

NET REPRODUCTIVE RATES OF MERINO SHEEP FLOCKS IN AN ARID AREA

J.P. KENNEDY\* .

Low reproductive rates tend to be a feature of sheep flocks in arid areas. Because of large paddocks and low labour employment the improvement of reproductive performance depends on adoption of low-cost, labour efficient strategies. One strategy is the choice of the optimum time for joining. The most appropriate parameter for comparison of joining times is the 'net reproduction rate' (NRR) i.e., the number of ewe lambs which reach the age of first joining, produced by each ewe during her own lifetime in the breeding flock (Moule 1971).

We conducted an experiment in which flocks of 80 to 110 merino ewes; aged between 1½ and 5½ years, of the South Australian strain were joined at 5 different times each year from 1970 to 1975, inclusive. The flocks were located at Fowlers Gap Arid Zone Research Station, 110 km north of Broken Hill, N.S.W. Annual rainfall averages 195 mm, but for 1970, 1971, 1972, 1973, 1974, 1975 and 1976 was 130, 318, 110, 395, 629, 309 and 275 mm, respectively. The methods used to obtain data were described by Kennedy, et al. (1976).

N.R.R. calculated as described by Moule (1971) was:

0.882; 1.091; 0.640; 0.322; and 0.435

for flocks in which joining commenced in early January, early April, mid-June, mid-August and early January, respectively.

Although lamb marking percentages in the January, April and June groups were not significantly different (81.3%, 88.7% and 74.3%, respectively) it is clear that only the April flock was self-replacing with 4 age groups of breeding ewes, which is the common age structure for the area (Chudleigh 1971). Major contributors to low N.R.R. in all flocks were high death rates of ewes between birth and age of first joining (38.3% ± 11.6; 27.8% ± 13.7; 41.6% ± 20.7; 66.0% ± 4.3 and 35.5% ± 9.0, respectively) and of breeding ewes (10.5% ± 1.6; 13.6% ± 2.7; 18.1% ± 4.4, 14.2% ± 3.8 and 20.4% ± 8.5 respectively). Unusually high rainfall during the experiment was associated with severe blowfly-strike which was responsible for heavy mortality.

Opportunities for improvement of N.R.R. appear to depend on pastoralists choosing autumn for joining, rather than the traditional summer period (Chudleigh 1971), the development of methods to reduce mortality and an increase in the number of age groups of breeding ewes. The last option may reduce wool production from the flock and this possibility is presently being studied.

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\* School of Wool & Pastoral Sciences, The University of New South Wales, Kensington, N.S.W., 2033.