

Profitable Milk Production

Good quality silage is a key factor in profitable milk production



Quality of Silage

- ▶ Dry Matter (DM)
- ▶ Metabolisable Energy (ME)
- ▶ Crude Protein (CP)
- ▶ Fermentation (acidity level pH and ammonia level NH_3)

Silage Dry Matter

- ▶ Dry Matter is the feed remaining after all the water has been taken out
- ▶ Dependent on weather and degree of wilting
- ▶ Ideally 25–30%
- ▶ Grass wilted over 30 % is more difficult to consolidate
- ▶ More prone to spoilage by yeasts and moulds

Silage Metabolisable Energy (ME)

- ME (MJ/kg/DM) is the most important measure of energy content
- Represents the amount of energy available to the cow after losses in digestion, gases and urine.

Silage Metabolisable Energy (ME)

ME measures the energy content of silage
in MJ/kg DM

Very high	> 12
High	11.5 - 11.9
Moderate	10.5 - 11.4
Low	< 10.5

Digestibility (D-value)

- The D-value of a forage (%) measures the amount of digestible organic matter
- Decreases as the forage matures and becomes stemmy
- Poor silages will typically have a D-value below 60%, average silages 65%, very leafy silages over 70%.

Silage Crude Protein (CP)

CP measures the protein content of silage as a percentage of DM

Very high	14%
High	12 - 14%
Moderate	10 - 12%
Low	< 10%

Silage Fermentation

- ▶ pH measures acidity of feed
- ▶ Well fermented clamp silages pH of between 3.8 and 4.2
- ▶ Higher values indicate butyric fermentation
- ▶ Higher DM silages have a $>$ pH 4.2–4.6, due to less lactic acid being produced (perfectly ok, but difficult to manage clamp face)

Ammonia (N)

- ▶ Ammonia nitrogen (g/kg total N or %) indicates the degree of protein degradation in preserved forages
- ▶ Poor fermentation produces silage unpalatable to stock
- ▶ Well fermented silages have values of <10%, higher values associated with butyric fermentation caused by clostridia