Alternative finishing strategies for Holstein-Friesian bulls slaughtered at 19 months of age

Brian Murphy\textsuperscript{1,2}, Alan Kelly\textsuperscript{2} and Robert Prendiville\textsuperscript{1}

\textsuperscript{1}Animal Grassland Research and Innovation Centre, Teagasc Grange, Dunsany, Co. Meath, Ireland
\textsuperscript{2}University College Dublin, Belfield, Dublin 4, Ireland
Introduction

- Dairy expansion
  - Abolishment of milk quotas
  - 50% increase in milk production (Food Harvest 2020)
  - Anticipated increase in the proportion of male dairy calves available for beef production

- Dairy calf to beef production
  - Traditionally steer production system
  - Increase in bull beef production (Bord Bia, 2014)

- Why??
  - Increased live weight gains
  - Greater carcass weight at a younger age
  - Potential to increase stocking rate
  - Increased profit on a per hectare basis (Ashfield et al., 2014)
Objectives

Effects of alternative finishing strategies on the performance of Holstein-Friesian (HF) bulls slaughtered at 19 months of age

Effects of a fat supplement on the performance of these bulls
Materials and Methods

- Data were available for 58 spring born HF bulls

<table>
<thead>
<tr>
<th>2 finishing strategies</th>
<th>×</th>
<th>2 fat supplementation levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoors on concentrate ad libitum diet (AL)</td>
<td></td>
<td>Control finishing diet (C)</td>
</tr>
<tr>
<td>At pasture offered 5 kg DM of concentrate per head daily (PC)</td>
<td></td>
<td>Treatment diet (T) 5% fat included in finishing diet</td>
</tr>
</tbody>
</table>
Grazed at pasture offered 1 kg DM of concentrate during the 1st season.

Housed on grass silage ad libitum and 1.5 kg DM of concentrate per head daily (Nov 3rd).

Turned out to pasture for 58 days (April 9th).

Finished for 102 days (June 6th – slaughter).

C bulls remained at pasture in September.

Slaughtered on September 16th.
Materials and Method

- Live weights recorded fortnightly
- Pre grazing sward heights:
  - During 2\textsuperscript{nd} grazing season = 11 cm
  - During finishing = 8 cm
- Concentrates offered daily
  - Weighed back twice weekly
- Ultrasound measurements
  - Start of the finishing period
  - Pre slaughter
- Data were analysed using Proc MIXED of SAS
  - Fixed effects
    - Finishing strategy
    - Fat supplementation level
## Results: Effects of finishing strategy

<table>
<thead>
<tr>
<th></th>
<th>AL</th>
<th>PC</th>
<th>SEM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated concentrate DMI (kg/head)</td>
<td>1004</td>
<td>453</td>
<td>6.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ADG during finishing (kg/day)</td>
<td>2.09</td>
<td>1.42</td>
<td>0.070</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Slaughter weight (kg)</td>
<td>580</td>
<td>551</td>
<td>15.7</td>
<td>0.0745</td>
</tr>
<tr>
<td>Carcass weight (kg)</td>
<td>300</td>
<td>294</td>
<td>9.1</td>
<td>0.5729</td>
</tr>
</tbody>
</table>
## Results: Effects of fat supplementation level

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>C</th>
<th>SEM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated concentrate DMI (kg/head)</td>
<td>716</td>
<td>741</td>
<td>4.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ADG during finishing (kg/day)</td>
<td>1.80</td>
<td>1.71</td>
<td>0.049</td>
<td>0.1910</td>
</tr>
<tr>
<td>Slaughter weight (kg)</td>
<td>571</td>
<td>560</td>
<td>11.1</td>
<td>0.4993</td>
</tr>
<tr>
<td>Carcass weight (kg)</td>
<td>302</td>
<td>292</td>
<td>6.4</td>
<td>0.2766</td>
</tr>
</tbody>
</table>
Results: Ultrasound measurements

- Subcutaneous (s/c) fat 1.3 mm greater for AL (P<0.01)
- Similar depth of s/c fat for T and C
- Similar levels of muscle depth for AL and PC
- No difference in muscle depths for T and C
Conclusion

- Increased **concentrate DMI** for AL
- Greater **ADG** during finishing for AL
- Similar **carcass weight** and **conformation score**
- Greater fat score for AL
- Depressed **concentrate intake** for T
- Greater **kill-out** proportion for T
Thank you for your attention

Questions?

Acknowledgements: Research Stimulus Fund 11/SF/332