

## A historical perspective on District agriculture

Agricultural production in the Seventh Federal Reserve District centers on the production of feed and livestock products. Five commodities, corn, soybeans, hogs, cattle, and milk, typically account for almost 90 percent of the marketing receipts of District farmers. Because of this concentration and the fluctuating forces that have influenced supply and demand for these commodities, the District's agricultural sector has undergone marked changes since the early 1970s.

A sharp rise in corn and soybean output during the 1970s was spurred by an increase in the demand for these commodities. Domestic utilization of corn increased by 30 percent while soybean use rose 45 percent. Corn used for feeding livestock and poultry, which accounts for the bulk of domestic corn demand, rose by a fourth during the period. Use of corn for food, seed, and industrial purposes, although only a small component of domestic demand, jumped more than 75 percent between 1970 and 1980.

Although the increase in domestic utilization was substantial, the major impetus for the expansion of corn and soybean output came from the burgeoning world demand for U.S. grains and feeds. Overall U.S. agricultural exports rose at an unprecedented annual rate of 8 percent during the 1970s. During that period the U.S. share of world coarse grain trade grew from about 40 percent to more than 70 percent. Corn exports, the principle component of the nation's coarse grain exports, grew at an annual compound rate of almost 16 percent. Soybean exports grew at a rate in excess of 6 percent per year and consistently held a world market share of about 80 percent. Combined with strong domestic demand, the rise in exports ushered in a boom period for Midwest grain farmers.

Farmers in District states responded to the growing demand in world grain and oilseed markets by greatly expanding output. By the early 1980s, corn acreage harvested in District states had jumped about 28 percent from the decade-earlier level, with large increases recorded in every District state and particularly in Michigan and Wisconsin. Moreover, impressive gains in per acre yields boosted output even more, resulting in District-wide production in the early 1980s almost 60 percent above the levels of ten years earlier. During the same period, soybean production in District states

increased more than 64 percent paced by a 43 percent rise in harvested acreage.

This shift toward crop production to supply an expanding world market contributed further to a reduction in the importance of livestock production that had been occurring for some time in most areas of the District. After accounting for almost two thirds of total cash receipts in the mid 1960s, livestock marketings had fallen to less than half of the total receipts generated by District farmers by 1980. Only Iowa and Wisconsin were generating more receipts from livestock marketings than crop marketings among the District states at the end of the 1970s.

Much of the falloff in livestock receipts is attributable to the decline of the cattle feeding industry in District states. In the mid 1960s, the District accounted for almost a third of the cattle in feedlots across the United States, with Iowa the number one cattle feeding state in the nation. The 1970s, however, saw a sharp cut in cattle feeding across the District, despite an increase of almost 10 percent nationwide. By 1980 cattle feeding in the District was down about a fourth from ten years earlier.

Hog production in District states largely followed the national trend during the 1970s. In the mid 1960s, District states accounted for more than half of the nation's inventories of hogs and pigs, with Iowa alone accounting for a fourth of the total. By the end of 1980, however, inventories of hogs and pigs on farms in District states increased about 17 percent, while the U.S. inventory jumped about 28 percent. As a result, the District's share of total inventories slipped slightly to 46 percent, although Iowa retained its dominant position within the industry.

The shift in resources away from livestock toward crop production in the 1970s is also evident in milk production trends among the District states. In 1980, milk output in the five state region was down about 2.5 percent from the level of the mid 1960s, compared to a 3.5 percent gain in production for the nation as a whole. Moreover, sharp reductions in four of the states were largely offset by a substantial increase in output in Wisconsin. The largest grain producing states in the District, Illinois, Indiana, and Iowa, saw milk production decline by 25 percent to 34 percent during the period. The importance of dairy output in

the region, therefore, was maintained by a 19 percent increase in output by Wisconsin dairy farmers.

The increases in crop receipts contributed to rising farm income and a rapid escalation in farmland values throughout the Midwest. Farmland in District states was no exception, registering more than a four-fold increase in value during the decade of the 1970s. However the rapid increase in values was accompanied by a substantial increase in the amount of debt held by District farmers.

The rise in debt was particularly rapid in the second half of the 1970s. Between 1974 and 1979, the proportion of farm operators with debt in District states jumped from 42 percent to 63 percent. In comparison, 54 percent of farm operators nationwide had outstanding debt in 1979. In addition to the substantial increase in the incidence of debt across the District, the average amount outstanding to these indebted farmers doubled between 1974 and 1979.

The huge increase in debt contributed further to the overall escalation in farm production expenses. By 1979, interest expenses among District states had jumped more than 150 percent from the 1974 level, and continued to rise sharply into the early 1980s. Other production expenses were up 54 percent. Despite the increases in interest and other expenses, farm income remained strong. Real net farm income in the District, an inflation adjusted measure of the value of a given year's production whether it is sold, fed to livestock or held in inventory, averaged more than 11 percent higher in the 1970s than during the 1960s.

The boom period for agriculture which characterized the 1970s ended abruptly in the early 1980s. Exports, which had fueled the expansion of crop production, dropped off sharply, pressuring prices and income lower. Moreover, the huge expansion of debt in the late 1970s was compounded by the sharp escalation of interest rates in 1980. By 1982, interest expenses among District farmers had climbed to more than \$4.8 billion, 67 percent above the high 1979 level. As a result, many of the District's highly leveraged farm operators were experiencing severe financial stress.

The drop in U.S. agricultural exports in the 1980s is the result of a combination of forces. The worldwide recession of the early 1980s had a deleterious effect on U.S. agricultural exports. Stalled economic growth limited export demand and persistent debt problems and foreign exchange shortages in many regions of the world further dampened demand. In addition, increased production and exports by countries other than the United States contributed to mounting competitive pressures.

The success that other exporting countries have enjoyed in competing with the U.S. agricultural exports in recent years is attributable to a number of factors. Among these factors are large production and export subsidy policies of many exporting nations. In addition, U.S. domestic agricultural and macroeconomic policies inadvertently enhanced the export opportunities of other nations.

Following the inflation experience of the 1970s, farm price supports in the United States were designed to cover anticipated increases in production costs. However, increased world production pressured commodity prices lower, leaving U.S. support prices above market clearing levels and resulting in disastrous consequences for U.S. agricultural exports. Rather than being directed toward export channels to satisfy demand at the prevailing world price, U.S. commodities moved under loan and into inventories. The void this movement created was then filled by competing exporters. The situation was further exacerbated by domestic macroeconomic policies that contributed to the rising exchange value of the dollar.

Despite the falloff in exports of major District commodities, production continued to expand. With price and income support payments insulating farmers from the effects of lower exports, producers responded with record corn crops in 1981 and 1982 and near record soybean output. Crop inventories began to build to burdensome levels. To alleviate this problem, the government instituted the Payment in Kind program (PIK) in 1983, which paid farmers in commodities to reduce their acreage of grains and cotton.

District farmers producing corn and other feed grains participated heavily in the program, sharply reducing acreage. Corn acreage harvested dropped 27 percent from a year earlier, but a severe drought further trimmed District corn production to about half the previous year's level. The drought also curtailed soybean production in District states, dropping it by about a fourth from the 1982 level.

The PIK program, combined with the drought, boosted feed grain prices sharply, transferring the financial stress that had been experienced by grain farmers to livestock producers. High feed costs accentuated the decline of cattle feeding in the District and severely squeezed the operating margins of all livestock enterprises. By the end of 1986, the number of cattle on feed in District states had dropped another 32 percent from the 1980 level, compared to a 6 percent drop nationwide. Low and negative operating margins for hog producers following the PIK and drought reduced feed grain crop of 1983 contributed to a 15 percent decline of hog inventories in District states in 1985 compared to five years earlier.



Milk production continued to rise in the early 1980s, requiring large government purchases of manufactured dairy products to support prices. In an effort to cut surplus production and reduce the costs of the support program, the government instituted a paid diversion program for milk producers in 1984. The program along with high feed costs had the short term effect of cutting U.S. output by 3 percent from a year earlier in 1984. However, with milk support prices remaining relatively high, milk production rebounded in 1985 after the end of the program, rising 6 percent above a year earlier in the District and nationwide.

The very short term effectiveness of the diversion program prompted the introduction of the whole-herd Milk Termination Program that took effect in 1986. Under the terms of the program, participants were required to liquidate their dairy herds and refrain from producing milk for at least five years in exchange for government payments based on past production. In District states, participating farmers represented about 5.4 percent of the region's 1985 milk marketings, compared to participation equivalent to 8.7 percent of 1985 marketings nationwide. While the program has been effective in cutting projected milk production through most of 1987, it appears likely that low feed costs will continue to boost output per cow and that following the final herd liquidations, gains in milk production will resume.

Declining receipts and mounting expenses pressured income and land values in the 1980s. Despite a huge increase in government payments, which have averaged more than \$6 billion in the 1980s compared to \$2 billion in the previous decade, net farm income declined. Among District states, inflation adjusted net farm income in the first half of the 1980s averaged less than half the level of the 1970s. The declines were most pronounced in Illinois, Indiana, and Iowa, ranging from almost 60 percent to more than 70 percent lower than the previous decade. Inflation adjusted net farm income nationwide in the first half of the 1980s averaged 39 percent lower than in the 1970s.

The steep decline in net farm income precipitated a huge reduction in District farmland values. By the end of 1986, farmland values across the District had plummeted to about half of their 1981 peak. Adjusted for inflation, the decline was about 60 percent from the peak. As a result of the drop, the wealth that had accumulated to farmland owners during the 1970s was completely eroded. While the drop in net worth undermined the financial positions of all producers, for some it resulted in insolvency.

Through attrition and efforts to restructure balance sheets and streamline operations, farmers have been

adjusting to the economic realities of the 1980s. Although farm debt continued to expand through 1983, it has declined steadily since that time. By the end of 1985, outstanding farm debt among the District states (excluding price support loans from the CCC) had dropped almost 11 percent from the 1983 peak. With farm debt nationwide registering a further 8 percent decline last year, it is likely that outstandings among District farmers will continue to fall as well.

The sharp declines in debt, along with generally lower interest rates, have contributed to lower production expenses. Paced by a 16 percent decline in interest expenses between 1982 and 1985, total production expenses of District farmers fell by more than 6 percent over the period. Although data for individual states is not available, farm expenses nationwide fell sharply again last year, suggesting that even further declines among District states occurred.

Lower production expenses and greatly improved returns to livestock producers over the last two years along with large government payments have contributed to improving prospects for a recovery in the farm sector. Further encouraging signs for District farmers are evident in export trends. Although soybean exports continue to be pressured by stiff competition from Southern Hemisphere producers, a substantial rebound in corn and feed grain exports has occurred this year. Coarse grain exports in the current year are expected to increase almost a fourth from the dismal level of a year ago. Production setbacks in some regions of the world, greater use of export subsidies by the United States, and the lower exchange value of the dollar have contributed to the recent recovery of exports. Most importantly, however, the introduction of generic PIK certificates increased market supplies and pressured prices lower, effectively circumventing the loan rate price floor.

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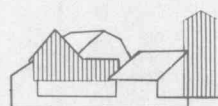
## Selected Agricultural Economic Indicators

	Latest period	Value	Percent change from		
			Prior period	Year ago	Two years ago
<b>Receipts from farm marketings (\$ millions)</b>					
Crops*	February	9,952	-22.2	2	-11
Livestock	February	2,792	-58.0	-30	-30
Government payments	February	5,661	0.0	12	-2
	February	1,499	212.9	114	3
<b>Real estate farm debt outstanding (\$ billions)</b>					
Commercial banks	December 31	12.7	2.2 <sup>†</sup>	11	25
Federal Land Banks	December 31	37.9	-5.0 <sup>†</sup>	-16	-23
Life insurance companies	January 31	10.8	-1.7 <sup>†</sup>	-8	-12
Farmers Home Administration	December 31	10.4	-0.7 <sup>†</sup>	-1	3
<b>Nonreal estate farm debt outstanding (\$ billions)</b>					
Commercial banks	December 31	31.2	-7.3 <sup>†</sup>	-12	-21
Production Credit Associations	December 31	10.7	-11.3 <sup>†</sup>	-24	-40
Farmers Home Administration	December 31	16.4	-6.8 <sup>†</sup>	-2	5
Commodity Credit Corporation	December 31	19.0	20.5 <sup>†</sup>	12	112
<b>Farm loans made (\$ millions)</b>					
Life insurance companies	January	79	-47.2	156	224
<b>Interest rates on farm loans (percent)</b>					
7th District agricultural banks					
Operating loans	April 1	10.89	-2.1 <sup>†</sup>	-12	-19
Real estate loans	April 1	10.26	-2.3 <sup>†</sup>	-12	-22
Commodity Credit Corporation	July	6.88	0.0	2	-13
<b>Agricultural exports (\$ millions)</b>					
Corn (mil. bu.)	April	2,270	-6.0	7	-15
Soybeans (mil. bu.)	April	185	27.4	218	10
Wheat (mil. bu.)	April	54	-20.5	-33	-11
	April	73	-1.1	13	-5
<b>Farm machinery sales<sup>P</sup> (units)</b>					
Tractors, over 40 HP	May	3,574	-20.2	-16	-38
40 to 139 HP	May	2,969	-17.6	-4	-36
140 HP or more	May	605	-30.8	-48	-46
Combines	May	110	-36.0	-21	-77

\*Includes net CCC loans.

<sup>†</sup>Prior period is three months earlier.

<sup>P</sup>Preliminary



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