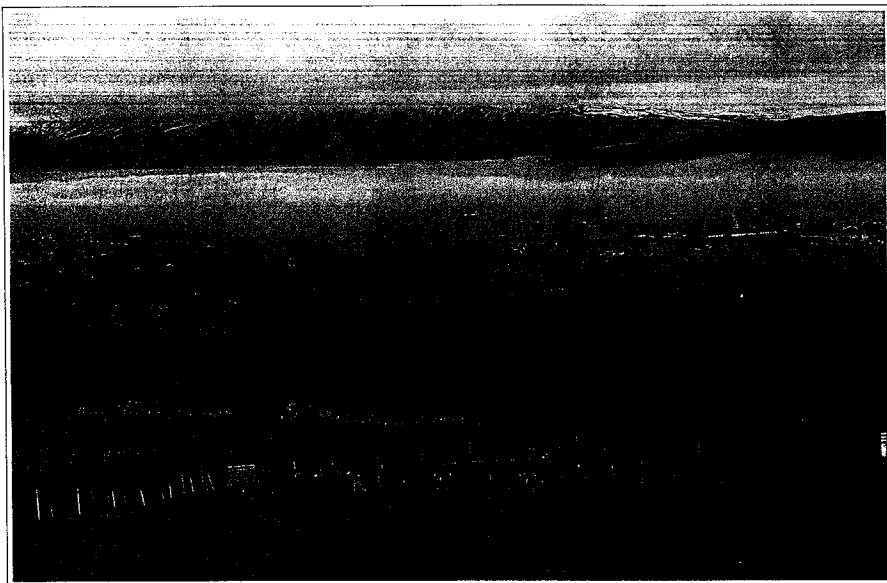


Invermay deer farm commands a great view of the Rock and Pillar Range in the distance



Farm not programmed for "profit"

Invermay goes outside conventions

by Noreen Hegarty

INVERMAY DEER Research Farm has nearly a 20 year history and, like most established New Zealand deer farms, it's come a long way in two decades.

However, unlike most deer farms, it is not and has never been a profitable venture — if profit is regarded as only a monetary thing.

You could say the farm, or 'field laboratory' as such research properties are becoming known, is unconventional.

For starters it employs a team of five to run its 125 hectares.

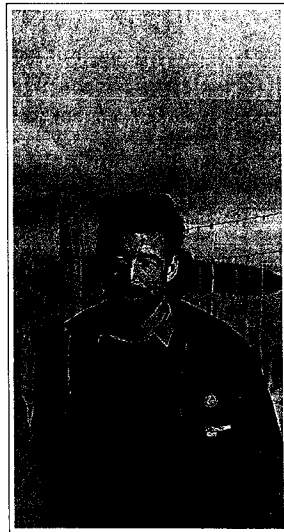
Farm manager John Patene is the head honcho, admirably com-

plemented by his sturdy offside Adam Whaanga — stock manager and senior technician.

Patene says the farm exists to provide a service to science, to manage groups of deer to optimum farming standards and to present those groups of deer for whatever research they're required.

At times it can run up to 50 groups. That takes some juggling when there's just a few more than 60 paddocks to put them in, each an average size of 1.5 ha.

"Each group of deer is involved in at least one trial, but often more," Patene says. ▸



Farm manager John Patene

"The farm provides a service to science."

PROFILE

▷ "Minimum group sizes are determined by the statisticians, then the practicalities of farm management for the groups are looked at."

All science requirements are discussed and a management strategy is worked out and diared months in advance.

Everyone involved with hands-on running the farm — Patene, Whaanga, Greg Wisnesky, Aaron Leckie and Barry Martin — has to have a clear idea of what the research programmes are about so they can maintain them within the daily management plan.

"Because of those programmes this farm can't respond to commercial pressures as quickly as a conventional property," Patene says.

He's used to that though, as it's not the first unconventional deer farm he's worked on.

He started at Invermay in 1982 for two years, then went to work with Rusa deer in Northern Queensland and Western Australia in 1984.

He returned to New Zealand in 1986 to establish the Landcorp deer farm on the Waitangi Block in the Bay of Islands and from there was instru-

mental in organising the import of Moluccan Rusa to New Zealand.

Things foreign called again in 1988, so he went to central Spain — the province of La Mancha — to assist farming 400 wild/captured Red deer.

Patene had the task of dividing them into age and sex mobs which were single sire mated to improve antler production for trophy hunting purposes.

MAF Ruakura welcomed him back to New Zealand for six months in 1989, but the lure of the south was strong, so it was down to Invermay early the following year.

Invermay deer research concentrates on Red and Wapiti breeds and Pere David hybridisation.

The farm leases 60 ha in the Waiora Valley (about 6 km away) enabling the whole operation to carry about 1,300 deer.

Red hinds make up nearly half the herd, (there are 766 of them) while Red stags total 300. Of the hinds, there are 328 yearlings, 138 of which are in grazing trials at AgResearch Woodlands in Southland.

The balance of the hinds — 138

yearlings, 104 rising 2 year-olds, 305 mixed age and 20 ovaectomised — are at Invermay.

In a breakdown of Red stag numbers there are 98 yearlings, 81 rising 2 year-olds and 77 rising 3 year-olds and older. The farm also runs 90 Wapiti/Wapiti cross stags.

There are 22 pure, mixed-age Canadian Elk cows and a further 38 three-quarter and half bred.

The farm also runs 89 Pere David deer — 40 half and quarter-bred females and 49 half and quarter-bred males.

The 1992 AI breeding programme (from January to April) involved 251 hinds in three major projects and all AI was done laparoscopically.

Although the Pere David hybridisation programme was nearly a washout, the overall success of AI as a breeding technique was endorsed.

AgResearch consultant Tony Pearce says the Pere David programme (involving 91 Red hinds) fell down around the half-bred stags used.

"One had a damaged leg during the rut, making semen recovery difficult. Another of the stags died, making his semen recovery even ▷

Where does deer dosh come from?

FORsT, of course!

by Noreen Hegarty

WHILE OWNED and operated by the NZ Ministry of Agriculture and Fisheries, Invermay Agriculture Centre won a worldwide reputation for its pioneering research into the management of Red deer and Wapiti as farm animals.

Originally the funding for this work came directly from the MAF research vote but since the mid-1980s this funding has come under increasing pressure.

Successive governments have required individual industries to fund more and more of their own research.

Since the election of the present National Government in 1990, the concept of "contestability" for available public good research funds has been introduced.

This has involved the reconstruction

of government research departments into government-owned, industry-based limited liability companies known as Crown Research Institutes (CRIs).

Invermay is now owned by the Pastoral Agricultural Research Institute (Co Ltd) which trades under the name AgResearch. Like the other CRIs, it is free to tender in its area of expertise for government and private research work worldwide.

This separation of those who fund from those who conduct research is designed to give government the best possible bang for its research bucks.

However, it potentially conflicts with the government's industrial development policies which are based on New Zealand gaining competitive advantage from quality assured. ▷

PROFILE

▷ more difficult!"

The combined result was that only eight of the 91 hinds conceived. In comparison, a calving percentage of 43 per cent from a 48 per cent pregnancy rate was achieved in the 1991 breeding season.

The Canadian Wapiti/Red crossing achieved a 71.9 per cent success rate with 57 cows in the programme, comparing favourably with the pure Canadian Wapiti mating which achieved 81.8 per cent.

Pure Red mating resulted in 45 pregnancies among 92 hinds treated — more than half the group were 2 year-olds.

Adam Whaanga is the pregnancy scanning expert and says all groups in the treatments are routinely followed up with chaser stags.

"The pregnancy status is confirmed by scanning and parentage blood-type if there's any doubt.

"One person is assigned to one group of cows or hinds from calving until AI and it seems the consistency of handling has contributed to improved AI success rates.

"AI is used because the Pere David hybridisation programme is emerg-



Coming into velveting

An Invermay sire stag stands his ground high above the sea

ing as the most important breeding programme on the farm.

"This season we expect about 70 quarter-bred Pere David fawns on the ground and we'll aim for the same sized drop over the next few seasons."

In the Pere David hybridisation programme at least, the same hinds are used each year to facilitate the gene mapping programme — an attempt to identify linkage to production traits in hybrids between deer species and strains. ▷

▷ branded value added products (to use the jargon of the age).

That argument aside, good research at Invermay is funded by the dollars scientific staff can win from the Foundation for Research, Science and Technology (FoRST).

The government foundation has a "kitty" of \$250 million and early in 1991 the broad category for "Deer Research" (not exclusive to Invermay deer farm) was allocated \$2.8 million to finance 10 research objectives which are to be achieved by June 30, 1993.

Deer Research is part of Output 4 — one of 39 sections or Outputs. FoRST splits its \$250 million kitty among:

The Output 4 category refers to all non-traditional animals — deer, goats, alpaca, buffalo, pigs, poultry, horses and bees.

In the 1992/93 year, Output 4 was allocated \$5.2 million, deer research got \$3.4 million of that.

The Invermay Deer Research Farm runs on a \$200,000 deficit so whatever the revenue and expenditure of the farm; the difference between the two figures will always be \$200,000 which is funded by FoRST's allocation to deer research.

Invermay's Dr Ken Drew is AgRe-

search's national deer research boss. He says Output 4's allocation of funds will drop by 23 per cent to \$4 million in the five years from June 1993 to 1998.

"Deer programme financing is likely to be reduced by about 10 per cent of its current \$3.4 million allocation.

Drew is using this assumption as the basis for the five-year strategic plan for deer research he is planning for AgResearch. A meeting held last month determined which projects were necessary and would require FoRST funding from 1993 to 1998.

Of the \$9.4 million allocated to deer research, \$2.07 goes to Invermay. The balance is split between deer research at Ruakura and Flock House. Drew says it may be necessary to seek further deer industry support for science in areas the industry would specifically like to see research and development carried out. There are 10 deer research objectives that have to be achieved by June 1993. All have been allocated FoRST funds and eight are being carried out at Invermay.

Invermay is also conducting a substantial research programme on behalf of the NZ Game Industry Board worth about \$400,000 in the current financial year. □

PROFILE

▷ All calves and fawns are tagged at birth and paired up with the dam to become part of the farm's ongoing reproduction and growth studies.

Patene says Invermay's Wapiti cows had been poor performers when it came to conception, so management of the Wapiti stock was being finetuned.

"We found deer, especially Wapiti, didn't like being moved regularly between the leased land and the farm and that was affecting their performance.

"We left the calves on Wapiti cows until late September this year and mated the cows naturally with the calves still at foot."

It's difficult to save autumn and spring pasture on the Invermay deer farm, simply because of the numbers of groups run on the property which all need their own space.

A hillside pine plantation helps alleviate that problem by wintering 350 Red hinds as it did this season.

The hinds were fed a diet of silage and barley — 5 kg a head/day of the former and .5 kg a head/day of the latter — from wooden chutes set to the angle of the hillside to minimise feed wastage.

The chutes — one for every 55 animals — are placed within easy access of the central raceway to facilitate efficient feeding out every two days.

It was a hard winter over much of the country this year but Invermay deer were fed to the optimum. In all they consumed 4,500 bales of lucerne hay, 109 tonnes of barley, 1,500 bales of meadow hay and 420 tonnes of silage.

When the farm was first established in 1973, Red hinds weighed 80 kg on average at mating — now the average is 104 kg.

Patene says the hybrid females are also mated, but pure Red hinds comprise the base breeding herd.

For research reasons Invermay deer farm doesn't normally cull many of its poorer performers — stags or hinds. Much research involves at least two years study of the same animals.

This year though, the farm had a bit of a cleanup and sold or killed a number of deer off the property.

The all-Red velvetting herd, which is drafted into mobs according to casting dates, was tidied up.

The rule of thumb at Invermay is that stags cutting less than 50 per cent of the mean of their age group do not go

into the velvet herd.

Going on last season's harvest, rising 4 year-olds were culled out of the herd if they cut less than 2.5 kg after 58 days growth, while rising 3 year-olds were culled at 2.3 kg after the same time.

All velvet is removed in the crush with local anaesthetic and the bulk of it is sold to the NZ Game Industry Board to be used in research programmes, many of which are carried out at Invermay.

Last season 132 kg of Invermay velvet was processed at Kornex on behalf of the GIB, about 50 kg was sold to Glenlambly Holdings and

about 120 kg of Wapiti and hybrid velvet was sold to the Alpine Deer Group.

All regrowth and spiker velvet was sold through Velpool.

Patene says all Invermay farm staff operate to the same code of practice when handling deer.

"We're very conscious of animal welfare on the farm, so as well as aiming for optimum feeding of the deer, they're all yarded quietly from weaning," he says.

"It's important the deer have a mild temperament because they're in the yards often and every time they are they have something done to them." ▷

Research projects

INVERMAY'S DEER research team, according to a resume published by AgResearch, "maintains a strong sense of industry direction."

Some of the following research activities have been completed or put on hold — but the following list depicts what has been and is going on at Invermay.

• Venison research:

Carcase composition studies in relation to leanness, age and growth rates; post-slaughter treatment of carcases; effects of electrical stimulation and storage at low temperature on tenderness and meat quality; packaging and meat quality; development of inverted dressing technique for deer carcases; further processing; new product development. Much of the work is conducted in association with industry groups. Venison evaluation is conducted across breeds and stags and hinds within species, at different ages.

• Species/breed evaluation:

Interspecies hybridisation involving Elk (Canadian Wapiti), Pere David deer and their hybrids with Red deer with evaluation for venison and velvet antler production; Pere David deer and Canadian Wapiti performance, recording and deer breeding schemes.

• Reproduction:

Reproductive manipulation and genetic approaches: AI and embryo transfer.

• Animal health studies:

Vaccine research and development; parasitology and evaluation of anthelmintics; plus some trace element research; Wapiti health programmes; versimosis vaccine development.

• Velvet antler:

Pharmacology; velvet antler composition; biological activity of velvet antler preparations; Growth and physiology; function and growth; hormonal control; cell line cultures.

• Deer growth, physiology and nutrition:

Photoperiod and growth; seasonality of growth; growth and production patterns; hormonal and regulatory control of growth.

• Molecular genetics:

Gene mapping (DNA and protein polymorphisms) using interspecies hybrids; commercial protein typing.

• Deer social behaviour, animal welfare:

Studies on appropriate animal handling systems; behavioural response to farm management procedures; improvement of management systems.

• Alternative pasture species and nutritional regimes:

Variation in pasture species; growth and production under various feeding regimes.

Bovine tuberculosis and Fallow deer production research projects are carried out at the University of Otago and Ruakura Agriculture Centre respectively. □

PROFILE

▷ The deer yards have been modified many times since first built, to accommodate research results or to facilitate research like Dr Jo Pollard's deer social behaviour and animal welfare studies.

The most recent addition to the yards is a new crush almost in the centre of the facility, closer to the scales and drench crate.

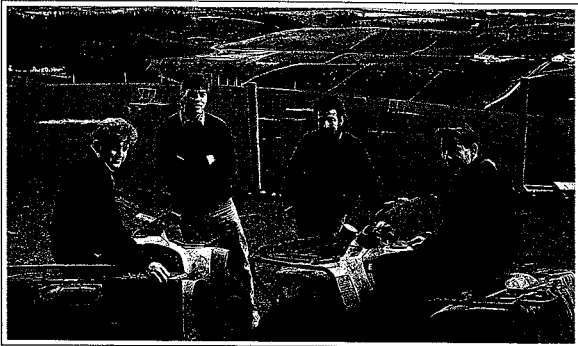
However, Invermay Deer Research Farm is going one step further than that — new yards to complement the existing ones built in 1978 are under construction and they'll be the first thing people see when they visit the property.

The floor is concrete cobbled throughout so the whole setup will be hirable without being slippery underfoot.

"We want to have the first ISO accredited deer farm in the country," Patene says.

"It's important a research farm takes a leading role in achieving accreditation so visitors to it can see what's needed on their own properties to achieve that status."

Most of the deer farm's AI will be done in the new 20 metre by 12 m



The Invermay farm team

From left: Greg Wisnesky, Adam Whaanga, Aaron Leckie and John Patene

facility which is planned for completion by December.

Patene says the new yards will follow the same design principle as the original lot; the deer will be broken into manageable groups and made to go around corners.

Basically, he says, the new yards will be an intensive farm science

facility.

Production figures as an overall farm total are irrelevant when discussing the Invermay deer farm. As Patene says, "We have a responsibility to earn the best revenue we can, but science is the farm's first priority." □