Nth American 'imports' compare poorly

Invermay believes health problems a factor for its Canadian Wapiti

Canadian Wapiti, imported for a programme of 'upgrading' the NZ Wapiti and also for hybridisation with NZ Reds, are not performing up to their genetic potential at Invermay — and scientists believe health problems may be partly to blame. This report on the performance of the Canadian Wapiti and their hybrids is an edited version of a paper produced recently by Invermay's Peter Fennessy and Tony Pearse.

A NUMBER of Wapiti (*C.e.nelsoni, C.e.rooseveltii, C.e.manitobensis*) have been imported from Canada since 1981. While 'purebred' herds are being maintained, the males are also being used in the 'upgrading' of New Zealand Wapiti-type deer and in hybridisation with NZ Red deer (mainly of *C.e.scoticus* origin).

The NZ Wapiti-type deer has its origin in the Fiordland National Park and is a hybrid of mixed background between *C.e.nelsoni* and Red deer, and consequently the relative proportions of each species is unknown.

The interest in the upgraded Wapiti and the Wapiti X Red hybrids centres on their use in venison production systems (eg, as a terminal sire over Red deer) and for velvet antler production.

Table 1 presents a summary of typical live weights for NZ Red deer (NZR), Canadian Wapiti (CW) and the Canadian Wapiti/NZ Red hybrid at Invermay — although the data for Canadian Wapiti (*C.e.manitobensis*) are limited because of the small size of the herd (less than 20).

The data have not been collected in experimental situations with all animals run together; rather the data represent a summary of the performance information available.

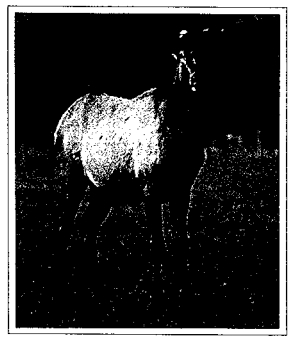
The birth weights for the hybrid are about intermediate between the two parental strains, but at the 3 month (weaning), 1.3 year (yearling) and 2 year old stages the hybrids are clearly superior to that expected for an intermediate animal.

However by the time they are 3 to 4 years old, the female hybrids are at an intermediate weight — but this is not the case with the males.

There are two possibilities to explain this apparent relative superiority of the hybrids particularly at the young ages, namely hybrid vigour and/or a relatively poor performance of the purebred Canadian Wapiti.

Also included in Table 1 are calculations of the expected live weights for the Canadian Wapiti in the Invermay environment; these are deduced from the weight of the Red deer and Canadian Wapiti/NZ Red hybrid, assuming either no or 10 per cent hybrid vigour for live weight in the hybrid progeny.

Assuming an absence of hybrid vigour, it is apparent that only at birth that the male Canadian Wapiti attain their appropriate weight for age — although the females are about their expected weights by 3 to 4 years of age.



A young Canadian Wapiti import
The breed's 'underperformance' may not be a problem just at Invermay

The calculations on the basis of 10 per cent hybrid vigour in the progeny would suggest that the Canadian Wapiti females exceed their expected live weights at birth, but then fall behind to catch up again by the time they are 3 years old.

Overall, extrapolating from other species, some hybrid vigour could be expected — so in reality the expected live weight might be somewhere between the two calculated extremes presented in Table 1.

Data for velvet antler production are presented in Table 2.

As both 2 and 3 years olds, the Canadian Wapiti/NZ Red hybrid actually outperform the purebred Canadian Wapiti. The antler data, therefore, also support the concept that the purebred Canadian Wapiti have a relatively poor performance in the Invermay environment. ▶

Table 1 *Typical live weights (kg)[1] by age for New Zealand Red deer (NZR, Cervus elaphus scoticus), Canadian Wapiti (CW, C.e.manitobensis) X NZR hybrids and CW at Invermary with the expected live weights[2] for CW (assuming A- no hybrid vigour and B- 10 per cent hybrid vigour in CW X NZR progeny) and the ratio of actual to expected live weights for CW.*

	Actual live weights			*Expected live weight of CW[2]*		*Actual/expected live weights of CW*	
Age	NZR	CW X NZR	CW	A	B	A	B
Males							
Birth	9.6	14.1	18.1	18.6	16.0	0.97	1.13
3m	48	74	73	100	86	0.73	0.85
1.3y	110	155	155	200	172	0.78	0.90
2.2y	150	210	210	270	232	0.78	0.91
3.2y	188	264	265	340	292	0.78	0.91
4.2y	210	(295)[3]	305	380	326	0.80	0.94
5.2y	220	(310)	330	400	344	0.83	0.96
Females							
Birth	8.8	13.3	17.2	17.8	15.3	0.97	1.12
3m	43	71	70	99	85	0.71	0.82
1.3y	85	129	140	174	149	0.81	0.94
2.3y	96	158	180	220	189	0.82	0.95
3.2y	105	167	215	229	197	0.94	1.09
4.2y	110	170	240	230	198	1.04	1.21

[1] Moore 1982, 1983, 1984; Moore et al. 1988a, b; Moore and Littlejohn 1989; Pearse unpublished data.
[2] Expected live weight of CW: A = 2(CW X NZR) – NZR and B = 2(0.909(CW X NZR) – NZR.
[3] Actual live weights for (CW X NZR) males at 4.2 and 5.2 y are based on limited data.

Table 2 *Typical velvet antler yields (kg; and days of growth) NZR, CW, X NZR hybrids, and CW at Invermay and the expected velvet antler weight for CW[1] assuming no hybrid vigour and the ratio of actual to expected velvet antler weight for CW.*

	Actual velvet antler weights			*Expected velvet antler weight of CW[1]*	*Actual/expected velvet weight of CW*
	NZR	*CW X NZR*	*CW*		
2y	1.01 (55)	2.05 (64)	1.99 (68)	3.09	0.64
3y	1.60 (58)	2.63 (64)	2.50 (71)	3.66	0.68

[1] Expected velvet antler weight of CW = 2(CW X NZR) – NZR

Table 3 *Mean live weights (kg) at weaning (c 3 months) and 1.3 years for New Zealand Wapiti-type deer (NZW, C.e.nelsoni X C.e.scoticus interbred hybrid) and Canadian Wapiti (CW, C.e.manitobensis) X NZW hybrids at Orokonui with the expected live weights[1] for CW assuming no hybrid vigour in the CW X NZW progeny.*

	Actual live weights (kg)		*Expected live weight of CW[1]*
Age	*NZW*	*CW X NZW*	
Males			
3m	71	82	93
1.3y	153	176	199
Females			
3m	60	74	88
1.3y	118	146	174

[1] Expected live weight of CW = 2(CW X NZW) – NZW

However problems of underperformance may be more widespread. For example there is evidence — albeit based on very limited data — that the Canadian Wapiti/NZ Wapiti-type hybrids at Orokonui, a Landcorp property, also outperform the purebred Canadian Wapiti in terms of weight for age.

In this respect, Table 3 presents liveweight data for NZ Wapiti and the Canadian Wapiti/NZ Wapiti at weaning (about 3 months) and yearling (1.3 years) stages at Orokonui. Using the same method as in Table 1, the expected liveweights of Canadian Wapiti in the absence of hybrid vigour were calculated.

The expected weights are very similar to those derived from the Invermay data, with expected yearling weights for males and females of around 200 and 175 kg respectively.

The comparative liveweight and velvet antler weight data strongly support the concept that the Canadian Wapiti are performing poorly compared with their genetic potential in the Invermay environment. The poor performance may be at least in part because of health problems including ryegrass staggers, copper deficiency, internal parasitism, an apparent mycotoxicosis of unknown origin and a generalised wasting syndrome probably of mixed etiology.

All of these problems are much more severe in Canadian Wapiti than in either the Canadian Wapiti/NZ Red hybrid or the NZ Red. Internal parasites are particularly difficult to control, and it appears that adult Canadian Wapiti may not develop immunity to the parasites at the level found in NZ Reds.

While the production of the Canadian Wapiti/NZ Red hybrid is a specialist operation, principally because of the difference in size of the parental strains, there is considerable potential for its use — particularly as a sire over NZ Red hinds.

Fennessy and Thompson (1989), using a computer model of food intake and growth in deer, suggested that the use of such a hybrid system would increase efficiency of meat production by about 11 per cent over a straight-bred NZR system.

The use of such a hybrid as a sire would also enable more rising yearling males to attain a carcase weight of 55 kg by September-October, the time of the year when there is a high demand for venison to meet export requirements. □