

THE SHEPHERD

A GUIDE FOR SHEEP AND FARM LIFE

Volume 36-Number 9

September, 1991

Early Morning Risers



OPP Concerned Sheep Breeders Society Directory 1991

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Performance of Booroola, Romanov and Finnsheep Crosses with DLS

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(Since the release of the Romanov sheep to the industry five years ago, the question which I always avoided has been the performance of the Romanov sheep in crossing. I simply did not have sufficient information based on research results to enable me to answer that question. We, therefore, decided to conduct a research experiment to be able to provide the necessary answers. We had collected information on the animals as yearlings and on half the animals in their second parity, but disaster struck, and a fire destroyed all the facilities including the crossbreds we were testing. The following results are some of what we could salvage from that experiment.)

The availability of prolific breeds of sheep has changed the means for improving prolificacy in native sheep. As it presently stands, there are two types of prolific sheep. In the first, prolificacy is a quantitative trait controlled by numerous genes and transmitted additively as in Finnsheep, Romanov, D'Man and Hu Yang breeds. In the second type, prolificacy is controlled by what is believed to be one dominant gene with large effect on ovulation and is inherited according to simple Mendelian principles, such as in Booroola, Cambridge and Javanese sheep. A crossbreeding program initiated to improve prolificacy in DLS sheep involved crossing with breeds from both types, Romanov and Finnsheep from first and Booroola from second to compare the performance of these breeds in crossing.

The 407 yearlings evaluated were born in February and March 1987 and 1988 out of DLS ewes bred to DLS, Romanov (R), Finnsheep (F), Booroola (B), R x DLS, F x DLS and B x DLS rams. The resulting progeny were pure DLS, three first crosses, 1/2 R, 1/2 F, 1/2 B and three back crosses, 1/4 R, 1/4 F and 1/4 B. The lambs were weighed at birth and weaning (50 days). From weaning to mating and during early pregnancy they were offered good quality grass silage supplemented with up to 250 g (1/2 lb.) of a grain mixture. These amounts were increased to 1 kg (2.2 lbs.) per ewe per day before lambing and while nursing.

In December when the ewes were between 8 and 9 months of age, they were distributed equally into ten mating groups and exposed to rams for a 6-weeks mating period. Two rams each of R, F, B, DLS and Coopworth were used. The traits studied were body weights at birth, 50, 100 and 365 days of age, pre-weaning average daily gain (ADG), fertility, total number of lambs born and weaned (prolificacy), survival rates, total weight of lambs born and weaned and greasy fleece weight at about 14-15 months of age.

The results (Fig. 1) showed that Romanov and Booroola first and back crossed lambs were significantly heavier at birth than those of Finnsheep, while DLS ewe lambs were intermediate. The ranking observed at birth was the same up to 100 days of age. At one year, Romanov first cross ewes averaged 61 kg and

Fig. 1

BODY WEIGHTS IN KILOGRAMS FOR DIFFERENT GENETIC GROUPS

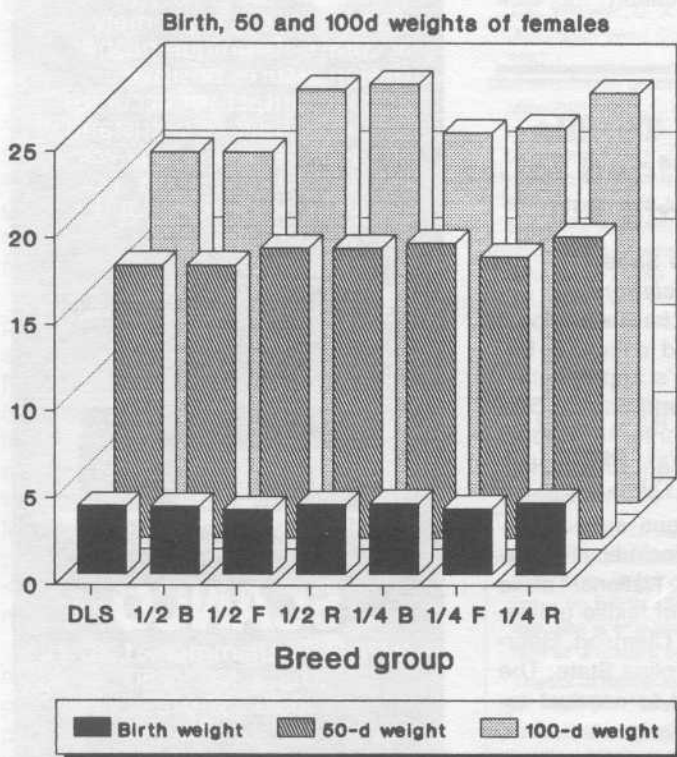
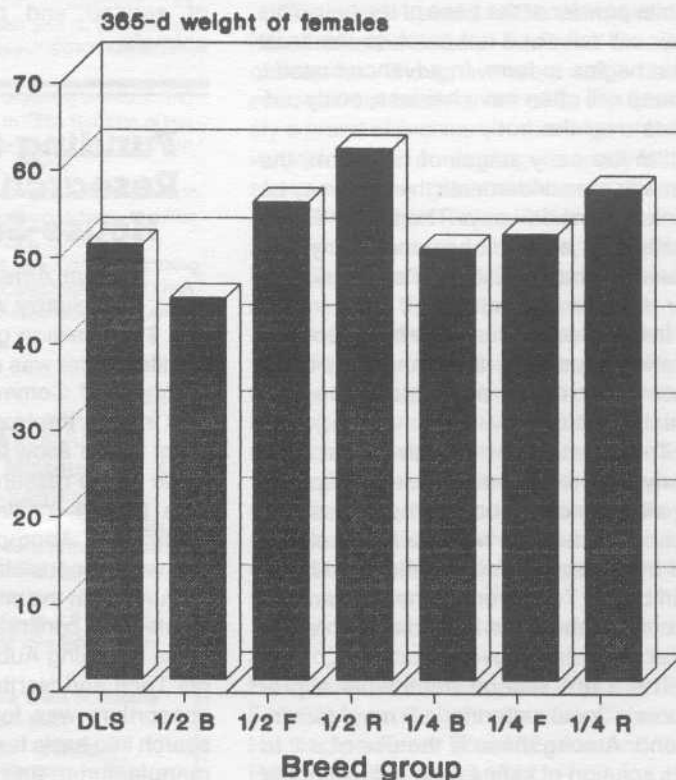


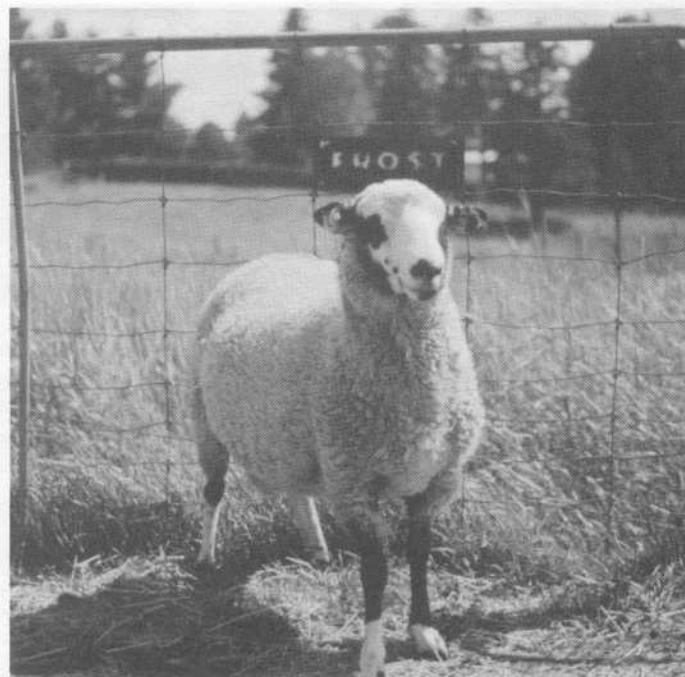
Fig. 2

BODY WEIGHTS IN KILOGRAMS FOR DIFFERENT GENETIC GROUPS





½ Finn x ½ DLS



½ Romanov x ½ DLS

were significantly the heaviest group followed by Romanov back cross ewes averaging 56 kg (Fig. 2). At that age, Romanov and Finnsheep crossbred ewes, were heavier than DLS ewes, which, in turn, were about 10% heavier than the Booroola crosses.

Fertility in Romanov crosses averaged 96% and was about 13% higher than in Finnsheep crosses, which, in turn, were about 13% higher than in Booroola crosses (Fig. 3). Almost half

the Booroola first cross ewes failed to conceive at 8-9 months of age compared to about 25% for DLS and only 2.4% for Romanov first cross ewes. Number of lambs born (Prolificacy) was highest in Romanov crosses (2.07 and 1.79) while the Finnsheep and Booroola crosses were comparable (Fig. 4). All the crosses exceeded DLS in number of lambs born and weaned. All crosses had better survival rate at birth than DLS, but the

Fig. 3

NUMBER OF LAMBS BORN AND WEANED IN DIFFERENT GENETIC GROUPS

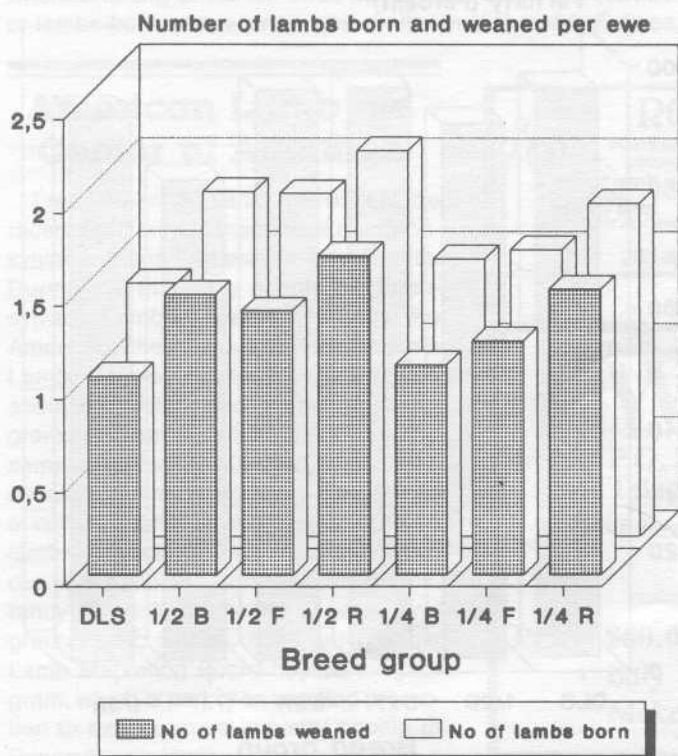
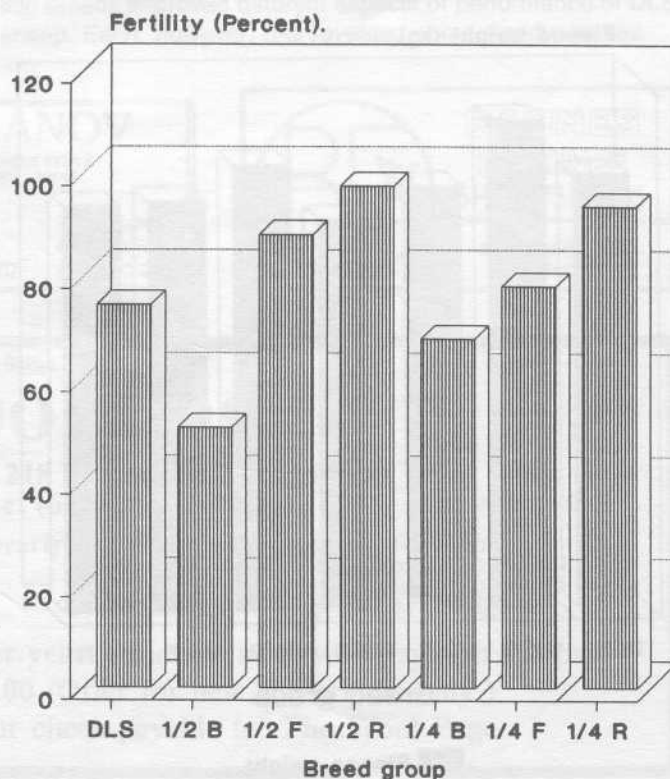


Fig. 4

FERTILITY AT AGE 8-9 MONTHS IN DIFFERENT GENETIC GROUPS





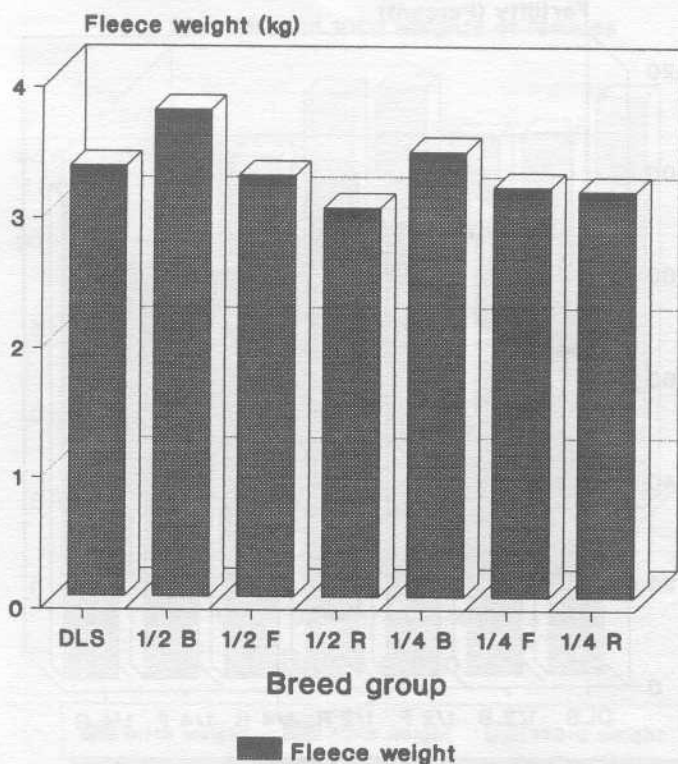
1/4 Finn x 3/4 DLS

differences were small and statistically non-significant. preweaning lamb survival ranged between 85 and 92%, the differences being non-significant.

Litter weight for Booroola and Finnsheep crosses ranged between 5.2 kg (1/4F) and 5.5 kg (1/2B) at birth and between 19.4 kg (1/4B, 1/4F) and 21.3 kg (1/2F) at 50 days. Romanov first cross ewes produced litters averaging 6.4 kg at birth and 25.1 kg at

Fig. 5

FLEECE WEIGHT IN KILOGRAMS FOR DIFFERENT GENETIC GROUPS



1/2 Booroola x 1/2 DLS

weaning, while for the Romanov back crosses, the litters averaged 5.8 and 23.1 kg respectively. Greasy fleece weight was highest in Booroola crosses (3.7 and 3.4 kg) followed by DLS (3.3 kg), then Romanov and Finnsheep crosses (Fig. 5).

The ewes born in 1987 were mated again in September 1988 when they were 17-18 months old to get information on their

Fig. 6

FERTILITY OF EWES, LITTER 2 FOR DIFFERENT GENETIC GROUPS

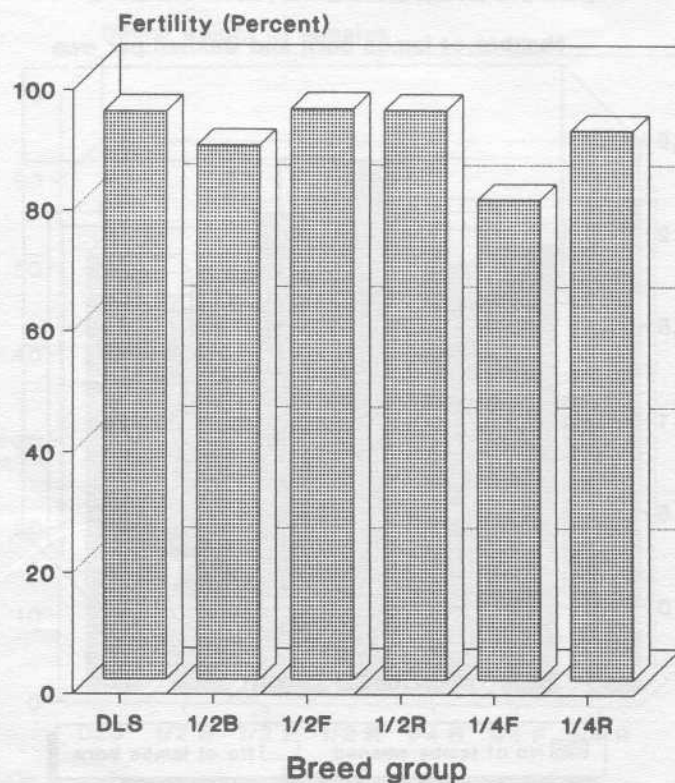
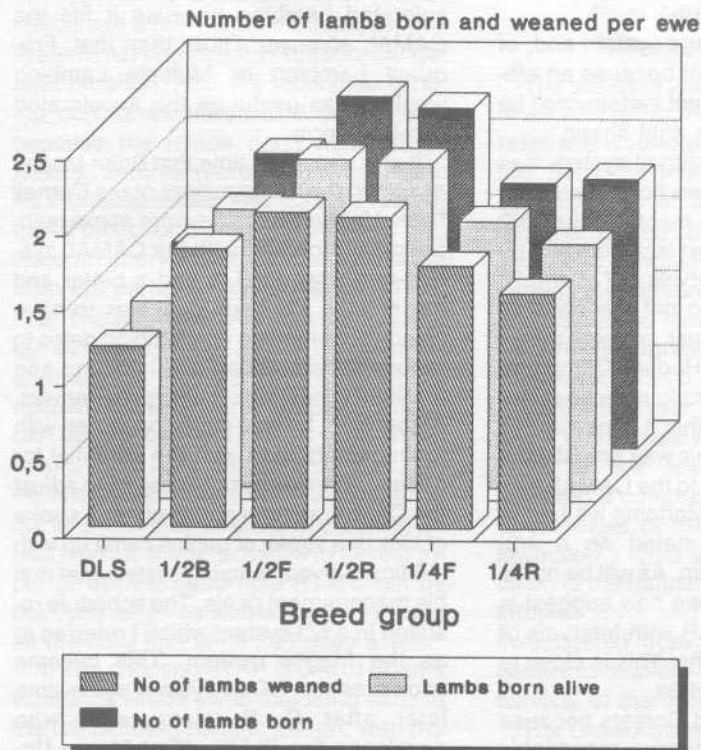


Fig. 7

NO OF LAMBS BORN & WEANED, LITTER 2 FOR DIFFERENT GENETIC GROUPS



second litter fertility and prolificacy under an accelerating system of eight-month lamb interval. As figure 6 shows, fertility was over 95% in DLS, 1/2F and 1/2R groups, below 90% in 1/2B and 1/4R whereas fertility of the 1/4F ewes was close to only 75%. Number of lambs born and weaned was similar in 1/2R and 1/2F ewes,

higher than in 1/2B and in the backcrosses (Fig. 7). All the prolific crosses had higher prolificacy than DLS.

The results indicated that crossing DLS sheep with Romanov or Finnsheep had generally favorable effects on growth rate, fertility and prolificacy and unfavorable effect on wool production at first parity. Crossing with Booroola yielded favorable effects on prolificacy and wool production and unfavorable effects on growth rate and fertility at 8-9 months of age. Romanov crosses excelled those of Booroola and Finnsheep in most of the productivity traits, with the performance of Booroola and Finnsheep crosses being very similar. Booroola crosses excelled in wool production but were markedly inferior in fertility at 8-9 months and to a lesser extent at 17-18 months of age.


The productivity of back crosses was inferior to that of first crosses. In Booroola back crosses, half the animals were theoretically carriers of one copy of the fecundity gene, while the other half were non-carriers. Similarly in Romanov and Finnsheep back crosses, one fourth of the genes were contributed by the prolific breeds. The final results were similar in both types of inheritance and one cannot determine whether the reduction in performance of the back crosses was due to gene segregation or loss of additive gene effect from the prolific breeds.

No comparative studies are available in which Romanov, Finnsheep and Booroola breeds were involved. Studies comparing Romanov and Finnsheep crosses showed an advantage of Romanov crosses in body weight and reproductive traits. Similar results were found in this trial crossing with the DLS but only for yearlings, the performance in the second parity was very similar. So far, no studies comparing Romanov and Booroola crosses have been reported, while few studies have compared crosses of Booroola and Finnsheep. Booroola crosses were generally higher in weight, and reached sexual maturity at an older age. On the other hand, they produced heavier fleeces than Finnsheep crosses. Prolificacy of Booroola and Finnsheep crosses was similar in all studies reported especially in later parities.

It can be concluded that crossbreeding with either type of prolific breeds improved different aspects of performance of DLS sheep. Each, however, has revealed some disadvantages.

American Lamb the Center of Attention

Fresh American Lamb was a hit at the recent 53rd annual meeting of the Pennsylvania Meat Processors Association. During the three-day event, the Pennsylvania Lamb Marketing Board and the American Sheep Industry Association's Lamb Council presented information about value-added and certified lamb programs to more than 300 attendees who sampled grilled lamb, lamb ham, salami, sausage and roast leg. They also viewed a cutting demonstration featuring new lamb cuts such as fillets, boneless shoulder roasts, double boneless loin chops, fancy Frenched racks, kebabs and ground lamb patties. The Pennsylvania Lamb Marketing Board hosted the program, which is part of an ongoing promotion to expose more industry people to Pennsylvania lamb.



ROMANOV

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