DIAMETER VARIABILITY BETWEEN WOOL FIBRES IN A STAPLE IS UNAFFECTED BY CHANGES IN STOCKING RATE OR SEASONAL NUTRITION

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Wool that has a lower average fibre diameter or diameter variability can increase spinning performance, and reduce prickliness (Lamb 1992; Dolling *et al.* 1992). Methods for decreasing mean fibre diameter (MFD) are well documented however less is known about management practices which affect fibre diameter variability. The aim of this experiment was to determine whether changes in the stocking rate of fine wool merino wethers affected fibre diameter variability over a period of 3 years.

The experiment had 2 replicates of 3 stocking rates (7.5, 10, 12.5 sheep/ha) with 10 sheep per stocking rate. Fine wool Saxon Merino wethers of 14 months age were shorn in August immediately prior to the experiment and annually thereafter. They were grazed for 3 years on annual pastures with 544 mm average annual rainfall at Werribee (37°54`S,144°41` E) Dye bands were applied to the mid-side every 2 months in year 1, and every 3 months in years 2 and 3, giving a total of 14 known periods of wool growth. Wool from each time period was cut into 2 mm snippets and measured on the FDA-ZOO. Data were analysed by 2 way analysis of variance, correlation and regression analysis.

Standard deviation (SD) was not different either due to seasonal changes over the entire treatment period or to different stocking rates ($P > 0.7$). Stocking rate did affect MFD ($P = 0.07$). Regression analyses showed no relationship between SD and MFD ($P > 0.05$). Consequently coefficient of variation (CV) increased in response to decreases in MFD (Figure 1).

Regression equations: $SD = 2.72 + 0.0353MFD$ ($P > 0.05$; $r = -0.5$ 15)

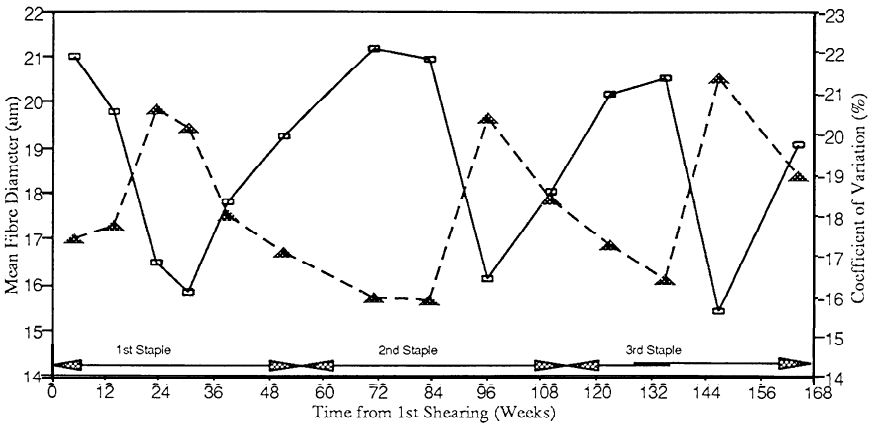

Figure 1. Coefficient of variation and mean fibre diameter of wool from wethers, averaged for the 3 stocking rates. (Coefficient of variation triangles, mean fibre diameter squares)

In conclusion, seasonal nutrition and stocking rate had little affect on SD indicating that the shape of the diameter distribution curve is relatively constant even though MFD is affected by these changes in sheep management. This indicates that as MFD increases, all fibres increase in diameter by the same magnitude. Thus the response of the smallest follicles to increased nutrition is greatest with the finer fibres within the staple increasing in diameter at a proportionately greater rate than the thicker fibres. The relationship between MFD and CV has implications for fleece measurement involving the use of single guillotine cuts across a staple.

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