Artificial insemination of Fallow

by Dr Geoff Asher,
Ruakura Animal Research Centre,
Hamilton

COMMERCIAL USE of AI in the deer industry is now a reality. But while it is probable that several thousand Red deer hinds have been inseminated this year, there has until recently been little incentive to apply such technology commercially to farmed Fallow deer. Now with the recent importation of bucks from overseas, including the very rare Mesopotamian Fallow, there is considerable incentive.

In 1986 we conducted preliminary work on AI using Fallow. This pooled together several years of work on oestrous detection, oestrous synchronisation and semen collection. The outcome was very pleasing and suggested that commercial application of AI to Fallow deer may not be far away.

In the first experiment, designed to compare fresh and frozen semen delivered intravaginally, 57 Fallow does each had their first oestrus of the 1986 breeding season synchronised with an intravaginal CIDR (12 per cent progesterone CIDR-type S). CIDRs were inserted for 14 days and the does were run with crayon-harnessed vasectomised bucks following CIDR removal.

At 48 hours after CIDR removal (previous studies had shown this was when most does showed oestrus) 26 does were inseminated with fresh semen (collected two hours earlier) and 31 does were inseminated with thawed semen (collected 12 months earlier). Inseminations were all performed while the does were restrained in a cradle and the semen was placed at the base of the cervix (but not in the cervix). Each doe was inseminated with 80 million live sperm (the average ejaculate contains about 350 to 500 million sperm). Tup marks were recorded at the time of insemination.

On day 21 from AI, the does had cycled (i.e. failed to conceive to AI). Also, tup marks were recorded between days 19 and 23 (fertile bucks were introduced on day 15). Fawning dates were obtained for all does and the fawning rate to AI was calculated on the basis of a 234 day gestation length.

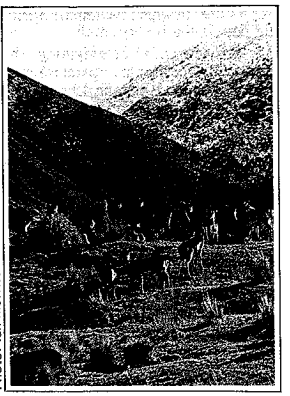

Photo: Ian Morrison

Fallow does at Silverhill, Albury
Commercial AI in Fallow is likely to be available in two years, thanks to years of basic research at Ruakura.

Table 1 shows that the fawning rate to AI was close to 50 per cent — with virtually no difference between fresh and thawed semen. This was a very pleasing result for a first attempt at AI. It is interesting to note, however, that blood progesterone data indicated that a number of does conceived to AI but failed to retain the embryo. The actual apparent conception rate to AI was about 65 per cent. Further work is required to identify the cause of embryonic mortality that reduced the actual fawning rate to 50 per cent.

In the second experiment, in which the aim was to investigate the feasibility of laparscopic intrauterine AI, 55 does were synchronised as for the first experiment. At 56 to 58 hours from CIDR removal (somewhat later than for intravaginal inseminations as the sperm are deposited closer to the eventual site of fertilisation) the does were anaesthetised (Rompun and Ketalar) and laparoscopically inseminated with a single straw of semen (80 million live sperm). The semen was injected into both uterine horns. Anaesthesia was then reversed and the does were returned to their paddocks.

Table 2 shows that the apparent conception rate to intrauterine AI was 47 per cent and fawning rate was close to 44 per cent. Both conception and fawning rates are somewhat lower than for the intravaginal inseminations of Experiment 1.

This may reflect problems associated

Table 1: Results of Experiment 1 (Intravaginal AI)

	Does inseminated	Does marked by vas. buck by AI	Does conceiving to AI	Does fawning to AI	Embryo loss
Fresh semen	26	11 (42.3%)	17 (65.4%)	13 (50.0%)	4 (23.5%)
Frozen semen	31	20 (64.5%)	20 (64.5%)	15 (48.4%)	5 (25.0%)

Table 2: Results of Experiment 2 (Intrauterine AI)

Does inseminated	Does marked by buck by AI	Does conceiving to AI	Does fawning to AI	Embryo loss
55	24 (43.6%)	26 (47.3%)	23 (41.8%)	3 (11.5%)

with anaesthesia or suboptimal timing of intrauterine insemination relative to ovulation.

The 1986 trials have shown a promising outcome for intravaginal inseminations in Fallow deer — the procedure for such AI is simple and quick, involving no more than a few minutes per animal. Trials run this year will look at the effect of sperm numbers on conception rate and possible means of reducing embryo mortality (and hence increase the fawning rate to AI).

Acknowledgement
We would like to thank Waioneke Park for the loan of 100 mature Fallow does used in the studies on AI — a very generous contribution to our work.