

DNA test to revolutionise sheep worm control

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The tail ends of Barber's pole worm adult females taken from one sheep infected with a single isolate of this worm species.

CSIRO scientists have moved a step closer to developing a novel DNA test which has the potential to revolutionise management of one of the biggest threats to sheep health in Australia, the barber's pole worm.

Barber's pole worm, *Haemonchus contortus*, is one of the top three nematode parasites of sheep. Nematode parasites cost the Australian industry hundreds of millions of dollars each year in lost production, veterinary drugs, and animal deaths.

The discovery of DNA markers by CSIRO Livestock Industries researchers working at Armidale, NSW, will allow producers in the future to implement control strategies that specifically target the worm strains present on their own properties.

Targeted control has the potential to reduce the impact of worm

resistance to veterinary drugs, reduce drug usage and lead to better health and welfare outcomes for sheep.

CSIRO Livestock Industries' research scientist, Dr Peter Hunt, said new work just published in the International Journal for Parasitology is the first to report on the effects of divergent barber's pole worm strains on sheep and link these effects to DNA analysis.

"Our work has revealed for the first time that different strains of barber's pole worm can have dramatically differing effects on their hosts," Dr Hunt said. "One strain caused a 30 per cent reduction in wool growth while another had little impact. In another example, one strain caused a 38 per cent reduction in red blood cell numbers, while the most benign strain resulted in only a 14 per cent reduction.

"We have found ways to identify these different strains of worms via their DNA, so that with a simple test, a producer could determine which strain is present and therefore what to do about it. At the moment, if faecal counts show animals are infected, the main management option is for producers to drench their sheep," he said.

"We also hope that DNA markers can be used to track changes in worm populations on individual properties and link these with management decisions. When enough graziers became involved, correlations between individual markers, parasite management strategies and worm characteristics should emerge.

"The process should work similarly to successful genetic databases such as Breedplan, but more work to develop good DNA markers is needed for this outcome to be realised."

Dr Hunt said that while this research would trigger a new outlook on sheep management, in the short-term it increased the importance of on-

farm quarantine.

“We have known for some time that there is a risk of bringing drug resistant worms onto a property when new stock are introduced, but now we know the stakes are even higher,” he said.

Source: CSIRO

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