The effect of grazing different pasture herbage masses on rumen pH in lactating dairy cows

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Introduction
- Pre-grazing herbage mass affects herbage quality and herbage dry matter intake (O’Donovan and Delaby, 2008)
- Grazing high quality pastures can lead to low rumen pH (Gibbs et al., 2007)
- Rumen pH is related to milk fat %, fibre degradation, nutrient absorption and overall cow health and welfare (Kleen et al., 2003)
- Most rumen pH work derives from feeding high grain diets → little info available on rumen pH of grazing dairy cows

Objective
To investigate the effects of three different pasture herbage masses on dairy cow rumen pH

Materials and methods
• Three separate farmlets
  - low herbage mass 1200kg DM/ha  LM
  - medium herbage mass 1600kg DM/ha MM
  - high herbage mass 2200kg DM/ha) HM
• Treatments operated for duration of grazing season, Apr-Oct
• 20 dairy cows allocated to each treatment
• Stocking rates (2.9 cows/ha) & post-grazing sward heights (4cm) same for all treatments
• Grass allocated daily and no supplementary feed offered
• Rumen study carried out in autumn (Aug-Oct)
• Six lactating rumen-cannulated dairy cows arranged into two 3x3 latin squares
• Two week periods
• Rumen pH measured on days 10 and 11 of each period
• Calculated avg rumen pH across day & amount of time spent below certain pH thresholds

Results
Effect of pre-grazing herbage mass on average rumen pH

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rumen pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM</td>
<td>5.50</td>
</tr>
<tr>
<td>MM</td>
<td>5.60</td>
</tr>
<tr>
<td>HM</td>
<td>5.70</td>
</tr>
</tbody>
</table>

No effect of treatment on average rumen pH or duration of time spent below certain pH thresholds

Interesting finding
Pasture-fed dairy cow rumen pH may be lower than TMR-type systems (Nocek et al., 2002; Gibbs et al., 2007). But we found no negative effects on milk fat concentration or lameness.

Conclusions
In current study herbage mass did not have an effect on dairy cow rumen pH. Need to expand data on rumen pH in grazing dairy cows and explore rumen function mechanisms.