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THE EFFECT OF SEASON OF THE YEAR AND PASTURE ALLOWANCE ON THE GROWTH OF LAMBS FED DIFFERENT PASTURE SPECIES

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Recent work at Ruakura has shown precise, stable asymptotic relationships between liveweight gain (LWG) and level of nutrition (pasture allowance) for a given set of pasture conditions and for a range of pasture species (Jagusch et al., 1979a, b, c). With legumes, maximum LWG is obtained at lower pasture allowances than for ryegrass based swards. Because these experiments were conducted during the early finishing period for lambs (December-January) it seemed appropriate to investigate the March-April situation of late finishing store lambs when ill thrift is likely (Scott et al., 1976).

Suffolk x Coopworth lambs from a synchronised lambing in September 1979 were used to compare growth rates from red clover (RC), white clover (WC), ryegrass-white clover (RWC) and luceine (L) pastures when these were fed at 5 pasture allowances (range 1 to 6 kg DM/head/d) for 28 days in December and March, to 22 and 24 kg lambs respectively (n = 20/group).

<p>| TABLE 1: COEFFICIENTS FOR EXPONENTIAL MODEL RELATING LWG AND PASTURE ALLOWANCE WHEN LAMBS ARE FED DIFFERENT PASTURE SPECIES |
|--------------------------------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>A (g/d)</th>
<th>PA90 (kg DM/lamb/d)</th>
<th>A (g/d)</th>
<th>PA90 (kg DM/lamb/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC</td>
<td>220 ± 13</td>
<td>2.6</td>
<td>183 ± 17</td>
<td>2.7</td>
</tr>
<tr>
<td>WC</td>
<td>256 ± 13</td>
<td>2.2</td>
<td>209 ± 18</td>
<td>2.4</td>
</tr>
<tr>
<td>RWC</td>
<td>207 ± 13</td>
<td>2.7</td>
<td>128 ± 15</td>
<td>3.9</td>
</tr>
<tr>
<td>L</td>
<td>177 ± 12</td>
<td>3.2</td>
<td>178 ± 16</td>
<td>2.8</td>
</tr>
<tr>
<td>B</td>
<td>0.76 ± 0.31</td>
<td></td>
<td>1.45 ± 0.43</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>0.0055 ± 0.0016</td>
<td></td>
<td>0.0075 ± 0.0026</td>
<td></td>
</tr>
<tr>
<td>RSD</td>
<td>24</td>
<td></td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
The curvilinear model with restricted coefficients as described by Jagusch et al. (1979b) was used:

\[ \text{LWG} = A(1 - \exp(B - A.C.PA)) \]

where \( A \) is the maximum liveweight gain (g/d) where further increments of pasture allowance (PA kg DM/lamb/d) give no further increase in growth and \( B \) and \( C \) are scale and shape coefficients common to all pastures.

The coefficients for each relationship are given in Table 1, together with a value estimating the level of nutrition at which 90% of asymptotic LWG was reached (PA90).

The results show the regular differences between pastures species within seasons in LWG characteristic of our previous work (Jagusch et al., 1979b, c). However, there was substantial reduction in LWG during March for lambs fed RWC, due to the fact that clover contributed only 9% of the sward, compared with December when clover was 32%. This resulted in a lower PA90 value for December compared with March, unlike our previous results when clover contributed 20% of the sward (Jagusch et al., 1979b). Obviously variation in the proportion of clover will shift relationships for RWC. There was no ill thrift in these lambs.

REFERENCES


