Avoiding 'dermo' at dipping

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About 'dermo'

'Dermo', or more correctly, dermatophilosis, is a skin infection of sheep and occasionally other species, and is also called 'lumpy wool'. It makes sheep highly susceptible to flystrike, difficult to shear cleanly, interferes with the distribution of backline products, and is highly contagious when wet sheep come into close contact. The disease occurs when the bacterium *Dermatophilus congolensis* gains access to skin and causes inflammation with exudation of protein and serum from skin, which goes on to form the scabs. When the scabs are found on the lower legs the condition is called strawberry footrot. Sheep usually self-heal after infection and develop a strong immunity, although some sheep may remain chronically infected and should be culled.

How dermo is spread

Bacteria can be present in two forms; either as resistant spores that exist in the lumpy wool scabs, or as threadlike hyphae capable of invading skin. Zoospores (the motile infective form) are released from the scab after a period of wetting and transform into active hyphae. Hyphae invade susceptible skin causing it to become inflamed and develop an oozing exudate. The serum forms the lumpy wool scab, which then becomes caught in growing wool. Resistant zoospores form within the dry scabs. Zoospores present in scabs are reactivated in the future in the presence of moisture.

Very young lambs lack immunity and have limited lanolin waterproofing of their wool and skin and this predisposes to attack by the bacterial hyphae. Any sheep without a developed immunity, but particularly lambs and weaners, are susceptible to developing dermo if exposed to zoospores while they have breaks in their skin barrier that allow invasion. Skin can be damaged by insect bites, grass seeds, dog bites, tears from protruding objects in yards, shearing cuts or damage to the waterproof layer of skin following prolonged wetting.

Limiting dermo spread

Limiting the spread of dermo depends on eliminating events that bring sheep together in close confinement in damp weather conditions e.g. yarding and planned jetting or dipping events. Zinc sulphate heptahydrate is registered as a bacteriostat to minimise the spread of dermo between sheep during dipping, but will not have any effect on active lesions. Product labels carry directions for the addition of 10 kg of zinc sulphate heptahydrate per 1000 litres of dip water (1% solution). Some dipping product labels suggest adding chlorhexidine disinfectants (e.g. Hibitane®) for general dip hygiene, but these have no registered claims against the spread of dermo.

It is established that 1% zinc sulphate in dip wash inhibits dermo transmission. If mixed with some bore waters however, zinc sulphate can cause suspended clay particles to drop out of solution. Diazinon binds tightly with organic or clay particles so the addition of zinc sulphate to diazinon-based dip solutions can cause a drop in the concentration of diazinon in solution and an accumulation of diazinon in the sludge at the bottom of the dip sump. Constant agitation of the dip wash will assist achieving uniform chemical concentration, but pumps with much greater capacity than those found on most sheep farms are required. At the time of writing, diazinon can only be used to dip sheep in the Richards submersible cage dip under APVMA Permit Number 12555. In addition, the Flockmaster II label clearly states, '*Do not use with zinc sulphate*'. Contact the manufacturer for advice on whether other dip products are compatible with the use of zinc sulphate. The main purpose of dipping remains

to eradicate sheep lice and while zinc sulphate is helpful in limiting dermo spread, it may have an overall negative effect on the efficiency of lice control.

Alternatives for lice treatment decisions when dermo risk is high

An alternative approach to using zinc sulphate is to improve management around dipping to avoid dermo spread e.g. don't hold wet sheep closely together in yards for extended periods, don't truck wet sheep or choose not to wet-dip in years when the risks of dermo and subsequent losses are greatest.

When dermo risk is high:

- Cull infected sheep if only a small proportion is affected.
- If affected sheep can be clean-shorn, choose a backline lice treatment. See Short Wool Tool.
- Use good dipping management. See Plunge and cage dipping LiceBoss Note.
- Consider adding a bacteriostat to the dip.

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