**Feeding A Ruminant**

The rumen is a large fermentation chamber with many millions of microbes – we are ‘feeding’ the bugs. They have evolved to digest fibre.

**BASIC TERMINOLOGY**

**Dry Matter (DM%)**

Important to know: to compare feeds and know what you are feeding; to understand how much feed you have in store; to know how much you will need.

**Metabolisable Energy ‘ME’ (MJ/kg DM)**

Energy in food minus energy lost in faeces, urine and methane.

We can calculate roughly how much of a feed is required if we know the ME requirements of the animal. E.g. a cow which needs 80 MJ/kg DM per day will need 8 kg dry matter of a 10 ME silage. This is 32 kg of freshweight.

**Crude Protein ‘CP’ (%)**

Total protein in a feed. Includes **ERDP (Effective Rumen Degradable Protein) and DUP (Digestible Undegradable Protein).**

The animal needs **Metabolisable Protein (MP).** Normally this comes from microbial protein but at times of high demand (high yielding dairy cows, ewes (and cows?) in late pregnancy. Need to supplement with **DUP.**

**ESTIMATING SILAGE DRY MATTER / QUALITY**

* Liquid easily squeezed out by hand <20%DM
* Liquid squeezed out but takes more effort 20–25%DM
* Very hard to get any liquid out but hands feel wet >25%DM
* Can you form a ball with it, how does it hold it’s shape?
* How spikey is it in your hand – rougher it is the lower the energy

**PROTEIN FEEDS**

|  |  |
| --- | --- |
| **Feed** | **Indicative Protein (% CP)** |
| Barley | 11 |
| Wheat | 11 |
| Oats | 10 |
| Rapeseed Meal | 40 |
| Soyabean Meal | 56 |
| Wheat Distillers Grains | 34 |
| Sugar Beet Pulp | 10 |
| Draff | 24\* |
| Pot Ale Syrup | 36 |
| Molasses | 4 |
| Molaferm | 10 |
| Maize Distillers Grains | 31 |
| Barley Distillers Grains | 26 |
| \* Very highly variable – important to analyse | |

**RELATIVE FEED VALUES**

Allow us to compare the value of different feeds against each other, taking into account their different ME and CP content.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feed | DM  % | ME  MJ/kg DM | CP  g/kg DM | Relative Value £/T | Del Price £/T |
| Draff | 23 | 11.1 | 200 | 34.62 | 22-25 |
| Pot ale syrup | 45 | 14 | 370 | 105.79 | 70 |
| Wheat distillers | 90 | 13.5 | 340 | 198.21 | 210 |
| Maize distillers | 90 | 14 | 310 | 188.71 | 200 |
| Barley distillers | 89 | 12.5 | 260 | 162.75 | 180 |
| Hipro soya | 89 | 13.8 | 560 | 273.01 | 340 |
| Beet pulp | 89 | 12.5 | 100 | 108.04 | 175 |
| Soya hulls | 90 | 12 | 120 | 113.18 | 155 |
| Wheat | 86 | 13.6 | 100 | 110.68 | 138 |
| Potatoes | 21 | 13.3 | 90 | 25.80 | 25-30 |

*Prices indicative, at November 2016.*

**SILAGE ANALYSIS – WHAT TO LOOK FOR**

**Dry Matter**: Can vary widely depending on time of cutting, wilting, age of grass, weather etc. Target normally 25 – 35%.

**ME**: Very important – can also vary widely ( 7 – 12 MJ/Kg DM)

**Protein**: Important and again variable. This year many low protein silages seen.

**D-Value**: Digestibility, range from 45 – 78.

**pH, VFA, Lactic Acid**: measure of fermentation. VFA indicates poor fermentation and risk of spoiling in pit.

**NDF**: Fibre – high indicates older/later cut grass (more lignin), likely to be lower ME.

**PAL**: Potential Acid Load – risk of acidosis. Other risk factors include poor quality wet silages, high concentrate diets.

**FEED LABELS – WHAT TO LOOK FOR**

* Why are you buying the feed – energy or protein?
* Protein usually stated in freshweight, e.g. Hipro soya = 50% fresh or 56% dry.
* ME rarely stated on label.
* Label ingredients ordered by decreasing inclusion rate. Used to be highest to lowest, now often in range of %.
* Beware cheap ‘filler’: Oatfeed, palm kernel expeller, shea nut, etc – lower energy and palatability (but some may contribute to protein).
* Be aware of urea as an ingredient and contribution to ‘protein’ content – not true protein.
* **Does it pass the “too-good-to-be-true?” test?!**

**MEASURING SILAGE STOCKS**

**PIT**

* Silage (t) = length x width x height x density
* Length, width and height of the pit are measured in metres assume the ramp is half the pit height and add this on.
* Density is dependant on the DM of the silage: Density (t/m3) = 6.5/DM(%) + 0.4…or:

**Silage DM (%)**  **Clamp Height (m)**

***2.0*  *2.5*  *3.0*  *4.0***

20 780 840 890 950

25 690 730 775 830

30 620 660 690 740

35 570 600 625 670

40 520 550 570 610

**BALES**

* Weigh a representative bale (probably between 500-750kg per bale depending on the dry matter)
* No. of bales x weight of bale x dry matter/100 = tonnes DM
* If you haven’t got equipment to weigh bales, a 1.2x1.2m (4ftx4ft) round bale weight can be estimated as silage (t) = 0.725 – (0.007 x DM%)

**HAVE I GOT ENOUGH?**

|  |  |
| --- | --- |
|  | **Daily Dry Matter Intake (DMI) of silage (kg)** |
| **Rearing cattle** | 4.0 |
| **Finishing cattle** | 7.0 |
| **Spring Suckler cows** | 7.0 |
| **Ewes** | 1.0 |
| **Lambs** | 0.5 |

1. Count the number of cows that will need fed over the winter

2. Estimate the cow’s daily dry matter intake of silage (DMI) previous table unless otherwise known.

3. Multiply the no. of cows (A) x DMI (B) = daily DMI

4. Multiply the daily DMI for cows (C) x estimated feeding period (days) = kg DM required to feed the suckler cows over the feeding period.

5. **Repeat for each class of livestock**

6. Add together all livestock grass silage DM requirements and add a safety margin in case of a longer winter and wastage (e.g. 20%) = total silage dry matter requirement over winter feeding period. If you want carryover stocks add them here.