

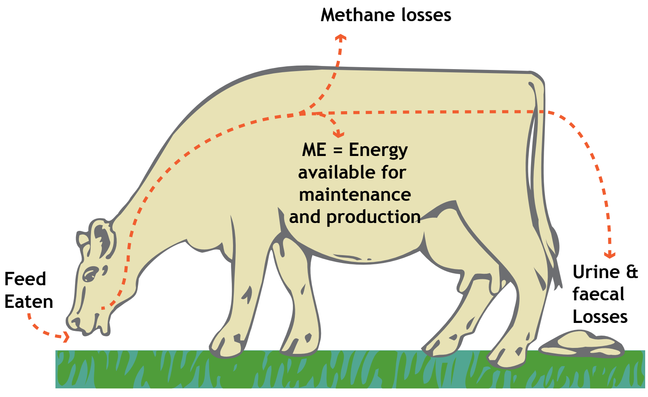
# Pasture feed value

## Animal Production

Animal production

Pasture feed value is measured in several ways, the most important being metabolisable energy (ME) and digestibility. ME is the more useful unit for many applications. Feed value matters, because it drives animal intake and performance.

## Metabolisable energy (ME)




ME is the energy in a feed available to the animal after allowing for faecal, urine and methane losses. It is measured in megajoules per kilogram of dry matter of the feed (MJ/kg DM).

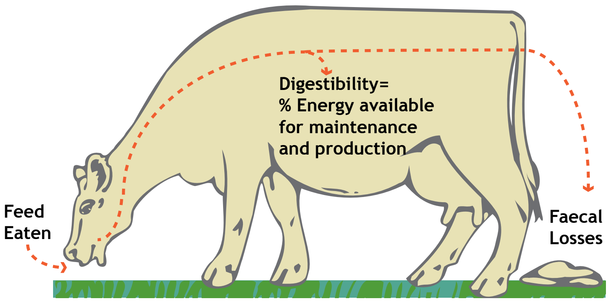
ME is the energy available to the animal for maintenance, growth and production.

## Typical ME in MJ/kg DM (these vary widely)

| Pasture | | Ryegrass plant | |
|---|---|---|---|
| Leafy spring | 11.5-12.5 | Green leaf | 12-13 |
| Leafy summer | 10.5-11.5 | Dead leaf | 7-8 |
| Stalky dry summer | 8-9 | Green stem in spring | 11 |
| Leafy winter | 11-12 | Mature stem in spring | 8 |
| **Silage** | | **Hay** | |
| Pasture good | 11+ | Pasture good | 10 |
| Pasture average | 9-10 | Pasture average | 8.5 |
| Pasture poor | 8 | Pasture poor | 7.5 |
| Maize (early dent) | 10.3 | Straw | 6.5 |

## Dry matter digestibility

Digestibility is the percentage of energy in a feed available to the animal after faecal losses. This can be calculated as:




| Typical DM digestibility values | |
|---|---|
| Leafy spring pasture | 80-85% |
| Leafy summer pasture | 75-80% |
| Stalky summer pasture | 60-65% |

# Relating ME & digestibility

Digestibility and ME are related and can be approximately compared as follows:

| Dry matter digestibility (%) | 60 | 70 | 80 |
|---|---|---|---|
| (MJ/kg DM) | 8.8 | 10.6 | 12.4 |

# Why is ME important?

ME is a key driver of animal performance in most NZ pasture-based systems. ME has a double effect, because as ME feed values increase, so do animal intakes. Conversely, low ME feeds need extra time in the rumen to degrade. For example, it takes 45-55 hours for high fibre straw (ME 7-8) to pass through the rumen, compared with 18-24 hours for good quality grass (ME 11-12). When an animal's rumen is full, it will stop eating, so low ME feeds limit intake.

# Water soluble carbohydrates (WSC)

WSC are simple sugars present in plant cells, and are an important energy source for animals. WSC content is highly correlated with ME. In most cases ME gives a better indication of animal performance than WSC, as production responses to WSC have been much smaller and less consistent than responses to ME. Increased levels of WSC can have environmental benefits at times, by reducing the amount of nitrogen lost in the urine.

# Crude protein (CP)

Animals need crude protein to maintain body tissue and produce milk/meat. Ideal CP levels for lactating animals are 17-18%. For live weight gain 12% CP is needed in the diet. NZ pastures are relatively high in CP, and it does not generally limit animal production, except in summer dry conditions.

Rather than lift animal production, pastures containing high concentrations of CP (≥18%) lead to more nitrogen in the urine and dung. This increases potential N loading in the urine and dung patches and subsequent risk of nitrate leaching from the soil.

# Neutral detergent fibre (NDF)

NDF is the most common measure of fibre in feed analysis. NDF measures more than 90% of the structural components in plant cell walls, including lignin, hemicellulose and cellulose. In high quality pasture, the ideal NDF is 35-40%. As it rises, for example in rank pasture, ME and digestibility fall.

# Visually assessed feed quality

Nutritive value can be assessed visually, based on physical attributes. Always look at the whole paddock as quality can vary across a pasture.

- Legumes and herbs generally have higher feed value than grasses.
- Green leaf generally has high ME; dead matter, stem and seed head are significantly lower.
- Anything green and leafy is often a sign of higher crude protein content.
- High temperatures drop summer ME.

# Importance of management

Good pasture management is the biggest driver to maximising feed value, and creating sustainable, efficient, profitable farm systems. Key strategies include:

- Managing pastures through late spring
- Grazing to the correct residuals
- Grazing at the right time
- Maximising legume content