Dairy Outlook: December 2019

Milk prices and feed costs continue to rise, though potential plateaus in milk price lie ahead.

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A Bright Future

The recently reported October All Milk Price was the eleventh straight month of improved milk price and milk income (Tables 1 and 2). Feed costs have been up and down throughout the year, causing margin and income over feed costs (IOFC) to grow at a slightly slower pace (Figure 2). Futures on Class III and IV (Figure 3) suggest that a price plateau is ahead in 2020 around the $20/cwt all milk price. These futures prices provide great promise for 2020 as a year to rebuild balance sheets and make some sorely needed reinvestments on dairy operations. Another positive development for the American dairy producer is the very recent agreement on the United States, Mexico, Canada trade agreement (USMCA). Mexico is the number one export destination and Canada is the number three export destination for American dairy products. The USMCA cements our dairy trade relationship with Mexico as America furnishes 90% of all dairy products imported by Mexico. The USMCA also clears some dairy trade disputes between the United States and Canada and provides an opportunity to export additional American dairy products to our northern neighbor. All of this sends a very positive price signal to the markets and will be another factor that points to 2020 being a very good year.

However, in the face of excellent milk prices, we know that American dairy producers will rapidly increase production. When year over year milk production in America rises above 1.5%, milk markets usually respond with downward pressure on milk price. According to the latest WASDE (World Agricultural Supply and Demand Estimates) report (Nov 8, 2019), the all milk price forecast for 2020 is unchanged at $18.85 per cwt. One of the unknowns of 2020 that will affect milk prices, especially in the 2 nd half of the year, is how quickly our national dairy herd and milk per cow increases. Quarterly dairy cow replacement values from USDA NASS for the third quarter of 2019 indicate that dairy operations are expanding and/or refreshing their herds in the Western states. Prices over $1,400 were registered in TX, NM, CA and AZ. However, in the Northeastern and Midwestern states like PA, MN, OH and VT replacement prices were still below $1,200 (LMIC, Nov. 2019).

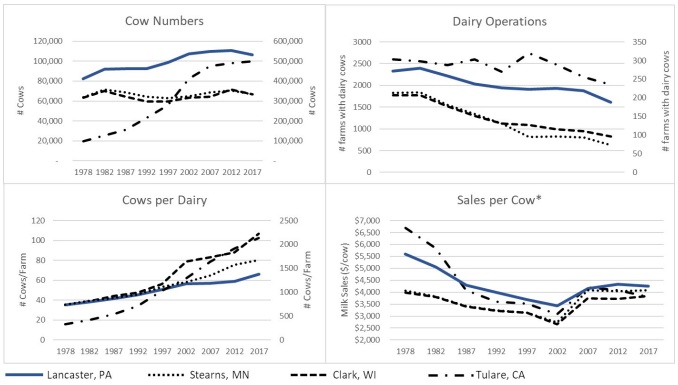
New Dairy Data

The data from the 2017 USDA Census of Agriculture has been released over the past months. It provides some astounding information regarding changes to the dairy industry in the United States such as the top counties for the number of cows and dairy herds.

Lancaster County, Pennsylvania leads all other counties in the nation for the number of dairy herds: 1,491 Tulare County, California leads all other counties in the nation for the number of dairy cows: 500,402

Many analyses look at the top 25 counties for number of cows or number of dairies. Cross referencing the two lists shows only four states with the same county on both: California, Pennsylvania, Minnesota, and Wisconsin. The first county in each state was evaluated in Figure 1 to examine the nearly 40 year span of USDA Ag Census data on cow numbers, farm numbers, cows per farm, and sales per cow.

Figure 1: 1978-2017 USDA Agriculture Census Data for Dairy Variables in 4 Top Dairy Counties



* Sales per cow were adjusted for inflation to match the 2017 values and based on the number of dairies reporing dairy sales. In the three graphs with a second y-axis, Tulare, CA is graphed against the right y-axis. All other counties are graphed against the left y-axis.

Average herd size differs by 18 fold between Lancaster, PA and Tulare, CA. Even though this is not new, since California has been known for large herds for 30 years, it is noteworthy that 55% of all milk cows in the United States are in herds of 1,000 cows or more. Twelve years ago, that number was only 20% of milk cows. The national dairy industry has rapidly scaled up in size. This can also be observed in Stearns, MN and Clark, WI, even though they still have relatively smaller herd sizes, they are increasing in herd size faster than that experienced in Lancaster, PA.

While some of Pennsylvania's progressive herds were growing during the past 12 years, the overall dairy industry in our state made little movement in herd size. It is recognized that some of our dairy farms are located in areas that would be very difficult to expand to 600-1,000 cows. However, if size allows for a lower cost of production (and in most well managed herds it does), our industry finds itself structurally imbalanced and potentially at a competitive disadvantage to dairy producers in other regions of the country. Size is only one of many factors that influence profitability on a dairy farm. The last graph in Figure 1 displays the sales per cow, and shows that the milk sales per cow in Lancaster has come down to be much closer to that of the other counties. The question remains can cost of production in Pennsylvania also realign to be competitive with other dairy states? The Pennsylvania dairy industry will be challenged in the years ahead to find other paths to profitability. This will be essential to remain competitive with the increasingly larger scale of the United States dairy industry.

Income Over Feed Cost, Margin, and All Milk Price Trends

Table 1: 12 month Pennsylvania and U.S. All Milk Income, Feed Cost, Income over Feed Cost ($/milk cow/day)

	PA All Milk Income	PA Feed Cost[1]	PA IOFC	*3 yr avg. breakeven IOFC[2]*	US All Milk Income	US Feed Cost[1]	US IOFC
Nov-18	$ 13.50	$ 5.03	$ 8.47	*$ 9.00*	$ 12.75	$ 4.20	$ 8.55
Dec-18	$ 13.20	$ 5.36	$ 7.84	*$ 9.00*	$ 12.30	$ 4.33	$ 7.97
Jan-19	$ 13.28	$ 5.50	$ 7.78	*$ 9.00*	$ 12.45	$ 4.35	$ 8.10
Feb-19	$ 13.43	$ 4.92	$ 8.51	*$ 9.00*	$ 12.60	$ 4.35	$ 8.25
Mar-19	$ 13.88	$ 5.33	$ 8.55	*$ 9.00*	$ 13.13	$ 4.41	$ 8.72
Apr-19	$ 13.73	$ 5.32	$ 8.41	*$ 9.00*	$ 13.28	$ 4.57	$ 8.71
May-19	$ 13.95	$ 5.30	$ 8.65	*$ 9.00*	$ 13.50	$ 4.68	$ 8.82
Jun-19	$ 14.10	$ 5.46	$ 8.64	*$ 9.00*	$ 13.58	$ 4.71	$ 8.86
Jul-19	$ 14.33	$ 5.72	$ 8.61	*$ 9.00*	$ 14.03	$ 4.64	$ 9.39
Aug-19	$ 14.55	$ 5.00	$ 9.55	*$ 9.00*	$ 14.18	$ 4.47	$ 9.71
Sep-19	$ 14.70	$ 4.82	$ 9.88	*$ 9.00*	$ 14.48	$ 4.44	$ 10.04
Oct-19	$ 15.08	$ 5.26	$ 9.81	*$ 9.00*	$ 14.93	$ 4.44	$ 10.48
Nov-19	$ 16.32	$ 5.16	$ 11.17	*$ 9.00*	$ 15.26	$ 4.45	$ 10.80
Dec-19	$ 16.25	$ 5.13	$ 11.12	*$ 9.00*	$ 15.13	$ 4.45	$ 10.67
12 mo. Avg.	$ 13.98	$ 5.25	$ 8.72		$ 13.43	$ 4.46	$ 8.97
12 mo. change	$ 1.22	$ 0.68	$ 0.54		$ 1.18	$ 0.26	$ 0.92
% change	9.6%	14.9%	6.6%		9.6%	6.1%	11.4%

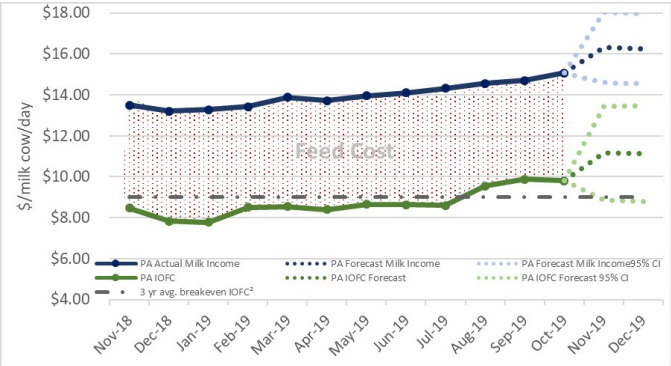
[1]Based on corn, alfalfa hay, and soybean meal equivalents to produce 75 lbs. of milk (Bailey & Ishler, 2007) [2]The 3 year average actual IOFC breakeven in Pennsylvania from 2015-2017 was $9.00 ± $1.67 ($/milk cow/day) (Beck, Ishler, Goodling, 2018).

Table 2: 12 month Pennsylvania and U.S. All Milk Price, Feed Cost, Milk Margin ($/cwt for lactating cows)

	PA All Milk Price	PA Feed Cost[1]	PA Milk Margin	*3 yr avg. breakeven Milk Margin[2]*	US All Milk Price	US Feed Cost[1]	US Milk Margin
Nov-18	$ 18.00	$ 6.71	$ 11.29	*$ 12.33*	$ 17.00	$ 5.60	$ 11.40
Dec-18	$ 17.60	$ 7.14	$ 10.46	*$ 12.33*	$ 16.40	$ 5.77	$ 10.63
Jan-19	$ 17.70	$ 7.33	$ 10.37	*$ 12.33*	$ 16.60	$ 5.81	$ 10.79
Feb-19	$ 17.90	$ 6.56	$ 11.34	*$ 12.33*	$ 16.80	$ 5.80	$ 11.00
Mar-19	$ 18.50	$ 7.11	$ 11.39	*$ 12.33*	$ 17.50	$ 5.87	$ 11.63
Apr-19	$ 18.30	$ 7.09	$ 11.21	*$ 12.33*	$ 17.70	$ 6.09	$ 11.61
May-19	$ 18.60	$ 7.06	$ 11.54	*$ 12.33*	$ 18.00	$ 6.24	$ 11.76
Jun-19	$ 18.80	$ 7.28	$ 11.52	*$ 12.33*	$ 18.10	$ 6.28	$ 11.82
Jul-19	$ 19.10	$ 7.62	$ 11.48	*$ 12.33*	$ 18.70	$ 6.18	$ 12.52
Aug-19	$ 19.40	$ 6.67	$ 12.73	*$ 12.33*	$ 18.90	$ 5.96	$ 12.94
Sep-19	$ 19.60	$ 6.43	$ 13.17	*$ 12.33*	$ 19.30	$ 5.91	$ 13.39
Oct-19	$ 20.10	$ 7.01	$ 13.09	*$ 12.33*	$ 19.90	$ 5.92	$ 13.98
Nov-19	$ 21.76	$ 6.87	$ 14.89	*$ 12.33*	$ 20.34	$ 5.94	$ 14.40
Dec-19	$ 21.67	$ 6.84	$ 14.83	*$ 12.33*	$ 20.17	$ 5.94	$ 14.23
12 mo. Avg.	$ 18.63	$ 7.00	$ 11.63		$ 17.91	$ 5.95	$ 11.96
12 mo. change	$ 1.63	$ 0.91	$ 0.72		$ 1.57	$ 0.34	$ 1.23
% change	9.6%	14.9%	6.6%		9.6%	6.1%	11.4%

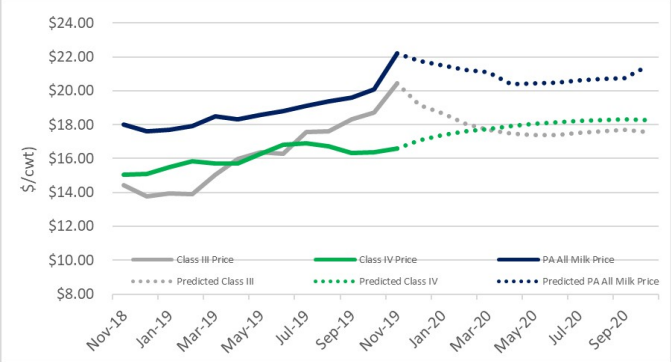
[1]Based on corn, alfalfa hay, and soybean meal equivalents to produce 75 lbs. of milk (Bailey & Ishler, 2007) [2]The 3 year average actual Milk Margin breakeven in Pennsylvania from 2015-2017 was $12.33 ± $2.29 ($/cwt) (Beck, Ishler, Goodling, 2018).

Figure 2: Twelve month Pennsylvania Milk Income and Income Over Feed Cost ($/milk cow/day)



²The 3 year average actual IOFC breakeven in Pennsylvania from 2015-2017 was $9.00 ± $1.67 ($/milk cow/day) (Beck, Ishler, Goodling, 2018).

Figure 3: Twenty-four month Actual and Predicted* Class III, Class IV, and Pennsylvania All Milk Price ($/cwt)



*Predicted values based on Class III and Class IV futures regression (Gould, 2019).

Table 3: Twenty-four month Actual and Predicted* Class III, Class IV, and Pennsylvania All Milk Price ($/cwt)

Month	Class III Price	Class IV Price	PA All Milk Price
Nov-18	$14.44	$15.06	$18.00
Dec-18	$13.78	$15.09	$17.60
Jan-19	$13.96	$15.48	$17.70
Feb-19	$13.89	$15.86	$17.90
Mar-19	$15.04	$15.71	$18.50
Apr-19	$15.96	$15.72	$18.30
May-19	$16.38	$16.29	$18.60
Jun-19	$16.27	$16.83	$18.80
Jul-19	$17.55	$16.90	$19.10
Aug-19	$17.60	$16.74	$19.40
Sep-19	$18.31	$16.35	$19.60
Oct-19	$18.72	$16.39	$20.10
Nov-19	$20.45	$16.60	*$22.23*
Dec-19	*$19.15*	*$17.07*	*$21.76*
Jan-20	*$18.69*	*$17.40*	*$21.49*
Feb-20	*$18.05*	*$17.60*	*$21.25*
Mar-20	*$17.68*	*$17.72*	*$21.11*
Apr-20	*$17.46*	*$17.90*	*$20.38*
May-20	*$17.41*	*$18.06*	*$20.43*
Jun-20	*$17.41*	*$18.15*	*$20.47*
Jul-20	*$17.54*	*$18.24*	*$20.62*
Aug-20	*$17.63*	*$18.29*	*$20.69*
Sep-20	*$17.69*	*$18.33*	*$20.75*
Oct-20	*$17.55*	*$18.27*	*$21.48*
Nov-20	*$17.48*	*$18.23*	*$21.42*

** Italicized predicted values based on Class III and Class IV futures regression (Beck, Ishler, and Goodling 2018; Gould, 2019).*

To look at feed costs and estimated income over feed costs at varying production levels by zip code, check out the Penn State Extension Dairy Team's DairyCents or DairyCents Pro apps today.

Data sources for price data

- All Milk Price: Pennsylvania and U.S. All Milk Price (USDA National Ag Statistics Service, 2019)
- Current Class III and Class IV Price (USDA Ag Marketing Services, 2019)
- Predicted Class III, Class IV Price (Gould, 2019)
- Alfalfa Hay: Pennsylvania and U.S. monthly Alfalfa Hay Price (USDA National Ag Statistics Service, 2019)
- Corn Grain: Pennsylvania and U.S. monthly Corn Grain Price (USDA National Ag Statistics Service, 2019)
- Soybean Meal: Feed Price List (Ishler, 2019) and average of Decatur, Illinois Rail and Truck Soybean Meal, High Protein prices, National Feedstuffs (USDA Ag Marketing Services, 2019)

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Authors

Robert C. Goodling, Jr.
Extension Associate, Dairy
rcg133@psu.edu
814-863-3663

David L. Swartz
Assistant Director, Animal Systems Programs
dls19@psu.edu
7173855380

Claudia Schmidt, Ph.D.
Assistant Professor of Marketing and Local/Regional Food Systems
cschmidt@psu.edu
814-863-8633

Virginia A. Ishler
Extension Dairy Specialist
vishler@psu.edu

Tim Beck
Extension Educator
tjb12@psu.edu
717-870-7702