

On-farm Mastitis Diagnosis

Rapid and accurate diagnosis is helpful for making decisions about cows suspected of being infected with mastitis. Numerous methods are used to identify mastitis infections. Those requiring the submission of milk samples to a laboratory have been criticized as too slow for on-farm decision making. To overcome this hurdle, indirect measures of the somatic cell counts (SCC) such as the California Mastitis Test (CMT) have been used for many years. Recently, several new on-farm tests have been introduced. Here's a summary of the options currently available.

California Mastitis Test

For 50 years the CMT has been the only reliable cowside screening test for subclinical mastitis. Although it does not identify the type of bacteria that cause mastitis, the CMT is useful in identifying quarters that have high SCC. The degree of reaction between a reagent and the DNA of cell nuclei indicates the number of somatic cells in a milk sample. The relationship between SCC values and CMT is not precise because of the high degree of variability in SCC values within each CMT score (see WDD Summer 2004, p 12).

In a study designed to test the ability of the CMT to detect infected quarters of fresh cows, quarter milk samples were examined each day after calving until 10 days postpartum. When a positive CMT was defined as a reaction of >1, about 57% of infected quarters were accurately identified (43% were missed). Another study used the CMT to test 7,431 composite milk samples obtained from herds in which about 35% of the cows were subclinically infected with



California Mastitis Test

Staph aureus and *Strep agalactiae*. When a CMT value of 'trace' or greater was used, 92% of infected cows were correctly identified. When a CMT value of >1 was used only 72% of infected cows were correctly

identified. To minimize the number of false negative results, the test should be read as positive when at least a trace reaction is apparent. While the CMT is adequate to detect very high SCC, its ability to precisely identify quarters with SCC that exceed the threshold of 200,000 -250,000 cells/ml is limited by its high rate of false negatives.

PortaSCC

The PortaSCC (www.portacheck.com) is another rapid test that is marketed for cowside SCC testing. This test is adapted from a product used by human cancer patients to monitor white blood counts. The test measures only white blood cells and has an upper limit of detection of 3,500,000 cells/ml.

PortaSCC consists of a small strip that is inoculated with a drop of milk and a reagent. The test strip requires a 45 minute room temperature incubation and is read in a small handheld meter shown here.



A Wisconsin *PortaSCC Test Strip Reader* study used PortaSCC to evaluate 300 quarter milk samples from cows on 10 dairy farms. There was no significant difference between the SCC determined in the lab and the results of the PortaSCC. When subclinical mastitis was defined based on a threshold of 200,000 cell/ml, there was an 88% agreement between the lab SCC and the PortaSCC. A similar favourable evaluation involving 200 cows in 10 Ontario herds was conducted by researchers from the University of Guelph.

Delaval Direct Cell Counter

The Delaval Direct Cell Counter (DCC) is a new device that is designed to be used on farms for rapid SCC evaluation. Small cassettes are filled with approximately 1 microlitre of fresh milk, stained automatically in the cassette and inserted into a small battery operated optical cell counter. The DCC produces a somatic cell count in less than 1 minute within the range of 10,000 to 4,000,000 cells/ml.