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The assessment of natural variation in felting and shrinkage in wool from two flocks.

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Abstract

Felting of wool is unwanted in raw wool scouring, wet treatments of most yarns and in the finished garment. It is desirable in some other uses and essential in the felt industries. The accepted method of testing loose wool felting is the Aachen felting test but it is laborious and relatively expensive. There is no generally accepted method for testing yarn shrinkage. For these trials new techniques using a household tumble dryer were developed for testing loose wool felting and yarn shrinkage. Analysis indicated that successful techniques had been developed for measuring loose wool felting and yarn shrinkage. Results with the loose wool felting technique were found to be highly correlated with those of the Aachen felting method ($r = 0.93$).

The effects of fibre characteristics on both loose wool felting and yarn shrinkage were investigated for straight-bred Romneys and for loose wool felting in $\frac{1}{4}$ Merino $\frac{3}{4}$ Romney (QM) crosses. Loose wool felting was most highly correlated with bulk ($r = -0.65$ for Romneys and -0.73 for QM's), crimp frequency ($r = -0.53$ and -0.41 respectively) and lustre (-0.30 and -0.40 respectively). Loose wool bulk ($r = -0.25$) and greasy fleece weight ($r = -0.40$) were the most highly correlated to yarn shrinkage. The greasy fleece weight relationship is thought to be environmental in origin. Micron and staple length were found to play only minor roles in loose wool felting and yarn shrinkage. Cotting was found not to be significantly correlated to either loose wool felting or yarn shrinkage.

Loose wool feltability was highly correlated ($r = 0.65$) to yarn shrinkage. A large percentage of yarn shrinkage variation was left unexplained. Part of this is probably due to variation in yarn characteristics and there is a need for a method of producing short-lengths of yarn of constant structure from very small wool samples.

The sire effect was significant ($P < 0.05$) and controlled 6.5% of the variation in loose wool felting and 12% in yarn shrinkage. This indicates that selection for either increased or decreased loose wool felting or yarn shrinkage would induce changes in a flock. Further investigation into the effect of scale height is warranted to enhance understanding of variation in felting.

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