REVALOR H AND DIETARY EFFECTS ON GROWTH AND FAT DEVELOPMENT IN GRAIN-FED EARLY OR LATEMATURING HEIFERS

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To ensure a continuous supply of cattle for local consumption and for export to Asia there is an expanding role for grain feeding cattle of both sexes, especially the female progeny of terminal sires. Grain feeding can increase fat deposition compared with pasture finished cattle (Tudor 1992) and protein concentration is critical as low protein levels may also increase fat development (Black 1974). Protein meals may improve performance of supplemented animals compared with a cheaper form of nitrogen such as urea, because of the extra lipid content of the meals. Other measures to counter unwanted fat in grain-fed animals include the use of hormonal growth promotants (HGP's) and the later maturing “Euro” breeds. This study measured the performance, fat deposition and carcase characteristics of 40 Angus heifers (AA) and 80 late maturing heifers sired by Blonde d’ Aquitaine (BA) or Limousin (LL) sires, fed barley grain diets with either urea (1%) or Canola meal (13%) added.

The heifers were about 10 months old when allocated to the dietary treatments after stratifying on liveweight and maturity type (average liveweight (± s.d.); early 283 ± 8.0 kg, late 283 ± 27.0 kg). Half the heifers on each diet were implanted with Revalor H when animals started on the high grain diet. Hay and grain were fed separately with virginiamycin included in the grain mix for the first 4 weeks of feeding to prevent acidosis. The diets were similar and averaged 11.6 and 11.3 MJ ME/kg DM and 13.1% and 14.4% crude protein for barley/urea and barley/Canola meal respectively. The hay consumed at 25% of the total diet contained 9.9 MJ ME and 8.5% crude protein. Heifers were fed for 94 days (Angus) and 130 days (Euro crossbreds) and slaughtered when the ultrasonic backfat reading at the P8 site was 10mm. Standard Ausmeat chiller measurements were recorded including hot standard car-case weight-(HSCW), P8 fat depth, eye muscle area (EMA), fat and meat colour and marbling score.

Table 1. Performance and carcase measures of early (AA) and late maturing (BA and LL) heifers with and without Revalor H implants. (Number of animals in brackets)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Early maturity (AA) Control (20)</th>
<th>Revalor H (20)</th>
<th>Late Maturity (BA and LL) Control (40)</th>
<th>Revalor H (40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth rate (kg/day)</td>
<td>1.15</td>
<td>1.23</td>
<td>1.12</td>
<td>1.41</td>
</tr>
<tr>
<td>Final liveweight (kg)</td>
<td>497</td>
<td>405</td>
<td>409</td>
<td>445</td>
</tr>
<tr>
<td>Carcase weight (kg)</td>
<td>200.5</td>
<td>210.7</td>
<td>220.9</td>
<td>228.6</td>
</tr>
<tr>
<td>P8 fat (mm)</td>
<td>10.7</td>
<td>11.5</td>
<td>9.8</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Analyses using Generalised Linear Regression models showed that sire breed significantly influenced final liveweight (P<0.001) with BA (433 kg) > LL (424 kg) > AA (395 kg). Dressing per cent of BA (54.4%) and LL (55.0%) heifers was also higher (P<0.001) than AA heifers (52.3%). These factors gave a $60 advantage in carcase value to the progeny of “Euro” sires compared to Angus ($63 J vs $57 I).

Revalor H increased the growth rate of late-maturing heifers by 26% (P<0.001), but this effect was reduced to 7% in Angus heifers. P8 backfat at slaughter was marginally less in late-maturing heifers, despite live ultrasonic backfat testing of the animals. Fat cover was not affected by HGP treatment. None of the breed, dietary or HGP factors influenced meat or fat colour or marbling measurements.

There was no difference in liveweight gain between heifers fed barley/urea or barley/Canola meal diets. Final liveweights between dietary treatments were identical at 396 kg in Angus heifers, but those fed Canola meal produced car-cases which were 9.0 kg heavier, a 2.8% increase in dressing percentage.

We conclude that performance on the 2 diets was identical and as could be predicted the “Euro” cross heifers took approximately 40 days longer to reach a specified target for P8 fat. They produced larger carcases with higher dressing out percentages than Angus heifers. Their growth rates were also more markedly affected by the use of Revalor H.