

**2018 State FFA Milk Quality CDE Problem Solving
100 Points (5 points per Question)**

Use the March 10, 2018 Hoard's Dairyman articles to answer the following questions.

1. In 2017, the top 10 states ranked by dairy farm numbers, only _____ percent exited the business.
A. 3.78
B. 3.82
C. 4.62
D. 4.93
E. 5.43
2. What was the number of dairy farms that held permits to sell milk in the U. S. in 2017?
A. 40,219
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 2017?
A. -1.2
B. -2.7
C. -3.8
D. -4.4
E. -5.7
4. From 1992 to 2017 how many licensed U. S. dairy farms have left the milking business?
A. 41,809
B. 46,975
C. 74,012
D. 89,700
E. 91,290
5. Which U. S. region lost the largest percentage of dairy farms in 2017?
A. All regions lost the same amount.
B. Midwest
C. Northeast
D. Southeast
E. West
6. The U. S. average herd size in 2017 was:
A. 196 cows
B. 206 cows
C. 209 cows
D. 234 cows
E. 254 cows
7. Which U. S. region had an average of 217 cows per herd in 2017?
A. All regions averaged the same.
B. Midwest
C. Northeast
D. Southeast
E. West
8. Which region had the lowest decrease (% change) in the number of dairy farms in 2017?
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 2017?
A. 105
B. 120
C. 140
D. 146
E. 154
10. The state that lost the most dairy farms in 2017 was:
A. Pennsylvania
B. Wisconsin
C. California
D. New York
E. Ohio

11. Nationally, milk production rose _____ percent in 2017.
- A. 0.4
 - B. 1.1
 - C. 1.4
 - D. 2.6
 - E. 3.1
12. The U. S. had a rolling herd average of _____ pounds in 2017.
- A. 19,841
 - B. 21,869
 - C. 22,258
 - D. 22,941
 - E. 23,785
13. California's 2017 milk production output was _____ million pounds more than any other state.
- A. 8,346
 - B. 9,478
 - C. 10,905
 - D. 12,375
 - E. 13,425
14. The U. S. total milk output in 2017 was about:
- A. 215.5 thousand pounds
 - B. 215.5 million pounds
 - C. 215.5 billion pounds
 - D. 215.5 trillion pounds
 - E. Cannot be determined
15. Minnesota had how many milk cows in 2017?
- A. 458
 - B. 4,580
 - C. 45,800
 - D. 458,000
 - E. 4,580,000
16. Which state had the lowest number of milk cows in 2017?
- A. Rhode Island
 - B. Wyoming
 - C. New Jersey
 - D. Hawaii
 - E. Alaska
17. Which state had the highest production in milk per cow in 2017?
- A. Michigan
 - B. Colorado
 - C. Georgia
 - D. Mississippi
 - E. Missouri
18. The U.S. produced enough milk to supply each U. S. person _____ pounds?
- A. 626
 - B. 643
 - C. 663
 - D. 684
 - E. 712
19. Which state produced the most milk based on its state's population in 2017?
- A. Vermont
 - B. New Mexico
 - C. California
 - D. Wisconsin
 - E. Idaho
20. Which state was a net importer of dairy products in 2017 (300 to 600 pounds)?
- A. Utah
 - B. Kansas
 - C. Texas
 - D. Nebraska
 - E. South Dakota

2017 State FFA Milk Quality CDE Problem Solving Key

100 Points (5 points per Question)

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

Dairy farm numbers hover near 40,000

The dairy industry said good-bye to 1,600 operations the past year. On a percentage basis, losses were the largest in the Southeast and Midwest.

by Corey Geiger, Managing Editor, Hoard's Dairyman

AS DAIRY cow numbers climbed to a 22-year high point, dairy farm numbers reached a modern-day low of 40,219. Those diverging trend lines highlight an industry that continues to consolidate. In 1995, there were 111,825 dairy operations with permits to sell milk. With a collective national dairy herd of 9.461 million cows that year, the average herd size was 85 cows. With 40,219 herds remaining and 9.392 million cows on those farms, herd size has climbed to a record 234 cows per herd.

While dairy cows and farms continue to consolidate into clusters, herd losses were equally steady among states with the most dairy farms and those that rank fewer in numbers. When evaluating the top 10 dairy states with 1,000 or more farms, that group lost 3.82 percent of its farms last year. For the remaining 40 states, losses totaled 3.83 percent. Typically, attrition has occurred at a faster pace in the latter group.

In reviewing the prior year's report, USDA added 10 herds to its 2016 estimate, raising the total from 41,809 to 41,819. In the updated data shown to the right, Vermont had 10 more herds.

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	40,219	-3.8

Table 1 details the 26-year history of dairy farms holding permits to sell milk. Since 1992, the drop in licensed, or so-called commercial, dairy farms has declined 91,290 from 131,509 to 40,219. That's a 69 percent drop during that time.

Table 2 provides an overview of the last 26 years of change. Nationally, average herd size has grown 217 percent, from 74 to 234 cows. Over the past year, herd size grew from 223 cows to 234 cows, up 11 head.

Regionally, the West (+329) and the Midwest (+210) have seen the largest percentage gains in herd size. During that time, herd sizes in the Northeast and Southwest grew at half that pace found in the Midwest.

Western herds added 40 cows per herd last year, bringing its average to 1,129. That represented stronger growth in herd size compared to the prior year's 34 cows. This year's 40-cow pace approached the growth that took place from 2012 to 2014 when herd sizes grew 49, 33, and 47 cows, respectively.

For the thirteenth time in the past 15 years, the Southeast had the largest share of farms calling it quits this past year (Table 3). The 6.4 percent total yielded 165 fewer dairy farms. Since 1992, the Southeast has lost more operations than any other area as farms fell from 12,057 to 2,410 . . . a drop of 9,647 farms or 80 percent. Cow numbers followed suit; there are 730,000 fewer cows, a 58 percent drop.

Next was the Midwest, which lost 4.8 percent of its dairy operations. Outside of the Southeast, the Midwest has been the only other region to post the largest reduction in dairy farms. The Midwest lost the most dairies in 2011 and 2014. Overall, its 4.8 percent reduction in farm numbers was the most since 2014. Within the region, Wisconsin lost 430 dairy farms, making that the largest loss in the region. However, on a percentage basis, the Badger State bucked recent trends by being under the regional average at 4.5 percent.

The West and Northeast retained the most dairy farms on a percentage basis, as both regions only fell 2.2 percent. On a total basis, however, the Northeast lost 300 farms compared to 80 in the West.

Table 3. Dairy farm numbers by state and region

State/Region	2016	2017	Change	Percent change
Midwest				
Illinois	640	630	-10	-1.6
Indiana	1,145	1,070	-75	-6.6
Iowa	1,265	1,200	-65	-5.1
Kansas	290	290	0	0.0
Michigan	1,810	1,750	-60	-3.3
Minnesota	3,350	3,210	-140	-4.2
Missouri	1,100	1,040	-60	-5.5
Nebraska	175	155	-20	-11.4
North Dakota	85	80	-5	-5.9
Ohio	2,560	2,380	-180	-7.0
South Dakota	235	225	-10	-4.3
Wisconsin	9,520	9,090	-430	-4.5
Region total	22,175	21,120	-1,055	-4.8
Northeast				
Connecticut	120	110	-10	-8.3
Delaware	35	30	-5	-14.3
Maine	250	250	0	0.0
Maryland	420	400	-20	-4.8
Massachusetts	140	140	0	0.0
New Hampshire	120	110	-10	-8.3
New Jersey	60	55	-5	-8.3
New York	4,650	4,490	-160	-3.4
Pennsylvania	6,650	6,570	-80	-1.2
Rhode Island	10	10	0	0.0
Vermont	830	820	-10	-1.2
West Virginia	75	75	0	0.0
Region total	13,360	13,060	-300	-2.2
Southeast				
Alabama	35	35	0	0.0
Arkansas	60	55	-5	-8.3
Florida	120	110	-10	-8.3
Georgia	210	180	-30	-14.3
Kentucky	630	600	-30	-4.8
Louisiana	100	95	-5	-5.0
Mississippi	75	70	-5	-6.7
North Carolina	210	190	-20	-9.5
Oklahoma	160	160	0	0.0
South Carolina	60	60	0	0.0
Tennessee	300	270	-30	-10.0
Virginia	615	585	-30	-4.9
Region total	2,575	2,410	-165	-6.4
West				
Alaska	2	2	0	0.0
Arizona	110	100	-10	-9.1
California	1,420	1,390	-30	-2.1
Colorado	120	120	0	0.0
Hawaii	2	2	0	0.0
Idaho	520	510	-10	-1.9
Montana	65	65	0	0.0
Nevada	20	20	0	0.0
New Mexico	150	150	0	0.0
Oregon	230	230	0	0.0
Texas	400	400	0	0.0
Utah	180	180	0	0.0
Washington	480	450	-30	-6.3
Wyoming	10	10	0	0.0
Region total	3,709	3,629	-80	-2.2
U.S. Total	41,819	40,219	-1,600	-3.8

Table 2. How our industry changed from 1992 to 2017

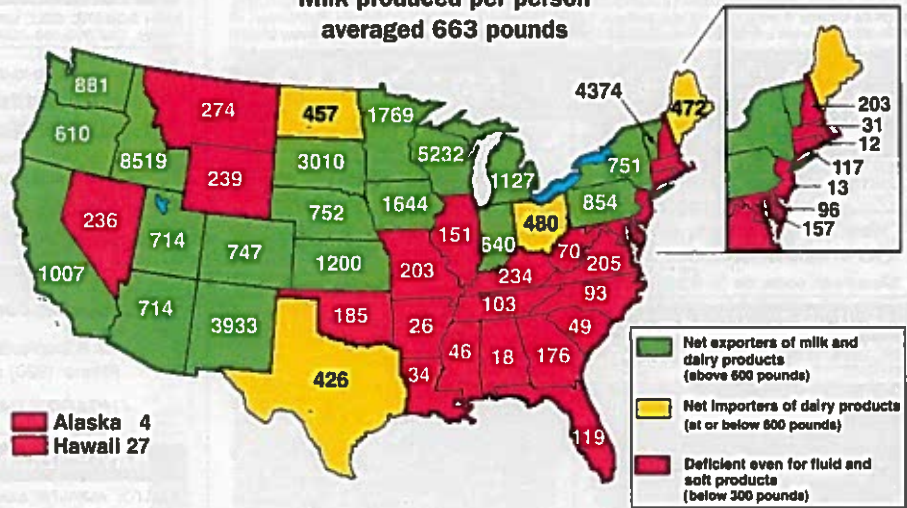
	1992			2017			Percent change		
	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows	herd
Midwest	80,135	4,100	51	21,120	3,354	159	-74	-18	210
Northeast	29,758	1,824	61	13,060	1,419	109	-56	-22	77
Southeast	12,057	1,253	104	2,410	523	217	-80	-58	109
West	9,559	2,515	263	3,629	4,098	1,129	-62	63	329
U.S.	131,509	9,692	74	40,219	9,394	234	-89	-3	217

Dairy cow numbers reached a 22-year high

AS THE nation's dairy herd inched toward the 9.4 million-cow plateau in 2017, it reached numbers not seen since 1994's 9.461 million head. Back then, total milk production was 155.6 billion pounds with 16,451 pounds per cow. Fast-forward 22 years, and the 9.392 million cows collectively produced 215.5 billion pounds for a 22,941-pound average per cow.

Overall, U.S. milk flow climbed 1.4 percent last year, equally split on growth of cow numbers, up 0.7 percent, and milk per cow, up 0.7 percent. Milk per cow ranged from Michigan's industry-leading 26,302 pounds down to Alaska's 9,667.

Milk produced per person averaged 663 pounds



Year	Billions of pounds	Percent change
2008	190.0	2.3
2009	189.2	0.3
2010	192.9	1.8
2011	196.3	1.8
2012	200.6	2.1
2013	201.2	0.3
2014	206.1	2.4
2015	208.6	1.3
2016	212.4	1.8
2017	215.5	1.4

2017 milk production			
State	Milk output in million pounds	% change from 2016	Rank
Alabama	89	-3.3	46
Alaska	3	-17.1	50
Arizona	5,010	3.6	13
Arkansas	79	-1.3	47
California	39,798	-1.7	1
Colorado	4,189	6.7	15
Connecticut	420	2.7	34
Delaware	93	-2.8	45
Florida	2,496	0.0	20
Georgia	1,840	0.5	23
Hawaii	39	11.5	48
Idaho	14,627	-0.3	4
Illinois	1,929	0.9	22
Indiana	4,264	2.7	14
Iowa	5,172	2.7	12
Kansas	3,496	5.0	16
Kentucky	1,041	-0.6	27
Louisiana	160	-5.3	40
Maine	630	0.0	33
Maryland	953	-0.4	28
Massachusetts	211	-4.5	39
Michigan	11,231	3.3	6
Minnesota	9,864	2.0	8
Mississippi	137	-4.9	42
Missouri	1,240	-1.6	26
Montana	288	-2.4	36
Nebraska	1,444	3.2	25
Nevada	709	7.4	31
New Hampshire	273	-4.9	37
New Jersey	119	-2.5	44
New Mexico	8,212	6.5	9
New York	14,912	0.9	3
North Carolina	952	-1.3	29
North Dakota	345	0.3	35
Ohio	5,591	0.8	11
Oklahoma	728	5.2	30
Oregon	2,529	-2.5	19
Pennsylvania	10,938	1.1	7
Rhode Island	13	-7.8	49
South Carolina	247	-1.2	38
South Dakota	2,618	2.8	18
Tennessee	693	-0.4	32
Texas	12,054	11.9	5
Utah	2,215	5.7	21
Vermont	2,728	0.0	17
Virginia	1,736	0.8	24
Washington	6,526	-1.9	10
West Virginia	127	-5.2	43
Wisconsin	30,320	0.7	2
Wyoming	138	-1.1	41
U.S.	215,466	1.4	

2017 cow numbers			
State	Milk cows 1,000s	% change from 2016	Rank
Alabama	6.0	-14.3	43-T
Alaska	0.3	0.0	50
Arizona	203.0	3.6	13
Arkansas	6.0	0.0	43-T
California	1,749.0	-0.7	1
Colorado	160.0	6.0	15
Connecticut	19.0	0.0	34
Delaware	5.0	0.0	47
Florida	124.0	0.8	18
Georgia	84.0	0.0	25
Hawaii	2.3	-4.2	48
Idaho	600.0	0.8	4
Illinois	93.0	-1.1	22
Indiana	187.0	1.6	14
Iowa	218.0	2.3	12
Kansas	152.0	4.1	16
Kentucky	56.0	-3.4	27
Louisiana	12.0	0.0	39-T
Maine	30.0	0.0	33
Maryland	48.0	0.0	28
Massachusetts	12.0	0.0	39-T
Michigan	427.0	1.9	8
Minnesota	458.0	-0.7	7
Mississippi	9.0	-10.0	41
Missouri	85.0	0.0	24
Montana	13.0	-7.1	37-T
Nebraska	60.0	0.0	26
Nevada	32.0	6.7	32
New Hampshire	13.0	-7.1	37-T
New Jersey	6.0	14.3	43-T
New Mexico	329.0	4.4	9
New York	623.0	0.5	3
North Carolina	45.0	-2.2	29
North Dakota	16.0	0.0	35
Ohio	263.0	-0.8	11
Oklahoma	39.0	5.4	31
Oregon	124.0	-0.8	19
Pennsylvania	525.0	-0.8	5
Rhode Island	0.8	0.0	49
South Carolina	15.0	0.0	36
South Dakota	117.0	1.7	20
Tennessee	40.0	-4.8	30
Texas	511.0	7.6	6
Utah	95.0	3.3	21
Vermont	129.0	-0.8	17
Virginia	87.0	-3.3	23
Washington	274.0	-0.7	10
West Virginia	8.0	-11.1	42
Wisconsin	1,278.0	-0.1	2
Wyoming	6.0	0.0	43-T
U.S.	9,392.0	0.7	

2017 milk per cow			
State	Milk per cow (pounds)	% change from 2016	Rank
Alabama	14,833	12.9	46
Alaska	9,667	-17.1	50
Arizona	24,680	0.0	4
Arkansas	13,167	-1.2	49
California	22,755	-0.9	16
Colorado	26,181	0.7	2
Connecticut	22,105	2.7	20
Delaware	18,560	-2.8	38
Florida	20,129	-0.8	32
Georgia	21,905	0.5	21
Hawaii	16,913	16.3	41
Idaho	24,378	-1.1	5
Illinois	20,742	2.0	30
Indiana	22,802	1.0	15
Iowa	23,725	0.4	9
Kansas	23,000	0.9	14
Kentucky	18,589	3.0	37
Louisiana	13,333	-5.3	48
Maine	21,000	0.0	27-T
Maryland	19,854	-0.4	34
Massachusetts	17,583	-4.5	39
Michigan	26,302	1.3	1
Minnesota	21,537	2.7	23
Mississippi	15,222	5.7	45
Missouri	14,588	-1.6	47
Montana	22,154	5.1	19
Nebraska	24,067	3.2	6
Nevada	22,156	0.7	18
New Hampshire	21,000	2.4	27-T
New Jersey	19,833	13.8	35
New Mexico	24,960	2.0	3
New York	23,936	0.4	7
North Carolina	21,156	0.8	25
North Dakota	21,563	0.3	22
Ohio	21,259	1.5	24
Oklahoma	18,667	-0.2	36
Oregon	20,395	-1.7	31
Pennsylvania	20,834	1.9	29
Rhode Island	16,250	-7.8	43
South Carolina	16,467	-1.2	42
South Dakota	22,376	1.1	17
Tennessee	17,325	4.6	40
Texas	23,589	4.0	11
Utah	23,316	2.4	12
Vermont	21,147	0.8	26
Virginia	19,954	4.2	33
Washington	23,818	-1.1	8
West Virginia	15,875	6.6	44
Wisconsin	23,725	0.8	10
Wyoming	23,033	-1.1	13
U.S.	22,941	0.7	

HOARD'S DAIRYMAN

2018 State Milk Quality- Cheese

Characteristics	Sample Numbers				
	1	2	3	4	5
A. Maximum Moisture more than 42%					
B. Minimum fat in the solids = 50%					
C. Gas holes are expected = No					
D. Receives "pasta filata treatment"= No					
E. Ripened by Bacteria= Yes					
F. Brine/surface salted= Yes					
G. Originated in United States= Yes					

2018 State Milk Quality- Cheese Key

Characteristics	Sample Numbers				
	1 Provolone	2 Swiss	3 Monterey Jack	4 Cheddar	5 American Processed
A. Maximum Moisture more than 42%	X		X		
B. Minimum fat in the solids = 50%			X	X	X
C. Gas holes are expected = No	X		X	X	X
D. Receives "pasta filata treatment"= No		X	X	X	X
E. Ripened by Bacteria= Yes	X	X	X	X	X
F. Brine/surface salted= Yes	X	X			
G. Originated in United States= Yes			X		X