# CRS Report for Congress

# Milk Standards: Grade A vs. Grade B

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## SUMMARY

Since fluid milk is susceptible to bacterial contamination, more stringent health and sanitation standards apply to the production of milk used for fluid consumption (Grade A) than milk used for butter, cheese, and other manufactured products (Grade B). Currently, more than 90 percent of commercial milk production is classified as Grade A, considerably more than what is actually needed for fluid consumption. Hence, more than one-half of the Grade A milk supply ends up in manufactured products.

Thirty States have some Grade B production, but 50 percent of this production is concentrated in Wisconsin and Minnesota. The volume of Grade B production has declined considerably over the last several years primarily because of a narrowing of standards between the two grades, which has caused Grade B milk producers to either upgrade their facilities to comply with Grade A standards, or exit dairying.

Although each State has the ultimate responsibility for developing health and sanitation standards governing milk production, the Federal Government does maintain oversight of these standards. Minimum standards for Grade A milk production and processing are outlined by the Food and Drug Administration (FDA) in its *Grade A Pasteurized Milk Ordinance* (PMO), and recommended minimum standards for Grade B milk are published by the U.S. Department of Agriculture. Virtually all States have adopted these recommended standards as a minimum, and many State regulatory agencies have adopted more stringent standards.

Milk from both Grade A and Grade B milk producers is checked regularly for: sight and odor, bacterial limits, somatic cell count (an elevated count is indicative of the presence of infection in the dairy cow), the presence of antibiotics, cooling temperature, and sediment. In addition, dairy farms are periodically inspected for compliance with water supply standards, and proper construction and maintenance for milking barns and milk rooms.

Dairy economists estimate that the producer cost of upgrading a Grade B facility to Grade A is approximately 15 to 25 cents per hundredweight of milk marketed. In most markets, particularly those that are distant from the Upper Midwest, producers would likely recapture this investment through the higher price that they could potentially receive for the higher grade milk. However, for many producers a number of obstacles make such a conversion difficult. The stricter water quality standards applicable to Grade A production would require many Grade B producers to undertake the costly operation of drilling and constructing a new well. Amish milk producers, who comprise a large portion of Grade B production in several Midwest States, might be required to use electrical refrigeration. Finally, many Grade B farms are small family-owned operations that would find it difficult to recapture their investment in upgrading their facilities as quickly as larger producers.

## Milk Standards:
## Grade A vs. Grade B

**What are the major distinctions between Grade A and manufacturing grade milk?**

In order for a dairy farmer to be classified as a Grade A producer, the producer's facilities and milk must meet more stringent health and sanitation requirements than those of a manufactured grade (commonly called Grade B) milk producer. Consequently, only Grade A milk can be used for fluid consumption; Grade B can be used only in manufactured dairy products such as cheese, butter, and nonfat dry milk. However, more than one-half of the Grade A milk supply is used in manufactured products.

**What portion of U.S. milk production is Grade A and Grade B, and what is the geographical distribution?**

Of the 145.3 billion pounds of commercial milk production in 1990, 92 percent was classified as Grade A. Thirty states have some Grade B milk production, but 50 percent of this production is concentrated in Wisconsin and Minnesota (see table 1 and figure 1). These two States accounted for 7.5 billion pounds of the nearly 15 billion pounds of total U.S grade B production in 1990, and currently have 16,290 of the 33,744 Grade B producers nationwide. Another five States (Iowa, Idaho, South Dakota, California and North Dakota) account for another 4 billion pounds (25 percent) of total Grade B production.

The volume of Grade B production and the number of Grade B producers have declined significantly over the last several years. Just since 1982, the number of Grade B producers has been reduced by more than one-half -- from 73,301 to 33,744 -- and Grade B production has fallen from nearly 20 billion pounds to just under 15 billion pounds. Contributing to this decline has been a narrowing of standards between the two grades, which has caused Grade B producers to either upgrade their facilities to Grade A or exit the industry. Also contributing were the dairy termination program in 1986 (a Federal program that paid farmers to slaughter or export their dairy herds, and exit dairying for at least 5 years), as well as the general economic trend in the dairy industry toward fewer and larger farms.

**Who regulates the quality standards of milk?**

Although each State has the ultimate responsibility for developing standards for Grade A milk, and for manufacturing grade milk production when the State has Grade B production, the Federal Government does maintain

**Figure 1.**

# Number of Grade B Producers

## February 1991

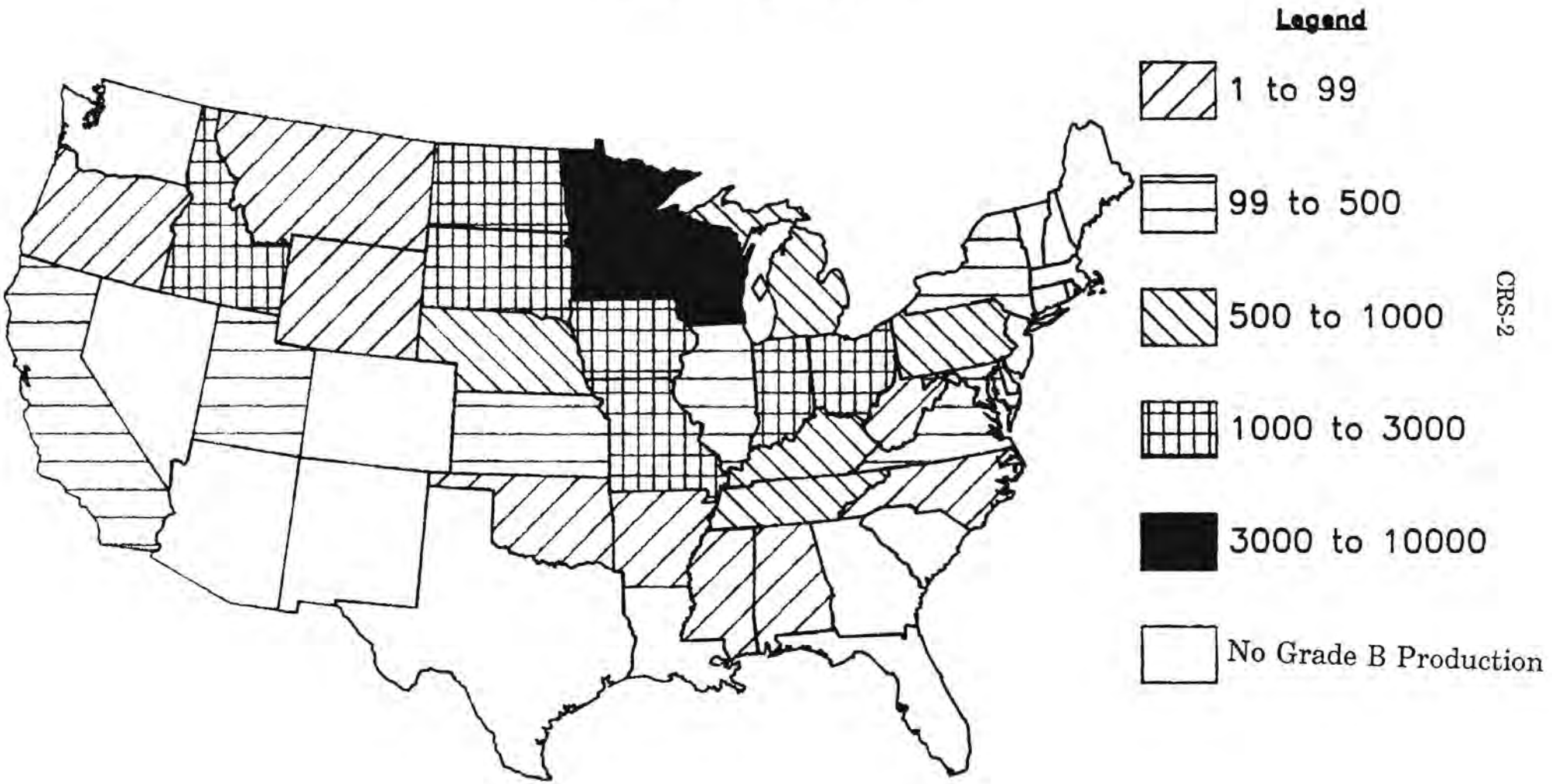

**Table 1.**
**Number of States with Grade B Milk**
**And Number of Grade B Producers**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Wisconsin | 9,664 | 16. | Kansas | 314 |
| 2. | Minnesota | 6,624 | 17. | Virginia | 294 |
| 3. | Ohio | 2,850 | 18. | New York | 275 |
| 4. | Iowa | 2,164 | 19. | California | 269 |
| 5. | South Dakota | 1,625 | 20. | Utah | 225 |
| 6. | Indiana | 1,550 | 21. | Maryland | 100 |
| 7. | Idaho | 1,150 | 22. | Oklahoma | 75 |
| 8. | Missouri | 1,118 | 23. | West Virginia | 68 |
| 9. | North Dakota | 1,050 | 24. | Arkansas | 63 |
| 10. | Kentucky | 850 | 25. | Oregon | 63 |
| 11. | Tennessee | 750 | 26. | North Carolina | 58 |
| 12. | Nebraska | 730 | 27. | Mississippi | 50 |
| 13. | Pennsylvania | 680 | 28. | Wyoming | 46 |
| 14. | Michigan | 550 | 29. | Alabama | 14 |
| 15. | Illinois | 464 | 30. | Montana | 11 |
| | | | | TOTAL | 33,744 |

Source: U.S. Department of Agriculture, Agricultural Marketing Service

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oversight of these standards and establishes recommended guidelines for the States to follow.

Minimum standards and requirements for Grade A milk production and processing are outlined in the *Grade A Pasteurized Milk Ordinance* (PMO) published by the Food and Drug Administration (FDA), an agency of the U.S. Public Health Service, Department of Health and Human Services. Grade A standards are recommended by the National Conference on Interstate Milk Shipments (NCIMS), which is comprised of voting representatives from State and local regulatory agencies, and non-voting representatives of the dairy industry and FDA. The NCIMS meets every 2 years (most recently in April 1991) to discuss and vote on changes to the PMO. As a general rule, the FDA accepts the Conference recommendations and incorporates them into the revised PMO.

The State regulators (which are usually either the State Department of Agriculture or the State Health Department) adopt the PMO standards as a minimum, and in many cases require more stringent standards. Consequently, States have a reciprocal agreement whereby shipments of Grade A milk are accepted regardless of their origin. If a State were to adopt less stringent standards than those in the PMO, producers would find it difficult to transport fluid milk across State borders. FDA has the responsibility of conducting

periodic checks to assure receiving States that each State is maintaining adequate sanitation standards.

State governments are also responsible for the regulation of manufacturing grade milk. Minimum standards for Grade B milk are recommended by the Dairy Division of the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service (AMS). USDA recommendations were published in April 1972 and have been subject to only a few amendments in the interim. Although 29 of the 30 States with Grade B production have adopted USDA recommendations as a minimum, USDA does not have the authority to prevent dairy products that were not produced according to standards from crossing State lines. However, USDA has oversight of dairy plants that sell surplus butter, cheese and nonfat dry milk to USDA under the Federal dairy price support program. Their surplus products are graded by USDA inspectors prior to purchase.

**What are the minimum standards that milk producers must maintain with respect to the quality of the milk?**

Before a milk hauler removes milk from a farm bulk tank or other container, the hauler is required to collect a sample of the farm milk and deliver it for testing. During any consecutive six month period, at least four samples must be collected in four separate months for both raw Grade A and Grade B milk, and checked for several standards including: bacterial counts, somatic cell counts, and antibiotics. Cooling temperatures are also checked before the milk is transported.

These chemical, bacteriological, and temperature standards are more stringent for the production of Grade A milk, which is eligible for fluid consumption, than for Grade B milk, which is not. Although pasteurization destroys most of the toxins in raw milk, some can cause severe gastroenteritis and other diseases in humans that pasteurization may not eliminate. Because Grade B milk undergoes additional processing into manufactured products, Grade B standards can be less stringent.

The following represents a summary of these standards:

**Sight and Odor:** Both Grade A and Grade B milk are physically inspected for smell and physical appearance by milk haulers at each pickup to determine the presence of any abnormal condition. Any milk that has an unusual odor, or is curdled, bloody, or has any other unusual appearance, must be rejected.

**Bacterial Limits:** Federal regulators rely on the bacterial count as an index of the sanitary quality of milk. Although the magnitude of the count does not always correspond to the presence or absence of disease organisms, a high count is usually a reliable indicator that the milk has either come from an unhealthy cow, been produced in unsanitary conditions, or has been kept at warm temperatures after milking, which can contribute to bacterial growth.

The maximum allowable bacterial count for Grade A milk under the PMO is 100,000 per milliliter (ml) prior to commingling with other producer milk. After commingling but before pasteurization, the count may not exceed 300,000 per ml. The USDA recommended maximum count for Grade B milk is 1 million per ml; the commingled count is 3 million per ml.

**Somatic Cell Count:** A high somatic cell count in raw milk is usually indicative of the presence of an infection in the dairy cow. One of the more prevalent infections is bovine mastitis, an inflammatory and generally communicable disease of the udder. Organisms can enter the milk either directly through the diseased udder or indirectly through other infected body discharges. In addition to the health consequences, a high somatic cell count inhibits the binding of the protein in milk with the milkfat, a necessary step in the manufacturing of cheese.

The PMO currently requires Grade A producers to maintain a somatic cell count below 1 million per ml, although many States maintain a standard of 750,000 per ml. The NCIMS recommended at its April 1991 meeting that the national standard be reduced to 750,000 per ml effective July 1, 1993. USDA also currently recommends a maximum somatic cell count of 1 million per ml, but is currently considering a revision of the standard. Historically, Grade B standards for somatic cell count have moved in tandem with changes in the Grade A standard.

**Antibiotics:** When a producer treats an infected cow with antibiotics, the milk from the treated cow is required to be withheld from commercial markets. Grade A regulators are currently required to use a drug residue test called the *Bacillus stearothermophilus* disc assay method, which is effective for detecting the presence of penicillin-type antibiotics. In response to public concern over the adequacy of this method for detecting drug residues in milk, supplemental milk tests were approved by the NCIMS to detect tetracycline and other antibiotics that may defy disc assay detection.

Both Grade A and Grade B producers must maintain an antibiotic level in the milk below established tolerances or "safe levels".

**Cooling Temperature:** Because improper refrigeration can foster the growth of bacteria in milk, both Grade A and Grade B producers must meet minimum requirements for the cooling of raw milk.

The PMO requires Grade A producers to cool the milk to 45 degrees or less within 2 hours after milking. The blend temperature after the first milking may not exceed 50 degrees. USDA recommends separate temperature standards for Grade B can milk and bulk milk. Milk in cans should be cooled immediately after milking to at least 50 degrees, unless the milk is delivered to the plant within 2 hours after milking. USDA recommends that Grade B bulk milk be cooled to at least 40 degrees or less within 2 hours after milking and maintained at 50 degrees or lower until transfer to a transport tank.

**Sediment:** Sediment in milk includes hair, flies, and other foreign matter. The PMO does not specify a maximum allowable sediment in Grade A milk. USDA recommends that sediment levels be checked monthly and rejects milk having a reading of over 2.5 milligrams.

**What happens when a producer is found to be in violation of these standards?**

**Grade A:** The PMO requires that whenever two of the last four consecutive bacterial counts, somatic cell count, or cooling temperature checks, taken on separate days, exceed the limit of the standards, the State regulatory agency must provide the producer with a written notice. An additional sample is taken within 3 to 21 days of the notice. The producer's Grade A permit is immediately suspended whenever a standard is violated by three of the last five samplings. Upon detection of unacceptable levels of antibiotics in commercially produced Grade A milk, the producer's permit is immediately suspended.

A producer may apply for the reinstatement of a suspended permit. If the violation was due to a high bacterial count or inadequate cooling temperatures, the State regulatory agency must issue a temporary permit within 1 week of the request for reinstatement, but only if an inspection of the facilities finds that the conditions leading to the violation have been corrected. If a high somatic cell count or the presence of antibiotics was the cause of suspension, a producer can be given a temporary permit whenever a resampling indicates that the milk is within acceptable limits.

**Grade B:** USDA recommends that a plant reject Grade B milk for any of the following reasons: 1) the milk fails to meet the requirements for sight and odor; 2) more than 2.5 mg of sediment is detected, 3) the milk has been classified as "undergrade" because of a high bacterial count for more than 4 weeks; 4) the somatic cell count is excessive in two out of four tests and a subsequent test indicates a high count; 5) antibiotics or any drug residues are detected, and the producer is not reinstated until a subsequent test is negative, or; 6) the milk has not been stored at the proper cooling temperature.

**What are the farm requirements for producers of Grade A and Grade B milk?**

In addition to the milk quality requirements discussed above, dairy producers must meet certain minimum standards with respect to their farm facilities. Grade A and Grade B standards regarding construction and maintenance of milking barns and the milk room are similar in most States. However, there are two major differences between Grade A and Grade B standards as outlined by the PMO and USDA recommended guidelines:

**Farm Water Supply** -- If an unsafe water supply is used in the cleaning of dairy containers and utensils, the milk may become more susceptible to

bacterial contamination. Hence, the PMO has specific standards for location and construction of wells on Grade A farms that generally parallel current State Water Board Authority requirements. Water samples for bacteriological examination are taken at least once every 3 years.

USDA regulations for Grade B producers require that the water come from a source that is approved by the State regulator. Grade B farms that do not conform with State requirements, or are located in a State that has no requirements, must have their water tested annually.

**Dairy Farm Inspection** -- Grade A producers are inspected every 6 months by an employee or representative of the State regulatory agency. Grade B inspections are conducted every 12 months by a State certified inspector.

### Are there economic incentives to convert to Grade A production?

The pricing scheme under Federal milk marketing orders compensates Grade A producers who sell in the fluid market for the additional costs associated with complying with Grade A standards.[1] Because Grade B milk is not eligible for fluid consumption, Grade B producers tend to receive a lower price (closer to the Class III price) for their milk than Grade A producers selling in the fluid market.

Dairy economists estimate that the cost of upgrading a Grade B facility to Grade A is 15 to 25 cents per hundredweight of milk marketed. In most markets, producers would likely recapture this investment through the higher price received for Grade A milk. This price incentive would likely be greater in the South than in the Upper Midwest, since the price differential under Federal orders for milk sold for fluid consumption is greater the more distant a region is from the Upper Midwest.

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[1] The farm price of approximately 80 percent of all Grade A milk is regulated under Federal milk marketing orders, whereby regulated dairy handlers are required to pay a minimum price for their Grade A purchases in 42 marketing order regions. Another 17 percent of Grade A milk is regulated by 13 separate State marketing orders.

Grade A milk sold under most Federal orders is classified into three classes: Class I milk is sold for fluid consumption and commands the highest price. Class II products (yogurt, cream cheese and other soft manufactured products) use milk that receives a lower price than milk for fluid consumption. The lowest minimum price is paid for milk used for hard manufactured products (butter, cheese, and nonfat dry milk), which receives a Class III price.

**What are the greatest obstacles faced by Grade B producers who wish to convert to Grade A production?**

Telephone interviews with regulators in the ten States with the most Grade B producers (representing 80 percent of total producers) indicate that the following factors are considered major obstacles to conversion to Grade A:

**Water Supplies:** Nearly all of the regulators contend that the stricter water quality standards for Grade A production prevent many Grade B producers from making the conversion. Many Grade B producers have wells that would be considered unsafe by Grade A standards because of their depth, their proximity to potential contamination sites, and for structural reasons. Because these Grade B producers would be required to undertake the costly operation of drilling and constructing a new well that conforms to Grade A standards, many would cease operations, say the regulators.

**Amish Cooling Practices:** In several Midwest States, many of the Grade B dairy farms are operated by Amish milk producers, who choose not to use electrical refrigeration. Instead, these producers either use a water-cooling method of refrigeration or deliver the milk to the processor within 2 hours of milking to conform with Grade B standards. According to State regulators, the States with the highest concentration of Grade B producers are: Ohio, (more than 2,500 Amish dairy farms, 90 percent of the State's Grade B producers); Indiana (nearly 1,000 farms, 60 percent); Missouri (500 farms, 50 percent), and Iowa (400 farms, 20 percent).

Although many Amish producers would probably find it difficult to convert to Grade A, it would not be impossible. Many Pennsylvania Amish producers use diesel power for refrigeration, allowing them to become Grade A producers.

**Cost Considerations:** Although the financial rewards are greater for Grade A milk, many Grade B producers reportedly receive a price that barely covers their costs of production, and therefore lack the financial resources necessary to make the capital investment to upgrade their facilities. Many Grade B farms are small, family-owned operations that would likely find it difficult to recapture their investment as quickly as larger dairy farms.

MILK SOLD TO PLANTS AND DEALERS BY PRODUCERS, AND PERCENT OF FLUID GRADE, BY STATE, 1989 AND 1990 1/*

| State | 1989 | | 1990 | |
|---|---|---|---|---|
| | Quantity | Percent fluid grade 2/ | Quantity | Percent fluid grade 2/ * |
| | Mil. lbs. | Pct. | Mil. lbs. | Pct. |
| ALA | 524 | 100 | 523 | 99 |
| ALAS | 22.2 | 100 | 15.7 | 100 |
| ARIZ | 1,516 | 100 | 1,630 | 100 |
| ARK | 769 | 97 | 788 | 98 |
| CALIF | 19,072 | 98 | 20,660 | 98 |
| COLO | 1,189 | 100 | 1,240 | 100 |
| CONN | 500 | 100 | 495 | 100 |
| DEL | 125.6 | 100 | 121.0 | 100 |
| FLA | 2,440 | 100 | 2,523 | 100 |
| GA | 1,300 | 100 | 1,420 | 100 |
| HAW | 151.5 | 100 | 148.6 | 98 |
| IDAHO | 2,620 | 72 | 2,905 | 75 |
| ILL | 2,708 | 87 | 2,786 | 89 |
| IND | 2,184 | 90 | 2,226 | 90 |
| IOWA | 4,070 | 75 | 4,215 | 76 |
| KANS | 1,235 | 90 | 1,225 | 91 |
| KY | 2,182 | 92 | 2,175 | 93 |
| LA | 930 | 100 | 920 | 100 |
| MAINE | 585 | 100 | 590 | 100 |
| MD | 1,363 | 100 | 1,350 | 100 |
| MASS | 422 | 100 | 436 | 100 |
| MICH | 5,080 | 98 | 5,150 | 98 |
| MINN | 9,975 | 74 | 9,875 | 76 |
| MISS | 755 | 98 | 740 | 99 |
| MO | 2,920 | 89 | 2,985 | 89 |
| MONT | 311 | 98 | 325 | 98 |
| NEBR | 1,325 | 74 | 1,310 | 76 |
| NEV | 288 | 100 | 325 | 100 |
| N H | 286 | 100 | 298 | 100 |
| N J | 340 | 100 | 349 | 100 |
| N MEX | 1,205 | 100 | 1,511 | 100 |
| N Y | 10,825 | 100 | 10,855 | 100 |
| N C | 1,482 | 97 | 1,486 | 95 |
| N DAK | 1,000 | 56 | 1,075 | 56 |
| OHIO | 4,490 | 92 | 4,460 | 92 |
| OKLA | 1,202 | 96 | 1,220 | 96 |
| OREG | 1,416 | 98 | 1,517 | 97 |
| PA | 9,630 | 99 | 9,567 | 99 |
| R I | 30 | 100 | 30 | 100 |
| S C | 442 | 100 | 426 | 100 |
| S DAK | 1,708 | 53 | 1,701 | 55 |
| TENN | 2,055 | 93 | 2,050 | 94 |
| TEX | 5,106 | 100 | 5,501 | 100 |
| UTAH | 1,111 | 82 | 1,200 | 82 |
| VT | 2,295 | 100 | 2,330 | 100 |
| VA | 1,970 | 97 | 1,982 | 97 |
| WASH | 3,926 | 100 | 4,208 | 100 |
| W VA | 265 | 98 | 260 | 98 |
| WIS | 23,660 | 83 | 24,055 | 86 |
| WYO | 118 | 69 | 117 | 73 |
| U.S. | 141,124 | 91 | 145,300 | 92 |

1/ Includes the equivalent amounts of milk for cream sold to plants and dealers. 2/ Percentage of milk sold to plants and dealers that is eligible for fluid use (Grade A in most States). Includes fluid-grade milk used in manufacturing dairy products.

SOURCE: "Milk Production, Disposition, and Income," DA 1-2(91), Agricultural Statistics Board, National Agricultural Statistics Service, USDA.