

FREEZING POINT GRADES

Excess water in milk causes freezing point grades. Water can enter milk in a number of ways. For example, water leaking into the milk side of the cooler, not draining the plant after putting a wash through, and machine failure or permanent (illegal) reverse flow connections. Rinse water going into the milk tank is the most likely cause.

Excess water can contain bacteria from untreated water, or detergents from wash solutions therefore increasing the risk of milk contamination. The milk may also be downgraded on bactoscan tests as a result of this contamination.

Dairy Companies object when water is added to milk because it increases transportation and processing costs. There is no financial advantage in adding water to the milk as payment is based on content not volume.

Detection by 'Freezing Point Test'

Laboratories use a cryoscope to measure the freezing point of milk. Milk normally has a freezing point of -0.545°C . If water is added, the freezing point moves closer to that of pure water (0°C).

You must prevent water being added to milk at all times. When milk volumes are lower (during early and late season) any added water makes up a higher percentage of the milk. The effects of contamination are worse and penalties are more likely.

Control Measures

- Ensure that the milk tank and other sections of the plant are completely drained before milking eg your releaser milk pump, cooler, clusters, receiving can, etc. An inadequately drained plant can hold up to 125 litres of water in the pipelines alone. Receivers, if not drained, increase this amount considerably.
- At the start of milking don't put the delivery line into the milk tank until the milk flow arrives.
- Remove or divert the delivery line from the milk tank immediately after the last cow has finished milking. By the time you can visually see any colour change in the milk, 80% of the volume is water. Don't flush any milk into the milk tank using water.
- Check that the plate cooler is put together correctly and has no cracks or holes in the plates. Cracked plates can cause a transfer of water into the milk side of the plates. Look carefully at each individual plate by holding them up to a strong light and flexing them. Even a small hairline crack can allow water in to the milk side. There may be evidence of milk in the cooler water. This is good place to check first. You can also check for cracked plates by turning the water cooler on and removing the bottom of the filter. Wait for 15 minutes. If any water comes through the filter it indicates that a plate is probably cracked therefore causing the transfer of water in to the milk.
- Disconnect the reverse flow cleaning pipes from the milking machine after cleaning. Don't connect the clusters to the jettors before the completion of

milking. Any water left in the jetter line can be transferred into the milk tank. If the tap in the jetter intake line is even partially open, the water in the jetter tub can be drawn into the milk tank through the jettors.

- Prepare cows adequately for milking. Remove soil and dung if present but don't over-wet the udder.
- Don't volume-wash cows before or during milking.
- Don't rinse the top of lidded milk tanks while it contains milk.
- If you have a foam problem on the top of milk, don't try and remove it by squirting it with a hose. Find the cause and fix it.
- Have a good look at the plant. Ensure all the drainage points in the lines and on the plant are in the lowest spots. If not, speak to your local machine agent and get them corrected.

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