

**Standard Plate Count or Plate Loop Count (SPC or PLC)** is the measure of the total number of aerobic bacteria in the milk. The most common causes of a high SPC is dirty milking equipment, poor cooling, and poor udder prep. Mastitic cows shedding bacteria can also cause high counts.

The regulatory limit for SPC is 100,000 bacteria/ml of milk. Farms should be able to routinely get counts below 25,000 which is where most quality premiums start.

**Preliminary Incubation Count (PI)** is the test used to monitor the cleaning and sanitizing efficiency of milking equipment. Milk samples are held at 55F for 18 hours prior to plating. Bacteria that grow at cool temperatures will increase in numbers. Efficient cooling of milk on the farm can mask cleaning problems. The PI count can serve as an early warning system.

Usually the PI count is similar to the SPC. If it is 3-4 times higher than the SPC, it is considered significant.

**Lab Pasteurized Count (LPC)** will warn of chronic low-grade cleaning failure (i.e. milkstone deposits) and worn out rubber parts. It is the measure of the bacteria that survived pasteurization.

Counts higher than 200 are considered abnormal. Most farms can reasonably get counts of 0. In lab land there is no such thing as "0" so it is considered <1 recorded as a 1.

**Coli (Coliform)** is primarily an indicator of the quality of udder preparation. Manure left on the teats that gets into the milk will elevate coliform counts. Cows with coliform mastitis (i.e. E. coli and Klebsiella) can also elevate coliform counts.

Counts higher than 50 are considered poor.

**E. Coli** is one specific kind of coliform bacteria. It is found in manure, and also in cows with E.coli mastitis.

Counts higher than 50 are considered poor.

**SCC (Somatic Cell Count)** is a measure of the number of infection-fighting white blood cells present in the milk. It is an indicator of the udder and general health of the cow. Somatic cell counts will vary from cow to cow, and day to day, and will dramatically increase when a cow is fighting a mastitis infection. High SCC cows can be identified using DHIA testing service, or the CMT paddle.

Most cows should easily run counts under 100,000 cells/ml. The regulatory bulk tank limit is currently set at 400,000 cells/ml.

**Cryo (Cryoscope)** is a test used to measure the amount of water in milk, by determining the freezing point of the sample. The cut off in most quality programs is -.530.

**DMC/DMSCC (Direct Microscopic Count)** The number of bacteria and somatic cells in a sample can be quickly and roughly estimated under a microscope. Direct counts are not as accurate as plating for

bacteria or electric determination of SCC, but are very valuable when you need to know immediately when a sample is running.

**Milk Urea Nitrogen (MUN)** is used to determine how efficiently a cow is using the protein in her ration. The more protein wasted, the higher the MUN will be. MUN results are reported in milligrams per deciliter (mg/dl).

The best approach to using MUN analysis is to evaluate the average MUN for all of the animals in each feeding group. Deciding the change and ration fed to a group of dairy cattle is a big decision, with large financial implications. The average MUN of many samples is much more reliable for evaluating a feeding program than the result of a single bulk tank sample or the results from just a few individual animals.

Current data indicates groups of cattle can maintain high production with MUN in the range of 10-14 milligrams per deciliter. An average MUN greater than 14 suggests that protein is being wasted. As averages approach 18 mg/dl, conception rate may begin to decrease.

There are 5 likely reasons for an average MUN to be greater than 14 mg/dl.

1. Too much total protein is being consumed.
2. The protein sources are too quickly degraded in the rumen.
3. Not enough soluble carbohydrates are consumed at the right time.
4. There is an imbalance of amino acids in the proteins being fed.
5. Feeds are presenting in the wrong sequence or intervals.

If the average MUN for a group of animals is less than 10 mg/dl, performance may be enhanced by increasing the amount of protein being fed.

### **Notes**

\*MUN varies with the time since last feeding as well as the specific feeds and order in which they are presented to cattle. The goal for optimum feeding is to keep MUN values within guidelines throughout the entire day. Managing MUN is a feeding management issue as well as a rotation ingredient issue.

\*MUN results are most accurate on a composite sample representing an animal's entire milking. Results on milk stripped before or after a milking will not be the same as a composite sample.