

SOMATIC CELL COUNTS (SCC)

Somatic Cells can always be found in milk, if only in small numbers. They are mainly white blood cells sent to fight infection in the udder and also include a small number of damaged udder cells. The milk from cows that have mastitis therefore contains more somatic cells.

Mastitis can either be sub-clinical or clinical. *Sub-clinical Mastitis* is an infection that is not able to be seen by the milker. Clinical Mastitis is when signs such as a swollen quarter or clotted milk can be seen by the milker.

Sub-clinical and clinical mastitis are caused by the same bacteria, the difference being the age of the infection or how bad it is. Most cases of clinical mastitis exist in the sub-clinical form first.

There are four main mastitis causing bacteria in New Zealand.

MASTITIS-CAUSING BACTERIA	% OCCURRENCE
Staph. aureus	54
Strep. uberis	32
Strep. dysgalactiae	7
Strep. agalactiae	4
Others	3

The two most common forms are Staph. aureus and Strep. uberis. The milk from cows infected with Staph. aureus has a very high somatic cell count. The milk from cows infected with Strep. uberis has elevated somatic cell counts but usually not as high as Staph. aureus infections. However cows infected with Strep. uberis may cause a standard plate count grade. (A standard plate count measures the number of bacteria in the milk).

The best method for identifying cows with sub-clinical mastitis is the *Individual Cow Somatic Cell Count*.

Somatic cell counts are expressed as the number of somatic cells in a millilitre (ml) of milk.

Normal Levels: Cows that have never had mastitis have naturally occurring counts around 20,000 to 100,000 (higher counts for older cows). Cows that have had mastitis and have been cured may have a normal count above 100,000.

Infected Levels: Cows that have mastitis consistently show a large increase in SCC compared to their normal levels. Cows with counts above 150,000 are likely to be infected. The higher the count the worse the infection (levels vary depending on the type of mastitis bacteria).

Variation: Somatic cell counts can vary over a season for reasons other than mastitis. They increase following calving for several days before dropping to normal levels, they also tend to rise towards the end of lactation. Short term rises can occur due to under feeding, pregnancy testing, bulling activity and holding milk. These effects are usually more noticeable in cows with mastitis.

Why are we interested in Somatic Cells?

- Cows with high somatic cell counts usually produce less milk than those with lower counts (by up to 8 kg of milksolids per lactation for every increase of 250,000 cells/ml in the range between 100,000 and 600,000)
- Cows that are infected in their first lactation produce about 8% less milk, this effect is carried over in to the second lactation even if the infection is cured
- High SCC milk is related to changes in milk composition that reduce the yield of cheese and casein products. The flavour and shelf life of products can also be affected; these are indirect costs to the farmer.

Dairy Companies

Most Dairy Companies are now testing the bulk milk supplied to the factory. Some tests are advisory only while other dairy companies are penalising farmers with high counts. (Consult your company for relevant figures).

Companies are targeting SCC because;

- The international market led by the European Community requires milk to be less than 400,000 cells/ml.
- It is important that New Zealand milk is of the highest quality.

Somatic Cell Count Definitions

The Bulk Milk Somatic Cell Count

(BMSCC) is the somatic cell count of milk from your vat. It is an indicator of the quality of milk supplied to the company. It can also be used as a guide to the number of cows infected in your herd.

The table gives a general indication of the percentage of infected cows in a herd (clinically or sub-clinically)

BULK MILK COUNT	EST % OF HERD INFECTED
100 000	20
500 000	46
900 000	54

(Source Massey University)

Individual Cow Somatic Cell Counts

(ICSCC) are from herd test samples collected and tested for each cow at intervals during the season. They can be used to identify problem cows for special attention.

Estimated Bulk Milk Somatic Cell Counts

(EBMSCC) appear in SCC reports. They come from counts of individual cows which are adjusted for the volume each cow produces on the day of the herd test. When measured on the same day as the bulk count the two figures should be reasonably close, however the estimated bulk count includes milk that may have been held back from the vat due to excessive counts or antibiotics.

RMT Test



Collect small amount of milk from each quarter. Using the X-purt paddle squeeze in the same volume of RMT reagent.



Swirl the contents around and tip the paddle back and forwards. Watch for the thickness of the fluid. Higher cell count cows will have a more gluggy appearance.

Note: The longer you mix for the more gluggy the mixture will become, so take a "reading" after about 30 secs.



Once mixed, carefully pour out the contents of the paddle. Higher cell count quarters will not pour smoothly, really high cell counts will fall out as a blob.