

Dairy Foods Career Development Event

1. In 1937 the _____ established the Milk Marketing Order system that granted the federal government power to stabilize milk price received by farmers.
 - a. Sherman Anti-Trust Act
 - b. Capper-Volstead Act
 - c. Agricultural Marketing Agreement Act
 - d. Agricultural Adjustment Act

2. In what year was recombinant bovine somatotropin approved for commercial use in the U.S.
 - a. 1974
 - b. 1983
 - c. 1988
 - d. 1993

3. Children should consume three servings of milk group foods daily. What percent of calcium available in the food supply is provided by milk group foods?
 - a. 73
 - b. 83
 - c. 95
 - d. 99

4. Half-and-half is a mixture of milk and cream that contains between _____ and _____ percent milkfat.
 - a. 3.25, 8.25
 - b. 10.5, 18.0
 - c. 30.0, 36.0
 - d. 36.0, 50.0

5. Yogurt is the result of mixing milk and cream products with _____, _____, and _____.
 - a. lactic acid producing bacteria, escherichia coli, staphylococcus aureus
 - b. lactic acid producing bacteria, lactobacillus bulgaricus, streptococcus thermophilus
 - c. lactic acid producing bacteria, bacillus thuringiensis, staphylococcus aureus
 - d. none of the above

6. It requires _____ pounds of whole milk to produce one pound of butter.
 - a. 7.4
 - b. 10.0
 - c. 12.0
 - d. 21.2

7. Which of the following is not an accepted method to pasteurized milk?
 - a. heating milk to 145 degrees for not less than 30 minutes
 - b. heating milk to 161 degrees for not less than 15 minutes
 - c. heating milk to 161 degrees for not less than 15 seconds
 - d. heating milk to 284 degrees for not less than 2 seconds

8. Which state had the largest one-year increase in production of milk for the year 2000?
 - a. California
 - b. Florida
 - c. Idaho
 - d. Iowa

9. In the year 2000, which state led the nation in butter production.
 - a. California
 - b. Minnesota
 - c. New York
 - d. Wisconsin

10. In the year 2000, rank from highest to lowest the percent utilization of the US milkfat supply.
- fluid products, frozen products, cheese, butter
 - fluid products, cheese, butter, frozen products
 - cheese, fluid products, frozen products, butter
 - cheese, fluid products, butter, frozen products
11. Which fluid milk product had the greatest consumption in the year 2000?
- whole milk
 - reduced fat
 - nonfat milk
 - flavored milk
12. Per capita consumption of fluid milk in the US from 1975 to 2000 has _____.
- steadily declined
 - steadily increased
 - been variable
 - remained constant
13. Milk products are high in food proteins with about _____ percent of the protein as whey and about _____ percent of the protein as casein.
- 3.5, 3.2
 - 10, 90
 - 18, 82
 - 8, 92
14. Which country has the greatest per capita fluid milk consumption?
- Argentina
 - Ireland
 - Sweden
 - United States
15. Which country has the greatest output per cow at 18,890?
- Denmark
 - Japan
 - Sweden
 - United States
16. In what year was the highest all milk price of \$15.43 received on the farm for milk products produced.
- 1976
 - 1983
 - 1998
 - 2000
17. Per capita supermarket sales of fluid milk are greatest in which metropolitan area?
- Des Moines
 - Boise
 - Denver
 - Pittsburgh
18. In what year did the American Dairy Association introduce the 'Real Seal' dairy symbol?
- 1980
 - 1983
 - 1993
 - 1995

19. The fat-soluble vitamins carried by milkfat are _____
- a. A, B, C, D
 - b. A, D, E, K
 - c. C, D, E, K
 - d. A, B, E, K
20. In the year 2000, how many dairy cows were there in the U. S.?
- a. 9.2 million
 - b. 10.1 million
 - c. 12.2 million
 - d. 21.9 million
21. In 1997, how many one-half pints of milk were served in child nutrition programs in schools.
- a. 7.6 million
 - b. 2 billion
 - c. 4.9 billion
 - d. 23.2 billion
22. Intake of fluid milk reduces the incidence of _____ in humans.
- a. colon cancer
 - b. hypertension
 - c. osteoporosis
 - d. all of the above
23. The principle carbohydrate in milk is lactose, it accounts for _____ percent of the total solids not fat and _____ percent of the calories in whole milk.
- a. 54, 30
 - b. 32, 56
 - c. 78, 67
 - d. 75, 75
24. The major or macro-minerals contained in the largest quantity in whole milk are _____
- a. calcium, potassium, nitrogen
 - b. calcium, magnesium, potassium
 - c. calcium, phosphorus, potassium
 - d. calcium, magnesium, phosphorus
25. When producing Grade A raw milk, producers must adhere to the restrictions of the Pasteurized Milk Ordinance. What percent of the raw milk produced in the U.S. is Grade A?
- a. 25
 - b. 45
 - c. 85
 - d. 95
26. Homogenization reduces the fat globules in milk and results in uniform composition of milk without the removal of fat constituents. What other advantage does homogenized milk have?
- a. richer flavor
 - b. lower curd tension
 - c. increased digestibility
 - d. all of the above
27. The most common coagulating enzyme used for curd formation in cheese making is _____
- a. lactic acid
 - b. prolactin
 - c. rennet
 - d. sulfuric acid

28. The most common American-type cheese produced in the US today is _____

- a. cheddar
- b. colby
- c. gouda
- d. swiss

29. For the year 2000 the top three cheese producing states in the U.S. in order are _____, _____, and _____

- a. California, Wisconsin, New York
- b. Wisconsin, Minnesota, California
- c. Wisconsin, New York, Minnesota
- d. Wisconsin, California, New York

30. Most ripened cheese contain _____ times as much water insoluble components such as milkfat and protein.

- a. 10
- b. 20
- c. 25
- d. no difference

Interrupt and Analyze Information (use the attached tables to answer question 31-40)

31. What percent of disposable income does the average U.S. citizen spend today on food?

- a. 11.6
- b. 12.0
- c. 13.4
- d. 13.8

32. The proportion of disposable income spent on food away from home has _____ since 1970.

- a. steadily increased
- b. steadily decreased
- c. remained constant
- d. varied widely

33. In order, rank where the average consumer spent the most dollars at various retail outlets in 1998

- a. convenience stores, supermarkets, drug stores
- b. supermarkets, convenience stores, wholesale clubs
- c. supermarkets, convenience stores, mass merchandisers
- d. supermarkets, wholesale clubs, mass merchandisers

34. From 1978 to 1998 the per capita consumption of fluid milk in the U.S. has decreased about _____ pounds.

- a. 25
- b. 35
- c. 45
- d. 55

35. Fluid milk consumption in the U.S. had a slight increase from _____ to _____.

- a. 1978-1982
- b. 1982-1985
- c. 1985-1988
- d. 1996-1999

36. The U.S. dairy industry evolved in the Midwest and recently has shifted west of the Mississippi river Rank the regions of the U.S. for milk production in 2001

- a. midwest, west, southeast, northeast
- b. west, midwest, east, southeast
- c. west, northeast, midwest, southeast
- d. west, midwest, southeast, northeast

37. What is the legal limit for somatic cell count in the U.S. to sell raw milk.

- a. 400,000
- b. 500,000
- c. 750,000
- d. 1,000,000

38. According to 2000 National Dairy Herd Improvement records, what percent of herd test days were greater then 400,000.

- a. 4.1
- b. 29.5
- c. 69.1
- d. 73.3

39. The USDA sets the national base for somatic cell count premiums at 350,000. According to 2000 national DHI records what is the national average for somatic cell count in tested herds?

- a. 298,000
- b. 315,000
- c. 334,000
- d. 441,000

40. From 1997-2001 milk production per cow has steadily increased. In one of those years the U.S. experienced growth in total cows. Which year did the U.S. dairy herd grow the most?

- a. 1998
- b. 1999
- c. 2000
- d. 2001

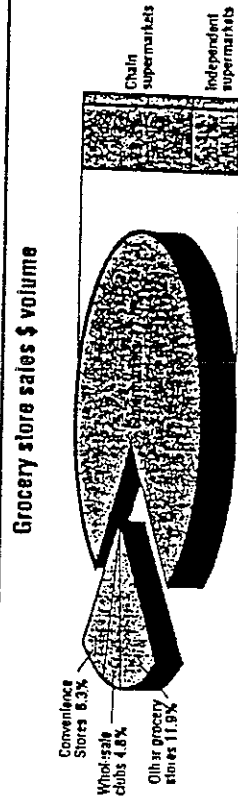
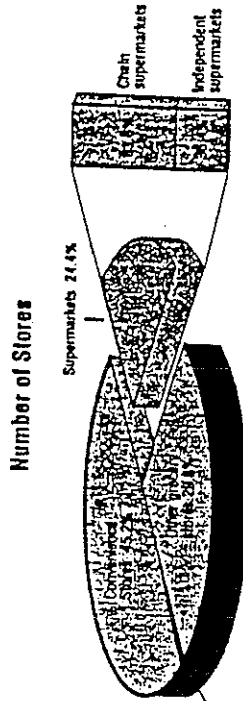
EXPENDITURES AS A SHARE OF DISPOSABLE PERSONAL INCOME; 1970-1998

Expenditures for food Expenditure of income spent for food

| Year | Disposable Personal Income | | Expenditures for food | | Expenditure of income spent for food | |
|-------|----------------------------|-----------------------------|-----------------------|-----------------------------|--------------------------------------|-----------------------------|
| | At Home ¹ | Away from Home ² | At Home ¹ | Away from Home ² | At Home ¹ | Away from Home ² |
| | (Billion Dollars) | | (Percent) | | | |
| 1970 | 727.1 | 74.2 | 26.4 | 100.6 | 10.2 | 3.6 |
| 1971 | 790.2 | 78.1 | 28.1 | 106.2 | 9.9 | 3.6 |
| 1972 | 855.3 | 84.4 | 31.3 | 115.8 | 9.9 | 3.7 |
| 1973 | 965.0 | 93.1 | 34.9 | 128.0 | 9.7 | 3.6 |
| 1974 | 1,054.2 | 105.4 | 38.5 | 143.9 | 10.0 | 3.7 |
| 1975 | 1,159.2 | 115.2 | 45.9 | 161.1 | 9.9 | 4.0 |
| 1976 | 1,273.0 | 123.1 | 52.6 | 175.7 | 9.7 | 4.1 |
| 1977 | 1,401.4 | 131.8 | 58.5 | 190.3 | 9.4 | 4.2 |
| 1978 | 1,580.1 | 145.3 | 67.5 | 212.8 | 9.2 | 4.3 |
| 1979 | 1,769.5 | 162.2 | 76.9 | 239.1 | 9.2 | 4.3 |
| 1980 | 1,973.3 | 179.1 | 85.2 | 264.4 | 9.1 | 4.3 |
| 1981 | 2,200.2 | 191.0 | 95.8 | 286.8 | 8.7 | 4.4 |
| 1982 | 2,347.3 | 198.4 | 104.5 | 302.9 | 8.5 | 4.5 |
| 1983 | 2,522.4 | 209.0 | 113.7 | 322.7 | 8.3 | 4.5 |
| 1984 | 2,810.0 | 220.9 | 121.9 | 342.8 | 7.9 | 4.3 |
| 1985 | 3,002.2 | 230.7 | 128.6 | 359.3 | 7.7 | 4.3 |
| 1986 | 3,187.6 | 239.3 | 137.9 | 377.2 | 7.5 | 4.3 |
| 1987 | 3,363.1 | 249.0 | 146.3 | 395.3 | 7.4 | 4.3 |
| 1988 | 3,640.8 | 261.9 | 157.6 | 419.5 | 7.2 | 4.3 |
| 1989 | 3,894.5 | 280.9 | 165.5 | 446.4 | 7.2 | 4.3 |
| 1990 | 4,166.8 | 306.0 | 177.6 | 483.6 | 7.3 | 4.3 |
| 1991 | 4,343.7 | 319.5 | 183.1 | 502.6 | 7.4 | 4.2 |
| 1992 | 4,826.7 | 321.8 | 192.0 | 513.6 | 7.0 | 4.2 |
| 1993 | 4,829.3 | 327.7 | 204.9 | 532.6 | 6.8 | 4.2 |
| 1994 | 5,062.7 | 344.8 | 214.7 | 559.3 | 6.8 | 4.2 |
| 1995 | 5,355.7 | 360.4 | 222.6 | 583.1 | 6.7 | 4.2 |
| 1996 | 5,608.3 | 376.0 | 230.1 | 606.2 | 6.7 | 4.1 |
| 1997* | 5,795.1 | 380.2 | 297.9 | 678.1 | 6.6 | 5.1 |
| 1998 | 6,027.9 | 395.3 | 301.7 | 697.0 | 6.6 | 5.0 |

Revised. ¹Food purchased from grocery stores and other retail outlets, including food purchased with stamps and food consumed on farms. Excludes government-donated foods. ²Excludes food paid for by government and business, such as food donated to schools, prisons and other institutions, and expense account meals. *May not add due to rounding. Source: USDA Economic Research Service.

RETAIL STORE FORMATS AND DOLLAR SALES VOLUME; 1998



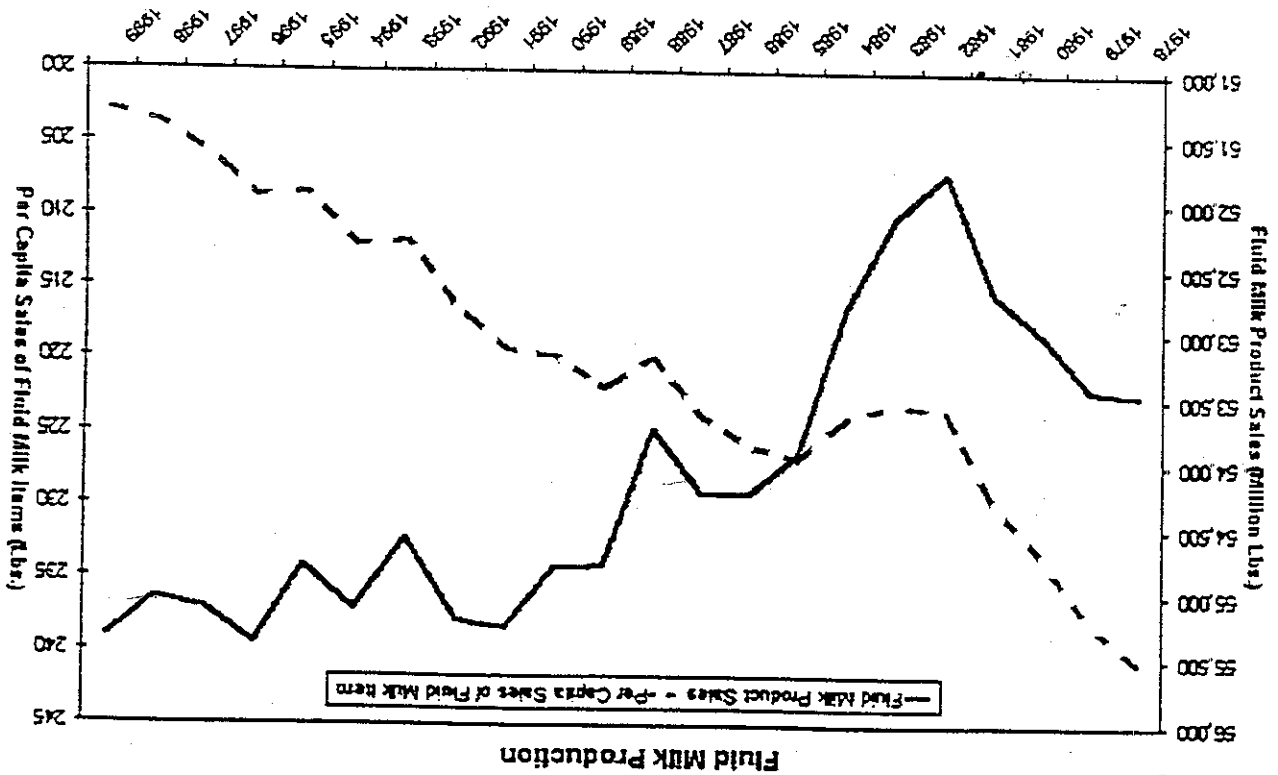
Source: Progressive Grocer Annual Report, April 1999

CONSUMER USAGE AND SPENDING AT VARIOUS RETAIL FORMATS; 1998

| Outlet | % Shopping | Weekly Tips | Weekly Spending |
|-----------------------|------------|-------------|-----------------|
| Supermarkets | 99 | 2.1 | \$73.40 |
| Mass Merchandisers | 77 | 1.5 | \$38.29 |
| Convenience Stores | 49 | 2.5 | \$14.53 |
| Chain Drugstores | 42 | 1.3 | \$20.74 |
| Wholesale Clubs | 27 | 1.2 | \$70.05 |
| Specialty Food Stores | 12 | 1.9 | \$24.44 |

Source: Progressive Grocer '98 Annual Report of the Grocery Industry, * 1998.

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Fluid Milk Product Sales and Per Capita Sales of Fluid Milk Items: 1979-1999

U.S. fluid milk product sales have increased with the growth in population, but per capita consumption has seen a steady 30-year decline. This decrease in per capita consumption is attributed largely to an ever-increasing beverage market in which milk competes. Processors have recently responded to this decline by developing more varieties of milk (flavors and fat levels) in convenient, ready-to-go packaging consumers can enjoy on the road or away from home.

... again led in that category with 22,324 pounds followed by Colorado, Idaho and California.

Number of dairies. The United States lost 6,307 dairies last year, a decline of 7.6%. Declines were 4,131 dairies in the Midwest, 1,382 dairies in the Northeast, 446 dairies in the South and 436 dairies in the West.

The largest drop was in Wisconsin, which lost 1,652 dairies or 8.3%. North Dakota lost the largest percentage of its dairies, 19.2%.

But New Mexico gained 12 dairies, while Maine and Arizona each added two new ones.

Average herd size. The average herd size grew by eight cows, to 119, in 2001. In the West, the herd size grew by 43, to 508 cows per herd. The Midwest showed an increase of five cows, to 75, and herds in the Northeast and South grew by three cows each, to averages of 84 and 130, respectively.

Idaho's average herd size jumped by 54, followed by Texas, with an

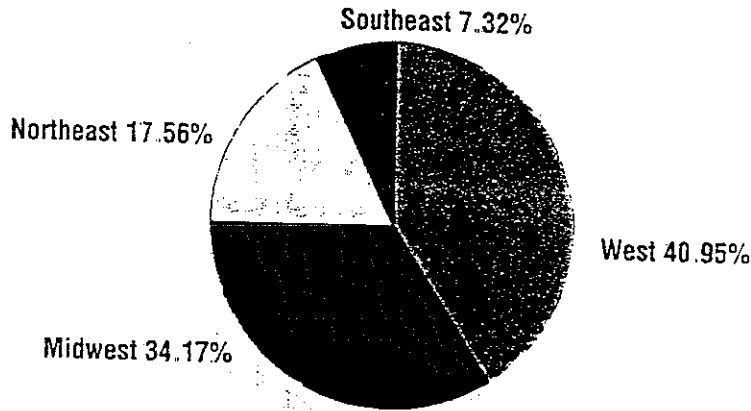
increase of 40 and Colorado, by 39. Arizona's average herd size declined by eight and New Mexico's average herd size dropped by six.

Top 100. California counties again dominated the top 10 in milk production. As the top U.S. dairy county, Tulare made nearly twice as much milk as second-ranked Merced. Lancaster, Pa., the only non-Western county in the top 10, dropped from eighth to ninth. Among California counties, Stanislaus passed San Bernardino for the third ranking, and Kings squeaked by Riverside to become the sixth largest county.

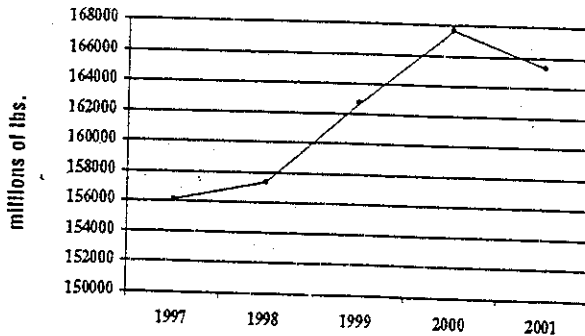
Counties new to the top 100 included Jasper, Ind., which jumped onto the list as the 43rd largest county, and Elkhart, Ind. Two Michigan counties, Huron and Clinton, and two Idaho counties, Cassia and Twin Falls, also made the list as did Mercer, Ohio, and Gilchrist, Fla.

Farm size. USDA data showed that 57% of the country's milk was made on farms with more than 200 cows, up from 54% in 2000. Operations with 100 to 199 head made 16.5%, down from 17.3% in 2000, and herds with 50 to 99 head made 22%, unchanged. ■

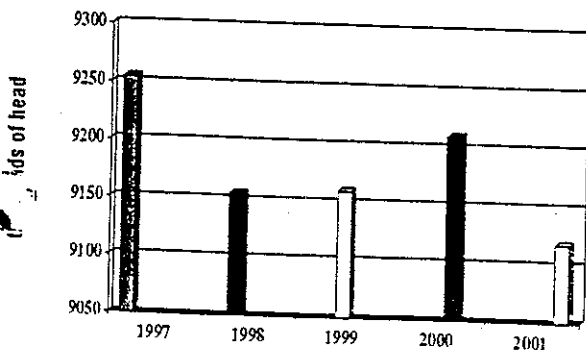
Regional Distribution of Milk Production for 2001



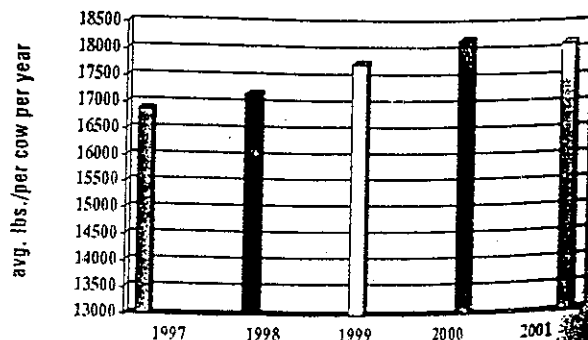
Total Milk Production



Total Cows in U.S.



Milk Production Per Cow



- Total
- Alaska
- Arizona
- California
- Colorado
- Hawaii
- Idaho
- Montana
- Nevada
- New Hampshire
- Oklahoma
- Oregon
- Texas
- Utah
- Washington
- Wyoming
- TOTAL
- U.S. \$
- Illinois
- Indiana
- Iowa
- Kansas
- Michigan
- Minnesota
- Missouri
- Nebraska
- North Dakota
- Ohio
- South Dakota
- Wisconsin
- TOTAL
- Connecticut
- Delaware
- Maine
- Maryland
- Massachusetts
- New Hampshire
- New Jersey
- New York
- Pennsylvania
- Rhode Island
- Vermont

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|----|----|----|----|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 |
| 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 |
| 45 | 46 | 47 | 48 |
| 49 | 50 | 51 | 52 |
| 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 60 |

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ADDRESS _____

CITY _____ STATE _____ ZIP _____

DATE _____ SIGNATURE _____

neru somatic cell levels are not improving

THERE has been little improvement in average DHI herd somatic cell count (SCC) levels in recent years. In fact, the U.S. trend may be considered slightly upward... 1995, 304,000; 1996, 308,000; 1997, 314,000; 1998, 318,000; 1999, 311,000; and 2000, 316,000.

The information was compiled by R. H. Miller and Duane Norman at USDA's Animal Improvement Programs Laboratory at Beltsville. Note that only SCC information from cows with usable records was used in this analysis. That's why average herd size reported will appear low for many states.

The two righthand columns in the table give the percent of herd

test days with SCCs above 750,000 and 400,000. The current regulatory maximum SCC for herds is 750,000, and 400,000 has been suggested as a possible future regulatory limit.

Nationally, 4.1 percent of test day averages from DHI herds exceeded the legal limit for SCC. Miller and Norman acknowledge that this percentage likely overestimates the proportion of herds that would have exceeded the limit.

Milk from treated cows with high cell counts would be going into the milk tank. Also, herds are rejected from the market until there are repeated bulk tank counts not above 750,000.

DHI herd somatic cell levels in 2000

| State | Cows per herd no. | Average daily milk yield lbs. | Average SCC cells/ml,1000e | Herd test days with SCC greater than: | |
|----------------|-------------------|-------------------------------|----------------------------|---------------------------------------|------------------|
| | | | | 750,000 cells/ml | 400,000 cells/ml |
| Alabama | 117.1 | 53.8 | 441 | 8.5 | 54.4 |
| Arizona | 625.6 | 70.5 | 313 | 0.6 | 21.8 |
| Arkansas | 53.1 | 53.9 | 427 | 13.2 | 44.8 |
| California | 404.1 | 74.7 | 282 | 1.6 | 18.4 |
| Colorado | 202.1 | 80.7 | 280 | 0.0 | 12.5 |
| Connecticut | 69.4 | 69.1 | 326 | 2.7 | 24.7 |
| Delaware | 98.3 | 67.2 | 353 | 0.7 | 27.1 |
| Florida | 332.6 | 69.5 | 504 | 12.6 | 73.6 |
| Georgia | 86.2 | 62.7 | 409 | 8.5 | 51.1 |
| Idaho | 173.1 | 76.1 | 330 | 4.0 | 28.7 |
| Illinois | 54.6 | 64.9 | 327 | 3.6 | 29.3 |
| Indiana | 48.5 | 63.4 | 344 | 4.8 | 31.1 |
| Iowa | 46.7 | 65.7 | 334 | 4.4 | 31.5 |
| Kansas | 55.2 | 64.0 | 428 | 12.2 | 47.8 |
| Kentucky | 52.2 | 59.1 | 370 | 5.5 | 37.2 |
| Louisiana | 64.9 | 54.2 | 476 | 10.1 | 66.3 |
| Maine | 55.1 | 64.3 | 305 | 3.2 | 25.7 |
| Maryland | 61.9 | 67.2 | 330 | 3.1 | 30.3 |
| Massachusetts | 60.7 | 65.2 | 329 | 4.7 | 29.2 |
| Michigan | 69.6 | 69.0 | 293 | 2.8 | 24.1 |
| Minnesota | 49.7 | 68.0 | 362 | 6.3 | 38.3 |
| Mississippi | 89.9 | 59.5 | 448 | 4.0 | 56.1 |
| Missouri | 48.0 | 59.4 | 356 | 5.2 | 33.7 |
| Montana | 71.3 | 74.8 | 257 | 1.0 | 11.8 |
| Nebraska | 63.8 | 66.2 | 376 | 6.9 | 36.0 |
| Nevada | 187.5 | 71.8 | 332 | 4.3 | 26.8 |
| New Hampshire | 72.3 | 72.0 | 316 | 3.6 | 24.7 |
| New Jersey | 63.9 | 66.4 | 350 | 4.6 | 35.3 |
| New Mexico | 526.4 | 75.1 | 255 | 0.0 | 19.1 |
| New York | 63.9 | 67.0 | 303 | 4.1 | 27.3 |
| North Carolina | 84.6 | 64.5 | 370 | 6.0 | 41.4 |
| North Dakota | 54.4 | 62.9 | 342 | 5.5 | 28.6 |
| Ohio | 52.0 | 66.3 | 349 | 5.3 | 34.6 |
| Oklahoma | 63.9 | 61.7 | 396 | 8.9 | 37.4 |
| Oregon | 109.3 | 73.0 | 283 | 0.8 | 16.4 |
| Pennsylvania | 45.8 | 65.5 | 329 | 3.0 | 28.7 |
| Puerto Rico | 81.6 | 42.5 | 475 | 13.8 | 61.5 |
| Rhode Island | 39.8 | 64.7 | 218 | 0.0 | 8.1 |
| South Carolina | 120.4 | 60.0 | 379 | 3.2 | 42.9 |
| South Dakota | 51.4 | 65.0 | 409 | 9.3 | 40.1 |
| Tennessee | 66.0 | 59.0 | 420 | 9.8 | 45.9 |
| Texas | 208.7 | 68.4 | 294 | 1.1 | 20.0 |
| Utah | 86.8 | 75.0 | 285 | 2.3 | 20.8 |
| Vermont | 58.6 | 65.1 | 321 | 3.7 | 25.8 |
| Virginia | 79.8 | 66.4 | 338 | 2.5 | 29.3 |
| Washington | 150.4 | 78.4 | 289 | 1.9 | 16.1 |
| West Virginia | 67.2 | 63.5 | 379 | 5.3 | 37.0 |
| Wisconsin | 49.9 | 68.9 | 298 | 3.0 | 24.3 |
| Wyoming | 209.6 | 77.7 | 283 | 0.0 | 0.0 |
| United States | 73.3 | 69.1 | 316 | 4.1 | 29.5 |

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