

**2019 State FFA Milk Quality CDE Problem Solving
100 Points (5 points per Question)**

Use the March 25, 2019 Hoard's Dairyman articles to answer the following questions.

1. Which year had the highest percent negative change in the number of licensed U.S. dairy farms?
A. 2018
B. 2013
C. 2004
D. 2001
E. 1998
2. What was the number of dairy farms that held permits to sell milk in the U. S. in 2018?
A. 37,468
B. 41,809
C. 42,960
D. 43,281
E. 44,291
3. What was the percentage change of licensed U. S. dairy farms in 2018?
A. -1.2
B. -2.7
C. -3.8
D. -4.4
E. -6.8
4. From 1992 to 2018 how many licensed U. S. dairy farms have left the milking business?
A. 61,809
B. 66,975
C. 84,012
D. 94,041
E. 97,290
5. Which U. S. region lost the largest percentage of dairy farms in 2018?
A. All regions lost the same amount.
B. Midwest
C. Northeast
D. Southeast
E. West
6. The U. S. average herd size in 2018 was:
A. 196 cows
B. 206 cows
C. 209 cows
D. 234 cows
E. 251 cows
7. Which U. S. region had an average of 171 cows per herd in 2018?
A. All regions averaged the same.
B. Midwest
C. Northeast
D. Southeast
E. West
8. Which two regions had the lowest decrease (% change) in the number of dairy farms in 2018?
A. Midwest and Northeast
B. Northeast and West
C. Southeast and West
D. Southwest and Midwest
E. West and Midwest
9. Minnesota lost how many dairy farms in 2018?
A. 105
B. 120
C. 230
D. 250
E. 370
10. The state that lost the most dairy farms in 2018 was:
A. Pennsylvania
B. Wisconsin
C. California
D. New York
E. Ohio

11. Nationally, milk production rose _____ percent in 2018.
- A. 0.98
 - B. 1.12
 - C. 1.42
 - D. 2.68
 - E. 3.14
12. The U. S. had a rolling herd average of _____ pounds in 2018.
- A. 19,841
 - B. 21,869
 - C. 22,258
 - D. 22,941
 - E. 23,149
13. California's 2018 milk production output was _____ million pounds more than any other state.
- A. 8,346
 - B. 9,478
 - C. 9,834
 - D. 10,375
 - E. 11,425
14. The U. S. total milk output in 2018 was about:
- A. 215.5 million pounds
 - B. 215.5 billion pounds
 - C. 217.6 billion pounds
 - D. 217.6 trillion pounds
 - E. Cannot be determined
15. Minnesota had how many milk cows in 2018?
- A. 409,558
 - B. 411,580
 - C. 424,000
 - D. 453,000
 - E. 458,000
16. Which state lost the most percentage milk production in 2018?
- A. Rhode Island
 - B. Alabama
 - C. New Jersey
 - D. Hawaii
 - E. Alaska
17. Which state had the highest production in milk per cow in 2018?
- A. Michigan
 - B. Colorado
 - C. Georgia
 - D. Mississippi
 - E. Missouri
18. The U.S. produced an average of how much milk per person?
- A. 626 pounds
 - B. 643 pounds
 - C. 665 pounds
 - D. 684 pounds
 - E. 712 pounds
19. Which state produced the most milk based on its state's population in 2018?
- A. Vermont
 - B. New Mexico
 - C. California
 - D. Wisconsin
 - E. Idaho
20. Which state was a net importer of dairy products in 2018 (300 to 600 pounds)?
- A. Utah
 - B. Kansas
 - C. Texas
 - D. Nebraska
 - E. South Dakota

2019 State FFA Milk Quality CDE Problem Solving Key

100 Points (5 points per Question)

1. E
2. A
3. E
4. D
5. D
6. E
7. B
8. B
9. C
10. B
11. A
12. E
13. C
14. C
15. D
16. B
17. A
18. C
19. E
20. C

U.S. dairy 2018 statistics

A fourth difficult year in a row took a big cut out of dairy farm numbers.

THE dairy industry's post-2014 financial woes will end eventually, but it didn't happen in 2018.

Monthly Class III milk prices averaged just \$14.61 per hundredweight last year, the lowest since 2010 and only slightly higher than the \$14.20 average in 1998.

For 2,731 licensed milk producers across the country, four bad years in a row were enough. It was the most dairy farms to exit the business since 2007, when the industry was nearly 50 percent bigger.

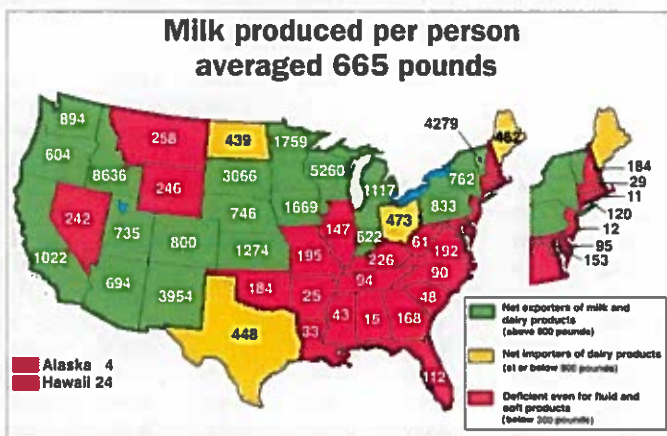
The 6.8 percent exit rate was the highest since 2001 (7.3 percent) and the third highest ever since licensed farm number tracking began in 1992. The average annual rate of exits during the 25 years before 2018 had been 4.8 percent.

Most of last year's decline occurred in the five states with the most dairies. Wisconsin, Pennsylvania, New York, Minnesota, and Ohio lost a combined 1,650 farms. Big percentage losses occurred in Florida (-13.6 percent), Missouri (-11.5 percent), Georgia (-11.1 percent), Vermont (-11.0 percent), Kentucky (-10.0 percent), and Indiana (-9.8 percent).

Cow numbers increased

Despite widespread operating losses throughout the industry, total U.S. milk cow numbers moved higher for the fifth year in a row — but just barely, and perhaps as a testament to improved reproduction and the popularity of sexed semen. Only 7,000 more head were added, bumping the nation's total to 9.399 million, the most since 1996.

Regionally, cow numbers were up one percent in the West but down



How much things have changed:

	Number of licensed dairies	Total cows (millions)	Average lbs. milk per cow	Average herd size
1998	91,508	9.154	17,189	100
2008	57,127	9.315	20,395	163
2018	37,468	9.399	23,149	251

everywhere else. In fact, only nine states grew cow numbers — eight of which were in the West.

Two deserve special mention. Texas added 22,000 head, by far the most of any state, and Colorado's 8.6 percent gain (14,000 head) was far and away the biggest. At the other end of the spectrum, 11 small states (all with 45,000 cows or less) lost at least 6.3 percent each.

The dive in farm numbers in 2018 pushed the industry across a significant new threshold — average herd size passed 250 cows. It's a long way from the 100-head average in 1998, back when many owners could still do the milking themselves. Two

hundred and fifty-one, however, is a much different proposition, as is management in general.

Production up modestly

Perhaps surprisingly, given relatively low feed prices for much of the year, ever-increasing attention to cow comfort, growing adoption of genomics, and more reproduction tools, productivity gains in 2018 were fairly unremarkable.

Average U.S. milk production did set a new record of 23,149 pounds per cow — an amount that would have led the individual state rankings as recently as 2004. But the one-year gain was just 208 pounds, which is 22

percent below the most recent five-year average and 30 percent below the latest 30-year average.

Michigan, at 26,340 pounds, had the highest state average for the second year in a row. Colorado was again second. California, for many years a fixture at or near the top of the list, did not make the Top 10 for the third year in a row, likely due to a continued shift toward Jerseys. In fact, it was just 157 pounds above the national average.

Two billion pounds more

Cow numbers barely budged and production per cow gains were modest, yet total U.S. milk output still rose by 2.1 billion pounds to a new record of 217.6 billion in 2018.

Relatively speaking, that was a slow year. The 0.98 percent gain was the smallest in five years, as was the 2.1 billion total pounds. During the previous 20 years the average increase had been 3 billion pounds.

Last year's gains, however, were decidedly more regional than national. Production in the West was up strongly, the Midwest was down a microscopic fraction, the Northeast was down slightly, and Southeast was down a lot.

Only 16 states improved total production in 2018 — one in the Northeast, three in the Midwest, and 12 in the West. Colorado (+8.8 percent) and Texas (+6.6 percent) had the biggest individual gains. They also have the biggest production gains over the last five years — 41.2 percent and 33.7 percent, respectively. (South Dakota is also up 33.7 percent.)

Alabama lost the most production in both 2018 and over the last five years at 18.9 percent and 37.7 percent, respectively. 🐄

Top 10 dairy states in 2018

Most cows		Most milk (billions of lbs.)		Most milk per cow (lbs.)		Most cows per herd	
California	1,734,000	California	40.413	Michigan	26,340	New Mexico	2,350
Wisconsin	1,274,000	Wisconsin	30.579	Colorado	25,892	Arizona	2,080
New York	623,000	Idaho	15.149	New Mexico	25,106	Nevada	1,600
Idaho	609,000	New York	14.882	Idaho	24,875	Colorado	1,350
Texas	537,000	Texas	12.852	Washington	24,318	California	1,310
Pennsylvania	519,000	Michigan	11.168	Wisconsin	24,002	Florida	1,295
Minnesota	453,000	Pennsylvania	10.665	Nebraska	24,000	Texas	1,288
Michigan	424,000	Minnesota	9.868	Iowa	23,945	Idaho	1,250
New Mexico	330,000	New Mexico	8.285	Arizona	23,933	Hawaii	1,150
Washington	277,000	Washington	6.736	Texas	23,933	Washington	668
Most milk per herd		Most new cows		Most new milk (millions of lbs.)		Most new milk per cow (lbs.)	
New Mexico	56,975,750	Texas	22,000	Texas	798	Nevada	782
Arizona	50,756,160	Colorado	14,000	California	615	Massachusetts	781
Nevada	39,910,400	Idaho	9,000	Michigan	355	South Carolina	753
Colorado	34,739,550	Kansas	7,000	Idaho	516	North Dakota	704
California	30,169,267	Utah	4,000	Colorado	367	Montana	679
Idaho	30,157,500	South Dakota	4,000	Wisconsin	246	Wyoming	667
Texas	28,644,300	Washington	3,000	Kansas	209	Maryland	639
Florida	26,744,084	Iowa	2,000	Utah	207	California	551
Hawaii	18,295,350	New Mexico	1,000	Washington	205	Texas	527
Washington	15,937,444			South Dakota	87	Delaware	503

The author is the Western editor.

Dairy farm numbers slide 6.8 percent

On a percentage basis, last year's loss in U.S. dairy farms was the largest rate of closures since 2001's 7.3 percent.

by Corey Geiger, Managing Editor, Hoard's Dairyman

THE dismal dairy economy took its toll as 2,731 U.S. dairy farms hung up their milking machines for the final time this past year. On a sheer number basis, those closures represented the most exits since 2007 when 2,940 dairy farms shuttered operations. In that era, mailbox milk prices had plummeted from 2004's high of \$15.90 per hundredweight down to \$12.84 just two years later. Margins for selling milk have been under similar pressure this time around.

On a percentage basis, the impact was even deeper. Overall, 18 years have passed since there have been more farms that quit milking cows. In 2001, 7.3 percent of all U.S. farms exited the dairy business compared to 6.8 percent this past year. Overall, 1998 had the highest percentage of exits at 8 percent as shown in Table 1.

Dairy cows and farms continued to consolidate into clusters. When evaluating the top 10 dairy states with 900 or more farms, that group lost 6.6 percent of its farms last year. For the remaining 40 states, losses totaled 7.8 percent.

In reviewing the prior year's

report, USDA subtracted 20 herds from its 2017 estimate, lowering the total from 40,219 to 40,199. In the updated data shown to the right, New York had 20 fewer herds.

Table 1 details the 27-year history of dairy farms holding permits to sell milk. Since 1992, the drop in licensed, or so-called commercial, dairy farms has declined by 94,041, from 131,509 to 37,468. That's a 72 percent drop during that time.

Table 2 provides an overview of the last 27 years of change. Nationally, average herd size has grown 240 percent, from 74 to 251 cows. Over the past year, herd size grew from 234 cows to 251 cows, up 17 head.

Regionally, the West (+353) and the Midwest (+234) have seen the largest percentage gains in herd size. During this time period, herd sizes in the Northeast and Southwest grew at half the pace found in the Midwest.

Western herds added 63 cows per herd last year, bringing its average to 1,192. That represented stronger growth in herd size compared to the prior year's 40 cows. This year's 63-cow pace surpassed the growth that took place from 2012 to 2014 when herd sizes grew 49, 33, and 47 cows, with each advancing year.

For the fourteenth time in the past 16 years, the Southeast had the largest share of farms calling it quits (Table 3). The 7.7 percent total yielded 185 fewer dairy farms. Since 1992, the Southeast has lost more operations than any other area, as farms fell from 12,057 to 2,225 for a drop of 9,832 farms or 82 percent. Cow numbers followed suit; there are 747,000 fewer cows, a 60 percent drop.

The Midwest closely followed the Southeast by losing 7.5 percent of its dairies. Overall, the Midwest's reduction in farm numbers was the region's highest percentage loss since 2001's 8.5 percent. In that era, *Hoard's Dairyman* partnered with the American Farm Bureau Federation to obtain milk permit data. These days, USDA's National Agricultural Statistics Service (NASS) tabulates the information. Within the Midwest, Wisconsin lost 590 dairy farms, making that the largest net loss in the country.

The West retained the most dairy farms on a percentage basis as the region only fell 4.2 percent.

Table 1. Licensed U.S. dairy farms

Year	Number	% change
1992	131,509	
1993	124,945	-5.0
1994	117,732	-5.8
1995	111,825	-5.0
1996	106,181	-5.3
1997	99,413	-6.4
1998	91,508	-8.0
1999	87,527	-4.4
2000	82,937	-5.2
2001	76,875	-7.3
2002	74,012	-3.7
2003	70,375	-4.9
2004	66,830	-5.0
2005	64,540	-3.4
2006	62,070	-3.8
2007	59,130	-4.7
2008	57,127	-3.4
2009	54,932	-3.8
2010	53,132	-3.3
2011	51,291	-3.5
2012	49,281	-3.9
2013	46,975	-4.7
2014	44,809	-4.6
2015	43,534	-2.8
2016	41,819	-3.9
2017	40,199	-3.9
2018	37,468	-6.8

Table 2. How our industry changed from 1992 to 2018

	1992			2018			Percent change		
	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows	Cows/ herd
Midwest	80,135	4,100	51	19,535	3,342	171	-76	-18	234
Northeast	29,758	1,824	61	12,230	1,405	115	-59	-23	87
Southeast	12,057	1,253	104	2,225	506	227	-82	-60	119
West	9,559	2,515	263	3,478	4,146	1192	-64	65	353
U.S.	131,509	9,692	74	37,468	8,399	251	-72	-3	240

Table 3. Dairy farm numbers by state and region

State/Region	2017	2018	Change	Percent change
Midwest				
Illinois	630	600	-30	-4.8
Indiana	1,070	965	-105	-9.8
Iowa	1,200	1,120	-80	-6.7
Kansas	290	280	-10	-3.4
Michigan	1,750	1,520	-230	-13.1
Minnesota	3,210	2,980	-230	-7.2
Missouri	1,040	920	-120	-11.5
Nebraska	155	155	0	0.0
North Dakota	80	80	0	0.0
Ohio	2,380	2,200	-180	-7.6
South Dakota	225	215	-10	-4.4
Wisconsin	9,090	8,500	-590	-6.5
Region total	21,120	19,535	-1,585	-7.5
Northeast				
Connecticut	110	110	0	0.0
Delaware	30	25	-5	-16.7
Maine	250	230	-20	-8.0
Maryland	400	380	-20	-5.0
Massachusetts	140	130	-10	-7.1
New Hampshire	110	100	-10	-9.1
New Jersey	55	50	-5	-9.1
New York	4,470	4,190	-280	-6.3
Pennsylvania	6,570	6,200	-370	-5.6
Rhode Island	10	10	0	0.0
Vermont	820	730	-90	-11.0
West Virginia	75	75	0	0.0
Region total	13,040	12,230	-810	-6.2
Southeast				
Alabama	35	30	-5	-14.3
Arkansas	55	50	-5	-9.1
Florida	110	95	-15	-13.6
Georgia	180	160	-20	-11.1
Kentucky	600	540	-60	-10.0
Louisiana	95	90	-5	-5.3
Mississippi	70	65	-5	-7.1
North Carolina	190	180	-10	-5.3
Oklahoma	160	150	-10	-6.3
South Carolina	60	50	-10	-16.7
Tennessee	270	250	-20	-7.4
Virginia	585	565	-20	-3.4
Region total	2,410	2,225	-185	-7.7
West				
Alaska	2	1	-1	-50.0
Arizona	100	100	0	0.0
California	1,390	1,335	-55	-4.0
Colorado	120	120	0	0.0
Hawaii	2	2	0	0.0
Idaho	510	480	-30	-5.9
Montana	65	60	-5	-7.7
Nevada	20	20	0	0.0
New Mexico	150	140	-10	-6.7
Oregon	230	220	-10	-4.3
Texas	400	400	0	0.0
Utah	180	180	0	0.0
Washington	450	410	-40	-8.9
Wyoming	10	10	0	0.0
Region total	3,629	3,478	-151	-4.2
U.S. Total	40,199	37,468	-2,731	-6.8

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