

Bulk Tank Milk Quality in California

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Introduction

Bulk tank milk (BTM) is tested to assure compliance with the national, state, and local milk plants. Testing BTM helps to ensure the safety and quality of dairy products. The following tests are routinely performed: somatic cell count (SCC), standard plate count (SPC), laboratory pasteurization count (LPC), and coliform count (Coli). Information about BTM quality parameters can be used by dairy producers to compare their milk quality to industry-wide benchmarks, and to define achievable goals for their operations. The objective of this study is to describe BTM quality for the California dairy industry.

Materials and Methods

Bulk tank milk quality data were provided by a large California dairy cooperative that processes approximately 60% of the state's milk. Data set 1 included information on weekly averages of bulk tank milk SCC, SPC, LPC, and Coli from January 2001 to October 2009. A descriptive statistic was performed on California BTM quality by year and month. Data set 2 included individual herd information on SCC, SPC, LPC, Coli, and SPC from October 2008 to September 2009. All the milk loads shipped by each dairy were sampled weekly (ranging from one to seven loads per week per dairy). Only herds with BTM samples collected throughout the 12 month period were included in the final data set 2 ($n = 537$) which comprised a total of 56,455 BTM observations. Bulk tank milk quality parameters were described for the top and bottom 25% herds during the study period. Data sets were analyzed with Proc Freq of SAS.

Results

Over the last nine years, bulk tank milk SCC decreased from 275,000 SCC/mL in 2001 to 199,000 SCC/mL in 2009. A similar trend was observed for bacterial counts. In 2001, SPC were 4,863 CFU/mL and LPC 104 CFU/mL, whereas in 2009, SPC were 3,990 CFU/mL and LPC 81 CFU/mL. However, year 2005 was exceptionally high for SCC (272,000 SCC/mL) and SPC (4,982 CFU/mL). Bulk tank milk SCC, SPC, and LPC increased during the winter months, coinciding with the rainy season (January to March). During the hot season (July and August), there was also an increase in SCC, LPC, and SPC. The highest SPC (5,737 CFU/mL) and LPC (97 CFU/mL) values were observed in January and the highest SCC (270,000 SCC/mL) in March. From October 2008 to September 2009, BTM quality parameters for the top 25% herds were: SCC < 156,698 SCC/mL, SPC < 2,969 CFU/mL, LPC < 43 CFU/mL, and Coli < 25 CFU/mL; and for the bottom 25% herds were: SCC > 252,679 SCC/mL, SPC > 5,729 CFU/mL, LPC > 129 CFU/mL, and Coli > 63 CFU/mL.

Significance

California BTM quality has improved over the last nine years. Environmental conditions have an impact on BTM quality, with higher bacterial counts and SCC during the rainy season and the hot season. Overall, during the study period, California BTM quality was within acceptable parameters. California dairy producers may use BTM information from the 25% top herds as achievable goals for their operations.