

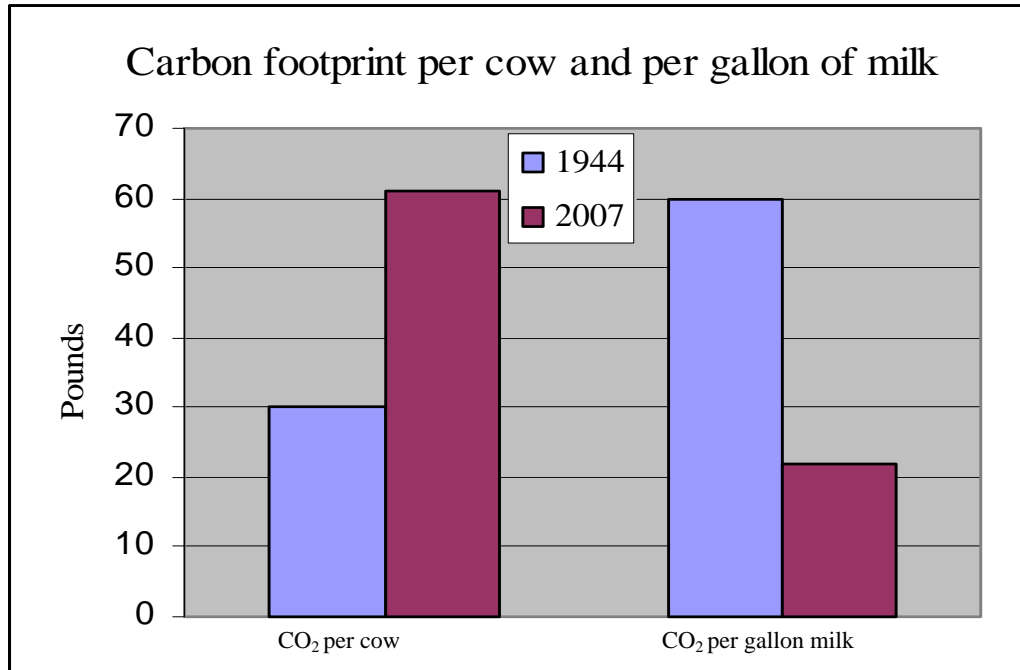
National FFA 2010  
Dairy Foods  
CDE

Problem Solving

Dairy's Environmental Impact

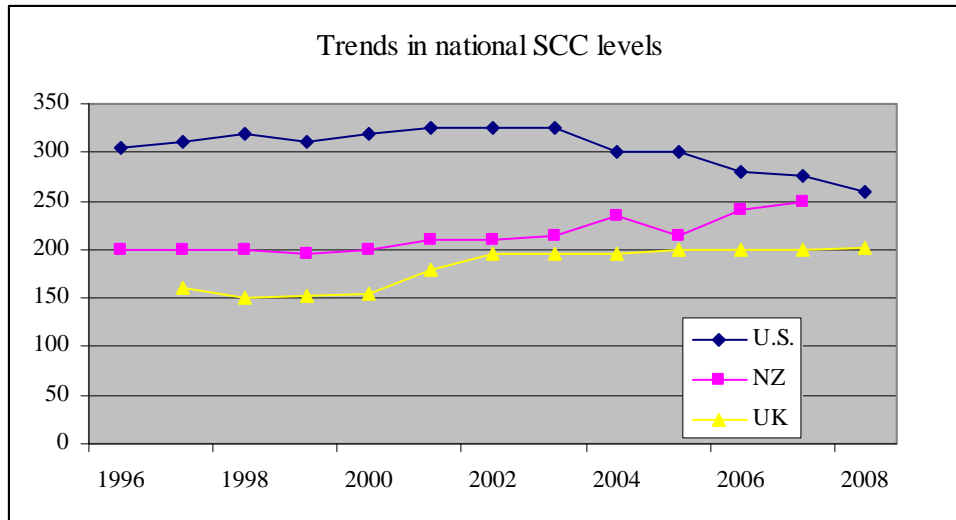
In 1944, the U.S. had 25.6 million cows producing a total of 117 billion pounds of milk annually. Pasture was the principal forage, supplemented with home grown hay and limited grains. Manure, spread throughout the year, was the only source of nutrient renewal for the land. Manufactured fertilizers were not available nitrogen, phosphorus, and potassium were reserved for use in World War II munitions. Antibiotics, other pharmaceuticals, and chemical pesticides were unavailable. Draft horses were used for most cropping. In contrast to 1944, the 2008 U.S. dairy herd contained 9.3 million cows but produced 190 billion pounds of milk. The huge improvement in milk yield has been achieved through a combination of higher genetic merit, improved feed ration formulation, and use of herd health and management programs to improve animal care.

1. The milk production per cow in 2008 was \_\_\_\_\_ times more than milk production per cow in 1944.
  - A. 2
  - B. 4
  - C. 8
  - D. 10
2. What was the percentage increase in milk production from 1944 to 2008?
  - A. 42%
  - B. 52%
  - C. 62%
  - D. 72%
3. The number of cows in 1944 were approximately \_\_\_\_\_ times more than the number of cows in 2008.
  - A. 2.75
  - B. 4.75
  - C. 8.75
  - D. 10



Today's dairy system produces considerably less manure, methane, and nitrous oxide per billion pounds of milk than the 1944 system. Carbon dioxide, methane, and nitrous oxide are used to calculate the carbon footprint of dairy production. When all system inputs and outputs are included, the carbon footprint is correctly expressed as per unit of milk.

4. Based on the chart above the carbon footprint of a gallon of milk produced in 2007 is only \_\_\_\_\_ percent of that in 1944.
- A. 5
  - B. 17
  - C. 29
  - D. 37
5. Based on the chart above the carbon footprint of a cow in 2007 is \_\_\_\_\_ percent more than the carbon footprint of a cow in 1944.
- A. 23
  - B. 34
  - C. 49
  - D. 62



Somatic Cell Counts (SCC) have become one of the measures of milk quality. Although the statutory limits for SCC levels vary across the globe, a level at a maximum of 400,000 per milliliter appears to be the level that milk buyers and milk quality advisors are proposing.

6. The graph above indicates that the level of SCC in the U.S. has decrease by approximately \_\_\_\_\_ percent from 1998 to 2008.
  - A. 5
  - B. 13
  - C. 25
  - D. 33
  
7. The level of SCC in the UK has increased by approximately \_\_\_\_\_ percent from 1998 to 2008.
  - A. 33
  - B. 45
  - C. 53
  - D. 60
  
8. The level of SCC in New Zealand (NZ) has been fairly steady from 1997 to 2006 but has \_\_\_\_\_ the last two years.
  - A. decreased
  - B. increased
  - C. remained steady
  - D. not changed
  
9. The higher the SCC \_\_\_\_\_ the quality of milk.
  - A. the better
  - B. does not affect
  - C. the lower
  - D. increases

Top 25 counties by cow numbers					
2007 Rank	County, State	Cows	2002 Rank	1997 Rank	1992 Rank
1	Tulare, CA	474,497	1	1	1
2	Merced, CA	273,242	2	2	3
3	Stanislaus, CA	191,729	3	4	4
4	Kings, CA	163,600	5	6	7
5	Gooding, ID	140,371	7	14	48
6	Kern, CA	124,756	13	27	39
7	Fresno, CA	114,768	10	11	10
8	San Bernardino, CA	110,090	4	3	2
9	Lancaster, PA	109,653	8	8	6
10	San Joaquin, CA	109,336	9	9	9
11	Maricopa, AZ	95,643	6	7	8
12	Yakima, WA	89,575	14	20	38
13	Chaves, N.M.	85,067	12	12	41
14	Madera, CA	76,811	26	59	79
15	Jerome, ID	76,123	20	18	49
16	Twin Falls, ID	70,256	23	46	112
17	Weld, CO	69,783	24	32	35
18	Stearns, MN	68,677	16	16	13
19	Pinal, AZ	66,892	84	185	323
20	Clark, WI	64,438	17	17	16
21	Curry, N.M.	63,883	22	75	289
22	Marathon, WI	62,840	1	15	11
23	Roosevelt, N.M.	61,139	21	43	159
24	Earth, TX	55,937	15	10	12
25	Cassia, ID	53,845	74	168	256

10. Nine of the top 25 counties are in California, representing \_\_\_\_\_ percent of the cows in the top 25 counties.
- 38
  - 57
  - 75
  - 80
11. Based on the rankings which county had the largest increase in cows from 1992 to 2007?
- Tulare, CA
  - Gooding, ID
  - Pinal, AZ
  - Cassia, ID
12. Based on the rankings listed above, which two counties were not in the top 25 counties until 2007?
- Kern, CA and Jerome, ID
  - Twin Falls, ID and Weld, CO
  - Cassia, ID and Roosevelt, NM
  - Pinal, AZ and Madera, CA

Although it ended the year with two months of much needed higher prices, 2009 was perhaps the worst year ever for producer milk prices. Even with those two months over \$14.00, Class III price average during 2009 was \$11.36, a decline of \$6.08 from the previous year and the lowest average since \$10.42 in 2002.

USDA Class III Milk Prices				
	<u>2009</u>	<u>1999</u>	<u>1989</u>	<u>1979</u>
Jan	\$10.78	\$16.27	\$11.90	\$10.55
Feb	\$9.31	\$10.27	\$11.26	\$10.52
Mar	\$10.44	\$11.62	\$10.98	\$10.59
Apr	\$10.78	\$11.81	\$11.09	\$10.63
May	\$9.84	\$11.26	\$11.12	\$10.67
Jun	\$9.97	\$11.42	\$11.33	\$10.76
Jul	\$9.97	\$13.59	\$11.76	\$10.87
Aug	\$11.20	\$15.79	\$12.37	\$11.09
Sep	\$12.11	\$16.26	\$13.10	\$11.32
Oct	\$12.82	\$11.49	\$13.87	\$11.25
Nov	\$14.08	\$9.79	\$14.69	\$11.27
Dec	\$14.98	\$9.63	\$14.93	\$11.34
AVG.	\$11.36	\$12.43	\$12.37	\$10.91

13. Based on the USDA Class III Milk Prices table above, when the four years posted are averaged which month has the lowest average price?  
A. Feb  
B. May  
C. Jun  
D. None of the above
14. The largest difference between the 1999 and 2009 Class III Milk Prices occurred during the month of \_\_\_\_\_.  
A. Aug  
B. Dec  
C. Jan  
D. none of the above
15. Although the average 2009 Class III Milk Price was a \$1.07 lower than 1999, which month in the two years had the largest decrease in price from the previous month?  
A. Jan, 2009  
B. Jan, 1999  
C. Feb, 1999  
D. none of the above