

The frontiers of cervine science will be open to delegates when they visit AgResearch Invermay on the final day of the conference, Thursday, June 1.

Hugh de Lacy went down there to see what's in store.

Secrets of the lab

Current deer research at Invermay covers five main areas: velvet, genetics, tuberculosis, reproduction, and behaviour and welfare.

Dr Jimmy Suttie runs velvet antler research, which over the past two years has concentrated on pharmacology and antler growth.

He's trying to understand how antler develops, and is focusing especially on the pedicle.

Running in tandem with this work is the pharmacological study, aimed at making commercial extracts of antler, based on cell culture assays harnessing the most active biological components. This is industry-funded through the Game Industry Board, in contrast to the fundamental antler growth work which is Government-funded through the Foundation for Research, Science and Technology.

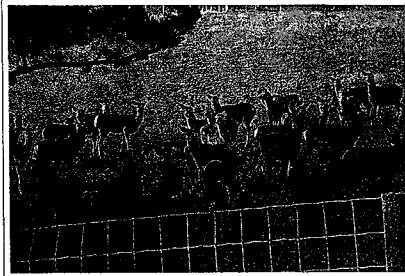
The pharmacological intellectual property, covering every edible deer product other than venison, is owned 50/50 by the Game Industry Board and AgResearch by way of Velvet Antler Research New Zealand (VAR-NZ).

Antler and pharmacological work run in tandem and "can't be viewed in isolation from each other, because many of the substances the animal produces to influence its own antler growth are also likely to be active pharmacologically," Suttie says.

Highly topical is the tuberculosis research of Drs Colin Mackintosh and Ken Waldrup. Together with Dr Frank Griffin from the University of Otago's deer laboratory, they are evaluating the potential of vaccination for disease control, and identifying animals with high susceptibility or resistance.

The scientists are conducting the world's first attempt to identify Tb resistance or susceptibility in large animals, something which may ultimately allow farmers to breed away from susceptible lines or up to resistant ones.

Semen was taken from 40 stags shown to be 100 per cent free of Tb before they were taken to the infect-



Pere David hybrids and Red weaners at Invermay AgResearch

ed deer farm near Milton.

There they were infected with Tb and, after the disease had established, were slaughtered and their Tb status assessed.

Frozen semen from the three most susceptible and the three most resistant stags was used to inseminate 225 Red hinds on Andrew Orbell's Clayton Station, near Fairlie.

Representatives of their progeny will go back to the Milton farm to be infected. Within a couple of years it should be possible to establish whether or not there is a genetic component to Tb susceptibility.

Genetics

In the genetics field, Tony Pearce, in collaboration with Mike Tate, is establishing a genetic map for deer using Pere David-Red hybrid animals.

The main push is to be able to recognise productive traits from sets of genes on the chromosomes, with Tate looking for markers to identify those sets of genes.

The Pere Davids are genetically unique because they are descended from three animals rescued from extinction in their native China and taken to Britain early this century.

There are only tiny genetic distinctions between individual PD animals, and when these are plugged into the huge variation in Red genes, they offer the potential to determine in PD-Red hybrids where the specific genes are coming from.

"By using the model so created,

some time down the track a blood sample may be enough to determine at birth an animal's genetic potential in particular traits," Pearce says.

"As well as production markers, it might be possible to identify a genetic marker for disease resistance.

"That might even bring PD hybrids into mainstream commercial breeding, because they're fine-looking animals but susceptible to some diseases."

There are strong implications for the industry's quality assurance programme in Dr Jo Pollard's work on aspects of deer behaviour and welfare.

For example, variations between social interactions in the paddock and those in the yard may determine how best to guard the animals' welfare during transport, and during such manipulations as vetting, ear-tagging and weaning.

Shelter

Pollard is looking too at varying confinement environments, such as indoor wintering, and the influences of shade and shelter outdoors.

With indoor wintering increasing in importance in the south, the effects of lighting, pen size and population are being evaluated.

This latter work complements some of the reproductive studies being carried out by Drs Mark Fisher, Bernie McLeod and Geoff Asher.

Melatonin, a naturally occurring hormone, is being used in a number of reproduction studies and as a means to control breeding patterns for in-vitro maturation and fertilisation work with deer eggs and semen.

Debbie Berg has advanced this technique in deer from work done at Ruakura to a point where it is now being used for research at Invermay.

In the medium term it could allow the harvesting of many eggs from a superior hind, fertilising them in a tube with semen from preferred stags, and transferring the embryos to recipient hinds. □