

Crossbreeding Canadian Wapiti bulls with Red hinds

In 1981, Invermay imported a group of 23 Canadian Wapiti (Elk) captured in Elk Island National Park, Alberta. These animals were a gift from the Canadian government.

The crossbreeding of these animals with Red deer requires skilled management. This article reviews progress in this programme and the performance of the progeny.

The 79 live F1 (1st cross) hybrids so far generated by the study have allowed Dr Peter Dratch and Mike Tate to develop blood typing technology to the point where they can differentiate between pure Wapiti, hybrids and Red deer. The Canadian Wapiti bulls are also being used to upgrade the Invermay New Zealand Wapiti type herd based at Orokonui. Invermay's Dr Geoff Moore reports.



An imported Canadian Wapiti bull mating a Red hind. The success of these unions and the fertility of the offspring show that Reds and Wapiti are races of the same species.

TRIAL WORK with the Canadian Elk at Invermay has been aimed at improving results from the Elk/Red cross by refining mating and calving management.

For mating, some hinds in each group have been synchronised for oestrus using progesterone - PMS treatments. This helps us to discover which sire bulls are interested in mating hinds. To minimise fawning difficulties with this cross, care is taken in their feeding to ensure that excess fat in the birth canal does not impede delivery of the fawn. Pasture available to the hinds is controlled in late pregnancy to avoid oversized fawns and pasture is restricted until after fawning to avoid the possibility of rumen overfill affecting the ability of the fawn to present itself normally for birth.

As fawning approaches, the hinds are supplemented with lucerne-based deer nuts or pellets to tame them and ensure they receive adequate nutrition.

Reproductive performance

In 1984, two groups of 15 mature Red hinds (average 110 kg) were joined with three Canadian Wapiti bulls each for mating. When only one of the bulls, an experienced sire, commenced rutting and was observed mating, the two groups of hinds were boxed together and the other bulls removed.

The sire bull was replaced later as he appeared sexually exhausted.

At fawning, 24 of the 30 hinds produced F1 calves (including one set of twins), of which 20 to 22 were sired by the experienced bull. This observation suggests Canadian Wapiti bulls should not be expected to mate more than 20 hinds in one season.

In 1985, another two groups of 15 Red hinds were set up for mating in a similar pattern to 1984. Again only one bull commenced rutting and the hind groups were boxed together.

This bull — not the same one that worked well in 1984 — sired 21 F1 fawns from the 30 hinds joined with him. This was further evidence that a Canadian Wapiti bull should not be expected to mate more than 20 hinds in one season.

Three of the hinds required assistance at fawning and one fawn was born dead. One other hind slipped her fawn after being yarded with another hind which required assistance when calving.

In 1986, three mating groups of hinds numbering 17, 15 and 14 were set up. The bull which worked well in 1985 again worked well with all 17 hinds in his group producing F1 fawns to him. In the other two groups, the bulls appeared to be working but no fawns were born to the first cycle.

These two groups of 15 and 14 hinds were boxed and another bull used which sired 14 F1 calves from the 29 hinds during the second cycle.

Calf losses in 1986 included three twins from hinds treated with ▶

WAPITI RESEARCH

▷ progesterone-PMS to synchronise oestrus and one fawn which became mismothered after going through a fence.

Ensuring bulls are in fact working is important in getting the hinds pregnant as early as possible in the season. Young inexperienced bulls should be used with caution and shouldn't be expected to mate more than 10 to 15 females.

Bulls do not develop full rutting behaviour until three years of age. A major cause of bulls not working is apparent intimidation resulting from running them too close to other bulls in adjacent mating groups.

Replacement Red or hybrid stags should always be used after the first or second cycle to ensure conception rates are high overall and to avoid late fawning hinds having to give birth to oversized young.

F1 liveweights and growth rates

Birth weights of the F1 calves over the three seasons have averaged around 14.0 kg for males and 13.2 kg for females. These birth weights are well in excess of the birth weights for Red deer fawns of 9.5 kg (males) and 8.9 kg (females) recorded on the Invermay deer unit.

Growth rates to weaning are 20 per cent higher than the best of about 400 g/day achievable with straight Red deer. Weaning weights are about 15 kg heavier than for Red deer.

As rising yearlings, the spring growth rates of the 1985 born males averaged 453 g/day, compared to 277 g/day for young Red deer stags run in the same herd.

The 64 per cent faster growth of the F1 males is considerably better than the 55 per cent faster growth of the NZ Wapiti type

males relative to Red deer reported in another article in this issue and is indicative of a degree of hybrid vigour. It also indicates that there is far more Red blood than commonly believed in the so-called NZ Wapiti deer.

Liveweights of the F1 sexes at 14 months are not as diverse as in Red deer. The 1985-born F1 females at 14 months weigh 91 per cent of the weight of their male counterparts.

For Red deer at 14 months (1978 age group data) hinds weigh 80 per cent of the liveweight of the stags (76 kg v 95 kg) and as mature deer, hinds weigh 49 per cent of the liveweight of the stags (104 kg v 212 kg). Mature weights of the F1 animals are likely to be above the intermediate weight of their parents due to hybrid vigour.

For the imported Canadian Wapiti, the mature cows weighed 244 kg at six to seven years of age compared to 337 kg for the bulls. The cows when mature weigh 72 per cent of the weight of the bulls. In contrast, Red hinds weigh in at 49 per cent of stag liveweight. Hence mature F1 hinds are likely to be more than 60 per cent the weight of mature F1 stags.

In a venison production system, there are improved efficiencies in having a relatively smaller breeding hind unit with faster growing male progeny, if only males are slaughtered for venison.

By 15 months of age a young Red stag is close to its mother's weight whereas this does not occur with Wapiti. However, when demand for female breeding stock declines and both male and some female deer are slaughtered for venison, the closer females are to males in liveweight becomes an advantage in increasing venison production.

Another advantage of having the two sexes closer in liveweight at a given age, is the greater similarity in carcass cuts. This will make them easier to market in the same lines. Or if it is neces-

TABLE 1:
Calving performance of adult Red deer hinds mated to Canadian Wapiti bulls.

Year	No. of hinds	Hinds calving	Calf losses	Weaning
1984	30	24/30 (80)	0/25a (0)	25/30a (83)
1985	30	21/30 (70)	2/21 (10)	19/30 (63)
1986	46	31/46b (67)	8/41c (20)	24/46b (52)

a includes one set of twins

b excludes 8 progeny from a F1 replacement stag

c includes 3 twins

TABLE 2:
Liveweight (kg) and growth rate measurements for F1 calves born in the 1984-1986 seasons.

Year of birth	Males			Females		
	1984	1985	1986	1984	1985	1986
Birth weight	13.6	14.3	14.1	13.9	12.9	13.1
Gain to weaning (g/day)	592	560	501	561	510	505
Weaning weight (March)	56a	63	63	56ab	57	64
LWT at 14 months	143	146	—	128	133	—

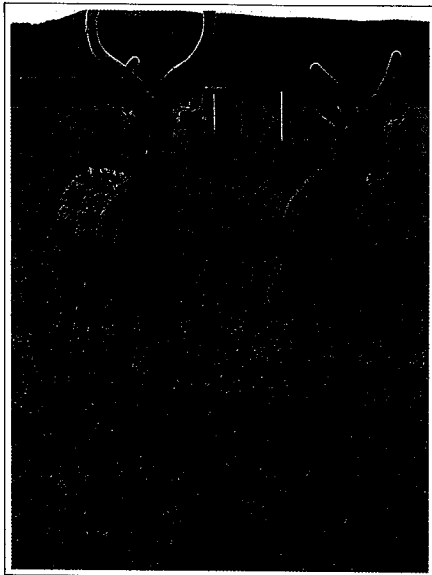
a weaned in late February

b excludes one set of twins weaned at 40, 41 kg

WAPITI RESEARCH

11-month old Canadian Wapiti x Red F1 hybrids

Hybrids have the best of both breeds: A high carcase weight at 12 months relative to dam weight and a small difference between the sexes in carcase size for age.



sary to extend the supply period of carcasses of a given size, this can be achieved by killing males followed by females.

For meat production, the development of a hybrid line appears to have the balance of advantages from both Red and Wapiti. That is, weight of carcase produced at 12 months relative to dam weight (breeding costs) and less differences between the sexes in carcase size for age.

It has become clear that the venison export industry wants well-grown young stags for slaughter in late spring which will produce carcasses in the range of 50 to 70 kg. (Although there is recent evidence that some exporters will take young heavier carcasses without penalty.)

Cross breeding Wapiti or Wapiti-type bulls with Red hinds or breeding their hybrids can easily produce young stags which will kill out at 50 to 70 kg in carcase weight in their first spring. For straight Red deer breeding, only a small proportion of stags will reach the premium weight for slaughter by the end of spring unless successful earlier breeding programmes are adopted.

Reproductive performance of F1 hinds

Groups of older hinds ($n = 5$) and yearling hinds ($n = 9$) were single sire mated to F1 sires in separate groups. All hinds fawned, but three of the 2-year old hinds lost theirs later.

Liveweights of the 2 plus 3-year old hinds pre-mating (March) were 160 kg (138 to 182.5) and 133 kg (115.5 to 145) for the yearling hinds.

These results (100 per cent fawning) from F1 females are evidence that hind fertility is not affected by hybridisation between Canadian Wapiti and Red deer. Likewise, the fertility of the F1 stag is apparently not impaired and their mating performance with Red deer hinds does not suffer from the lack of interest shown by Canadian Wapiti bulls.

Scientifically, the cross-breeding of the parent forms and the fertility of the hybrids shows conclusively that Wapiti and Red deer are races of the same species. Furthermore, that the original hybridisation of the species in Fiordland could have occurred from the union of a Wapiti bull and Red hind. □