

Overview

U.S. milk production is one of several key components of the dairy situation and outlook whose behavior in this unusual year has produced decidedly unique patterns of milk and dairy product prices in 2020. When combined with unusual market behavior among key dairy components, producers are experiencing a roller-coaster ride requiring a strong stomach, and great patience, as markets eventually return to normal.

Still, the economic outlook is much brighter than in the darkest days of the spring, and some of the most visible emblems of recent turmoil – namely negative Producer Price Differentials (PPDs) in milk checks – should soon fade.

Milk production growth in the nation has zigzagged this year from +1.3% in January, to +2.8% in March, to -0.5% in May and back to +2.0% in July. Other actors in dairy's strange drama have been sales of dairy products at retail, which have been stronger than usual; use of dairy products in food service and institutions, which have been weaker than usual but fluctuating; government purchases of dairy products for food assistance use, which have been much larger than usual; and finally, government direct payments to dairy farmers, which have no recent historical precedent.

All this has led to wild fluctuations in average U.S. milk-price results as reported by USDA: \$18.00/cwt. in March, \$13.60 in May, and \$20.50 in July. June and July also saw record high negative PPDs in federal orders, due to the interaction of the resulting unusual fluctuation of dairy product prices.

U.S. dairy exports have been a particular bright spot this year. The country exported more than 17 percent of its total milk solids production during May, June and July, only the second time that exports have exceeded this benchmark for three consecutive months (February through May 2018 holds that record). The United States exported close to three-quarters of total commercial use of dry skim milk during the 12 months through July, a significantly higher percentage of this key product's commercial use exported than any previous consecutive 12-month period.

Domestic Commercial Use	May–Jul 2020	May–Jul 2019	2019–2020 Change	Percent Change
	(million pounds)			
Total Fluid Milk Products	NA	10,977	NA	NA
Yogurt	1,140	1,060	80	7.6%
Butter	496	452	44	9.7%
American-type Cheese	1,335	1,274	61	4.8%
All Other Cheese	1,897	1,893	4	0.2%
Total Cheese	3,232	3,167	65	2.1%
Dry Skim Milk	208	273	-65	-23.8%
All Products (milk equiv., milkfat basis)	54,786	53,697	1,089	2.0%
All Products (milk equiv., skim solids basis)	45,224	46,686	-1,462	-3.1%
All Products (milk equiv., total solids basis)	48,102	48,791	-689	-1.4%

Commercial Use of Dairy Products

Commercial use of butter has grown markedly, year-over-year, almost every month this year from March through June, but dropped by seven percent in July. American-type cheese domestic use has generally increased since March, but not as strongly, while domestic use of other cheese was mostly stable to down over that time.

Domestic commercial use of dry skim milk amounted to barely more than one-quarter of total use during March through July this year, with exports representing almost three times that amount. During the same period in 2019, that ratio was closer to half and half. Domestic use of milk in all dairy products increased during May through July, measured on a milkfat basis, but dropped based on skim solids, reflecting the strong pull of dry skim ingredients, including whey products, into the export markets during the period.

U.S. Dairy Trade

The United States exported almost 100,000 tons more of the key dry skim ingredient products during May through

July this year as it did during the same period a year earlier. This boosted the percentage of U.S. milk solids production exported during the period from 14.2% a year ago to 17.5% this year.

Butter was the only major product category to show a significant increase in imports into the United States during the period May through July.

Milk Production

U.S. milk production is rebounding quickly, rising by 2.0 percent in July, as reported by USDA's National Agricultural Statistics Service (NASS). Somewhat contrary to expectations, states that showed notably faster rates of production growth in July, or slower rates of decline, compared to the few months prior, were not western states with large average farm sizes. Instead, they included most of the states in the Upper Midwest, the Corn Belt, the larger states in the Northeast, and several in the Southeast. The pace of expansion in the national dairy cow herd also picked up in July.

U.S. Dairy Exports	May–Jul 2020	May–Jul 2019	2019–2020 Change	Percent Change
		(metric tons)		
Butter	5,708	4,171	1,537	37%
Anhydrous Milk Fat / Butteroil	1,558	1,585	-27	-2%
Cheddar Cheese	13,268	13,759	-491	-4%
American-type Cheese	13,318	13,899	-581	-4%
All Other Cheese	89,980	76,660	13,320	17%
Total Cheese	103,298	90,559	12,739	14%
Dry Skim Milk	230,288	155,746	74,542	48%
Whole Milk Powder	11,426	9,617	1,809	19%
Dry Whey	52,999	36,893	16,105	44%
Whey Protein Concentrate / Isolate	49,809	45,526	4,283	9%
Lactose	102,151	101,802	348	0%
Percent of U.S. Milk Solids Exported	17.5%	14.2%	3.3%	23%

U.S. Dairy Imports	May–Jul 2020	May–Jul 2019	2019–2020 Change	Percent Change
		(metric tons)		
Butter	14,060	11,278	2,782	25%
Cheese	34,860	43,050	-8,190	-19%
Dry Skim Milk	386	28	358	1284%
MPC (all protein levels)	15,753	19,269	-3,516	-18%
Casein	18,416	17,681	735	4%
Percent of U.S. Milk Solids Imported	3.5%	3.8%	-0.3%	-7%

Dairy Products

Cheese production growth was relatively balanced between the major types and varieties during the May through July period, compared with recent months, with all annual changes falling into the narrow range of one to two percent. Monthly butter production has pulled back significantly following a large surge in April. The current notable shift in dry skim milk use away from the domestic market and toward exports continues to be reflected in U.S. production of the specific types of this product, i.e., away from nonfat dry milk and toward protein-standardized skim milk powder, which is much preferred by foreign buyers as it facilitates reconstitution into other dairy products in dairy-deficient importing countries.

Dairy Product Inventories

End-of-month stocks of butter have remained in post-1990s record territory since the end of April this year, i.e., essentially the entire time the pandemic has been roiling the dairy markets. Measured by days of total commercial use in stock, however, these COVID-era butter stocks stack up toward the higher, but by no means record, levels compared to others in recent years.

Cold storage stocks of both American-type and other type cheese have followed somewhat similar patterns in recent months. This past April had the highest stock levels since at least 1994 for both types of cheese, but the other COVID-affected months were less remarkable for American-type cheese stocks, and even less so for those stocks measured

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Milk and Dairy Products Production	May–Jul 2020	May–Jul 2019	2019–2020 Change	Percent Change
Milk Production				
Cows (1,000 head)	9,354	9,325	29	0.3%
Per Cow (pounds)	5,983	5,969	14	0.2%
Total Milk (million pounds)	55,967	55,658	309	0.6%
Total Milk Solids (million pounds)	7,104	7,051	54	0.8%
Dairy Products Production		(million pounds)		
Cheese				
American Types	1,330	1,306	25	1.9%
Cheddar	948	934	14	1.4%
Italian Types	1,415	1,400	15	1.0%
Mozzarella	1,129	1,113	16	1.4%
Total Cheese	3,319	3,261	58	1.8%
Butter	480	476	4	0.9%
Dry Milk Products				
Nonfat Dry Milk	469	504	-35	-6.9%
Skim Milk Powder	160	125	34	27.3%
Dry Whey	256	245	11	4.5%
Whey Protein Concentrate	118	121	-3	-2.3%

Dairy Product Inventories	Jul 2020	Jun 2020	Jul 2019	2019–2020 Change
		(million pounds)		
Butter	373	362	330	13%
American Cheese	785	793	773	2%
Other Cheese	607	623	587	3%
Nonfat Dry Milk	310	289	292	6%
Dry Whey	84	85	68	25%

Dairy Product Inventories *from page 3*

as days of total use. By contrast, all months since April were clustered pretty much right at the top for other than American-type cheese, both in absolute terms and even to a great extent measured as days of use in stock.

Dairy Product and Federal Order Class Prices

Monthly butter prices in the National Dairy Product Sales Report (NDPSR) have followed a rather tortuous path over the past year. A year ago, they were nearing the end of their

3-year reign at mostly above \$2.20/lb. From there, they eroded steadily until taking a final plunge to almost \$1.25/lb. in April, as the pandemic hit. They were then boosted back into the \$1.70s/lb. range in June and July before coming back down most recently to around \$1.50/lb.

Cheese prices have gotten most of the attention recently, but their remarkable behavior has occurred mostly during the current pandemic period, starting with a plunge, in the monthly NDPSR, down to near \$1.30/lb. in May, then soaring up to around \$2.60 two months later and now sliding back down toward two dollars. While rather extreme, these price moves have been in response to clearly identifiable changes in

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Dairy Product and Federal Order Prices	Aug 2020	Jul 2020	Aug 2019	2019–2020 Change
NDPSR Dairy Product Prices	(per pound)			
Butter	\$1.515	\$1.789	\$2.366	-\$0.851
Cheddar Cheese	\$2.110	\$2.587	\$1.828	\$0.282
40-Pound Blocks	\$2.214	\$2.698	\$1.864	\$0.351
500-Pound Barrels	\$1.982	\$2.437	\$1.757	\$0.225
Nonfat Dry Milk	\$0.962	\$0.972	\$1.034	-\$0.072
Dry Whey	\$0.334	\$0.344	\$0.367	-\$0.033
Federal Order Class Prices for Milk	(per hundredweight)			
Class I Mover	\$19.78	\$16.56	\$17.89	\$1.89
Class III	\$19.77	\$24.54	\$17.60	\$2.17
Class IV	\$12.53	\$13.76	\$16.74	-\$4.21
Retail Dairy Product Prices				
Fluid Whole Milk (per gallon)	\$3.406	\$3.255	\$3.045	\$0.361
Lowfat Fluid Milk (per gallon)	\$3.038	\$2.826	\$2.702	\$0.336
Cheddar Cheese (per pound)	\$5.572	\$5.517	\$5.367	\$0.205
Butter (per pound)	\$3.623	\$3.572	\$4.036	-\$0.413

Milk and Feed Prices	Jul 2020	Jun 2020	Jul 2019	2019–2020 Change
Producer Prices				
All Milk (per cwt.)	\$20.50	\$18.10	\$18.70	\$1.80
Feed Prices				
Corn (per bushel)	\$3.21	\$3.16	\$4.16	-\$0.95
Soybean Meal (per ton)	\$291	\$289	\$311	-\$20
Alfalfa Hay (per ton)	\$183	\$190	\$196	-\$13
DMC Feed Cost (per cwt.)	\$8.09	\$8.11	\$9.43	-\$1.34
DMC Margin (per cwt.)	\$12.41	\$9.99	\$9.27	\$3.14

Dairy Product and Federal Order Class Prices *from page 4*

supply and demand conditions in the cheese markets, including the milk supply reductions in the spring, the large government purchases in spring and summer, the on-again, off-again outlook for food service use, and the current expansion of milk production again. In conjunction with relatively stable prices for nonfat dry milk and dry whey, these changes have produced two months of negative producer price differentials in June and July. These will moderate considerably in August before likely turning positive again in September.

In August, retail prices for whole and lowfat fluid milk, as reported by the U.S. Bureau of Labor Statistics (BLS), took their largest one-month jumps since at least February 2014. This may be yet another somewhat unusual fact of milk and dairy product pricing to chalk up to the unique circumstances to which the pandemic has subjected the dairy industry this year.

Milk and Feed Prices

The monthly margin under the Dairy Margin Coverage (DMC) program for July was \$12.41 per cwt. This was an increase of \$2.43 per cwt. from the June margin. The milk price increased by \$2.40 per cwt., from \$18.10 per cwt. in June to \$20.50 per cwt. in July. By contrast, the feed cost calculation for July was just \$0.03 per cwt. lower than in June. Since March, the milk price has been by far the most volatile component of the DMC margin, showing month-to-month changes, either down or up, that have averaged \$2.83 per cwt. By contrast, the monthly changes in the feed cost component have averaged just \$0.19 per cwt., and have been all declines, during that same period. Even the individual items in the feed cost formula have been relatively stable, with monthly price changes since March averaging, on a per hundredweight of milk basis, \$0.15 for corn, \$0.05 for soybean meal, \$0.04 for all alfalfa, and \$0.06 for dairy-quality alfalfa.

Looking Ahead

As of mid-September, dairy futures markets were looking generally bearish for cheese during the remaining months of 2020 but moderately bullish for butter and nonfat dry milk and neutral for dry whey. The near-term tracks of these four basic dairy products will largely determine the path that milk prices will follow during the rest of the year. That path would be a drop from July's U.S. average all-milk price of \$20.50 per cwt., the peak milk price for the year, down to between \$17.00/cwt. and \$17.50/cwt. in September, and then stabilizing between \$18.50/cwt. and \$19.00/cwt. during the fourth quarter of the year.

USDA's recent announcement of another round of dairy product purchases gave a boost to the daily cash cheese markets, particularly for block cheese, but it did not fundamentally alter the generally bearish track of cheese futures prices. This outlook doubtless reflects continued uncertainty over Congress reaching an agreement that would produce another large infusion of relief funding for agriculture, coupled with anticipation of further expansion of U.S. milk production and uncertainty about future consumption of dairy products, particularly in food service and in the nation's only partly reopened schools.

The mid-September futures-based price outlook would equate to an average all-milk price for the country of \$17.85/cwt. for all of calendar year 2020. USDA's forecast from earlier in September was similar, at \$17.75/cwt. for the year. Neither forecast includes the substantial direct CFAP payments dairy farmers will have received this year. Through mid-September, dairy farmers have received \$1,746 million in payments under the initial round of these payments, at 80 percent of the full announced payment rate. A second round of CFAP payments was announced at about the same time, which could add at least a further \$1,262 million to dairy producer income. That averages out to \$1.35 per cwt. for all milk produced in 2020.

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