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# Financial Performance of Specialized Corn-Soybean Farms, 1987

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*Specialized corn-soybean farms — those with at least 50 percent of their production value from corn and soybeans and with at least \$40,000 in gross revenue — fared better financially in 1987 than farms specializing in most other types of commodities. Specialized corn-soybean farms accounted for 56 percent of all corn sales and 59 percent of all soybean sales in the United States. Small specialized farms with gross revenue between \$40,000 and \$100,000 had the least favorable costs and returns structure. Production was concentrated in five adjoining areas: the western Corn Belt, the eastern Corn Belt, the Northern Plains, the Lake States, and the South. Specialized corn-soybean farms in the Northern Plains showed the highest net returns and lowest costs.*

U.S. farmers' combined receipts for corn and soybeans dropped to \$18.4 billion in 1987, down from more than \$28 billion just 2 years earlier (table 1). Farmers specializing in both corn and soybeans accounted for almost \$11 billion of those 1987 receipts. Their financial data for that year show that many are recovering soundly from the farm credit crisis of the mid-1980's.

Corn and soybeans are common joint enterprises that are often considered together when appraising whole-farm finances. Similar machinery and cultivation practices allow farmers to diversify with the two crops. Over 81 percent of farms that raised soybeans in 1987 also raised corn, while almost 55 percent of farms that raised corn also raised soybeans.

About 195,200 of the Nation's 2.2 million farms had 50 percent or more of their production in a combination of corn and soybeans in 1987. About 132,500 farms that fell into this category also had at least \$40,000 in gross revenues. These farms, termed specialized corn-soybean farms, and their revenues, costs, and finances in 1987 are the focus of this report.

Specialized corn-soybean farms provide the best examples of the financial merits of producing both corn and soybeans. They sell the bulk of both of those crops produced in the United States, and they

generally rely on farm income and sales of corn and soybeans for a substantial portion of their household's total income.

Only 22 percent of all U.S. farms that produced any corn or soybeans were classified as specialized corn-soybean farms. However, they accounted for more than 56 percent of U.S. corn sales and 59 percent of U.S. soybean sales in 1987. Corn and soybeans amounted to 74 percent of the value of production of specialized corn-soybean farms.

The 62,700 farms which specialized in corn and soybeans, but had gross revenues under \$40,000 in 1987, accounted for less than 12 percent of U.S. corn-soybean sales in 1987. Some 73,000 farms had more than \$40,000 in total production, but corn and soybeans were only a minor enterprise.

We derived cash receipts data for States producing corn and soybeans from the *Economic Indicators of the Farm Sector*, a periodical of the Economic Research Service, U.S. Department of Agriculture.

**Table 1 — U.S. combined corn-soybean cash receipts (including net CCC payments) in 1987 were the lowest since 1977**

Year	Corn receipts	Soybean receipts	Total
<i>Millions of dollars</i>			
1976	9,470	8,656	18,126
1977	8,629	8,689	17,318
1978	8,246	11,822	20,068
1979	10,279	12,938	23,217
1980	13,959	14,241	28,200
1981	13,349	12,245	25,594
1982	12,625	12,419	25,044
1983	10,857	12,153	23,010
1984	10,479	11,957	22,436
1985	16,851	11,160	28,011
1986	12,544	9,211	21,755
1987	8,806	9,565	18,371

Source: *Economic Indicators of the Farm Sector*, U.S. Dept. Agr., Econ. Res. Serv.

## General Terms and Returns Definitions

**Commercial farms** annually produce \$40,000 or more in agricultural commodities.

**Specialized corn-soybean farms** are commercial farms whose combined value of corn and soybean production accounts for 50 percent or more of the value of the farm's total crop and livestock sales. Production of both corn and soybeans is required.

**Gross revenue** equals the sum of livestock commodity sales, the value of crop production (less that fed to livestock), direct Government payments, income from rental of farmland, the rental value of hired laborers' dwellings, and other cash farm-related income.

**Net returns** equals gross revenue less total expenses (or costs) for the farm business. This measure does not include off-farm income, farm operator household expenses, or expenditures for capital items and depreciation. Thus, net returns equals residual returns to owned inputs and own labor and management before capital replacement.

**Returns margin** equals net returns divided by gross revenue. The measure indicates how effectively gross revenues are converted to net returns.

**Returns/assets ratio** equals the sum of net returns and interest expenses divided by the value of assets. This measure of performance represents returns to assets, labor, and management before capital replacement.

**Total expenses** are all cash variable and fixed business expenses, except for capital consumption, but including share rental expenses, inkind payments to hired workers, and purchased livestock.

**Capital expenditures** are for purchases of farm machinery, office machines, and construction costs.

**Size classes** are based on the sum of the value of crop production (less that fed to livestock or otherwise used on the farm) and gross sales of livestock commodities. The categories are set at:

- \$40,000 to \$99,999 (small commercial farms),
- \$100,000 to \$199,999 (midsized commercial farms),
- \$200,000 to \$399,999 (large commercial farms), and
- \$400,000 or more (the largest farms).

Information on corn-soybean farms was from the 1987 Farm Costs and Returns Survey.

## Market Conditions

The marketing environment for corn and soybeans has been constantly changing as U.S. and world farmers and traders adjust to the changes incorporated in the market-oriented policies of the Food Security Act of 1985. In 1987, the U.S. agricultural sector was in the second full year of the 1985 Act.

The act continued voluntary acreage reduction programs for corn in return for price and income support by the Government. In 1987, the act required a 20-percent reduction in base corn acreage for farmers to be eligible for price support payments. The loan rate for corn was \$2.28 per bushel, but the Secretary of Agriculture set a reduced ("Findley") loan rate at \$1.82 per bushel. The target price was at \$3.03 per bushel. The target price minus the market price of \$1.94 per bushel led to deficiency payments of \$1.09 per bushel.

For soybeans, the loan rate administered by the Commodity Credit Corporation (CCC) created a price floor. Soybeans have no target prices, acreage reduction programs, or deficiency payments. The loan rate for soybeans was \$5.22 per bushel during 1983-85 before it dropped to \$4.77 per bushel in 1986. Season average prices have fluctuated by more than 40 percent since 1981, but they exceeded the loan rate for almost all years.

## Gross Revenues and Net Returns

The principal shortrun measure of financial health is net returns, which averaged \$33,478 for all specialized corn-soybean farms in 1987. Even though the average net returns for all specialized farms was ample, over 16 percent had negative net returns. Off-farm income was a major portion of farm operator household cash income for many specialized corn-soybean farms and averaged \$16,573. Average direct Government payments were \$28,733.

Because average net returns are usually related to farm size, comparisons of net returns to gross

revenues (the returns margin) or comparisons of net returns in relation to assets (the returns/assets ratio) better reflect profitability. The average returns margin for specialized corn-soybean farms was 26 percent, and the average returns/assets ratio was 7 percent. These averages compare very favorably with other types of specialized farms (table 2).

The average specialized corn-soybean farm harvested 242 acres of soybeans, producing \$48,000 in sales. Corn was harvested on 232 acres (excluding required set-aside acres) and produced \$47,400 in sales (excluding net Commodity Credit Corporation payments). The set-aside acres and price support payments should be included for any comparison of profitability between corn and soybeans. Major livestock, hogs and cattle, generated \$8,300 and \$6,400 in revenue, respectively. Hay and wheat were the most common other crops grown.

Gross revenue came from very similar sources in similar proportions regardless of size (table 3). Government payments, livestock revenue, and other farm-related income were an almost constant proportion of gross revenue over all size classes.

However, some differences were evident. Small farms relied the most on corn and soybeans, with these sales accounting for 66 percent of their gross revenues. Small farms also relied more on soybeans (37 percent of gross revenues) and less on corn (29 percent of gross revenues) than the other size classes.

Following a trend found in most types of specialized farms, small farms were in the worst financial shape in 1987. Average net returns were \$12,313 for small farms. Small farms had the lowest returns margin, the lowest returns/assets ratio, and the highest percentage of farms with negative net revenues (fig. 1). Although 42 percent of the farms were small, 52 percent of all farms with negative net returns were small. All size classes of specialized corn-soybean farms had positive average net returns in 1987. As farm size increased, net returns generally increased.

Most U.S. farm operator households receive some income from off-farm sources. For farm households, in general, and specialized corn-soybean farms, in particular, average off-farm income decreases as farm size increases, except for households on the largest farms, which have more off-farm income than those on

**Table 2 — Key financial indicators of specialized farms, 1987**

Type	Net returns	Off-farm income	Government payments	Margin	Returns/assets ratio	Negative net returns
	----- Dollars -----			----- Percent -----		
Corn-soybean	40,703	14,999	28,733	26	7	16
Wheat	36,620	15,807	44,787	22	5	19
Cotton	62,345	22,180	50,519	23	10	13
Tobacco	43,196	13,812	4,801	32	14	9
Hogs	36,376	12,548	16,526	20	8	14
Dairy	26,541	10,752	4,965	15	5	20
Cattle	19,616	22,577	12,026	10	3	26

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

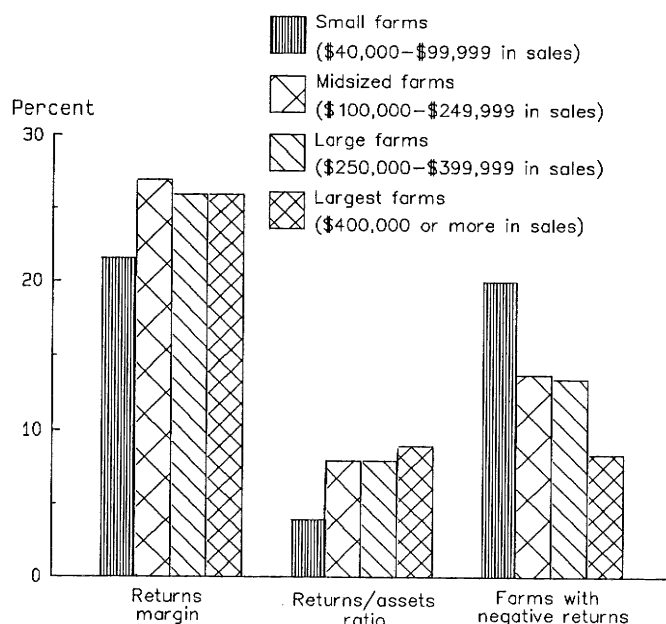
**Table 3 — Average net returns, gross revenue, and components of gross revenue for specialized corn-soybean farms by size class, 1987**

Size class	Average net returns	Average gross revenue	Average share of gross revenue per farm from —					
			Corn	Soybeans	Other crops	Livestock	Government payments	Other farm-related income
	----- Dollars -----		----- Percent -----					
\$40,000-\$99,999	12,313	90,043	29	37	1	11	19	5
\$100,000-\$249,999	34,662	180,179	31	32	1	10	20	5
\$250,000-\$399,999	67,375	304,491	32	31	1	10	21	5
\$400,000 or more	117,168	496,222	31	28	1	13	19	6
All	33,478	130,977	31	32	1	11	20	5

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

the mid-sized farms. The average off-farm incomes for the small to the largest farms were \$17,828, \$14,802, \$13,051, and \$28,878, respectively.

Figure 1  
All but the smallest specialized corn-soybean farms fared well in 1987



Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

## Cost Structure Varies by Farm Size

Viewing farm finances only through production expenses can be deceptive if returns are changing. Another way to examine farm cost structure is to calculate a ratio of input costs to the total value of production. Cost/returns ratios differ with enterprise mix, production practices, and efficiency levels. Because the ratios apply to all crops and livestock produced, they include more than the costs per dollar or bushel of corn or soybeans produced. That is, the ratios are farm oriented rather than enterprise oriented. This section examines the cost structure of specialized corn-soybean farms by analyzing cost/returns ratios.

Specialized corn-soybean farmers covered their costs if all revenue sources are considered (table 4). The cost/returns ratio for all farms was less than 100 percent only if we exclude capital expenditures. The cost/returns ratio for all specialized corn-soybean farms exceeded 100 percent when we included capital expenditures or an estimated value of unpaid labor. Over 20 percent of gross revenues came from direct Government payments and 5 percent from other farm income. When returns include these other two sources, the cost/returns ratio is significantly lower at 79 percent.

Rent (both cash and shared) was the largest component of expenses in 1987 at 31 percent of

Table 4—Ratios of costs to value of production for specialized corn-soybean farms by size class, 1987

Cost components	Value of total production				All
	\$40,000 to \$99,999	\$100,000 to \$199,999	\$200,000 to \$399,999	\$400,000 or more	
	<i>Cents per dollar of production</i>				
Variable crop inputs	25	24	26	25	25
Fertilizer	12	11	12	13	12
Chemicals	7	7	7	7	7
Seed	6	6	6	6	6
Irrigation	1/	1/	1/	1/	1/
Variable livestock inputs	11	9	7	10	9
Fuel and supplies	7	7	6	6	7
Labor:					
Excluding unpaid	4	5	8	7	6
Including estimated value of unpaid labor <sup>2/</sup>	29	20	16	13	20
Marketing	2	2	2	2	2
Interest	11	11	11	9	11
Capital expenditures	11	12	10	10	11
Leasing and repair	9	13	10	11	12
Rent	29	33	31	30	31
Taxes and other business costs	11	9	9	8	9
All costs, excluding capital expenditures	101	92	95	93	95
All costs, including capital expenditures:					
Excluding unpaid labor	113	105	105	103	106
Including estimated value of unpaid labor <sup>2/</sup>	137	120	112	109	119
All costs to production plus other farm income <sup>3/</sup>	86	78	77	77	79

<sup>1/</sup> Less than 1 cent per dollar of production.

<sup>2/</sup> Based on the average wage rate for farm laborers.

<sup>3/</sup> Ratio of all costs, including capital expenditures and excluding an unpaid labor estimate, to the sum of the value of production, direct Government payments, and other farm income.

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

production. Variable crop inputs (fertilizer, chemicals, seed, and irrigation) were the second largest component of expense. Fertilizer alone was 12 percent of production.

Variable livestock costs (feed, livestock purchases, veterinary services, and livestock equipment purchases) were 9 percent of production. Capital and related expenses (capital purchases, equipment leasing, equipment maintenance and repair, and land improvements and maintenance) were another 19 percent of production. The expenses for labor were sizable, 20 percent of production, including an estimate of unpaid labor.

Specialized corn-soybean farms were also similar in costs of production. Small farms had the highest cost/returns ratios of the four size classes. Small farms were more labor intensive and relied more on unpaid labor. Paid labor costs of 4 percent of production were the lowest for small farms; however, the estimated value of unpaid labor (operator and family hours) was the highest for small farms at 25 percent of production.

The largest farms with over \$400,000 in gross revenue had the lowest cost/returns ratio for three of the four overall measures. Fertilizer costs per \$1 of production were the highest for the largest farms. Bigger farms had generally lower cost structures (fig. 2).

## Financial Strength and Loan Default Problems

Specialized corn-soybean producers have been hit hard by the cost-price squeeze of the 1980's. Between 1976-79 and 1980-83, annual average costs rose 40 percent for farmers. Spiraling real estate prices and higher interest rates made cash-flow requirements for

land purchases two to three times higher than in the early 1970's. Widespread drought in the Midwest in 1983 and in the South in 1986, combined with a trend to lower commodity exports and lower commodity prices during 1984-86, caused all but the most financially sound operations to experience abnormally low profits or losses during the mid-1980's.

Financial stress due to the cost-price squeeze caused loan defaults to rise to about 25 percent among corn-soybean producers during 1985-86. Loan default is a particularly serious sign of financial stress because it indicates an inability to adjust to adverse business conditions.

Accounting standards identify a loan to be in default if (1) loan payments are in arrears or (2) outstanding loan principal is unlikely to be fully repaid. The latter often occurs when farmers fall behind on their loan payments, debt increases over a 2- to 4-year period, and assets fall to less than the value of outstanding debt.

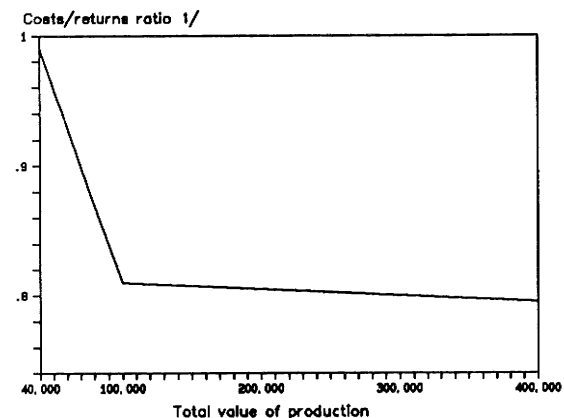
We classified farms as experiencing default problems if debts exceeded assets (insolvent), debts were very high and only partial payment of scheduled principal and interest was made, or debts were high and no loan payments could be made from available farm and off-farm income.

About 10 percent of the more than 130,000 commercial farms that specialized in corn-soybean production in 1987 had loan default problems (table 5). These 13,819 farms held 23 percent of the debt of all specialized corn-soybean operations. The debt subject to repayment difficulties exceeded \$3.7 billion in early 1988. Despite this large amount of "problem debt," however, several factors suggest the finances of corn-soybean producers have substantially improved during the late 1980's:

- Loan default problems of corn-soybean producers declined from 18 percent in 1984 to 10 percent in 1987.
- About 95,000 farms, 72 percent of all specialized corn-soybean farms, had low debt or were debt free.
- Some 23,500 producers with high or very high debt still made all loan principal and interest payments from earned income.

Cash-flows are based on receipts and expenses during calendar year 1987. Receipts rose because of a 13-percent increase in corn prices and a 21-percent increase in soybean prices during 1987. Farmers relied less on corn. Corn as a share of total corn-soybean production dropped from 64 percent in 1985 to 49 percent in 1987 (table 6). Rebounding crop prices continued to benefit farmers in 1988, as corn and soybean prices averaged 40 percent higher than

Figure 2  
Larger farms transformed costs into returns most efficiently



1/ Average ratio of costs, including capital expenditures, to value of production plus Government payments.

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

### Indicators of Debt Load

**Debt/asset ratio.** The ratio of farm debt to farm assets shows the relative burden of debt compared with the asset base of the farm: high debt (40-70 percent), very high debt (70-100 percent), and insolvent (more than 100 percent).

**Debt service.** The cash-flow required to meet scheduled loan principal and interest payments. Cash-flow available for debt service is that remaining after deducting operating expenses, capital replacement costs, and family living expenses from gross receipts.

**Cash-flow.** The sum of commodity sales, other farm income such as custom-work, and off-farm income, less cash expenses.

**Interest/sales ratio.** The ratio of interest paid to sales is a reliable indicator of debt's relative burden upon farm earnings. This ratio is useful for direct comparison of farms of varying size classes.

in 1987. Higher direct Government payments also helped compensate receipts for lowered production. Improvement among several other factors suggests that the worst of the recent financial crisis is now behind most corn-soybean producers. Debt/asset ratios, capital expenditures, the number of stressed

farms, and farms with negative net returns also dropped dramatically during 1985-87 (table 6). Average asset levels increased 22 percent in 1987 as debt decreased 22 percent during 1986-87. Land prices in the Midwest corn-soybean production States rose 8 percent during 1987 and 9 percent in 1988. Stable or rising land prices help farmers borrow for seed, fertilizer, and other production inputs and for replacing older planters, combines, and other farm machinery.

Corn exports doubled between 1986 and 1989. Rising exports and the drought-induced 30-percent decline in corn yields in 1988 have lowered corn stocks from more than 4 billion bushels a year ago to about 2 billion bushels, or less, in mid-1989.

Large differences in the net worth and debt position of corn-soybean producers were evident in early 1988 and will probably continue as the farm sector slowly stabilizes its finances. Table 7 shows two categories of farms, those able versus those unable to service debt obligations.

About 8,100 stressed farms had substantial success in servicing their loans, but their limited net worth, averaging only \$5,000 per farm, suggests they remain financially vulnerable if either their net cash-flow declines or if land values fall, eroding their limited net worth. These farmers owe more than 50 percent of their debt to the Government's Farmers Home Administration (FmHA) or the Government-sponsored Farm Credit System (FCS). Interest on their average debt of \$305,000 was twice the level of nonstressed farms.

**Table 5 — Ten percent of specialized corn-soybean farms had loan repayment problems on January 1, 1988**

Debt service category	Debt/asset ratio					All
	No debt (0 percent)	Low debt (0 to 40 percent)	High debt (40 to 70 percent)	Very high debt (70 to 100 percent)	Insolvent (more than 100 percent)	
Fully able to service debt	Financial strength					85,634 farms
Partly able to service debt						118,640 farms (90 percent of all farms) \$12,430 million debt (77 percent of all farm debt)
Not able to service debt	13,819 farms (10 percent of all farms) \$3,771 million debt (23 percent of all farm debt)					27,057 farms
All	20,545	74,742	23,903	7,918	5,531	132,459 farms
	\$0	\$6,442 million	\$5,584 million	\$2,287 million	\$1,888 million	\$16,201 million debt

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

The stressed farms that were unable to make any debt service payments from earnings still have a substantial cushion of net worth, \$126,000. These farmers rely on FmHA and FCS financing for less than 30 percent of their farm loans. The current trend of increasing land values will generally permit these farmers to remain in farming even if their net cash-flows did not recover in 1988 due to that year's drought.

**Table 6—Financial indicators of specialized corn-soybean farms**

Item	1985	1986	1987
<i>Dollars (per farm averages)</i>			
Corn sales	69,463	55,129	40,667
Soybean sales	38,395	38,370	41,590
Total value of production <sup>1/</sup>	130,300	112,071	98,114
Government payments	8,895	17,253	25,977
Gross revenues	143,133	149,515	130,977
Net returns	35,489	11,906	33,478
Capital expenditures	16,328	16,541	11,111
Debt	156,052	131,111	122,311
Interest	16,526	13,267	10,625
Assets	426,636	390,709	476,604
<i>Percent</i>			
Returns margin	25	8	26
Returns/assets	8	3	7
Farms with negative net returns	20	29	16
Debt/asset ratio	37	34	26
Interest/sales ratio	17	17	17
Corn's share of gross revenue	49	37	31
Soybeans' share of gross revenue	27	26	32
Stressed farms	17	18	10

<sup>1/</sup> Total production includes other crops and livestock.  
Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

Recent financial problems in agriculture have focused attention on financial management and on the interaction between farm households and farm businesses. Farmers with default problems tend to be younger and have more dependents (table 8). Although 35 percent of farmers in default are younger than 35 years old, more than 80 percent of corn-soybean producers in this age group are financially stable.

Default problems are not primarily the result of overinvestment in land and machinery. Corn-soybean producers facing default own only 51 percent of the real estate assets typically owned by the stable producers. Even though the machinery assets of farmers facing default were only 80 percent those of the stable producers, the financially stressed corn-soybean farmers had slightly higher farm production in 1987.

Because Government payments are based on production patterns rather than financial problems, both groups received about \$26,000 in 1987. This level of payments, one-fourth the size of farm production value, points to Government programs as a stabilizing influence in 1987. Government payments, about \$17 billion, were at an all-time high in 1987.

The default difficulties of corn-soybean farms can in large part be related to the following factors:

- Low net worth, averaging about \$55,000.
- High debt, averaging about \$275,000, that leads to large interest payments of about \$19,000 per year. (Many stressed farms evidently were unable to pay all interest obligations due).
- Higher cash rent expense and lower off-farm income.

**Table 7—Comparison of specialized corn-soybean farms by debt service ability and stress, January 1, 1988**

Item	Nonstressed (118,640 farms)		Stressed (13,819 farms)	
	Total	Per farm	Total	Per farm
	Million dollars	1,000 dollars	Million dollars	1,000 dollars
Fully or partly able to meet debt obligations (97,306 nonstressed and 8,096 stressed farms):				
Net worth	39,168	403	37	5
Debt:				
Total	11,154	115	2,470	305
Farmers Home Administration	913	9	782	97
Farm Credit System <sup>1/</sup>	2,179	22	566	70
Not able to meet any debt obligations from earnings (21,334 nonstressed and 5,723 stressed farms):				
Net worth	7,393	346	719	126
Debt:				
Total	1,275	60	1,303	227
Farmers Home Administration	82	4	172	30
Farm Credit System <sup>1/</sup>	303	14	218	38

<sup>1/</sup> Members of the Farm Credit System include the Federal land banks and production credit associations.  
Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.



**Table 8—Characteristics of nonstressed and stressed operators of specialized corn-soybean farms, 1987**

Item	Nonstressed	Stressed
	<i>Percent</i>	
Operator's characteristics:		
Full time	65	65
Sole proprietors	87	84
Age less than 35	19	35
	<i>Number</i>	
Dependents	3.1	3.8
	<i>Dollars</i>	
Income, sales, and finance:		
Off-farm income	16,911	13,671
Direct Government payments	25,937	26,323
Value of production	97,960	99,422
Sales	83,047	71,483
Farm cash-flow	33,859	-2,801
Debt	104,754	273,082
Net worth	392,448	54,690
Machinery assets	91,791	74,809
Interest	9,615	19,296
	<i>Percent</i>	
Financial ratios that highlight farm stress:		
Interest to value of production	10	19
Cash rent paid to value of production	11	13
Off-farm income to value of production	17	14

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

If corn-soybean farmers with default problems had had the same level of off-farm income, cash rent expense, and interest expense as the stable farmers in 1987, their financial problems would have lessened substantially. Their cash-flow would have risen to \$12,070 from -\$2,801.

In broad terms, the financial problems of corn-soybean farmers remained large in early 1988. The 10 percent facing loan default have generally low equity funds that tend to limit investment in cost-saving technology, lead to burdensome interest and rent payments, and increase the risk of failure due to price or yield declines. The fiscal condition of many of these stressed producers may become stable as land prices improve and commodity prices remain above 1987 levels.

## Corn-Soybean Production by Region

Specialized farms in five regions accounted for nearly 75 percent of all corn and soybeans produced in the United States. Specialized farms produced 76 percent of all corn and soybeans in the western Corn Belt, 82 percent in the eastern Corn Belt, 64 percent in the

Lake States, 59 percent in the Northern Plains, and 47 percent in the South.

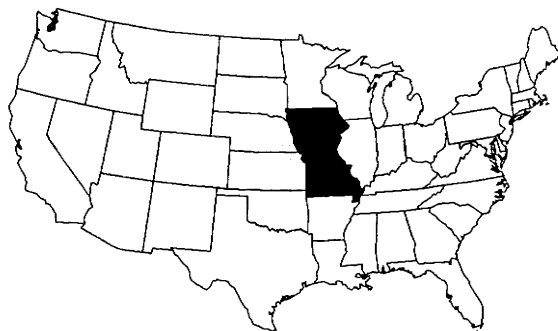
The eastern Corn Belt has traditionally been the leading corn-producing region. Production of corn declined during the 1970's and 1980's in the South; soybean production has been volatile in this region, increasing during much of the 1970's and then declining in the mid-1980's. The corn-soybean rotation that continues to dominate both Corn Belt regions has not adapted as well to the sandy soils and clay in the South or to extended periods of extreme heat and low rainfall common in the South.

Soybeans became more prevalent in the Northern Plains during the 1980's, as the value of soybean production increased from \$730 million to nearly \$1.1 billion between 1980 and 1987. Adaptation during the 1980's of hybrid corn seed to the extremes in heat and moisture conditions of the Northern Plains has also been successful.

Improved production technology, including minimum tillage techniques and effective weed control methods, continue to make the corn-soybean rotation dominate the humid regions of the United States. During the early and mid-1980's, the farm financial crisis was most severe among midwestern corn-soybean producers. Current evidence that the farm financial crisis has receded bodes well for the future of corn-soybean farms that produced crops worth \$25 billion. Table 9 summarizes statistics for the five regions.

## Western Corn Belt

With sales of \$4.4 billion in 1987, the western Corn Belt was the second largest corn-soybean producer. This region led all others with both the largest share of specialized producers, 59 percent, and the largest share of midsized producers with sales of \$100,000-\$250,000, 44 percent. Iowa had more commercial farmers with loan repayment problems, about 12,600 on average during 1984-86, than any other State. Missouri ranked fifth in terms of repayment problems and first in the proportion of farms with debt exceeding assets (insolvent) during 1984-86.



**Table 9 – Financial indicators of specialized corn-soybean farms, by region, 1987**

Item	Western Corn Belt	Eastern Corn Belt	Lake States	Northern Plains	South	All <sup>1/</sup>
<i>Dollars (per farm averages)</i>						
Gross revenues	121,179	140,092	116,983	142,427	135,531	130,997
Government payments	26,869	24,164	29,108	28,480	25,153	25,977
Corn-soybean sales	73,568	94,491	66,104	81,325	67,957	82,257
Value of total production	85,642	110,745	79,265	108,366	104,789	98,114
Crops used on farm	8,110	5,886	5,107	9,825	7,820	6,858
Capital expenditures	8,510	11,770	14,083	15,075	8,104	7,520
Debt	134,607	112,803	128,816	114,288	124,243	122,311
Interest	11,624	9,975	10,092	10,694	11,181	10,625
Net returns	32,206	39,240	18,466	44,860	30,048	33,478
Equity	305,062	401,461	300,967	409,930	331,358	357,219
Assets	433,272	508,754	438,385	522,456	451,212	476,604
<i>Percent</i>						
Returns margin	27	28	16	32	22	26
Returns/assets	7	8	4	9	7	7
Farms with negative net returns	14	14	26	9	23	16
Cost/returns ratio <sup>2/</sup>	83	81	97	75	87	84
Corn's share of gross revenue	29	33	27	32	24	31
Soybean's share of gross revenue	35	35	32	24	35	34
Debt/asset ratio	31	22	29	22	28	26
Interest/sales ratio	21	14	17	24	16	17
Stressed farms	11	7	19	8	15	10

<sup>1/</sup> Includes 1,570 specialized corn-soybean farms outside the five regions.

<sup>2/</sup> The average of all costs including capital expenditures divided by the sum of the total value of production and direct Government payments.

Source: 1987 Farm Costs and Returns Survey, U.S. Dept. Agr.

- Iowa had the largest number of specialized corn-soybean producers, nearly 34,000.
- The western Corn Belt had the most representative cost and returns of all the regions. Average costs, excluding capital expenditures, were 75 percent of revenues for both this region and the United States.
- The highest debt level, \$134,600, and the highest debt/asset ratio, 31 percent, were visible vestiges of the severe mid-1980's financial crisis in this region.
- Corn-soybean producers with loan repayment problems had an average net worth of \$33,160, less than one-tenth the level of the financially stable farms.

Volatile rainfall conditions have traditionally characterized southern Iowa and northern Missouri. Severe drought in parts of these States during 1983 and 1987, combined with plummeting land values, resulted in widespread loan default problems. However, corn-soybean producers in this region could rebound the most rapidly because their annual capital expenditures of about \$8,500 are the lowest of the Midwest regions. Farmers in this region achieved relatively high yields in 1988, and their land values climbed more than those in most other U.S. regions during 1987-88.

### Eastern Corn Belt

The deep topsoils and stable rainfall patterns of Illinois, Indiana, and Ohio make this region ideal for 60,000 specialized corn-soybean farmers. Thus, about 80 percent of all the corn-soybean producers in the eastern Corn Belt were specialized with annual sales exceeding \$40,000. Sales of \$6.5 billion were 37 percent of the U.S. total in 1987. The value of corn and soybean production, nearly \$215 per acre in 1987, was the highest of any region.



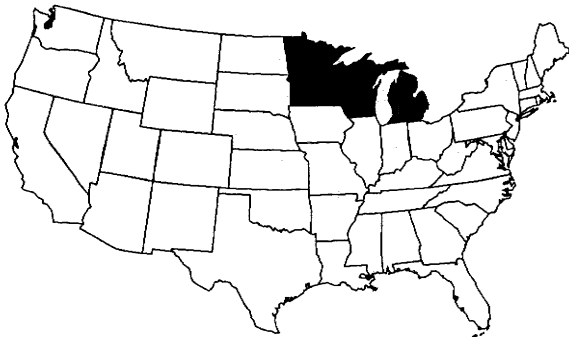
- High off-farm income, averaging nearly \$17,000 per farm (70 percent higher than in the Northern Plains), helped farm families withstand downturns in commodity prices in this region.

- Production costs averaging 72 percent of sales were the second lowest. Per farm value of corn and soybean production, \$94,500 in 1987, was the highest of any region.
- Only 7 percent of the specialized corn-soybean farmers had loan default problems in 1987, compared with 13 percent for the other regions.
- Moderate debt use and high land values created the lowest debt/asset ratio of any region, 18 percent.

Ideal production conditions, low cost structure, and net revenues of nearly \$40,000 indicate sound business conditions prevailed for most eastern Corn Belt corn-soybean producers in 1987. The major problem for financially weak farmers, and beginning farmers, was high land rent. Specialized eastern Corn Belt corn-soybean farmers paid average rent (including both cash and share rent) of nearly \$38,000 in 1987.

### Lake States

The Lake States provided about 11 percent of U.S. corn and soybean sales. More than 70 percent of this region's 17,200 specialized corn-soybean farms were located in Minnesota, where production conditions are excellent in the southern part of the State. The corn-soybean farms in the Lake States were smaller, on average, than in the other regions. This was the only region where more than half the specialized corn-soybean farms sold less than \$100,000 of farm products in 1987.



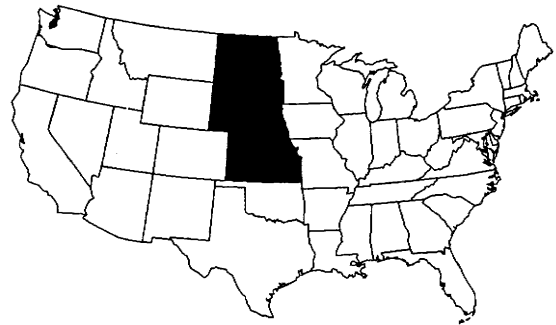
- Net cash farm income of corn-soybean producers, \$15,300, was the lowest of any region. Average sales were 23 percent less than in the eastern Corn Belt.
- The highest off-farm income of any region, \$22,940, substituted for the less intensive scale of corn-soybean production in the Lake States.
- Loan default problems affected 19 percent of specialized corn-soybean producers. Average farm

equity was about \$100,000 lower than in either the eastern Corn Belt or the Northern Plains.

High debt exposure, the second highest after the western Corn Belt, was the primary problem of typical corn-soybean farms in the Lake States. Lake States' farmers had nearly \$2 of outstanding debt for each \$1 of corn-soybean production, compared with about \$1.40 for farms in other regions. The strengths of corn-soybean producers in the Lake States were rent expense more than 40 percent lower, Government payments \$3,000 higher, and off-farm income about \$7,000 higher than was typical for all specialized corn-soybean farms.

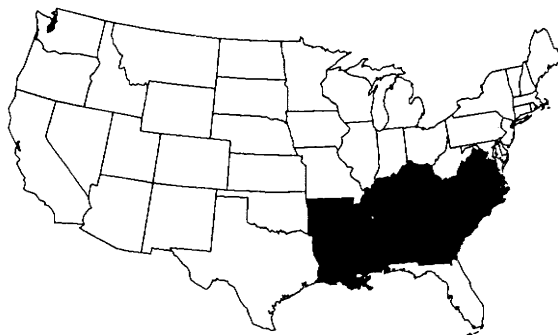
### Northern Plains

About two-thirds of the \$1.4 billion corn sales in the Northern Plains in 1987 were by Nebraska farmers. Extensive irrigation aided corn production in Nebraska. Kansas and South Dakota contributed half of the region's \$1 billion of soybean sales. About 20 percent of the region's specialized corn-soybean farmers had sales greater than \$250,000 in 1987, the highest proportion of large-sized corn-soybean farms in any region. But a higher proportion of large farms was not associated with disproportionately high debt, since the average debt/asset ratio of corn-soybean farms was lowest in the Northern Plains.



- Although the value of corn and soybean production, \$189 per acre in 1987, was lower than in all regions except the South, costs were also low, amounting to only 65 percent of corn-soybean production. Low costs resulted in the highest return to assets of all regions, 9 percent.
- Both assets and net worth were highest in the Northern Plains, \$522,000 and \$410,000 per farm, respectively.
- Extensive use of share rent, about three-fourths of all rent expense, limited financial risk. But low off-farm income heightened risk. Farms with default problems in this region averaged only \$5,530 off-farm income, less than one-third the average for all specialized corn-soybean farms.

The Northern Plains is the most agriculturally dependent multi-State region. In many parts of this region, opportunities to earn off-farm income are quite limited. The land is less productive than in the Corn Belt regions. Farmers have adapted by expanding farm size while tightly controlling debt use and production costs. The Northern Plains was the only region where acres of corn harvested exceeded acres of soybeans harvested for specialized corn-soybean producers. Much of the extra corn was fed to beef cattle (Nebraska and Kansas are the second and third leading beef-producing States). Greater corn acreage also generated larger Government deficiency payments. Farmers facing loan default in the Northern Plains received Government payments more than 40 percent larger than was typical for corn-soybean farmers in other regions.



larger percentage of all crop acres harvested than in any other region.

- The average value of corn-soybean production per acre was about \$50 less than in the other regions. Production costs of \$0.81 per dollar of production were the second highest.
- Fifteen percent of specialized corn-soybean producers in the South faced default problems, second highest after the Lake States.

### South

The 10 States in the South with substantial specialized corn-soybean production in 1987 accounted for 6 percent and 17 percent of U.S. corn and soybean sales, respectively. Nineteen percent of these farmers had sales greater than \$250,000, compared with only 15 percent in the Lake States.

About half of this region's corn sales in 1987 were from Kentucky and North Carolina; half the soybean sales were from Arkansas, Louisiana, and Mississippi. Through much of the South, corn is not a standard rotation crop for soybeans. The value of corn and soybean production in the South declined 48 and 40 percent, respectively, between 1980 and 1987 because of declines in acreage and crop prices.

- An average of 340 acres of soybeans were harvested on specialized corn-soybean farms, a

Severe drought conditions in the South in 1986 and significant declines in land values during 1985-87 in parts of the South combined to cause substantial financial hardships for corn-soybean farmers. Farmers Home Administration loans were about 180 percent larger among specialized corn-soybean producers in this region compared with other regions. One belt-tightening response of corn-soybean farmers in the South was to limit capital spending to \$8,100 in 1987, the lowest of any region. However, the South was the only region to substantially increase soybean yields in 1988. Those higher yields permitted farmers in this region to take advantage of the drought-caused rise in soybean prices last year.

### *For Additional Information . . .*

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