

Article on sheep lice control for “Making More from Sheep”

LOW RESIDUE OPTION FOR LICE CONTROL?

For the past six years the AWI has funded scientists from Agri-Science Queensland which is part of the Queensland Department of Employment, Economic Development and Innovation (DEEDI), to conduct research into the potential development of a biological control for sheep lice.

The research led by Dr Diana Leemon used a naturally occurring fungus, *Metarhizium anisopliae* to infect and kill lice. *Metarhizium* is easily found in soil and dead insects because it is a normal disease agent of insects. A fungal biopesticide would offer wool producers a residue free option for lice control that is suitable for organic production and would also help fight resistance due to the completely different mechanism by which the fungus kills lice.

The research was carried out in two phases, first in the laboratory then with animals in pen trials.

The laboratory studies showed how the fungus killed lice and led to the development of a formulation suitable for applying to fleece to control lice. A large number of different strains of *Metarhizium* were investigated to select the one most deadly to lice. The spores of this fungus were formulated in an emulsifiable oil that could be diluted in water for either dipping or jetting sheep. When this formulation is applied to sheep fleece the fungal spores are deposited in the wool grease along the wool fibres. As lice move around in the fleece they both consume spores and become coated in the spores. The spores germinate and grow into the body of a louse quickly killing it.

Animal trials were later conducted to test the efficacy of this fungal bio-control in controlling lice on sheep. Extremely lousy sheep were dipped in a miniature cage dipper to test the efficacy in short fleece or jetted to test the efficacy in both 3 month and 6 month fleece. The level of control was evaluated after 20 weeks for the dipped sheep and after 14 weeks for the jetted sheep. In all trials the fungal bio-control treated sheep had a marked reduction in lice burden compared to untreated sheep. However the best effect was seen in the fleece that was jetted at 6 months where there was an 83% reduction in lice as well as an increase in both the quality and clean fleece weight (see photo below).

Although the research has shown that a fungal bio-control can control lice on sheep, further study is needed to improve the efficacy and stability of the formulation. Once this is achieved registration trials leading to commercialisation can commence. AWI has signed an agreement with DEEDI and a commercial company to progress the registration trials when this further work is completed. The commercial company hopes to have a product in the marketplace within three years.

In the meantime, detailed information on best-practice lice control is available on the AWI LiceBoss website at www.liceboss.com.au and an up-to-date listing of lice and flystrike control chemicals can be accessed in the Products

module on the FlyBoss website at www.flyboss.org.au/tools/flystrike-decision-support-tools.php



Lousy fleece jettied at 6 months with the fungal biocontrol (left) after 14 weeks and untreated lousy fleece (right)

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