



Understanding Bulk Tank Test Results

Bulk tank samples taken by a cooperative or milk company when milk is being picked up at the farm can offer important information for managing milk quality and herd management. This information is often a good complement to regular monthly DHI herd testing.

One important fact about bulk tank sample results is that they represent the weighted average of a herd's performance. They are good for observing trends over time for the entire herd but likely are not providing enough detail to help a farm manage specific groups or individual cows in the herd. This is where regular herd testing fills a need and why the two types of testing results (payment samples and DHI samples) provide value by working together.

Regulatory Role

The samples taken during routine milk pick-ups are used to ensure compliance with the Grade "A" Pasteurized Milk Ordinance (PMO) and guarantee fair payment to farmers. At a minimum, farms are required by the PMO to have a monthly payment sample tested for bacteria counts, somatic cells and the presence of antibiotics.

Regarding component values, there are often state requirements about the minimum number of samples tested each month for butterfat and protein to make sure payments to farmers are accurate. In New York, farms need a component sample (for farms on every other day pick-up) or two samples (for farms on every day pick-up) in each ten-day period. Pennsylvania requires a butterfat and protein sample at least once every fifteen days.

While the PMO and state requirements represent the minimum standards, consumer demand for high quality milk means that many cooperatives and milk buyers perform additional testing to maintain their milk supply at a quality level that is competitive. This additional testing throughout the month has the added benefit of providing regular updates to farms on their milk quality and herd management.

Bacteria Results

The **standard plate count (SPC)** test (sometimes called a "raw" count) measures the number of bacteria in milk at the time of pick-up from the farm. It is a general measure of the overall cleanliness of the milking system on a farm. One is required almost monthly for each farm under the PMO. While the maximum legal limit under the PMO is 100,000/ml, to encourage high quality some cooperatives and dairy companies offer premiums for milk with a much lower SPC. Counts below 5,000/ml are considered excellent.

Along with the potential for increased quality premiums, focusing on lower SPC values can help improve the entire milking process. For example, poor milking procedures are a common cause of high SPC values. Focusing on teat cleanliness to reduce bacteria contamination can have the impact of improving teat

stimulation. Good teat stimulation encourages milk let-down. In turn, better milk let-down increases milk yields and decreases the amount of time a milking machine is on the cow.

Another cause of high SPC values can occur in the milkhouse with poor milking system sanitation such as ineffective detergents or incorrect water temperatures. Since chemicals and electricity are costs to the farm, reviewing the effectiveness of these tools as part of addressing a high SPC helps get the most out of every dollar spent.

A secondary bacteria test used by many cooperatives and milk companies to judge milk quality is a **preliminary incubation count** or PI. Unlike the SPC, in which samples are tested in a cold condition (32 to 40 degrees Fahrenheit), a PI count is first incubated at 55 degrees Fahrenheit for eighteen hours. The sample then goes through a bacteria counter. The value of the PI count is to compare what grew in the milk during the eighteen incubation period. For this reason, a milk sample tested for a PI count should always have an SPC performed on it first. This allows a comparison between the SPC and the PI count. The general rule is that if the PIC is three to four times greater than the SPC, there is a contamination issue.

The value of a PI count is that helps detect issues that may be hidden by cooling the milk. The causes of a high PI count can be similar to the causes of a high SPC (poor milking procedures, poor system washing and cleaning and poor water quality). The same benefits that exist in solving a high SPC can also occur by addressing high PI counts.

Somatic Cell Counts

Bulk Tank samples are also tested for somatic cell counts. As discussed at the beginning, these tank SCC results are good for monitoring overall trends in the herd. Monitoring the SCC values helps ensure that the average herd count is below the federally required level of 750,000 cells/ml and as importantly, below the market expectation of a 400,000 cells/ml SCC.

Beyond meeting the minimum regulatory and marketing standards, a recent study has concluded that managing SCC is a major driver of farm profitability. As recently reported in the popular dairy press, a study by Zoetis and AgStar Financial Services in the Midwest found that for every 100,000 cells/ml increase in bulk tank SCC, milk yield per cow declined 5.2 pounds. Reviewing the financial performance of the 90 herds involved in the study, authors discovered that of the six major metrics impacting 85% of dairy farm profitability, SCC was the most influential. The positive impact to profitability from lowering SCC is not just the result of increased quality premiums, but more importantly, improved animal health leading to fertility improvements and cull rate reductions.

Using bulk tank SCC to understand overall herd trends and then following up with monthly DHI herd test-

ing is a great one-two punch to manage SCC values. A farm working with their DHI technician can obtain reports such as the bulk tank contribution report based on monthly cow results. This report shows the weighted percentage of the bulk tank SCC that each cow in the herd contributes. It also shows what would happen to the bulk tank SCC if each cow's SCC contribution was removed. Having this information allows a farm to take targeted action with the cows most influencing herd SCC. Once action has been taken, the farm can then use bulk tank SCC to monitor the impact of management decisions.

Component and MUN Testing

Similarly to SCC, bulk tank components (butterfat and protein) and bulk tank MUN values show the weighted average of how the herd is performing. This allows a farm to make a feeding change and observe how the herd in general is responding to the change (Is production up or down? Are MUN values still within the optimal range?). However, as herds increasingly use multiple rations and divide cow into various groups and pens, just looking at the bulk tank average leaves a lot of the story untold.

As an example, with butter prices being high, many farms are looking to maximize butterfat production. If a farm bulk tank butterfat is running at 3.7% and it is the only tool used by the farm, changes need to be made to the entire herd ration as way to improve butterfat production or the farmer has to guess which pen or group needs help. A bulk tank average simply can't "zoom in" any more than the overall herd average.

This is where monthly DHI testing comes in. Working of 3.7% can obtain reports showing groups of cows that are only making 3.4% butterfat and groups making 3.95% butterfat. The farm can then take very different actions with each group of cows to help maximize butterfat production.

This same concept applies to using MUN to manage feeding programs. While a bulk tank MUN may be within the correct range, screening at Dairy One has found that many, many herds have a significant number of cows with MUN values well outside of the de-

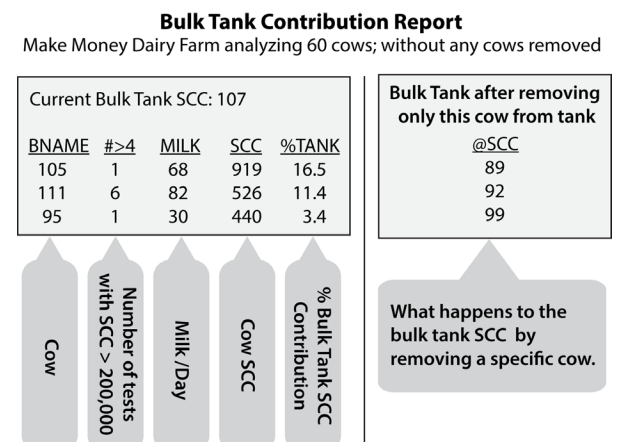


Figure 1: Bulk Tank Contribution Report

sired range. This indicates that portions of the herd may be significantly impacted by feed management issues such as lack of access or improper TMR mixing. Getting individual cow MUN values and reports as part of monthly DHI testing can identify by group or pen the average MUN value as well as the distribution of MUN values in each pen. This helps identify specific groups or pens where the most significant response to changes can occur.

Bulk tank results are a valuable source of farm data that allow for routine monitoring. They are important to track milk quality and herd performance. However, bulk tank results can only provide a specific level of detail. Monthly DHI testing provides the next step in farm management by looking at each cow. This allows farms to change the bulk tank average by focusing on the cows or groups of cows that can make the biggest changes to the numbers. Dairy One provides both comprehensive DHI services and bulk tank testing for regulatory and payment purposes. Contact Dairy One today to learn more about our services.