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FRB CHICAGO

AGRICULTURAL LETTER

FEDERAL RESERVE BANK OF CHICAGO
June, 1994 Number 1853

Trends in the dairy sector

U.S. milk production dipped slightly last year but is expected to regain lost ground in 1994. In addition, the U.S. dairy sector continues to be characterized by the long-term trends of declining cow numbers and rising productivity. Furthermore, milk producers in the states comprising the Seventh Federal Reserve District registered a decrease in their share of the market for raw milk as production continued a relative shift to the southwest and west. Dairy exports posted solid gains last year, but implementation of the Uruguay round of trade negotiations is expected to reduce the level of subsidized exports in the future.

Milk production posted a slight decrease in 1993 as modest productivity gains failed to offset another decline in the number of cows being milked. U.S. milk production totaled nearly 151 billion pounds, down a half percent from the previous year, but still the second-highest level on record. The number of milk cows on farms averaged 1 percent lower throughout the year, but the gain in the amount of milk produced per cow was less than 1 percent. Though this productivity increase was the smallest in four years, it is noteworthy because it indicates that dairy farmers still managed to improve on the sharp gain of the previous year even though the quantity and quality of forage production in many areas were limited by flooding. For all of 1993, the production of milk per cow averaged 15,554 pounds, a tenth higher than five years earlier and nearly a quarter higher than ten years earlier.

The long-term decline in the U.S. milk cow herd was aided last year by the largest level of dairy cow marketings since 1986. Overall, milk cow slaughter in federally-inspected plants rose nearly 4 percent last year. The increased culling helped push the January 1 inventory of milk cows down two percent from a year earlier and marked the third consecutive annual decline. At 9.6 million head, dairy cow numbers were 6 percent lower than five years earlier and 13 percent below the level of 10 years ago. In addition, the January 1 inventory of replacement heifers has varied little over the past four years, but did register a small decline to just over 4.2 million head. The pace of culling has eased somewhat this year and dairy cow slaughter through April was running about 5 percent below last year.

Milk production in the five states that comprise the Seventh Federal Reserve District—Illinois, Indiana, Iowa, Michigan, and Wisconsin—posted a decline of over 3 percent last year. This was the largest percentage drop registered by District dairy farmers since 1973. Output was off in each state except Michigan, where dairy farmers increased production nearly 1 percent. Wisconsin—despite suffering a five percent decline in milk production—was the leading milk-producing state for all 1993. However, milk production in California has exceeded that for Wisconsin in each month since July, 1993. Year-over-year gains in milk production in California have expanded to 8 percent through the first four months of this year. In contrast, milk production in Wisconsin through April was down 8 percent.

Trends in District milk production

	1970–79 avg.	1980–89 avg.	1990	1991	1992	1993	Change from 1992
	(----------million pounds---------)						(percent)
Illinois	2,591	2,685	2,820	2,811	2,682	2,626	–2.1
Indiana	2,293	2,293	2,276	2,285	2,289	2,255	–1.5
Iowa	4,161	4,041	4,233	4,151	4,231	4,054	–4.2
Michigan	4,677	5,280	5,233	5,256	5,397	5,435	0.7
Wisconsin	19,700	23,891	24,400	24,065	24,103	23,014	–4.5
Seventh District	33,422	38,190	38,962	38,568	38,702	37,384	–3.4
California	10,932	16,232	20,947	21,407	22,084	22,921	3.8
Other states	74,626	84,600	88,410	88,502	90,861	90,649	–0.2
United States	118,980	139,022	148,319	148,477	151,647	150,954	–0.5

Source: USDA

District farmers also accounted for a smaller share of U.S milk production as output rose elsewhere in the U.S. Together, Seventh District states accounted for just under a quarter of U.S. milk production, compared to a 27 percent share held five years earlier. Two factors account for the decline in market share held by farmers in District states. First, while the amount of milk produced per cow has been on the rise in District states, it has not kept pace with the gains registered by producers in other states. Milk

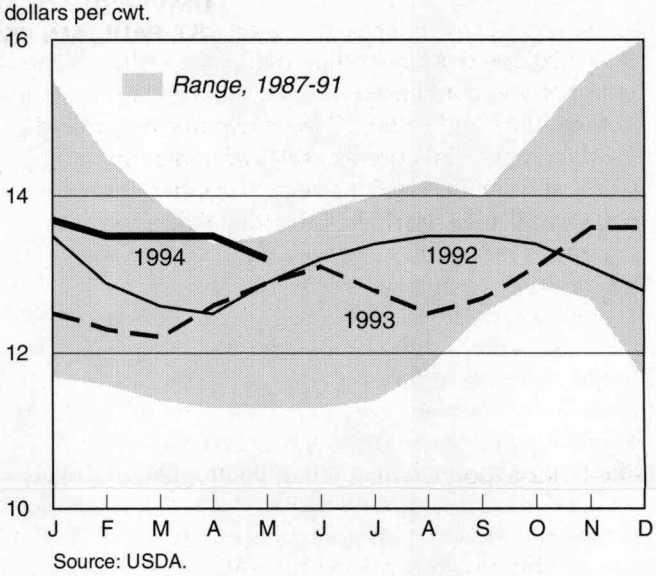
per cow rose about a half percent in District states last year, while the gain in the rest of the U.S. was nearly double that. Second, the number of dairy cows on farms is shrinking at a more rapid pace within the District than in the rest of the U.S. The number of milk cows on District farms throughout the year averaged 4 percent lower in 1993 when compared to the year before, but was little changed outside the District.

Another aspect of the structural adjustment occurring within the dairy sector is the decrease in the number of operations with dairy cows. In general, the number of operations with milk cows has fallen even more rapidly than cow numbers. There were over 200,000 operations nationwide with dairy cows in 1988. Last year, the number was down to about 162,000. The net effect is that the average herd size jumped nearly a fifth over the last five years to reach 60 head in 1993. These structural changes are also reflected by the dairy farmers within District states. However, the average number of dairy cows per operation has been growing more slowly within the District, averaging 53 head last year. That herd size pales in comparison to the herd averages that range from 110 to 280 head in such states as Idaho, New Mexico, Arizona, and California.

The disparity between milk production in the Seventh District and the rest of the U.S.—along with the ongoing structural change—underscore the changes occurring in regional patterns of milk production. In general, western and southwestern states are gaining a larger share of total milk output. Their gains have come at the expense of traditional dairy states such as Wisconsin, Minnesota, Pennsylvania, and New York. Of the 22 states that expanded milk production from 1988 to 1993, four of these states—California, New Mexico, Texas, and Washington—accounted for three-quarters of the increase. In particular, milk production in New Mexico has exhibited meteoric growth. In 1987, New Mexico ranked 32nd in U.S. milk production and accounted for less than 1 percent of the U.S. total. Since then, dairy farmers in New Mexico have posted double-digit gains of between 13 and 26 percent each year, and now rank 14th among states in production.

Dairy farmers in western and southwestern states are perceived to have a relative cost advantage that stems from milder weather, greater productivity, and larger herd size. A more temperate climate allows a smaller investment in facilities to house livestock. In addition, the longer growing season and availability of irrigation result in relatively larger yields of high-quality forage, helping to bolster the amount of milk produced per cow. USDA data also indicate that dairy farmers in western and southwestern states feed relatively more concentrate per cow, further boosting output. The

Milk prices received by farmers



Source: USDA.

greater productivity and larger herd size enables fixed costs to be spread over relatively more output, reducing unit costs of production. The larger herd sizes also enable greater specialization of labor and management relative to the dairy operations in midwestern and northeastern states. Moreover, the greater management specialization will likely lead to quicker adoption and more extensive use of bovine somatropin (bST) among producers in western and southwestern states, providing a further boost to output.

Just over 98 percent of the milk produced last year was marketed by farmers to commercial plants and dealers for further processing. About 1 percent was retained on the farm (mostly fed to calves) and the remainder was sold directly to consumers. The cash receipts received by dairy farmers from commercial milk marketings dropped about 3 percent last year due to the drop in production and a year-over-year decline in the average milk price received by farmers. Milk prices averaged $12.83 per hundredweight, a decrease of about two percent from the previous year. Commercial disappearance improved on the year, rising 2 percent. However, this gain was largely offset by lower "net removals" from commercial markets through USDA programs. Net removals represent purchases by the Commodity Credit Corporation (CCC) as part of its price support activities, plus purchases to fill contracts under the Dairy Export Incentive Program, minus CCC sales for unrestricted use. The dairy commodities shipped under the export program are included in net removals since their sale would not take place without the CCC subsidies. The upshot was that despite lower milk production and higher commercial use, ending commercial stocks posted only a slight decline.

The value of dairy exports rose for the second consecutive year in fiscal (October-September) 1993. Export value was nearly a fifth higher than the year before and over 150 percent higher than two years earlier. Exports of butter and condensed milk registered sharp gains in both volume and value. Cheese exports also posted a solid increase. In contrast, sales of nonfat dry milk were off from the previous year. Together, these products account for nearly half the total value of dairy exports. Through the first half of the current fiscal year, the value of dairy exports was near the level of a year ago. Gains in nonfat dry milk and cheese were largely offset by a decline in shipments of condensed milk, butter, and whey.

The Dairy Export Incentive Program (DEIP) and the GSM-102 Export Credit Guarantee Program both play an important role in supporting exports of U.S. dairy products. The GSM program offers CCC credit guarantees to foreign buyers of U.S. agricultural commodities who cannot pay in cash and may have difficulty obtaining credit. The guarantees cover short-term loans of up to three years. Users help support the program by paying a fee that is based upon the amount of the guarantee and the term of the loan. Last year, only 3 percent of $4.6 billion of credit guarantees were allocated to dairy products, with most of the dairy allocations going to Algeria. Nonetheless, the value of dairy products exported under the credit guarantee program in fiscal year 1993 amounted to nearly 14 percent of the value of U.S. dairy exports. Through the first half of the current fiscal year, credit guarantee allocations were off about a quarter from the previous year, primarily due to a reduction in the allocations to Algeria.

The DEIP directly subsidizes exports of U.S. dairy products, but its future use will likely be constrained by the implementation of the Uruguay round of the General Agreement on Tariffs and Trade (GATT). The DEIP subsidies—called bonuses—go to qualified exporters who complete sales of eligible products. The bonuses are intended to help exporters match the subsidized prices offered by other nations, especially those of the European Union. Use of the DEIP has been on the upswing, and the value of bonuses awarded in fiscal year 1993 more than doubled from the previous year, as did the tonnage receiving assistance. Furthermore, Algeria and Mexico were the largest users of the DEIP last year, accounting for 70 percent of the bonuses awarded. Of the commodities supported by the DEIP—milk powder, cheese, and butter/oil—exports of nonfat dry milk powder have received the greatest level of assistance. However, a recent USDA report indicates that implementation of the GATT would significantly reduce use of the DEIP to support nonfat dry milk exports. In contrast, the GATT limitations are expected to have little effect on foreign sales of cheese and butter/oil. The report also predicts the GATT would have little effect on domestic production and use, but would result in higher levels of both dairy exports and imports.

Gains in milk production and commercial disappearance are expected to follow divergent patterns during 1994, resulting in downward pressure on milk prices over the remainder of the year. In general, year-over-year gains in output are expected to increase later in the year, while the opposite is anticipated for commercial use. Output was unchanged during the first quarter as compared to a year earlier. A 2-percent gain in milk per cow was offset by a similar decline in the average number of milk cows on farms. USDA projections indicate year-over-year production gains will rise to about 1 percent this spring, then widen to about 2 percent in the second half as more dairy farmers use bST to boost output. For the year, production is expected to total 153 billion pounds, which, if achieved, would eclipse the 1992 record. However, this prediction is quite tentative due to the uncertainty surrounding bST use, forage production, and the effect of weather-related stress on the amount of milk produced per cow.

In contrast to production, commercial disappearance rose 5 percent in the first quarter as compared to last year, helping push the average milk price received by farmers to its highest level since 1990. First-quarter milk prices averaged about $13.57 per hundredweight, 10 percent higher than a year earlier. Milk prices are expected to trend sharply lower this spring and average well below year-earlier levels this summer. The midpoint of the USDA projection for the year indicates that milk prices received by farmers will average comparable to the $12.83 per hundredweight posted in 1993.

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AGRICULTURAL LETTER (ISSN 0002-1512) is published monthly by the Research Department of the Federal Reserve Bank of Chicago. It is prepared by Gary L. Benjamin, economic adviser and vice president, Mike A. Singer, economist, and members of the Bank's Research Department, and is distributed free of charge by the Bank's Public Information Center. The information used in the preparation of this publication is obtained from sources considered reliable, but its use does not constitute an endorsement of its accuracy or intent by the Federal Reserve Bank of Chicago.

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Selected agricultural economic indicators

	Latest period	Value	Percent change from Prior period	Year ago	Two years ago
Prices received by farmers *(index, 1977=100)*	May	144	–1.4	0	2
Crops *(index, 1977=100)*	May	132	0.8	10	7
Corn *($ per bu.)*	May	2.60	–1.9	21	4
Hay *($ per ton)*	May	100.0	1.8	15	34
Soybeans *($ per bu.)*	May	6.63	0.9	14	13
Wheat *($ per bu.)*	May	3.48	–2.0	12	–4
Livestock and products *(index, 1977=100)*	May	155	–3.7	–8	–1
Barrows and gilts *($ per cwt.)*	May	43.30	0.7	–9	–5
Steers and heifers *($ per cwt.)*	May	70.30	–6.8	–13	–7
Milk *($ per cwt.)*	May	13.20	–2.2	2	3
Eggs *(¢ per doz.)*	May	58.2	–5.7	–8	13
Consumer prices *(index, 1982-84=100)*	May	148	0.1	2	6
Food	May	144	0.1	2	4
Production or stocks					
Corn stocks *(mil. bu.)*	March 1	3,995	N.A.	–30	–12
Soybean stocks *(mil. bu.)*	March 1	1,008	N.A.	–17	–14
Wheat stocks *(mil. bu.)*	March 1	1,017	N.A.	–2	15
Beef production *(bil. lb.)*	April	1.90	–4.9	7	6
Pork production *(bil. lb.)*	April	1.43	–6.4	–2	1
Milk production* *(bil. lb.)*	May	11.5	4.0	1	2
Receipts from farm marketings *(mil. dol.)*	February	13,286	–14.9	4	5
Crops**	February	4,953	–37.4	5	–1
Livestock	February	7,148	0.9	2	5
Government payments	February	1,186	90.7	11	44
Agricultural exports *(mil. dol.)*	March	3,916	12.5	1	5
Corn *(mil. bu.)*	March	111	29.0	–18	–11
Soybeans *(mil. bu.)*	March	54	–20.9	–33	–15
Wheat *(mil. bu.)*	March	103	12.4	–17	–4
Farm machinery sales *(units)*					
Tractors, over 40 HP	April	7,139	8.2	14	41
40 to 100 HP	April	4,566	38.3	31	34
100 HP or more	April	2,573	–22.0	–6	55
Combines	April	580	1.0	24	86

N.A. Not applicable
*21 selected states.
**Includes net CCC loans.

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