

Performance of Finnsheep and Its Crosses With DLS

by M.H. Fahmy

Improving prolificacy in local sheep is frequently the main reason for importing prolific breeds from abroad. That is why Canada imported the Finnsheep in the 1960's and more recently the Romanov and Booroola in the 1980's.

In the mid 1960's Agriculture Canada initiated a project to develop a population of sheep with a long breeding season by combining genes from Australian Dorset, Border Leicester and Suffolk which is presently called DLS. This DLS population was then selected for extended breeding season (Sheep Canada Magazine, Vol. 1, No.1, 1976). Although the DLS population lived up to our expectations as far as the length of breeding season is concerned, we were not particularly satisfied with the 1.4 lambs born per ewe, we wanted more.

It was then, that we thought of incorporating genes from prolific breeds. One important problem faced us, what proportion of each breed should we put in the cross to produce the ideal animal with the highest return? To answer this question we conducted an intensive study over a period of 10 years using Finnsheep.

Between 1976 and 1979, we produced the mothers and sires of the ewes we intended to test. These included first cross F x DLS, backcrosses 1/4 F 3/4 DLS and 3/4 F 1/4 DLS in addition to the pure DLS and Finnsheep.

From 1979 to 1981, we mated these genetic groups to purebred and crossbred rams in such a way to produce seven combinations ranging between 1/8 F 7/8 DLS (1/8 F) to 7/8 F 1/8 DLS (7/8 F), in addition to the two

Table 1. Means for the reproductive traits studied according to genetic group.

	DLS	1/8 F	2/8 F	3/8 F	4/8 F	5/8 F	6/8 F	7/8 F	F
Conception rate	86.3	91.3	95.6	90.6	97.2	96.9	88.5	92.1	96.0
Ovulation rate	1.76	1.84	2.15	2.45	2.68	2.88	3.22	3.26	3.42
Litter size at birth	1.44	1.63	1.67	1.81	2.12	2.05	2.26	2.42	2.86
Litter size at weaning	1.22	1.44	1.45	1.52	1.84	1.76	1.69	1.91	2.03
Litter weight at birth (kg)	5.75	6.27	6.22	6.26	6.56	6.37	6.16	6.67	7.10
Litter weight at weaning (kg)	23.0	27.7	24.9	26.3	31.7	29.4	28.5	30.8	29.1
Lambs born dead/total born, % †	3.04	5.50	2.79	4.24	5.50	0.82	5.18	2.87	8.02
Lambs dead before weaning/total born alive, % †	13.9	10.3	10.7	9.4	9.8	12.6	17.4	17.0	22.9
No of lambs weaned/ewe exposed	1.06	1.26	1.36	1.34	1.72	1.67	1.45	1.74	1.89
Kg of lambs weaned/ewe exposed	18.1	22.3	22.2	21.4	27.6	25.8	22.0	25.5	26.0

† per ewe mated ‡ per ewe exposed

purebreeds, Finn and DLS. All these ewes, 361 in all, were mated to Suffolk rams to avoid any effect of the sire. Each ewe was mated in five consecutive years, the first when it was seven to eight months old. In all we had over 1300 lambings to evaluate the different groups.

It was important to evaluate not only litter size, but also ovulation rate to determine the full potential of the different genetic groups and also to have an idea about the embryonic loss which occurred before lambing. To do that, ewes in their second, third and

fourth parity were synchronized and their ovaries examined by a laparoscope to count the number of ovulations which occurred few days earlier.

Other information collected included conception rate or percentage of ewes diagnosed pregnant to those exposed to rams, prolificacy or number of lambs born and weaned, weight of lambs at birth and weaning. To combine ewe productivity in one measurement, the weight of lambs weaned per ewe exposed was calculated and considered as a representative of overall ewe productivity.

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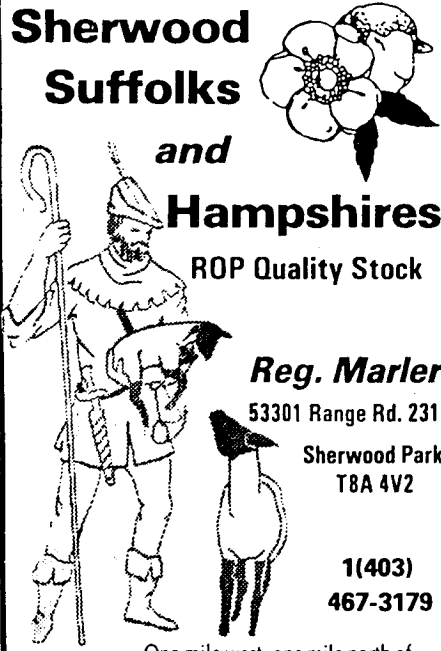


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The results of the study are presented in the table. Conception rate over the five lambings was lower in DLS than in the other groups. This was a result of lower conception rate of DLS yearlings exposed at seven to eight months. It was only 61 percent compared to 89 percent for Finnsheep yearlings.

The wide difference can be explained by differences in age at puberty, Finnsheep being an early maturing breed. At later parities, conception rate of all genetic groups was similar and high average 94 per cent.

As can be noticed from the table, ovulation rate and litter size were lowest for DLS and increased progressively with the increase of Finnsheep blood. DLS ewes weaned 1.22 (.7 as yearlings) and Finnsheep 2.03 lambs (1.7 as yearlings). The crosses were intermediate. The weight of Finnsheep litters was heavier but the weight of individual lambs was lighter than in other groups.

As a result of the lighter weights of Finnsheep lambs at birth, many of them died at birth and before weaning. Lamb mortality was about 30 per cent in Finnsheep compared to 17 per cent for DLS. At weaning, the heaviest litters were those raised by 4/8 F ewes (32 kg) followed by 7/8 F (31 kg) while those raised by 2/8 F and DLS were the lightest.

Number of lambs weaned per ewe exposed ranged between 1.9 for Finnsheep to 1.1 for DLS. DLS had also the lightest litters at weaning but the highest group was the 4/8 F which weaned 27.6 kg compared to 26.0 for Finnsheep. Again the low fertility of DLS as yearlings caused the low overall return for this breed. At older ages the performance of DLS ewes was close to that of 1/8, 2/8 and 3/8 F ewes.

The crosses were compared with the average of the two breeds DLS and Finnsheep to estimate the heterosis. The 4/8 F ewes produced 25 per cent more kilograms of lambs at weaning than the average of their parental breeds. The crosses exceeded DLS in all traits studied except lamb weight and mortality.

The general observation was that, crosses with low proportions of Finnsheep (1/8 to 3/8 F) produced about 22 kg of weaned lambs, those with higher proportions (5/8 to 7/8 F) produced about 24.5 kg whereas the 4/8 F cross gave the highest performance of 27.6 kg.

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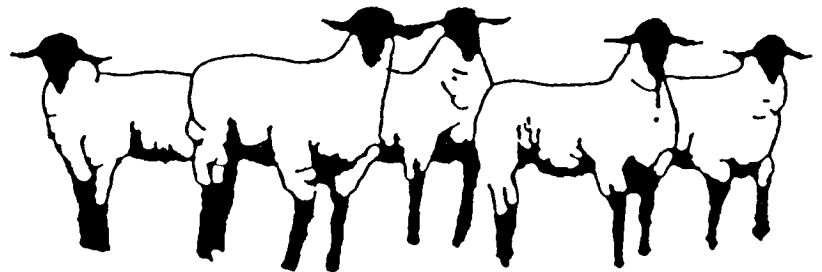
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