REPRODUCTION AFFECTS STAPLE STRENGTH IN THREE STRAINS OF MERINO

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Staple strength (SS) is a major component of wool quality that is affected by environmental and physiological factors, including reproduction (Thornberry et al. 1988). SS has implications for hauteur, which are reflected in the price (AWEX Market Reporting Service weekly reports). This study aimed to quantify the effects of reproductive performance and genotype on SS.

Merino ewes (1993 drop) from a single bloodline within each of a fine (n=97), a medium-Peppin (n=98) and a broad wool (n=91) strain within the Trangie QPLUS project (Taylor and Atkins 2000) were shorn in late September in three consecutive years. SS was determined on a midside sample at a commercial wool-testing laboratory. Ewe reproductive performance (recorded as no. of lambs born / lambs weaned) data was based on the six categories described by Lee and Atkins (1996).

Staple strength (mean 35.7 ± 0.3 N/ktex) did not vary between the bloodlines (P>0.05). Both year (P<0.05) and reproductive performance (P<0.001) had significant effects on SS (Table 1), but accounted for only 5% of the total variation. The strength of staples from dry ewes and 1/1 ewes was comparable. The greatest effects of reproductive performance were evident in multiple bearing ewes that lost at least one lamb (M/0 or M/1), being 4.3 - 4.7 N/ktex less than dry ewes or 1/1 ewes, and 2.9 - 3.1N/ktex less than ewes that reared multiple lambs.

Table 1. Deviations from mean (±s.e.) staple strength (N/ktex) due to reproductive performance

<table>
<thead>
<tr>
<th>Reproductive performance (no. lambs born / weaned)</th>
<th>0/0</th>
<th>1/0</th>
<th>1/1</th>
<th>M/0</th>
<th>M/1</th>
<th>M/M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.07a</td>
<td>0.81ab</td>
<td>1.79a</td>
<td>-2.64c</td>
<td>-2.46c</td>
<td>0.43b</td>
</tr>
<tr>
<td></td>
<td>(0.55)</td>
<td>(0.84)</td>
<td>(0.57)</td>
<td>(1.00)</td>
<td>(0.74)</td>
<td>(0.59)</td>
</tr>
</tbody>
</table>

Unlike superscripts indicate a significant difference (P<0.05). A M indicates multiple lambs.

Scrivener and Vizard (1997) demonstrated staple strength from fine wool ewes rearing a lamb was significantly greater than that of ewes that lost their lamb. Our study, confirming this trend across a range of bloodlines, indicates that the effects are more extensive. Differences in SS were evident between ewes rearing a single lamb after bearing a single versus multiple lambs.

REFERENCES