

DEVELOPMENT OF A PROLIFIC BREED FOR INTENSIVE LAMB PRODUCTION

D.G. HALL* and N.M. FOGARTY*

A prolific breed, suited to intensive prime lamb production is being developed by the N.S.W. Department of Agriculture. The breed, called "Hyfer" should offer greater flexibility and production in better environments than is possible with the present industry structure based on the Border Leicester x Merino (BLM) ewe. Further intensification with the BLM is limited, because, maximum production is about 1.6 lambs per year; spring joining results are variable and unreliable and the tiered breeding structure fails to create incentives for genetic improvement in the prime lamb industry. Our aim is to develop a dam breed with high fecundity and year round joining ability, ultimately capable of rearing an average of two lambs per ewe every eight months.

The "Hyfer" is being developed from Dorset (D), Booroola Merino (B) and Trangie Fertility Merino (F) sheep. From 1978-81, 1780 D ewe single sire joinings to 24 B and 26 F rams occurred and in 1981 270 F ewes were joined to nine D rams. These matings have produced 630 surviving F_1 ewes. F_1 ewes were first joined in autumn 1980, at $1\frac{1}{2}$ years of age, to reciprocal cross F_1 rams to produce F_2 progeny ($\frac{1}{2}D\frac{1}{2}B\frac{1}{4}F$). These matings, using all available F_1 ewes, will continue until 1984. F_1 rams, selected to maintain sire lines, come from multiple births, have an absence of horns and maternal dystocia. Final consideration is given to serving capacity, live weight, wool production and conformation.

F_2 ewes will be joined under an accelerated lambing regimen from 1982. Ewes will be joined in February, October and June and the best half of these ewes based on weight of lamb weaned per ewe over the two years, will be selected into a Nucleus flock to breed replacements. Rams will be selected within sire lines on the cumulative reproductive performance of their dams and growth, conformation and industry acceptability. Progeny of Nucleus ewes will be joined from 1986, to allow comparisons with industry BLM ewes under accelerated, spring and autumn joining management systems in a number of environments throughout N.S.W.

Fertility of F_1 ewes was 99 and 98% and litter size 1.59 and 1.79 in 1980 and 1981 respectively (Table 1). In February 1981, 71% of the eight month old and all older F_1 ewes were ovulating (Table 2). The ovulation rate for BxD ewes was 0.42 to 1.23 ovulations/ovulating ewe higher than for FxD ewes. Following the 1981 spring lambing, 61% of 2 and 3 year old F_1 ewes exhibited oestrus within eight months of the previous joining. These high levels of reproduction from the young F_1 ewes are encouraging. Providing recombination loss is not great, the F_2 progeny should form a highly productive population that will respond to further selection.

TABLE 1. Litter Size (LS)

Year	Breed	Age (yrs)	LS
1980	B x D	2	1.63
	F x D	2	1.55
1981	B x D	2	2.11
	F x D	2	1.37
	B x D	3	2.11
	F x D	3	1.58

TABLE 2. Ovulation Rate (OR) Feb. 1981

Breed	Age (mths)	OR
B x D	8	1.57
F x D	8	1.15
B x D	19	2.80
F x D	19	1.57
B x D	31	2.75
F x D	31	1.91

* N.S.W. Dept. of Agriculture, Agricultural Research Station, Cowra, N.S.W. 2794.