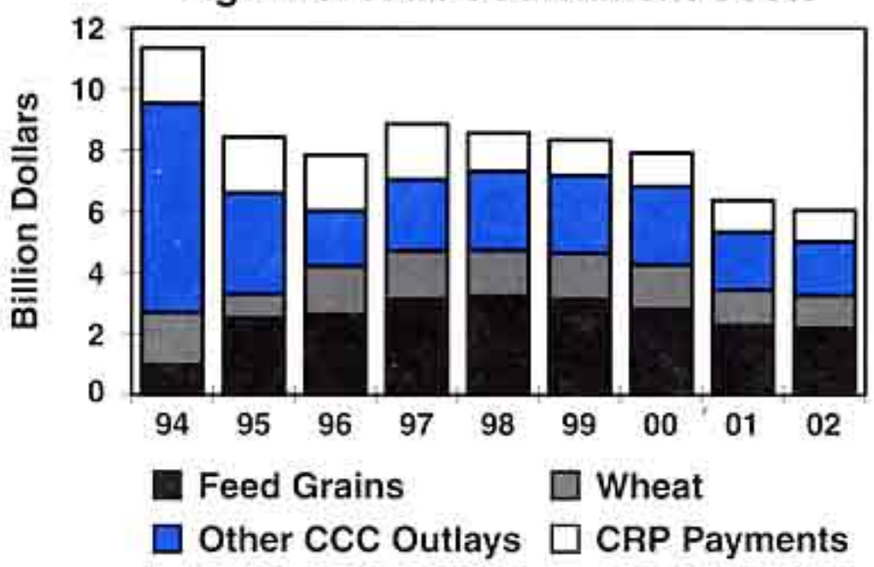
Net farm income varies over the period but generally increases (Figure 2). In 1996, nominal net farm income is just over $43 billion, however it falls to $41 billion in 1997, then rebounds to $50 billion by the end of the period. Real net farm income (in 1987 dollars) remains relatively stable, ranging from $30 to $33 billion.

Figure 2: Net Farm Income



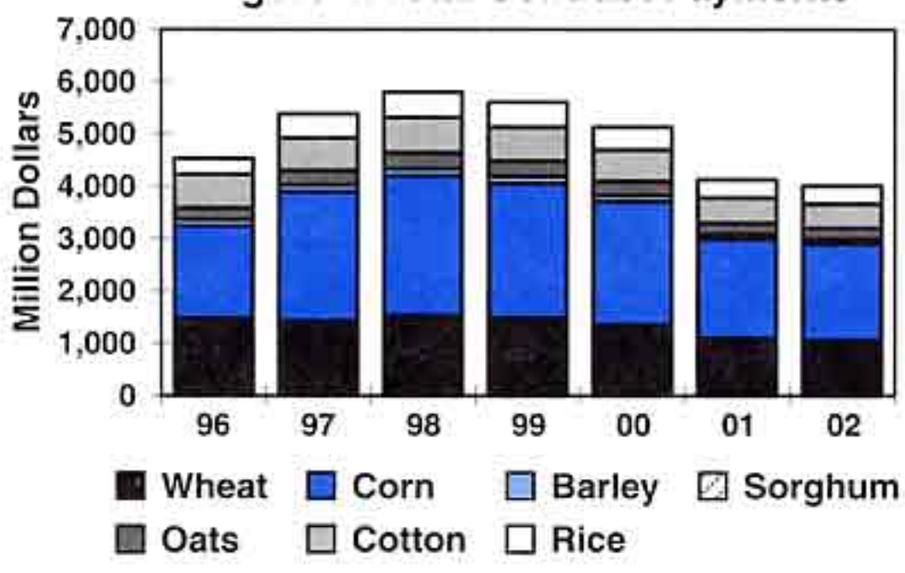
Government costs reach a peak in 1997 (Figure 3) due to the structure of contract payments and reductions in CRP contract payments. CRP payments decline over the period as a result of fewer acres being under contract.

Figure 3: Total Government Costs



The contract payments peak in 1998 and then gradually fall to about $4 billion by the end of the period (Figure 4). This represents a phase-down but not a phase-out of payments.

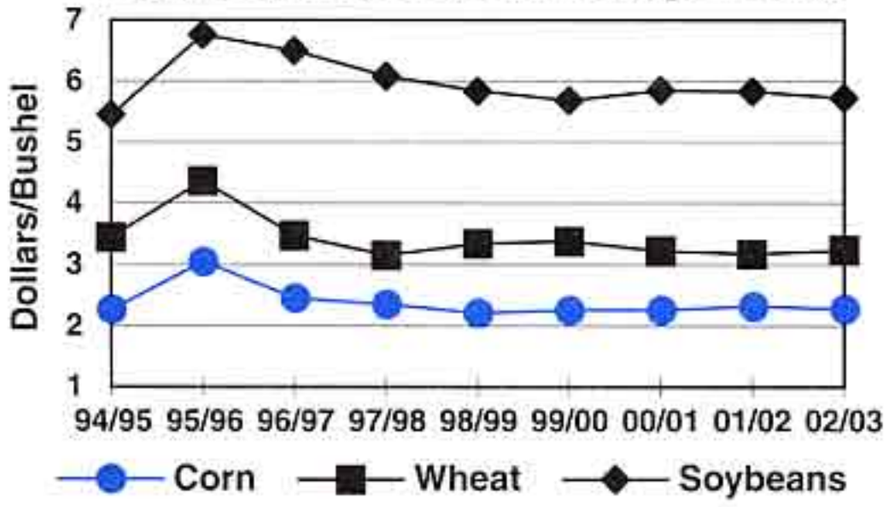
Figure 4: Total Contract Payments



Crops and Livestock

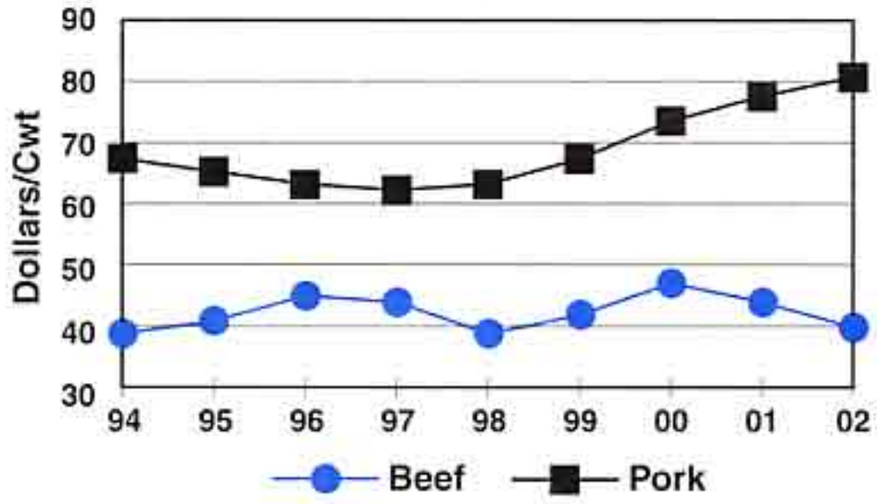
Increased planted acres and normal weather in 1996 would return grain prices to pre-1995 levels. Assuming normal weather throughout the period, corn farm prices average $2.30 per bushel. Wheat averages $3.30 per bushel, and the projected soybean farm price over the period is $5.95 per bushel (Figure 5). Note that price projections are based on mid-1995 market conditions.

Figure 5: Crop Season Average Prices



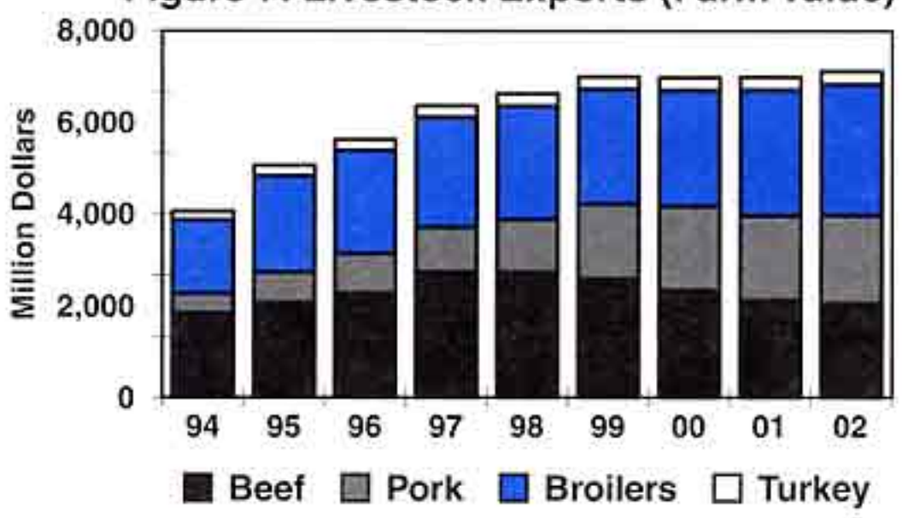
Livestock prices follow the normal cycle with 230-250 pound barrow and gilt prices peaking in 1996 at $46 per hundredweight and in 2000 at $47 per hundredweight. The troughs in the period 1996-2002 come in 1998 at $40 per hundredweight, and in 2002 at $41 per hundredweight (Figure 6). Steers (Nebraska direct 1100-1300 pounds) experience the period low in 1997 at $63 per hundredweight, but rebound to $81 by the end of the period due to cyclical declines in production.

Figure 6: Season Average Livestock Prices



Exports of meats rise over the whole period. Expansion comes mostly in the pork and poultry sectors (Figure 7). Beef exports actually peak in 1997, fueled by the low prices and the peak level of production in the cycle; then exports fall as production declines and steer prices rise. Pork exports more than double from 900 million pounds in 1996 to 2,300 million pounds by 2002. Broiler exports remain strong and rise from 4,000 million pounds to 5,000 million pounds by the end of the period. Turkey exports remain relatively stable and range between 350 to 425 million pounds.

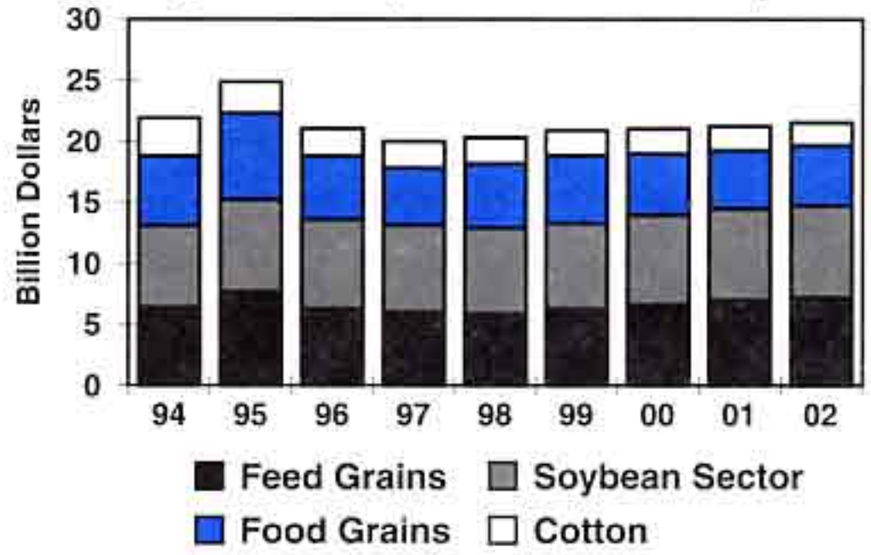
Figure 7: Livestock Exports (Farm Value)



Crop exports, after the 1995 spike, remain fairly stable throughout the remainder of the period (Figure 8). The value of wheat exports fluctuates between 4.3 and 5.2 billion dollars. The soybean sector (soybeans, soybean meal, and soybean oil) export value rises over

the period from 7.31 to 7.50 billion dollars. (Net exports for soybeans go from 22.2 to 24.2 million metric tons; soybean meal, 5.7 to 7.1 million metric tons; and soybean oil, 0.8 to 1.2 million metric tons.) The value of feed-grain exports ranges between 5.9 and 7.2 billion dollars over the period. Corn accounts for most of the feed-grain exports and its value ranges from 5.3 to 6.6 billion dollars over the period.

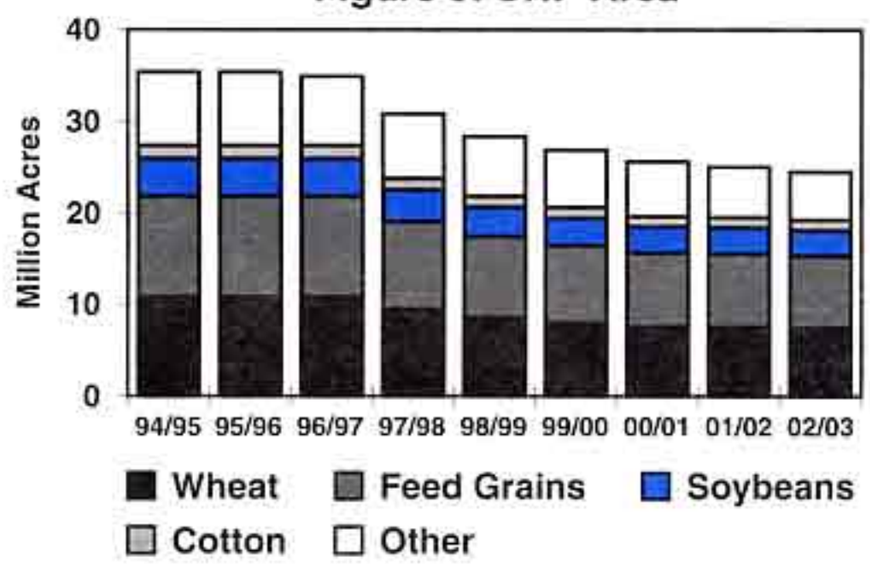
Figure 8: Crops - Value of Net Exports



Land Use

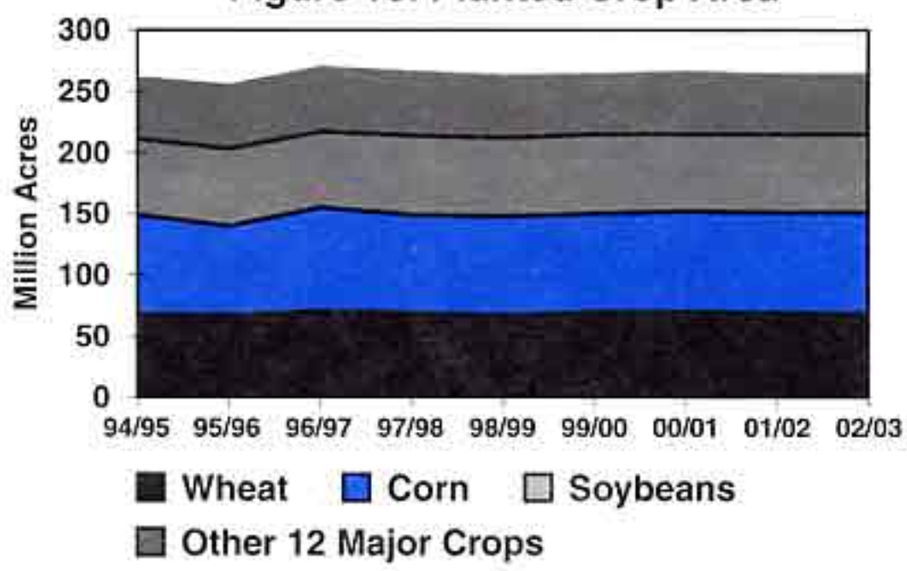
Land enrolled in the CRP is expected to fall from the current 36.4 million acres to just over 25 million acres in 2002 (Figure 9).

Figure 9: CRP Area



Total land planted to the 15 major crops increases to 272 million acres in 1996, then stabilizes around 265 million acres thereafter (Figure 10). Corn planted area increases by 10 million acres from 1995 to 1996, and then declines slightly (800,000 acres) over the period. Over most of the period, wheat planted area is down 3.4 million acres, barley is down 1.6 million acres, sorghum is down 100,000 acres, and oat planted area is down 300,000 acres. Soybean area is up 1.9 million acres with a 1.7 million acre increase in the Corn Belt region.

Figure 10: Planted Crop Area



Summary

FAPRI analysis of the agricultural reconciliation compromise, ARA-95, provides insights about potential results of the 1996 Senate Farm Bill. The results indicate continued strength in agricultural markets and in aggregate net farm income under this type of program structure.

Government Costs of Yield and Revenue Insurance

(Chad Hart, 515/294-6307)
(Darnell Smith, 515/294-1184)

With the recent development of revenue insurance products and earlier interest in a dual insurance program, questions arise about the aggregate government costs of these insurance options if they were available on a nationwide basis. Before the announcement of the CRC and IP revenue insurance products (outlined in the article, "A Review of New Revenue Insurance Programs" on page 10), we had conducted an analysis estimating government costs of existing yield insurance and a hypothetical revenue insurance product. This article outlines how we obtain government cost estimates for yield and revenue insurance for the 1996-2003 period under the FAPRI variable weather scenario. For this government cost comparison, we assume one program or the other is in place over the projection period.

For additional information on the variable weather scenario and how the data were incorporated in the analysis, please see "Weather Volatility and Farm Bill Options" and "How Revenue Assurance and Yield Insurance Stack Up: A Cost Comparison" in the September 1995 issue of the *Iowa Ag Review*.

Estimating Yield Insurance Costs

Under the 1994 crop insurance reform bill, yield insurance became mandatory for producers enrolled in federal farm programs. Thus, participation in yield

insurance will be significantly higher than it was before. For the 1996-2003 projection period, we have assumed that all producers who are active in the federal farm programs will participate in yield insurance and those farmers who are not enrolled in the farm programs will participate in yield insurance at the average historical yield insurance participation rate. Government subsidies of yield insurance premiums are set at the 1995 level.

Yields across a state are assumed to be normally distributed with the standard deviation chosen such that simulation results over the 1982-1989 period match the actual performance of yield insurance over the same period. From this assumption, the percentage of acres with losses and the average yield loss are computed. Statewide losses are the product of the price election, the yield shortfall below the yield guarantee, and the number of acres with losses.

Federal Crop Insurance Corporation (FCIC) administrative costs are set at $100 million per year over the projection period. Government costs are taken to be the sum of the premium subsidies, administration costs, and excess losses (i.e., losses over and above total premiums). Given this setup, yield insurance government costs by state and crop are estimated for 1996-2003.

Estimating Revenue Insurance Costs

At the time the analysis was conducted, revenue insurance was not available for the crops studied here, therefore no historical data on its price or performance existed. We proceeded to create a "history" for revenue insurance. For this "history," revenue assurance costs are estimated over the period from 1980 to 1989. From this, the average payout per acre is set as the premium for revenue insurance in 1990. All producers are assumed to participate in the revenue insurance program. From 1991 on, premiums are based upon historical loss ratios and are formulated to approach actuarial soundness in the same way as yield insurance premiums. Government subsidies of revenue insurance premiums are set at the same rate as for yield insurance. Losses are computed as under revenue assurance. More information on the estimation of revenue assurance costs can be obtained in CARD Working Paper 95-WP 140, "Estimating the Costs of Revenue Assurance."

We assumed that the revenue guarantee would be set at a given percentage of a five-year moving average of revenue (like revenue assurance). As with yield insurance, administration costs are set at $100 million per year over the projection period. Government costs are taken to be the sum of the premium subsidies, administration costs, and excess losses. Government costs of revenue insurance by state and crop are estimated for 1996-2003.

Results

The average 1996-2003 government cost figures for yield and revenue insurance for the farm program crops and soybeans are given in Table 1. Yield insurance is set at 65 percent yield coverage (65 percent of the yield guarantee at 100 percent of the price election), which has been the average yield insurance coverage selected by producers over the 1980s and the early 1990s. Revenue insurance is set at 70 percent revenue coverage. The government subsidy rate of premiums under both insurance plans is set at 41.7 percent of total premiums.

Average annual government costs of both programs are about $2 billion. Revenue insurance annual costs average about $100 million less than yield insurance. When examined by crop, yield insurance government costs are lower than revenue insurance government costs for upland cotton, oats, grain sorghum, and wheat. The reason is that these crops do not benefit as much from the inverse relationship between realized yields and market price that is prevalent for other crops, especially by region.

Table 1. Average Government Costs, 1996-2003.

Crop	65% Yield Insurance Average Government Costs 1996-2003	70% Revenue Insurance Average Government Costs 1996-2003
	(Million Dollars)	
Barley	39.41	27.25
Corn	737.03	632.91
Upland Cotton	294.75	306.44
Oats	10.06	37.46
Rice	43.31	37.20
Grain Sorghum	73.41	83.44
Soybeans	389.12	264.48
Wheat	464.85	576.47
Total	2051.95	1965.66

Table 2 provides the annual government cost estimates over the projection period. These estimates are again derived from a variable weather scenario where the weather over the period 1982-1989 is applied to the projection period 1996-2003. Government costs under yield insurance vary much more than under revenue insurance. While revenue insurance government costs stay fairly stable at around $2 billion, yield insurance government costs vary between $1 and $4 billion from year to year.

Table 2. Annual Government Cost Estimates.

Year	65% Yield Insurance Government Costs	70% Revenue Insurance Government Costs
	(Billion Dollars)	
1996	1.180	1.875
1997	3.715	1.892
1998	1.522	2.001
1999	1.313	1.973
2000	1.365	1.951
2001	1.300	1.985
2002	4.078	1.976
2003	1.942	2.073

Conclusions

These results indicate that government costs under the two insurance plans are nearly the same on average, but yield insurance costs are more highly variable than revenue insurance costs. The information gathered from this article, in addition to what has been presented in the Emerging Issues section regarding new revenue insurance products, reveals that new insurance packages have a promising future from the perspectives of both producers and the U.S. government. Additionally, it may well be the case that U.S. agricultural policy is in transition toward an income safety net based on farm revenue rather than on market price alone. The results indicate that this is a viable policy option.

Emerging Issues

A Review of New Revenue Insurance Products

(Chad Hart, 515/294-6307)
(Darnell B. Smith, 515/294-1184)

The Federal Crop Insurance Reform Act of 1994 legislated several significant reforms in federally subsidized crop insurance. The legislation diminished congressional authority for direct agricultural disaster payments and offered a replacement program of catastrophic coverage crop insurance (CAT) for a $50 fee per crop. CAT was mandatory for farm program participants, and the fee applied to all persons with an economic interest in the operation—extended families paid the fee many times over.

The reform act also mandated that the Federal Crop Insurance Corporation (FCIC) develop a pilot revenue insurance program. This spring, two revenue insurance products will be available in Iowa. These are Crop Revenue Coverage (CRC), developed by American Agrisurance Inc., and Income Protection (IP), developed by the FCIC. The IP plan is actually a revenue insurance product that embodies the safety-net structure of the proposed Revenue Assurance program. With IP, producer's premiums are partially subsidized; with Revenue Assurance, however, premiums would be paid in full by the government.

Under the traditional APH (Actual Production History) plan of multiple peril crop insurance (MPCI), a farmer is insuring against risk due to low yields. The new revenue insurance products allow the producer to insure against risk due to low revenues — the risk that realized revenue would be below the guaranteed amount. For a farmer to receive an indemnity under traditional MPCI, the actual yield must fall below the yield guarantee. For a farmer to receive an indemnity under a revenue insurance product, the computed harvest revenue must be less than the revenue guarantee.

A revenue indemnity can be triggered by low prices or low yield realizations or a combination of the two. Note also, that because revenue insurance is based on a combination of price and yield, it is possible for an insured producer to have below normal yields and not receive a revenue indemnity. In years with droughts or floods, low yields may be accompanied by high market prices. Thus, for revenue, higher market prices would tend to offset yield reductions.

The two revenue insurance products share many features. Crop price discovery of both products employs the use of commodity futures markets. Yields are computed under the APH guidelines and producers may choose coverage levels from 50 to 75 percent of the APH yield times projected price. Premium subsidies will be similar to other MPCI plans. Coverage exclusions are not available for hail, fire, and prevented planting.

The products also differ in several ways with important differences summarized in Table 1. The unit coverage level offered for the two new products is not the same. CRC provides coverage in basic and optional units (same as traditional MPCI), while IP insures at the "enterprise" level by county. The enterprise level means that all acreage in a county of the insured crop in which the farmer has a share must be covered and insured as one unit.

The revenue guarantee for IP is computed by the product of the coverage level, the APH yield, and the spring commodity price. The revenue guarantee for CRC is the product of the coverage level, the APH yield, and the higher of the spring or harvest commodity prices.

The IP product uses 100 percent of the average daily futures market closing price prior to the insurance

sales closing date for the spring market price and 100 percent of the average daily futures market closing price during harvest for the harvest market price. For CRC, the spring market price is 95 percent of the Chicago Board of Trade (CBOT) February average daily settlement price for the harvest contract (December for corn and November for soybeans). The harvest market price for CRC is 95 percent of the CBOT November (October) average daily settlement price for the harvest contract for corn (soybeans).

The maximum price increase allowed between the spring and harvest market prices under CRC is $1.50 per bushel for corn and $3.00 per bushel for soybeans. Those farmers with land classified as High Risk Land are eligible for coverage under CRC, but not IP. In Iowa, CRC will be available statewide for corn and soybeans; IP will be tested as a pilot program for corn in Adair, Audubon, Cass, Dallas, Guthrie, and Shelby counties (part of a multiple-crop, multiple-state pilot effort).

Table 1. Differences between CRC and IP.

Insurance Feature	Crop Revenue Coverage	Income Protection
Coverage Unit	Basic and optional units, as with traditional MPCI	Enterprise units, pools acreage by county and crop
Revenue Guarantee	Coverage level times APH yield times the higher of the spring or harvest market price	Coverage level times APH yield times the spring market price
Insurance Commodity Price*	95 percent of the CBOT average daily settlement price	100 percent of the average daily futures market closing price
Price Movement Limits	$1.50 per bushel for corn, $3.00 per bushel for soybeans	Not Applicable
Eligibility for Specially Rated Land	Eligible for coverage	Not eligible for coverage
Crop and State Availability	Corn and soybeans for all counties in Iowa	Corn for Adair, Audubon, Cass, Dallas, Guthrie, and Shelby counties in Iowa

*Virtually the same pricing method is used under both products except for the percentage level.

To show how these revenue insurance products respond to varying market conditions and to compare their performance with traditional MPCI, we have created an example indemnity payment schedule under CRC, IP, and MPCI. In the example, we assume a farm with a 140 bushel per acre APH yield for corn, a 75 percent coverage level, and a spring market price of $3.00 per bushel. Under these assumptions, the CRC spring revenue guarantee is $299.25 per acre (0.75 *x* 140 *x* (0.95 *x* $3.00)) and the IP revenue guarantee is $315.00 per acre (0.75 *x* 140 *x* $3.00). The APH yield guarantee is 105 bushels per acre and the price election is $2.65 per bushel — replacement cost coverage (RCC) is optional. A comparison of the revenue protection offered by the listed products is shown in Table 2.

Table 2. Total Amounts of Per Acre Protection.

Insurance Plan	Coverage Level	
	65%	75%
MPCI	$ 241	$ 278
MPCI + RCC	$ 241	$ 278
CRC	$ 259	$ 299
IP	$ 273	$ 315

Table 3 shows the per acre indemnity payment schedule for the three insurance plans at the 75 percent coverage level for realized yields of 60, 80, 100, 120, and 140 bushels per acre and prices of $2.20, $2.85, and $3.50 per bushel of corn. If the harvest price for corn exceeds the spring market price, then the CRC revenue guarantee increases. If the harvest price for corn rises to $3.50, the CRC harvest revenue guarantee is $349.13 per acre (0.75 *x* 140 *x* (0.95 *x* $3.50)), an increase of $49.88 over the CRC spring revenue guarantee.

Important aspects of the indemnity schedules shown in Table 3:

1) Revenue insurance products often pay indemnities when traditional MPCI does (except in one case—IP at 100 bu./acre).
2) Revenue insurance products often pay a higher amount than MPCI due to the higher price election.
3) Revenue insurance plans can pay indemnities due to low prices, even if yield is near normal—at the $2.20 price, both CRC and IP pay indemnities.

The gap between the CRC and IP indemnities originates from the differing price levels and the CRC harvest price adjustment in the case of higher harvest prices. Whether CRC or IP ultimately has larger indemnity payments depends upon the quoted spring and harvest prices and the unit coverage level. Also, please note that because indemnity triggers are based on quoted prices, that represent aggregate market conditions, and not on prices actually received by producers, these products do not insure against poor marketing decisions.

Table 3. Sample Per Acre Indemnity Payment Schedule.

Insurance Plan	Harvest Price IP/CRC	Actual Yield (bu./acre)				
		60	80	100	120	140
	($/bu)			*(Dollars)*		
CRC						
	2.20/2.09	173.85	132.05	90.25	48.45	6.65
	2.85/2.71	136.80	82.65	28.50	0.00	0.00
	3.50/3.33	149.63	83.13	16.63	0.00	0.00
IP						
	2.20/NA	183.00	139.00	95.00	51.00	7.00
	2.85/NA	144.00	87.00	30.00	0.00	0.00
	3.50/NA	105.00	35.00	0.00	0.00	0.00
MPCI*						
		119.25	66.25	13.25.	0.00	0.00

* MPCI is a set price, $2.65 for 1996.

Per acre premiums for MPCI, MPCI and RCC, CRC, and IP at 65 and 75 percent coverage levels are given in Table 4. This example uses the producer per acre premium rates for a Dallas County, Iowa farm with 100 acres of corn and an eight-year APH yield of 140 bushels per acre. The corn spring market price is assumed to be $3.00 per bushel and the MPCI price election is $2.65 per bushel. The RCC product is an adjunct product to MPCI which replaces the MPCI price election with the harvest market price if the harvest price is greater than the MPCI price election. The premium quotes for traditional MPCI and CRC are provided by American Agrisurance Inc. and the IP premium quotes are from the FCIC. The RCC component of the premium is approximately one-half of the MPCI premium; this approximation is used here for comparison purposes.

Table 4. Per Acre Producer Premiums.

Insurance Plan	Coverage Level	
	65%	75%
MPCI	$ 5.62	$13.41
MPCI and RCC	$ 8.43	$20.12
CRC	$ 8.87	$19.70
IP	$ 4.99	$10.60

Note that the IP premiums are lower than the traditional MPCI premiums. This occurs because, as noted earlier, low yields can be accompanied by high prices, thus revenue reductions from yield loss are partially offset. The MPCI with RCC has a premium structure similar to CRC. Both of these products increase the indemnity paid if prices increase during the growing season. This additional coverage translates into higher premium costs. The added coverage is useful for hedging contract deliveries and protecting inventory values, but it is not normally associated with the current year's on-field production risk. In comparing the CRC and IP premiums, one can see roughly how much the added marketing risk coverage (through the harvest price adjustment) costs.

Summary

Revenue guarantees, indemnity schedules, and premium quotes have been compared to allow producers the opportunity to examine which insurance product might provide the most efficient risk management tool for their needs. This will vary with individual circumstances, but some will find that revenue insurance would provide more protection at a lower cost. If there is sufficient interest in the limited offerings now available, other revenue insurance products may soon follow and offer a wider range of choices.

Special Article

Economic Impacts of CRP on Communities

(Daniel M. Otto 515/294-6147)
(Darnell B. Smith 515/294-1184)

The Conservation Reserve Program (CRP) established under the Food and Security Act of 1985 had these objectives:

1) Reducing supplies of surplus agricultural commodities.
2) Providing farmer income support.
3) Preventing threats to environmental quality.

The environmental goals were furthered by requiring a vegetative ground cover for idled cropland to prevent erosion runoff into streams. Establishing vegetative cover is intended to improve water quality and wildlife habitat which should in turn lead to increased recreational opportunities in the area.

The fact that county level sign-ups were limited to no more the 25 percent of the cropland in any county indicates a concern for the impacts of the program on rural economies. This report is focused on estimating the economic impacts of the CRP on rural economies in Iowa. Similar studies have been conducted in Virginia. Our study will be following the procedure outlined and implemented in the Virginia report. The direct impact of the CRP will be identified, and Input-Output modeling techniques will be used to estimate secondary impacts on the community.

The economic impact of the CRP in Iowa can be divided into:

1) Direct economic impacts—the revenues received or

lost by producers from sales of goods and services to consumers and the government.
2) Indirect economic impacts—money spent by producers on purchases of goods and services (such as fertilizer) to produce the direct economic impacts of crop production.
3) Induced economic impacts—the subsequent impacts resulting from income received by persons during the direct and indirect impacts which are, in turn, spent on other goods and services.

Input-Output (I-O) models are the most frequently used analytical framework for economic impact analysis. The I-O framework or matrix keeps track of all of the direct, indirect, and induced relationships among the many sectors of the economy. The U.S. Forest Service's IMpactPLANning (IMPLAN) I-O model was used for this economic impact analysis of the CRP program in Iowa. The 89 nonmetropolitan counties in Iowa were combined into a single model and the economic impacts were calculated in terms of changes to total gross output (TGO), total income, and employment.

The following economic impacts were considered:
1) Reduced crop production. The combined goals of the CRP suggest that land most subject to erosion and of relatively lower quality is enrolled first. Accordingly, the ISU budgets' lowest yielding corn land of 100 bushels per acre is used to estimate impacts. Since most of the CRP acres in Iowa were in government programs and because we are interested in local economic impacts, the $2.75 per bushel price for corn is used to value production on the 2.22 million areas of Iowa CRP land.

2) Maintenance of Vegetative Cover. After the initial costs of establishing grass, annual maintenance costs are likely to involve only a single mowing pass. Based on information from the ISU crop budgets, mowing costs are $2.10 per acre.

3) CRP payments (household expenditures). Losses in net farm income resulting from reduced crop production are implicitly part of reduced crop production. CRP payments are income transfers from the USDA to households to compensate farmers for these income losses. The overall average annual contract value in Iowa is $82.31 per acre. The net increase in household expenditures was assumed to be $80.21/acre ($82.31 minus $2.10 spent on cover maintenance).

Other studies of CRP impacts have included increased recreation spending stemming from improvement in wildlife habitat and water quality. Although potential for increased tourism exists and increased wildlife population and hunting activity have been widely reported in Iowa, we have not attempted to document or estimate the magnitude of these impacts. A recent study in southwest Minnesota of environmental benefits associated with CRP estimates increased values for hunting and tourism activities ranging from $8 to $39 per acre depending on the level of improvements in pheasant habitat. Aggregating over the 2.5 million CRP acres in Iowa implies additional benefits of $17.6 to $85.8 million of annual benefits to the Iowa economy from the CRP.

Economic impacts were calculated by combining the TGO and employment multipliers and the total income coefficients with the CRP-induced changes in final demand. Calculations are based on the per acre ISU budgets, but are presented on the basis of 1,000 acre units and aggregate Iowa totals (shown in Table 1). For brevity, we show only employment and income estimates; these are the more important measures of economic well-being.

Results

Considering only crop production and CRP rental payments, enrolling 1,000 acres of Iowa farmland on average decreases state employment by 1.8 jobs and state income by $11,700 (Table 1). Please note again that the calculations shown include direct, indirect, and induced impacts. (For a detailed breakdown, contact the authors.) The total employment impact was adjusted upward to reflect the fact that farmers are compensated for their employment loss of 6,460 jobs. Similarly, the farmer's share of income for crop production needs to be adjusted for the transfer payment which compensates households for loss in crop production activity. The total income impact includes both the initial transfer payment to farm households as well as the income impact generated by subsequent consumption expenditures of farm households.

Table 1. Iowa Economic Impacts of CRP

Impact Source	Per 1,000 Acres		Iowa Aggregates	
	Income	Employment	Income	Employment
	($Thousands)	*(Jobs)*	*($Millions)*	*(Jobs)*
Reduced Crop Production	-162.0	-7.7	-360.0	-17,094
Ground Cover Maintenance	1.2	.06	2.8	133
Household Expenditures	68.0	2.93	151.0	6,505
Compensated Employment		2.91		6,460
Income Transfer	81.5		181.0	
Total	11.7	1.80	-25.7	-3,996

* Iowa Aggregates Assume 2.22 Million Acres Enrolled in CRP

The total estimated annual impacts to the Iowa economy (again, calculated impacts are from crop production and CRP payments and do not include recreational benefits) are a loss of 3,998 jobs and income reductions of approximately $26 million per year. This estimate is based on a 2.22 million acre enrollment applied to the 1,000-acre-unit coefficients. These losses tend to be concentrated in agricultural sectors, but also include main street retailers and service businesses. Additionally, the losses are concentrated geographically in the counties that have higher percentages of their cropland enrolled in CRP. Counties in the southern tier of Iowa had especially high enrollment, with several counties at the maximum enrollment level of 25 percent of county cropland.

Other economic benefits resulting from the CRP include increased tourism and recreational spending induced by improvements in water quality and wildlife habitat — these benefits are not included in the analysis. Separate studies indicate these benefits are substantial. Also, some would argue that the CRP payments help stabilize the income stream in rural Iowa. The steady stream of income may help stabilize bank loan activities not only for production agriculture but for nonagricultural businesses as well.

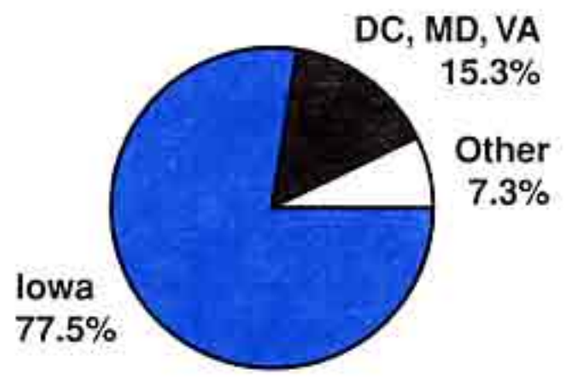
Who Reads *Iowa Ag Review*?

(Steven L. Elmore, 515/294-6175)
(Mary Adams, 515/294-4755)

The *Iowa Ag Review* recently began its second year of publication. As of February 1996, we had over 2,000 subscribers to our quarterly publication. Using our address list, we tried to provide a look at who receives the *Iowa Ag Review*.

The addresses of subscribers for the December issue, yield the data in Figure 1. Iowa residents are in the majority (1,374), followed by the Washington D.C. area (271), and other states and countries (129).

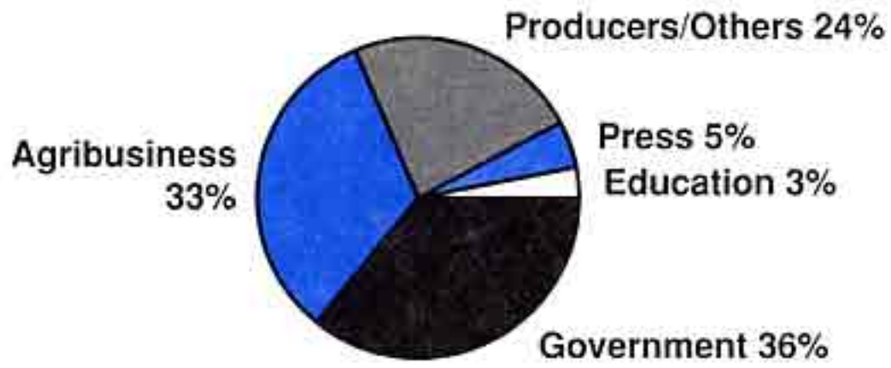
Figure 1: Mailing Addresses of Subscribers to Iowa Ag Review



A rough compilation of the subscribers' occupations was gathered from the address list (Figure 2). This, however, is only a indication because the address list did not include an occupation for everyone.

The categories are imperfect, but they do provide a sampling of the readers' occupations. The government category includes: elected officials, administrators, military personnel, and lobbyists. The education category includes those involved with university teaching and extension, county extension, and secondary education. The press category includes all the subscribers involved in print and broadcast media. The agribusiness group encompasses those who receive *Iowa Ag Review* at businesses and financial institutions. Producers are those who are involved in farming and others for whom no indication can be drawn from their addresses.

Figure 2: Occupation of Subscribers to Iowa Ag Review



Iowa Ag Review is on the Web

It is increasingly difficult to pin down the maximum readership and occupation of *Iowa Ag Review* readers because the newsletter is now online on the World Wide Web. To access our site, type the following address into your Web browser:

http://www.econ.iastate.edu/card/agreview

The current and all back issues are available in PDF format. They can be downloaded by using the Adobe Acrobat Reader which can be accessed through our site. You can either read the newsletter or print it out already formatted.

Other CARD/FAPRI research information and analysis are available on CARD's home page:

http://www.ag.iastate.edu/card.

Meet The Staff

FAPRI's newest analyst brings to his job a keen interest in how public policy impacts the agricultural sector. In fact, **Steven L. Elmore**, who came to Iowa State University in June, 1995 from the University of Nebraska's agricultural economics department, says that his job at FAPRI is one of the few places in the country where he can fully use his background in economics, natural resources, and political science. As the U.S. crops and livestock analyst, Steve helps prepare policy assessments for both houses of the U.S. Congress and the U.S. Department of Agriculture, as well as agribusinesses and public interest groups. Steve has already made significant contributions to FAPRI's new economic modeling system for Iowa and looks forward to doing more intensive analysis of Iowa's agricultural sector.

Steve's research topics during his master's degree program at the University of Nebraska-Lincoln were issues familiar to *Iowa Ag Review* readers; the 1995 Farm Bill, the emerging ethanol industry, the changing structure of the pork industry, and the future of farmland after CRP. For Steve, one of the attractions of working for FAPRI was that his job of managing the *Iowa Ag Review* publication would give him opportunities to address contemporary issues in agricultural policy.

Steve is a native of Kearney, Nebraska, in the central part of the state. Even though he wasn't raised on a farm, he notes that some of his fondest memories are of time spent on a farm that has been in his family for four generations (and is now operated by his cousin). Steve graduated from the University of Nebraska at Kearney (UNK) with a B.S. degree in public administration and economics (both awarded "with distinction"). He earned his degree (on time) while working full-time at the Platte Valley State Bank in Kearney as a computer operator.

Lest anyone think that he's solely a policy wonk, Steven has already gained a reputation for his lively sense of humor (and undying love of Nebraska Cornhusker athletics) among his FAPRI and CARD colleagues! Even though he's not likely to become a Cyclone fan anytime soon, the ISU administration knows when they've got a good ambassador on hand. In late April, Steve will be part of the annual "Road Scholar" tour where ISU top brass and select new faculty and staff members travel out-state to get a true picture of what Iowa is like. Steve is looking forward to meeting some of the *Iowa Ag Review* readers on his road trip, so have those story ideas ready for him!

Iowa Ag Review is published by the Food and Agricultural Policy Research Institute (**FAPRI**) at Iowa State University, a program of the Center for Agricultural and Rural Development (**CARD**). FAPRI is organized cooperatively by CARD at Iowa State University and the Center for National Food and Agricultural Policy at the University of Missouri-Columbia. It provides economic analysis for policymakers and others interested in the agricultural economy. Analysis that has been conducted jointly with the University of Missouri is identified here as FAPRI analysis. This publication presents summarized results that emphasize the Iowa implications of ongoing agricultural policy analysis, analysis of the near-term agricultural situation, and discussion of new agricultural policies currently under consideration.

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