Feeding experiments for dairy cows

Aim
- Effect of:
  - roughage quality
  - concentrate composition and allowance
  - additives
- On:
  - feed intake and
  - milk production and composition
  - utilisation of nutrients

Execution
- Animals in free stall
- Individual feeding of basal diet and concentrate:
  - Calan gate system
- Basal diet:
  - ad libitum
  - grass silage, corn silage and supplements
- Concentrate separate according to scheme
- 2 times daily milking

Lay out
- 2 to 8 treatments
- 12 to 16 animals per treatment
- 24 to 120 dairy cows
- heifers and older animals
- Complete randomised block design
  - with or without pre-period
  - 6 to 24 weeks

Observations
- DM intake basal feed and concentrates
- Milk production and weight
- Milk composition
  - fat, protein, lactose, urea, SCC
  - fatty acids, acidity of milk fat, hormones
- Fecal excretion, activity and rumination
- Body condition score
- Blood parameters
  - NEFA, βHBA, glucose, hormones
- Health and fertility data

Results

<table>
<thead>
<tr>
<th>Lactation stage</th>
<th>Begin</th>
<th>Mid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake (kg DM/d)</td>
<td>Mean</td>
<td>lsd¹</td>
</tr>
<tr>
<td>Roughage</td>
<td>14.0</td>
<td>1.00</td>
</tr>
<tr>
<td>Concentrate</td>
<td>10.0</td>
<td>0.25</td>
</tr>
<tr>
<td>Total</td>
<td>24.0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production</th>
<th>Begin</th>
<th>Mid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk (kg/d)</td>
<td>42.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Protein (g/d)</td>
<td>1350</td>
<td>50</td>
</tr>
<tr>
<td>Fat (g/d)</td>
<td>1700</td>
<td>75</td>
</tr>
<tr>
<td>Protein (%)</td>
<td>3.20</td>
<td>0.10</td>
</tr>
<tr>
<td>Fat (%)</td>
<td>4.10</td>
<td>0.20</td>
</tr>
<tr>
<td>Urea (mg/dl)</td>
<td>20</td>
<td>2.0</td>
</tr>
</tbody>
</table>

¹ lsd = least significant difference