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The efficiency of using additional mean fibre diameter measurements in merino breeding programs

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Increase of mean fibre diameter (MFD) with age in a rate faster than flock average, which is known as micron blowout (MB), was calculated using the differences between MFD taken at first and second shearings (MB1,2) and between second and average of adult shearings (MB2,A) from fine and medium wool data. MB1,2 and MB2,A were moderately heritable (0.29 and 0.19, respectively) in fine wool while, lower heritabilities were found for medium wool data (0.16 and 0.14). These estimates are in agreement with those from previous studies (Atkins 1990; Cottle et al. 1995; Hickson et al. 1995; Ponzoni et al. 1995; Hill et al. 1999).

The importance of inclusion of later measurements of MFD after first shearing in selection indices was explored. The results of this study show that selection based on additional MFD taken at second or adult shearing does not significantly improve the value of lifetime MFD for fine wool Merinos, as only a very small additional benefit in total \$ response was predicted. This is partly due to the high correlation between subsequent shearings (>0.89) and partly due to the value and frequency of first shearings as part of the total. Inclusion of MFD taken at second shearing into an index consisting of MFD measured at first shearing, clean fleece weight, coefficient of variation of fibre diameter, yearling weight and number of lambs weaned did not make any improvement in selection accuracy for fine wool Merinos. Consequently, information of MFD and the other traits measured at yearling age (10–12 months) are adequate for lifetime improvement of MFD in fine wool Merinos. This study also showed using mean fibre diameter measurements after hogget age is not beneficial in improving selection accuracy in medium wool Merinos.

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