EFFECT OF SUPPLEMENTARY FEEDING ON THE STAPLE STRENGTH OF WOOL PRODUCED BY MERINO HOGGETS


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Low staple strength (SS) is an important problem in areas of Australia where sheep are run under conditions of dramatic changes in quantity and quality of pastures (Bell and Ralph 1993). It is particularly important in young sheep as they predominantly produce the finer fleece wools which attract the greatest penalties. The aim of this study was to develop supplementary feeding strategies to increase the SS of wool produced from young sheep run at low, medium and high rainfall sites.

In both 1992/93 and 1993/94 a total of 240 fine (17.3 μm, 6-7 months of age) and 240 medium wool October shorn weaners (19.4 μm, 3-4 months of age) were stratified by liveweight into one of 4 lupin feeding treatments at Merredin (200-400 mm), Kojonup (400-600 mm) or Green Range (600-800 mm) (n = 40, N = 160). The sheep were fed lupins to maintain fleece free liveweight as follows: for survival (S), from early February (F), from pasture senescence in November (P) or from pasture senescence in November plus tactical feeding of hay/lupins following rainfall events (T). The sheep were shorn 12 months later in October. For year 2 the results for Merredin were discarded because of the outbreak of poisoning due to the weed, caltrop (Tribulus terrestris).

For year 1 there were significant (P < 0.001) differences in SS between sites, genotypes and treatments. SS increased (P < 0.001) as annual rainfall decreased between sites (mean ± SEM; 28.6 ± 0.9 v 26.6 ± 0.9 v 20.9 ± 0.7 N/ktex for Merredin, Kojonup and Green Range, respectively). The fine wool hoggets produced wool 8 N/ktex stronger (P < 0.001) than the medium wool hoggets (29.4 ± 0.7 v 21.4 ± 0.9 N/ktex). Wool from treatments T and P was significantly (P < 0.05) stronger than that from F and S (27.3 v 26.2 v 24.2 v 23.8 ± 0.9 N/ktex). However, there was no difference in SS between F and S.

There were significant interactions between sites x treatments (P < 0.01), and genotypes x treatments (P < 0.05) for year 2. Wool from treatments T, P and F was consistently stronger than that from treatment S at both Kojonup (18.8 v 26.0 v 23.8 v 29.8 ± 1.4 N/ktex, P < 0.001) and Green Range (18.7 v 21.7 v 24.1 v 24.4 ± 1.3 N/ktex, P < 0.05). At Kojonup, wool from treatment T was stronger (P < 0.01) than that from treatments P and F, whereas at Green Range they were similar. The fine wool hoggets produced stronger wool than the medium wool hoggets across all 4 treatments, with the differences ranging from 3 to 9 N/ktex (25.5 ± 1.3 v 22.2 ± 1.4 N/ktex and 31.7 ± 1.3 v 22.5 ± 1.4 N/ktex for F and T, respectively).

The results showed that supplementary feeding over summer-autumn increased the SS of spring shorn hogget wool. It highlighted the higher SS in the autumn-born, fine wool hoggets compared with the winter-born, medium wool hoggets. It is thought that the difference in SS between genotypes is due to the stage of maturity of the weaners going into summer-autumn.

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