The Co-operative Difference

Fonterra Dairy for life

Reducing the risk of thermoduric downgrades

Thermoduric bacteria are heat resistant bacteria that can survive pasteurisation. As they start to grow, they can reduce the shelf life and impact the flavour of a product.

Early intervention is the best tool you have to prevent thermoduric downgrades.

A snapshot of what to look for:

- Normally associated with aged deposits or perished rubberware
- Protein build up within the interior of the milk silo due to ineffective hot washes. Areas to check include the inlet and outlet, behind and below manhole door, non-return valve and agitator paddle
- Protein build or aged deposits within the milking plant. A key area to check is the milk line, but a full investigation throughout the plant is required
- Perished and aged rubber-ware
- Blocked or insufficient flow through jetters
- Wash programme not being followed, resulting in potential issues with hot wash temperature and volume, chemical dosage, length of the hot wash and/or turbulence
- Flushing pulsator not building a full water slug, resulting insufficient turbulence to clean the milk line
- Poor quality silage - look for the spore alert on your tanker docket

How to prevent thermoduric downgrades

Early intervention is the best tool you have to prevent thermoduric downgrades.

Prevent protein deposit build-up by:

- The right quantity of hot water – 10 litres per set of cups. For your vat, you should have a minimum of 2% of the vat capacity available for cleaning. If you are not recycling, you may need more than 2% (probably 4%) to achieve five minutes of contact time
- The right frequency of alkali washing – as a minimum this should be done twice a week. More often is better, particularly during the hot summer months. A chlorinated alkali is more effective, as the chlorine helps break down the fat and protein
- The right hot water temperature: 80 - 85°C. You should dispose of your alkali wash water to waste before the temperature gets below 55°C
- The right detergent concentration – as per the label
- The right contact time – a minimum of five minutes

Be sure to replace rubber-ware as per manufacturer's recommendations.

Carry out regular plant and vat hygiene checks. The Dairy Diary app makes filling out your Monthly Plant Check Assessment easier and faster. It provides you with helpful diagrams and information on what you should be checking for, space to record notes as you go and a 'farm summary' screen which shows you what checks have been completed and what checks still need to be done. There is more information on the **Dairy Diary app here**.

Make sure that you complete the monthly milking plant hygiene assessment in your Dairy Diary app or in the physical book. Don't stop checking if you find something as thermoduric bacteria can be found in multiple locations.

Poor quality silage – look for the spore alert on your daily docket.

General recommendations:

- Do not feed the gunge layer (top) from an open silage pit or other water damaged grass crops
- Prevent manure ponding of stock races, holding or feed pad areas
- Do not wet udders at milking time

Why are there sharp rises in thermoduric downgrades before and after Christmas?

Thermoduric downgrades tend to increase at these times because thermoduric bacteria like warm temperatures.

Often the milk plant and vat will be thoroughly cleaned during winter and then light deposit build-up occurs as the season progresses. As the weather gets warmer, these heat-loving bacteria quickly multiply. Some farmers choose to increase the frequency of alkali washes on the plant and vat from November onwards.

What does protein build-up look like?

If your vat has protein build-up you will see light rainbow colouring or a dull appearance as the protein deposit develops. Protein build-up can also be a light brown like soft varnish, which can be scraped up under your fingernail.

See images on the following page for examples.

Testing time and results

Due to the testing method, it takes four days for a thermoduric test to be completed.

Most bacterial growth will occur during the last 24 hours of the test, however at the 42 and 72 hour mark if the bacterial count is reading over 1000 cfu/ml an early warning is released, indicating a likely downgrade.

Results reported under 20 cfu/ml mean that a test has been completed and no growth occurred.

If you receive a 0 result for thermodurics, this does not mean there is no trace of this bacteria, it instead means there were too many colonies to be able to count, also known as a 'spreader' result.

In these situations the farm will not receive a downgrade, however it is highly likely there is a thermoduric issue and you should initiate checks to identify the cause.

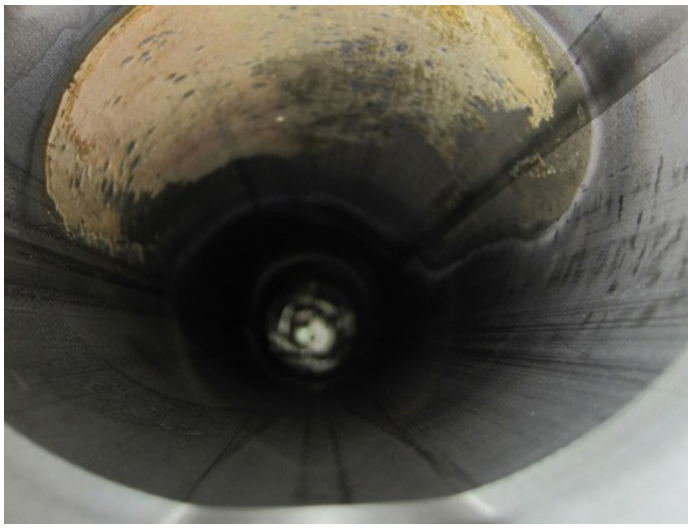
Training

PrimaryITO offers a Milk Quality Programme that aims to improve on-farm skills, knowledge and procedures to reduce the risk of downgrades while increasing the profitability of your dairy operation. This course has been developed in conjunction with Fonterra.

To arrange training for you and your team, contact Primary ITO on 0800 20 80 20 or visit their **website**.

Protein build-up on the interior surfaces of the milking plant

Protein build-up on the interior surfaces of the milk vat



Aged deposit rings in the main milk line

Aged deposits in the milk cooler

Support

Your milk quality results are available daily on your tanker docket or on the Farm Source website. If your thermoduric milk quality result is "Quality" (500-1,499 ml), a "0" result or if you receive a "thermoduric alert", you should carry out an immediate plant and vat hygiene check to mitigate against any potential future milk quality downgrade. There is a Pre-Season and downgrade busting factsheet available on the **Farm Source website.**

If you cannot determine the cause of the test result or you receive downgrades, call the Farm Source Service Centre on 0800 65 65 68. Depending on the duration and severity of the issue, they will organise an on-farm trace back and take you through the Milk Quality Support Programme.

Fonterra will refund up to the total amount of the deductions made under Clause 9.5 of the Fonterra Farmers' Terms of Supply ("**Terms of Supply**"), in the current season, to cover the cost of help from a Fonterra approved service provider to solve milk quality problem.

Please refer the Terms of Supply Clause 9.7 for more information.