Profiting from improved nutrition efficiency

This was the second meeting in a series of events at volunteer climate change focus farm Rumbletonrig. The group looked at ways to improve nutrition efficiency in the beef herd.

Home grown feeds; getting the balance right

The discussion group looked at the feeds produced at Rumbletonrig with SRUC nutritionist Colin Morgan, who was on hand to explain some of the science behind the advice. Not only is the correct energy and protein balance in animal diets important for efficient animal performance, but also how getting it right benefits greenhouse gas emissions.
Home produced forages

Pit silage provides the base to the rations for most of the cattle at Rumbletonrig. In recent years wholecrop spring cereals have also been ensiled and fed to stock.

Silage samples can look and smell different but even when they look the same it is impossible to tell the nutritional value just by eye. Laboratory analysis is required with the key results being dry matter, energy and protein content.

The analysis of the Rumbletonrig 2015 pit silage (Table 1) shows good metabolisable energy of 11.2 MJ/kg DM but a low crude protein of 92 g/kg DM (9.2% protein). In 2014 the protein levels was significantly higher at 115 g/kg DM or 11.5% so it is surprising to see the lower level despite fields and cutting dates being similar.

Table 1: Results of wholecrop and pit silage analyses in 2014 and 2015 at Rumbletonrig

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>DM</td>
<td>283</td>
<td>313</td>
<td>293</td>
</tr>
<tr>
<td>Energy</td>
<td>10.3</td>
<td>10.5</td>
<td>11.2</td>
</tr>
<tr>
<td>Protein</td>
<td>11.5</td>
<td>102</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Rumbletonrig 1st cut silage reflects the trend being seen in other first cut silage results in the area with a noted increase in the number of low protein silages to date (Table 2).

Table 2 - Crude protein levels - SAC results from across the Scottish Borders

<table>
<thead>
<tr>
<th>% CP</th>
<th>No of Samples</th>
<th>% of Samples</th>
</tr>
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<tbody>
<tr>
<td>&lt;8</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>8 – 8.9</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>9 – 9.9</td>
<td>27</td>
<td>22</td>
</tr>
<tr>
<td>10 – 10.9</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>11 – 11.9</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>12 – 12.9</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>13 – 13.9</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>14 – 14.9</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 15</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Why is protein level so important?

Rumen microbes require protein to ferment feed to grow and reproduce. Low protein feeds reduce the number of microbes, making the rumen function less efficient and as a result of this, animal growth declines. Very low protein diets can cause animal health issues with undigested forage impacting the animals rumen and digestive tract.
What are the target protein levels?
The overall protein level of a diet varies depending on the group of animals.
- Dry cow requires a minimum level of 9% protein.
- Weaned calf a minimum of 13% protein.
- Lactating cows or growing animals 12% protein.

Which protein supplement?
There are many different feeds that can be fed to supplement low protein forages.
Soyabean meal contains a high level of protein and is good for younger animals as it has a higher level of bypass protein which is not broken down by rumen microbes.
Rapeseed meal and other processed by-products from the distillery and brewing industry are also good sources of protein for ruminant diets e.g. wheat, barley or maize dark grains, or draff and pot ale.

Take home messages
- Get your forage analysed, know what you’ve got (quality & quantity)
- Use this information to plan feeding to make the most from your forages and buy in the best matched supplementary feeds
- Prioritise animals & match what you’ve got to those that need it most
- Group cows by condition score if possible and feed accordingly (and re-assess cows half way through winter)
- Start thinking about winter feeding and planning now to prevent cows losing/gaining excessive condition over winter
Ruminants and greenhouse gas emissions

Ruminants are unique in their production of the greenhouse gas methane. The gas is a by-product of a natural biological process and is referred to as enteric fermentation. Enteric fermentation accounts for approximately 60% of Scotland's total methane emissions (source Baggot et al, 2006). Methane has 23 times the carbon equivalent of CO₂ in terms of global warming potential.

Reducing methane

Reducing methane production is difficult as it is a naturally occurring process. However by ensuring that animals are healthy and growing well, the amount of CO₂ equivalents per kg of meat or milk produced can be reduced, i.e. more saleable product for the same amount of methane.

- Faster growing animals are more efficient and produce less methane gas over their lifetime.
- Healthy animals have higher daily lifetime gains.
- Animals fed diets balance for energy and protein to meet their requirements have higher daily gains and do not need to excrete excess protein
- High concentrate low fibre diets produce less methane.
- Yeast supplements for finishing animals on ad-lib cereal help to stabilise rumen pH, boost protein supply and reduce methane production.

Rumbletonrig is improving efficiency, farm performance and reducing methane emissions:

- Forages have been analysed and diets are balanced to meet animal requirements
- Compact calving period with 84% of herd calving in 6 weeks
- High concentrate low fibre finishing diet includes yeast supplement
- Prime bulls reach a higher slaughter weight than steers (on average 94 days quicker) producing less emissions/kg meat than steers.
- Life time daily gains are high with 2014 steers achieving 1.22kg/day (birth to slaughter 521 day average) and bulls 1.54kg/day (birth to slaughter 427 day).

How do you measure up?

Meetings are free to attend and all farmers are welcome.

For Rumbletonrig, contact farm facilitator Donald Dunbar on 01835 823322 or via email at donald.dunbar@sac.co.uk for more information.

www.farmingforabetterclimate.org

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