

INFO SHEET

Organic Management of Mastitis in Dairy Cows



- Summary**
- Mastitis is multi-factorial – a holistic approach gives the best results
 - The two most important bacteria are the environmental organism *Streptococcus uberis* and the contagious organism *Staphylococcus aureus*
 - The non-availability of dry cow therapy means staphs tend to be more important on organic farms
 - Prevention focuses on maximum hygiene and health of all cows at all times
 - With a few modifications SAMM plan forms the basis of control

Goals “We still get mastitis but we don’t fear it. Our cell count hovers high. We’d like to be low and that’s our goal but we’re not gonna sacrifice our friends...it’s not costing us fiscally yet” - *Phil Bax, Horohora, Cambridge.*

Reducing the incidence of mastitis in a herd to low levels requires significant effort and may incur substantial short-term costs with benefits only appearing in the medium to long term. The degree to which control is applied is a matter of personal choice and will vary somewhat between farms. Additionally, every farm is different and people's approach over the years has likely evolved in response to their particular environment, their cows and the bacteria involved.

Principles of Control Prevent infection and if infected, prevent spread and mitigate SCC.

“Through the winter we use seaweed and cider vinegar in the water trough and homeopathy as a prevention right through the year [...] and we get pretty good results.” *Nick Collins, Piopio.*

It sometimes helps to know which organism you’re dealing with. Although it’s probably not worth culturing every odd case, always take a sample and freeze it (it will last a month or two). If a problem develops, you’ve then got a bank of samples ready to go.

Strep uberis

Critical to control is a clean environment around calving and drying off – most infections occur at these times. *Uberis* is a normal gut resident in many cows so where there’s muck, there’s mastitis! Sunshine and dry conditions kill the organism quickly but prolonged cool, wet periods can lead to high levels of contamination of paddocks and races. Keeping calving paddocks as mud-free as possible is obvious but particularly important also is the last 100 metres or so of race before the yard – adequate drainage here will prevent the build-up of dung which would otherwise be walked around the farm. See Lameness info sheet for more on race construction. Spraying effluent will also result in contamination – most organisms will have disappeared after 30 days even with cool and wet conditions, but to be safe, it is not advisable to calve or dry off on effluent paddocks.

Teat spraying (while maintaining teats in top condition) and management of open teat canals close to calving are important. This particularly applies to heifers since most have no teat plugs. If cows in the springer mob are observed dripping milk, they should be milked and teat sprayed. Freeze some of the colostrum for their calves.

Careful feeding to avoid excessive bagging up means balancing the amount of fresh grass (which tends to promote bagging up) versus the amount of supplement fed to springers. Don't feed salt at this stage, especially to heifers. Teat spraying heifers when they are being trained for the shed pre-calving will help. One farmer runs the springer mob through the shed every day, which makes removing cows with calves easy, trains the heifers and gives the opportunity to teat spray.

At drying off, minimising build up of dung on paddocks is important. Fill them up with low quality hay so they're not walking up and down fencelines creating a mudbath. Keep them moving onto clean grass and check visually in the paddock for any obviously swollen quarters. Run them through the shed 8 - 10 days (no earlier) after dry-off day and again 3 weeks later to palpate all udders. Don't disturb any teat plugs unless you have to and take the opportunity to teat spray.

Staph aureus

The main risk period is mid spring onwards and teat spraying is vital to prevent spread. The spray *must* cover the entire teat. To check this is happening, use a small square of paper towel or tissue just big enough to cover your hand; grasp the teat immediately after spraying and look at the pattern on the towel – it should be more or less square with no gaps.

Emollient (eg glycerine) helps keep teats in good order. Teat skin does not have oil glands, which is why teats dry out so easily under adverse weather conditions. A dry, cracked teat is almost as prone to infection as a damaged one.

Vigilance in detecting new infections and regular monitoring of existing ones (using the RMT or an electronic detector) is needed to develop a picture of mastitis in the herd. Clinical cases must be separated. Ideally, all infected cows (including subclinicals) should be run as a separate mob and milked last although there are practical limitations to doing this! However, splitting the herd along age lines may have other benefits and help minimise the risk of older high cell count cows passing their infections to heifers and second calvers.

If high cell count cows are known, the bulk cell count can be mitigated simply by removing those cows from the bulk supply at times when there is a risk of grading. Hand stripping high cell count quarters after the cups come off will reduce the count from those quarters at the next milking. This is only of very short term benefit but is useful when necessary to get the bulk count down fast. In any case, counts from chronically infected quarters often vary considerably from day to day. Note, gloves should be worn and disinfected between each cow.

“There's 2-3 cows I know who they are, they give like 20L but they're millionaires and I can manage the cell count by whether I choose to put them in the vat or not.”

Mike Moss, Raglan

Both these are common strategies but there are two risks; firstly that an under-estimation of the problem may result in a grade anyway and secondly that this may prolong the presence of infected cows which are a risk to others in the herd.

Teat Spray Recipes

Commercial teat sprays are reliable and proven but there is pressure to phase them out. Here are a couple of suggested recipes. On paper they should work fine but have yet to be proven under farm conditions.

- 5 L Stock Iodine 2.5% (FiL), 6 L water, 2 L glycerine (Ecolab) or fish oil (Biosea)
- 50 ml tea tree oil (True Blue Organics), 1 L fish oil, 20 L water. Halve the amount of water at times of high risk.

Whatever you use, the general recommendation is not to mix up more than you can get through in 4 or 5 days, and always use high quality water.

Other Considerations

With a holistic approach, the following should always be explored. Space precludes a detailed discussion but further information is available, especially via the DairyNZ website.

Milking machine monitoring and maintenance: twice yearly checks are recommended but a good indicator of performance is what the cows' teats look like immediately after cups come off. Change liners every 2500 milkings and watch cup alignment.

Culling: ability to cull on mastitis is related to reproductive performance (see the InCalf programme, DairyNZ website or ask your vet).

Breeding for resistance: heritability is low but significant progress can be made if the selection pressure is strong enough. Low SCC bulls are available.

“We learned that mastitis ran in our cow families and at times to get on top of it we actually culled whole cow families – we got rid of the genetics.” *George Moss, Tokoroa*

Feeding and mineral levels: underfed cows are more prone to disease. Feeding is not just about quantity – a quality balanced diet (meaning a variety of pasture species fed at the right stage of the growth cycle and sufficient dietary fibre to stabilise the rumen and prevent diarrhoea) appears to have significant health benefits. Metabolic problems around calving can be associated with mastitis – attention to magnesium/calcium at this time is important. A severe shortage of selenium will result in more mastitis. Certified selenium Chip[®] applied with fertiliser or Moana chelate sprayed on pasture keeps selenium levels adequate.

Stress: there are three components:

- Feed (see above)
 - Behavioural
 - cow-to-cow interactions (eg heifer bullying, overcrowding)
 - human/cow interactions. Gentle handling and good facilities are necessary. See also Lameness info sheet
 - Climatic. Attention to shade and shelter.
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Treatment Options

Farmers in the first two years of conversion may continue to use antibiotics as a treatment (twice the withholding time is applied) but not as a preventative. Selective dry cow therapy may be used and Teatseal[®] is also allowed. However, this conversion time needs to be used to put strategies in place to ensure there is no necessity for routine antibiotic use by the start of the third year.

Treatment Options

Note: Organic regulations require that if any animal needs to be treated with antibiotics after the start of the third year of conversion on welfare grounds, it must be treated. It then must be quarantined during recovery before it is removed from the system.

Stripping (as often as practical) and **massage** are the prerequisites for all cases of clinical mastitis. This is particularly successful for *Strep uberis* if swelling is no more than moderate. Flunixin (an anti-inflammatory) is allowed as a restricted product - it may be useful for hard quarters and is definitely indicated for an animal that's off-colour. Another restricted product is Furosemide which may assist with the udder oedema typically seen in heifers. Reducing the oedema makes a case of mastitis easier to strip. Both these products have withholding times (3 and 4 days respectively)

Homeopathics are extensively used. Products vary with the severity of clinical signs. Phytolacca and hepar sulph are popular. Specific or more general nosodes are available for trough treatment at times of high risk.

“Last year the ones we dried off, about 10, we treated with staph negative homeopathy and this year they came in clear. We will probably do the same thing again this year. Not a quick fix but they will be ready for next year”. *Lane Cookson*

Tonics such as apple cider vinegar, seaweed extract and aloe vera (drenching or trough treatment) are commonly used as preventative or supportive therapy for both clinical and subclinical mastitis.

“Any clinicals we take out and give the appropriate homeopathic and boost their immune system along with seaweed, cider vinegar and garlic. We dose them usually with about 700mls mixture. Maybe 400 of seaweed and 3-400 of cider vinegar for 3-4 days and we get pretty good results.” *Nick Collins, Piopio.*

Intramammary medical grade **manuka honey** (5 – 10 ml, Cambridge Bee Products) is reasonably successful on clinical cases with minimal swelling of the udder and high SCC quarters if the infection has not been established for long.

Tea tree oil and herbal remedies are sometimes used. Hard quarters may be treated with a mixture of phytolacca (herbal extract) Echinacea and devils claw (Ethical Extracts) and good results have been reported for a mixture of celery seed and phyllanthus.

Note: USFDA regulations specifically prohibit the use of intramammary aloe vera.

“Our regime wasn't really working; it would clear everything else out but not the staph. We were using cider vinegar and seaweed in a wine bottle down the throat a couple of times a week and it was clear, but for the staph it wasn't budging it once and I was pouring it down their throats. So we thought we'd have to try something else. [...] Treated them with manuka honey in syringes for 5 days. Milked for a month separately. Out of that 30 cows, I culled 9 of them, the rest are back in the herd milking now. I don't know I can't say that that it's the manuka honey that we were using, but I think it was a combination of everything. The seaweed tonic in their troughs. They're all back milking now and the SCC is about 270,000 at the moment. That'll drop it down probably about 130.” *Lane Cookson, Midhirst, Taranaki.*

Farmer-reported success rates are reasonably consistent at around 50 – 65 %, although without testing, it may be difficult to distinguish between a clinical cure (which means only cessation of clinical signs, bacteria may still be present) and bacteriological cure (where the bacteria are eliminated). Even with bacteria no longer present, the cell count may continue to stay high for a couple of weeks or more. However, it should trend downwards – regular checking using the RMT will show if the quarter is improving.

**Summary of
Key Control
Measures**

- Vigilance - early identification and regular monitoring of infected cows.
 - Appropriate treatment/supportive therapy
 - Separation of infected cows
 - A clean, stress-free environment
 - High quality teat spraying (also ensuring teats are in good condition)
 - Machine – monitoring and maintenance
 - Post-milking stripping of high SCC quarters
 - Careful culling
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Note: Names of commercial vendors are included for the convenience of readers. In no way does it imply endorsement of all or any of their products. Before using any product, its status must be ascertained from your certifying agency. Restricted products need to be written into the management plan.

**Further
Reading**

Managing Mastitis – a practical guide for NZ dairy farmers. NMAC and LIC. Contact DairyNZ for a copy (can be ordered on-line)

Controlling Mastitis on Organic Farms. Alan Thatcher (Powerpoint presentation) on www.organicpastoral.co.nz

Manuka honey on www.organicpastoral.co.nz

Grow Organic Dairy is a project by ODPG and Massey University and aims to grow the organic sector by supporting existing and potential organic farming businesses. The project is funded through Sustainable Farming Fund and DairyNZ.



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