27 Fix areas that make udders muddy

The risk of environmental mastitis is increased when cows linger in wet, muddy areas or stand in water and mud of creeks, dams and watercourses. Congregation and dunging of cattle at watering points can increase exposure to environmental bacteria as well as reducing the health of the teat skin.

In Queensland, mastitis rates doubled and cell counts increased from 100,000 to 600,000 cells/mL when cows from the same herd were kept in two different feedlots for 15 weeks during a hot, humid autumn (Jonsson et al 1998). Conditions contributing to increased infection included day-long shade, higher stocking rates, and a wetter and muddier environment.

Technote 1 discusses the importance of a clean, dry environment, especially at calving time.

Hot, humid conditions particularly following rain will favour environmental mastitis as udders are contaminated with mud and faeces and conditions are suitable for bacterial multiplication (Blowey and Edmonstone 1995). Cows will wallow in mud to alleviate heat stress. Muddy udders need to be washed and this increases the likelihood of milking wet udders as well as reducing milking system throughput unless more milking staff are employed (Smith et al 1998). In South Western United States, few mastitis cases occur during dry, desert conditions in cows kept in sand yards that are often completely covered with manure, and these large herds often have low cell counts. When unseasonable rain falls, the sand yards quickly become very muddy and there is an increase in environmental mastitis. Such drylot dairy farms are usually recommended only when the annual rainfall is under 375 mm (Andrews 1998). Field observations are similar in South Australia on farms where dry, sandy conditions predominate.

Mud is always a problem on dairy farms, particularly on cow tracks, around gateways, feed pads and at the entrance to the dairy yard. Conditions are worse when cows are yarded in large dirt yards or wait in lanes before or after milking. Management of cow flow, and sometimes a little extra concrete, can reduce such hazards.

Confidence – Low

Little information specific to Australia is available.

Research priority – High

Practical solutions to mud problems need to be demonstrated locally for many areas in Australia.

27.1 Clean and renovate areas around troughs, gates, laneways and the entrance to the dairy area.

Long-term surface drainage and fencing

Tracks and lanes

Adequate drainage and good lanes reduce problems associated with dirty teats and udders. Cow tracks should be correctly formed with a good sub-base (grass and topsoil removed) and compacted before and after the gravel surface is laid. Gravel needs to be selected carefully (trial a small load first) so that tracks are comfortable for cows to walk on and do not contribute to lameness. The wearing course should be crowned to shed water and drains, and drains should be provided at the sides to direct water away from the general track area. Fencing should be arranged so cows remain on the track and do not have access to drains (Bridges 1984).

Feed pads

Feed pads must be carefully planned to reduce mud, particularly when the pad is covered for shade or weather protection and the drying and sanitising effect of sunlight is lessened. Covered feed pads should be concreted, preferably with 2-4% fall in a longitudinal direction, to facilitate flood washing or at least to improve drainage when they are scraped clean. Scraped, covered feed pads should be orientated North-South so the sun has some opportunity to penetrate under the shade and dry the surface (Davison and Andrews 1997).

Uncovered feed pads may be gravel provided they are properly formed and compacted similarly to the tracks. However they should always incorporate a 2-5% fall in at least one direction and a drainage system to carry water from the facility. Cows should be excluded from the drainage system. Regular twice-weekly scraping will reduce manure build-up (Davison and Andrews 1997).

Feed pads and cow track laid over boggy areas with little foundation can benefit from geotextile laid before gravel is installed. Geotextile will reduce the tendency for the gravel to sink through the mud (Turner 1998).

Geotextile fabrics are synthetically engineered materials that were originally developed to provide additional soil stability and to distribute loads over a wider area. They are laid under the base material (often gravel) of lanes or pads. The fabric is porous and allows water to pass through while holding the soil or rock in place.

Watering points

Cows standing with their udders immersed in contaminated water are at obvious risk from environmental mastitis. Pathogen counts in dams and stagnant waterholes frequented by cows are likely to be very high. Areas should be fenced to prevent cows entering dams, channels or other waterways and alternative watering points and cow cooling mechanisms should be provided. If it is impossible to replace these water sources, it should be possible to limit access to the edge of a small pond area by fencing, and reinforcing the bank with sleepers or wire grating.

Cows use waterholes in hot weather to alleviate heat stress. Bray et al (1992) demonstrated the importance of the bacteriological quality of water in Florida, United States. They found that man-made cooling ponds maintained by a continous flow of water had little effect on mastitis, whereas pathogen counts increased in natural cooling ponds. The coliform counts in the man-made ponds rose to 15,000 colony forming units (CFU) per mL, but usually remained well short of the 40,000 CFU/mL level required to induce new mastitis infections.

Short-term management solutions

The development of facilities such as cow tracks and feed pads tend to be long-term projects. Thoughtful management can reduce the mastitis risk in the interim period before a permanent solution is found:

- Some feed pads are better avoided during wet weather by feeding the cows on another area of the farm.
- Boggy areas under trees or gullies can be temporarily fenced off.
- Mud around paddock gateways can be reduced by alternating between two or more gateways into the same paddock or by lime stabilisation of such areas if the soil type is suitable (Smith and Dougherty 1972).
- Portable shade shelters have been successfully used to alleviate heat stress in Queensland and Florida (Davison and Andrews 1997). Such structures will not increase mastitis infection provided they are moved regularly enough so that a grass cover is maintained underneath.

Key papers

Andrews RJ. US Dairy 98. Study Tour Report, Department of Primary Industry, Mutdapilly. 1998.

Blowey R, Edmondson P. The environment and mastitis. In: Mastitis control in dairy herds, Chapter 8, Farming Press Books, Ipswich, United Kingdom, 1995:103-118.

Bray DR, Beede DK, Bucklin RA, Hahn GL. Cooling shade and sprinkling. In: Large Dairy Herd Management, American Dairy Science Association, United States, 1992:655-663.

Bridges DJ. Farm dairy race construction. Research Publication No. 10, Massey Univsersity Agricultural Research Foundation, New Zealand, 1984.

Davison TM, Andrews RJ. Feed pads downunder. Department of Primary Industry, Mutdapilly. 1997:25-29.

Jonsson NN, Mayer DG, Matschoss AL, Ansell J. Effect of feedlot design on milk somatic cell count and the incidence of clinical mastitis. In: Proceedings of the XX World Association for Buriatrics, Sydney, 1998:255-259.

Smith JF, Armstrong DV, Gamroth MJ, Harmer J. III Factors affecting milking parolour efficiency and operator walking distance. In: ASAE Proceedings of the 4th International Dairy Housing Conference, Michigan United States, 1998:88-95.

Smith TWC, Dougherty HG. Solution to the mud problem. Queensland Agric J 1972;98:493-495.

Turner LW. Geotextile pad design and use for dairy loafing and feeding areas. In: Proceedings of the American Society of Agricultural Engineers for the 4th International Dairy Housing Conference, Michigan, United States, 1998:37-43.