PRODUCTION AND QUALITY OF WOOL FROM WET EWES, DRY EWES AND WETHERS GRAZING IRRIGATED LUCERNE

I.D. SANDERSON*, J.D. McFARLANE* and J.E. PRATLEY+

summary

Wool production of wet ewes, dry ewes and wethers was compared over a period of eleven months, during which the three classes of sheep were grazed together on irrigated lucerne. Greasy and clean fleece weights of wethers were 12% greater than those of dry ewes, which in turn were 12-13% greater than those of wet ewes. There were also significant, but small, differences- in 'fibre diameter, staple length, yield and crimps per centimeter. The differences were consistent in the two age groups of sheep included in the experiment.

I. INTRODUCTION

In periods of low wool prices one strategy that may be adopted to simplify the management of a sheep enterprise is to refrain from mating the ewes. Such a strategy allows the producer to benefit from the increased wool production of dry sheep but still have the option of breeding in a subsequent year. Furthermore, this management practice permits diversion of labour to other enterprises.

To evaluate the economics of this course of action, it is necessary to know the differences in production and quality of wool from wet ewes, dry ewes and wethers of similar breeding. While some such information does exist (e.g. Turner and Young 1969), there is no information comparing these three classes of sheep when grazed under similar conditions. The aim of this experiment was to study such differences.

II. EXPERIMENTAL

The experiment was conducted over a period of eleven months (April 1972 to March 1973) on four-year-oldirrigated lucerne (Medicago sativa cv. Hunter River) growing on alluvial soils of the Macquarie River Valley near Wellington N.S.W.

The sheep were in two age groups, 2.5 and 4.5 years. Each group comprised 100 ewes and 50 wethers from the same lamb-drop. The younger group were medium-woolled non-Peppin Merinos and the older group were medium-woolled Peppin Merinos.

The experimental period began and ended with shearing. The animals were initially grazed separately in three groups of 100 sheep ("dry" ewes, "wet" ewes and wethers) for a 42 day mating period, during which four Dorset Horn rams were added to the "wet" group. After mating the sheep were reallocated so that there were 15 animals of each class from each age group in each of 3 replicates.

* School of Wool and Pastoral Sciences, The University of N.S.W., Kensington, N.S.W. 2033.
+ Present address: Wagga Agricultural College, Wagga Wagga, N.S.W. 2650.

Each replicate was rotationally grazed through seven 0.4 ha paddocks until September 22 and then through four paddocks until the end of the experiment. Grazing and spelling periods averaged '7 and 42 days respectively in the seven-paddock grazing period and 12 and 36 days in the four-paddock period.

From previous grazing experiments on the same area of lucerne (King 1972) it was expected that the grazing systems and stocking rates used would ensure that feed availability would be satisfactory throughout the experiment.

All animals were drenched at monthly intervals with thiabendazole to ensure a low level of intestinal roundworms. Blowfly attacks were controlled by jetting as appropriate in spring, summer and autumn.

At lambing all lambs were weighed, ear-tagged and identified with their mothers and their sex and birth status (single or twins) recorded. A record 'was kept of all lamb deaths, from birth until weaning.

At shearing the fleeces were weighed and mid-side samples taken for determination of clean fleece weight, staple length, fibre diameter, yield, crimp and colour. Definitions of the wool traits (other than colour) and techniques for measuring them have been given by Turner et al. (1953). Wool colour was subjectively appraised within 5 grades (1 = poor, 5 = good).

For purposes of analysis, "wet" ewes were defined as having reared at least lone lamb to weaning; several ewes reared twins and were included in the analysis. Dry ewes were those not mated or recorded as not having lambed.

The data were analysed as a 3 x 2 x 3 factorial experiment with the factors being, respectively, animal class (wethers, dry ewes and wet ewes) age (young and old) and replicates, using the analysis of variance of unweighted cell means technique (Snedecor and Cochrane 1967).

III. RESULTS

With the exception of colour, there were significant differences in all wool traits between different classes of animals (Table 1).

TABLE 1.

The mean and relative values of seven traits of wool from wethers, wet ewes and dry ewes

Class of Animal	Wethers	Dry Ewes	Wet Ewes	
Greasy fleece weight (kg)	3.87 (112)	3.47 (100)	3.06 (88)	**
Clean fleece weight (kg)	3.18 (112)	2.85 (100)	2.44 (87)	**
Fibre diameter (µm)	20.4 (96)	21.2 (100)	20.6 (97)	**
Yield (%)	76.8 (100)	76.4 (100)	74.9 (98)	*
Staple length (cm)	8.6 (101)	8.5 (100)	8.0 (95)	*
Crimp (crimps/cm)	4.3 (95)	4.6 (100)	4.4 (97)	**
Colour (1=poor, 5=good)	3.05 (99)	3.07 (100)	2.89 (94)	N.S.

** Significant at 1% level; * Significant at 5% level.

. The largest differences were in greasy and clean fleece weights. Other traits showed differences which were statistically significant but small.

The younger animals grew significantly more wool and had wool with a greater staple length than the older animals. This difference was not necessarily an age difference _per se_, because groups differed also in genotype.

There were no significant differences between replications in any trait except staple length and crimp, in which the differences were small.

IV. DISCUSSION

Both clean and greasy fleece weights of the wethers showed a 12% gain in production compared with dry ewes. These results are similar to those of Turner and Young (1969). The differences favouring dry ewes compared with wet ewes, 12 and 13%, respectively, for greasy and clean fleece weight, are similar to those reported by Doney 1958, Seebeck and Tribe 1963, and Mullaney et al. 1969 but different from those of Brown et al. 1966 who showed differences of 16.7 and 22.8%, respectively, in greasy and clean wool weights in Central Queensland.

The differences between wethers and dry ewes in fibre diameter, yield, staple length and crimp were significant but small. The authors consider that the differences are such that wool value per unit weight would not be affected.

The decreases in yield, fibre diameter, staple length and crimp due to pregnancy and lactation, were slightly larger than the corresponding differences between wethers and dry ewes but still relatively small.

The absence of age and class interaction indicates that the animal class differences were consistent in both age-genotype groups. The effect of age on various wool traits has been studied in the Australian Merino (Doney 1958, Riches 1958, Brown et al. 1966).

The economic advantages or disadvantages of not mating the ewes in a wool producing flock would depend upon many factors. However, for the practice to be worthwhile, the extra return from dry sheep as a result of the enhanced wool production per head and the extra sheep that can be grazed would have to be more than the value of the lambs produced in the breeding enterprise, less the direct costs associated with such lambs. In times of low sheep prices and high input costs, the above criteria may exist.

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VI. REFERENCES

BROWN, G.H., TURNER, HELEN NEWTON, YOUNG, S.S.Y., and DOLLING, C.H.S. (1966). Australian Journal of agricultural Research, 17: 557

DONEY, J.M. (1958). Australian Journal of agricultural Research, 9: 252.

KING, G.W. (1972). Ph.D thesis, Univ. of N.S.W.

MULLANEY, P.D., BROWN, G.H., YOUNG, S.S.Y., and HYLAND, P.G. (1969). Australian Journal of agricultural Research, 20: 1161

RICHES, J.H. (1958). C.S.I.R.O. Division of Animal Health, Production Division Report No. 7.

SEEBECK, R.M., and TRIBE, D.E. (1963). Australian Journal of experimental Agriculture and Animal Husbandry, 3: 149

SNEDECOR, G.W., and COCHRANE, W.G. (1967). "Statistical Methods". 6th Edition. (Iowa State University Press, Ames).

TURNER, HELEN NEWTON, HAYMAN, R.H., RICHES, J.H., ROBERTS, N.F., and WILSON, L.T. (1953). C.S.I.R.O. Division of Animal Health, Production Division Report No. 4.

TURNER, HELEN NEWTON, and YOUNG, S.S.Y. (1969). "Quantitative Genetics in Sheep Breeding". (The Macmillan Company of Australia, South Melbourne).