Teat scoring as an aid to managing mastitis

The large animal veterinary technicians' contribution

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Introduction

Mastitis costs the New Zealand dairy industry an estimated $180 million each year, making effective prevention and early detection essential on every farm. Teat scoring is a practical and effective tool that allows our large animal veterinary technicians to assess teat end condition and gain valuable insights into the early signs of damage providing farmers the opportunity to work alongside their vets to support timely interventions and proactive mastitis management of their dairy herds.

Mastitis – a simple overview

Mastitis develops when bacteria enters the udder through the teat canal. Once inside, the bacteria causes an infection that leads to inflammation in the udder tissue.

Subclinical mastitis – where the cow's immune system responds to the bacteria by sending somatic cells, primarily white blood cells, to fight the infection. When the immune system is able to control the infection there may be no visible signs of mastitis – just an elevated somatic cell count (SCC) indicating a subclinical case. Subclinical mastitis may develop into clinical mastitis if the infection worsens, or the immune response is compromised.

Clinical mastitis – where the cows immune system responds to the bacteria in the udder by sending somatic cells to fight the infection. Where the infection is too great and the immune system is unable to cope, visible signs of illness occur along with changes in the appearance of the udder which may become hard, swollen, red and painful and milk will appear discoloured with clots or flecks. (debris from the infection).

The cost of mastitis for the farmer:

- Production loss - once infected, the udder may never regain its original level of milk production
- Cost of treatment
- Labour – mastitis cows can be time-consuming to treat and cause delays in the milking shed
- Discarded milk
- Diagnostic testing and veterinary care
- Premature culling

Mastitis is one of the most widespread and costly health challenges in New Zealand Dairy farming.

The Healthy Teat and its role in preventing mastitis

From its skin condition to its teat end the cows teat is the first line of her physical defence against mastitis causing bacteria entering the udder.

- A healthy supple teat has a protective fatty acid layer that slows bacterial growth. Dry and cracked teats create an ideal environment for bacterial growth; the rough, broken skin provides small crevices where bacteria can accumulate and avoid being removed during milking or cleaning. These cracks compromise the natural barrier function of the teat skin, making it easier for bacteria to thrive, enter the teat canal and potentially cause mastitis. Maintaining healthy, supple teat skin is essential to reducing the risk of infection.

- The teat canal is lined with cells that produce keratin—a waxy substance with natural antimicrobial properties. This keratin forms a protective barrier, helping to trap bacteria and reduce the risk of infection. During milking, the keratin is gradually sloughed off, carrying trapped bacteria with it. However, when the teat end is exposed to repeated stress or irritation the teat may begin to produce excess keratin. This overproduction can lead to rough or very rough teat ends, a condition known as hyperkeratosis**,** which compromises teat health and increases the risk of mastitis.
- The smooth muscle sphincter surrounding the teat canal functions as a valve, controlling the opening and closing of the teat canal to let milk flow during milking, and then sealing tightly afterward to prevent bacteria from entering the teat during the milking interval and dry period. Damaged teat ends especially those with rough or thickened teat ends (hyperkeratosis) lose their skin elasticity which can limit the sphincter muscle's ability to fully close the teat canal increasing the risk of infection.

Teat scoring and why it matters

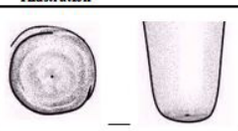
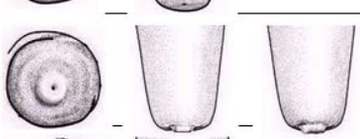
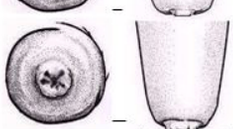
Teat scoring plays an important role in the early detection of teat-end damage, allowing issues to be addressed before they lead to more serious problems like mastitis. It helps identify potential faults in milking machine function and provides valuable insight into how milking technique, cup removal timing, and equipment maintenance may be affecting teat health.

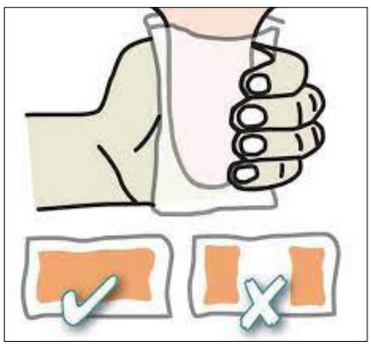
Regular checks of teat condition can help identify emerging issues and enable action to be taken promptly. Ideally, teat condition should be monitored throughout the season, but there are a few key times when it's especially important:

- Spring, when milking resumes after the dry period. This gives a solid benchmark for teat condition at the start of the season.
- After any changes to milking routine or equipment. If there have been any adjustments to vacuum levels, liners, or milking times, it's worth doing a check to make sure the cows are coping well.
- Before drying off, it's helpful to identify cows with teat-end damage. This information combined with herd test results and mastitis history, can really support good dry-off decisions.

Teat scoring should be done calmly and carefully to avoid disrupting cows or affecting teat condition observations. Ideally the best time to score teats is at milking time immediately after the removal of the cluster and before teat spray is applied. Cows should be approached gently, and teats examined methodically – a head torch is recommended, and recording can be done on a work sheet or electronically on to a browser such as Agrihealth platform. Fifty cows should be scored to ensure a representative sample of animals across different ages, stages of lactation, and management groups. Each cow is scored based on the worst teat condition e.g. if 1 of 4 teat ends is very rough then her score will be very rough, even if the other three are normal.

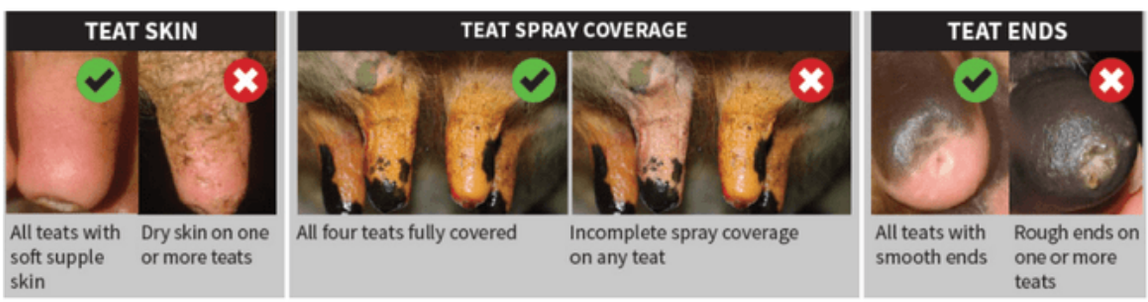
Alongside teat end scores, observations should include teat colour (noting red or blue discoloration), firmness, skin condition (normal or dry), and the presence of rings at the base of the teat or lesions.

Score	Description	Illustration
N	**No ring** The teat-end is smooth with a small, even orifice. This is a typical status for many teats soon after the start of lactation	
S	**Smooth or Slightly rough ring** A raised ring encircles the orifice. The surface of the ring is smooth or it may feel slightly rough but no fronds of old keratin are evident.	
R	**Rough ring** A raised, roughened ring with isolated fronds or mounds of old keratin extending 1 - 3 mm from the orifice.	
VR	**Very Rough ring** A raised ring with rough fronds or mounds of old keratin extending 4 mm or more from the orifice. The rim of the ring is rough and cracked, often giving the teat-end a "flowered" appearance.	



N: Normal/ No ring
S: Smooth ring
R: Rough ring
R: Very rough

Teat spraying - an essential part of the milking routine which plays a vital role in mastitis prevention. After milking, the teat canal remains open for a short period, leaving it vulnerable to opportunistic mastitis causing bacteria.



AgriHealth Teat Scoring Chart. Image by: AgriHealth.

Applying a disinfectant teat spray immediately after milking helps kill harmful bacteria on the teat surface before they can enter the udder. It's important to regularly check teat spray coverage and technique for both automatic and handheld sprayers to ensure all teat surfaces are properly coated as incomplete coverage reduces effectiveness. One simple way to assess this is by gently wrapping a clean paper towel around the teat after spraying; any missed areas will remain dry, highlighting where coverage needs improvement. Don't forget to re spray though!

In addition to its disinfecting properties, a good teat spray should contain emollients that condition and protect the skin from damage caused by weather and environmental challenges. Healthy, supple teat skin is less prone to cracking or damage, which further reduces the risk of infection.

Conclusion

Teat scoring plays a vital role in supporting udder health and improving mastitis outcomes on farm. When performed by trained veterinary technicians, it provides farmers and vets with clear, actionable insights into teat end condition—enabling early intervention and more effective mastitis prevention strategies. Combined with good milking routines and milking machine management, this simple assessment tool can make a significant impact on animal wellbeing, milk quality, and overall herd productivity.