

## AGE CHANGES IN WOOL TRAITS OF MERINO SHEEP IN WESTERN NSW

**S. Hatcher, K.D. Atkins, and K.J. Thornberry**

NSW Department of Primary Industries, Orange Agricultural Institute, Orange, NSW 2800

### SUMMARY

Repeatability and the effect of increasing age (from 2 to 5 years) on wool production and quality were determined for a mixed bloodline flock of superfine, fine and medium wool sheep in western NSW. For those traits which have previous estimates published in the literature the repeatability estimates in this study were similar with the exception of fibre diameter which was higher than previous estimates. This indicates it may be possible to select for fibre diameter in fine wool at an earlier age than in broader flocks. This study identified a general trend of wool production increasing to a maximum at 3 years of age and then reaching a plateau while wool quality traits tended to decrease with age. Partitioning of the interaction variance indicates that in general variation in the age trends was the result of bloodline differences rather than micron group.

**Keywords:** Merino, wool production, wool quality, repeatability, age changes

### INTRODUCTION

Wool production and wool quality both vary from one period to another if they are measured at different times in the life of a Merino sheep. It is important for Merino breeders to be able to identify and select animals for superiority at an early age as this enables them to cull the less productive animals and retain the superior sheep. Most estimates of repeatability for Merino wool production have been derived from medium (Beattie 1961; Young *et al.* 1960) or strong wool flocks (Morley 1951), with few estimates for fine wool Merinos. Mullaney *et al.* (1970) estimated the repeatability of a range of wool production and quality traits from a medium and three fine wool Merino flocks and found that the estimates for the fine wool Merinos tended to be slightly higher than those published previously for broader Merino strains. The higher repeatability estimates for fine wool flocks indicate that selection may be able to be made at an earlier age in finer flocks.

The change in wool production and quality traits with age will allow decisions on the optimal age structure of flocks to be determined (Brown *et al.* 1966; Mullaney *et al.* 1969). It is well known that wool production and wool quality characteristics can alter substantially with increasing age of sheep (Corbett 1979). Previous studies predominantly using medium to strong wool Merino strains, identified a general trend of wool production increasing to 3 to 4 years of age and then declining (Brown *et al.* 1968; Brown *et al.* 1966). The rate of change of wool production following the peak level identified in each of these studies differed, from a plateau to a slow or rapid decline. Although variable results have been observed with respect to wool quality traits, the general trend is for wool quality traits to gradually deteriorate with age (Mullaney *et al.* 1969; Swan and Purvis 2000). The Condobolin Fine Wool Flock provides an ideal basis to investigate the repeatability of wool production and quality traits and age trends, as it represents the performance of 5 drops of 11 Merino bloodlines each run at Condobolin for 4 years.