

# Lincoln scientists continue war on livestock problems

Animal and veterinary related research has always been a scientific strength at Lincoln University. Down the years numerous problems and issues connected with the country's production animals have been addressed, explored and resolved.

Here Science Writer Janette Busch takes a look at the work of four Lincoln University animal scientists who loosely form a "ruminant group" within the Agriculture and Life Sciences Division.

## Lame dairy cows

You can't talk to many people in the Agriculture and Life Sciences Division at Lincoln University without hearing the name of Dr Jim Gibbs mentioned. This is because his interests, knowledge and research abilities encompass a huge range of topics.

Gibbs heads the South Island Dairy Lameness Group that undertakes research that is providing data about the nature and extent of the lameness problem in South Island dairy cows. In particular, Gibbs and his team are investigating whether there is any association between nutrition and lameness in pasture-based dairying systems. This project, the largest lameness project in New Zealand to date, developed and pioneered the use of a simple on-farm recording systems for cow lameness. It then successfully demonstrated the effectiveness and value of the system by having it used in 70 commercial farms across the South Island (from Golden Bay to Invercargill). The model developed was then subsequently used by the Dairy NZ 'Healthy Hooves' lameness programme and has stimulated the use of on-farm recording in other animal health programmes in the New Zealand dairy industry. The project has established the actual prevalence of lameness in the South Island dairy industry and identified several previously unknown factors associated with this lameness, setting the groundwork for better strategies to reduce it.

## Sheep with worms

Internal parasitic worm infestations and the resistance of the worms to drenches are increasing problems facing the sheep industry in New Zealand and that's a field in which Dr Andrew (Andy) Greer is working.

Dr Greer has returned to Lincoln University after a two-year secondment to Moredun Research Institute in Scotland while on an AGMARDT Postdoctoral Fellowship.

He comes from a sheep farming background in Southland (you can hear the giveaway rolled r's when he speaks) so has first hand knowledge of the expense and production losses occurring from this problem.

While at Moredun Greer was involved in research to study the immune response of the sheep's mucosa (gastrointestinal lining) to parasites

Greer had already discovered during his PhD at Lincoln that it was the animals' own immune system causing the clinical symptoms and production losses from parasite and not the worms themselves.

"This finding was very different from what has previously been believed," said Greer.

"We know that some sheep react more readily to parasites than others. An understanding of these mechanisms may open the possibility of new vaccines that could dampen down the undesirable components of the immune response," he said.

This work is continuing in collaboration with scientists at Moredun.

The opportunity to purchase a flock of specially bred sheep from AgResearch with half of them resistant to parasites and the other half resilient (can tolerate parasites) has provided the ideal resource for these studies and has been a boost to this groundbreaking work.

## Gas emissions from cows

Cows or, more specifically, the rumen of cows is the focus of research by Dr José Laporte Uribe.

As his name suggests, Laporte was not born here but came to Lincoln University from Chile, after studying to be a veterinarian at the Universidad Austral de Chile in Valdivia. On completing his PhD in Animal Science he was awarded a Postdoctoral Research Fellowship to work with Dr Jim Gibbs on rumen function in cows; including methane emissions - a hot topic in agriculture at present.

Laporte is using a gas monitoring sensor probe to measure the methane emissions from the rumen of cows in real time. The initial work was undertaken in a controlled penfeeding environment and soon trials will start on a commercial dairy farm.

"This probe is used in the oil industry to deep-sea scan for methane gas and oil," said Laporte.

"What we did was adapt it for use in animals to record real time methane emissions *in vivo*, a world first."

Laporte says the probe gives far more accurate and reliable results than other methods which are more cumbersome.

As well as recording the methane emissions, Gibbs and Laporte are taking a number of other measurements and have found that the rumen of the Lincoln cows is very different from Northern Hemisphere cows which are fed high starch diets. South Island farms use a grass based system

