Assessing Your J Grennan & Sons Silage Report.

Silage analysis is a useful if not essential tool when diets are to be formulated for ruminant livestock.
All farmers should have their silage analysed in order to give them an idea as to what type and how much supplementary feed should be used to ensure performance levels.

Dry Matter (DM)

- Amount of silage remaining after the water has been removed.
- The energy and protein value of silage is quoted as **% Dry Matter**.
- The higher the DM the more energy and protein the animal will receive for every kg of fresh silage they eat.

E.g. cow eats 40kgs of a 20% DM silage and 40kgs of a 25% DM silage both with energy contents of 10.5 MJ/Kg DM.

- Energy supply from 20% DM silage is 40kg x 20% = 8kg DM x 10.5 = 84 units of energy

- Energy supply from 25% DM silage is 40kg x 25% = 10kg DM x 10.5 = 105 units of energy

  ➔ 21 units of energy more from higher DM silage = energy to produce approx. 1 gallon of milk

pH

- The pH of the silage indicates how well it has preserved.
- pH of around 3.8 to 4.2 = well preserved and will keep well.

- pH values of 3.6 and below are considered to be acidic silage's and will require careful supplementation and/or buffering to avoid stomach upsets.

- Dry silage's can have higher pH values and be well preserved such as 4.5 and above.

Ammonia N %

- High ammonia levels shows poor fermentation, this can be due to:

  - High grass nitrogen levels at cutting or
  - Low sugar, young wet grass being cut

- Effective additives can help to overcome this problem. Link to additives list

Standard of Fermentation	Ammonia N %
Excellent	<5%
Good	5-10%
Moderate	10-15%
Poor	15-20%
Very Poor	>20%

Crude Protein

- How mature the grass was at the time of cutting.

- > 15% = very leafy young grass
- 12 – 15% = grass at normal stage of cutting
- 9 – 12 % = mature stemmy crops

- Low protein silages will need to be supplemented with high protein rations to achieve decent levels of performance in animals. Link to feeds

ME (MJ/kgDM)

- The **energy** value of silage is expressed as the amount of energy contained in every kg of silage dry matter.

- Young grass will have the highest energy content and mature grass the lowest.

- The younger and drier the grass the more energy the silage will supply for milk and live-weight gain.

    - Top Quality: 11.5+
    - Average/good: 10.5 – 11.5
    - Poor quality: <10.0

FME (Fermentable energy)

- How much of the above energy can actually be used in the cow's stomach. A target is 70%+ of ME energy to be fermentable energy.

- E.g. 11.5 MJ/kgDM x 70% equals 8.0 MJ/kg
- Average 8.0 MJ/kg (Range 7 – 10 MJ/kg)

DMD Value

- This is a measure of the energy an animal can get from the silage.
- Poor late cut silage will have a DMD as low as 55% and a low energy value while excellent leafy silage will be >75% and have a high energy value.
- DMD will also affect intake, as silage with a high DMD will be digested quicker thus allowing more intake.
- High DMD values generally give high energy and protein levels.

Lactic Acid %

- Bacteria in fresh grass use grass sugar to make lactic acid during ensiling and this acid pickles or preserves the grass.
- A well-preserved stable silage will have a high % of lactic acid, which is sweet smelling.
- Poorly preserved silage will have large amounts of butyric acid which is a foul smelling acid and can lead to a lot of wastage in the pit.
- High levels of lactic acid are obtained from high sugar grass cut in bright sunny conditions, which is properly ensiled and quickly sealed and preserved.
    - Average 7.5%
    - Excellent 8 – 10%
    - Poor <5.0%
- Dry silage can be well preserved but still have a low lactic acid content.
- The target lactic acid % of the total acid amount in the silage is 65%+.
- Bacterial silage inoculants can supply the necessary numbers of ‘bugs’ to ensure lactic acid production and preservation but only if the grass sugar or ‘fuel’ is there in the first place. Link to additives

Neutral Detergent Fibre (NDF)

- A measure of the total fibre in the silage.
- Late cut, stemmy silage will have a high NDF.
- Too much NDF will slow down digestion, restrict intakes and reduce performance in animals.
- Too little NDF can cause acidosis due to rapid digestion.
    - Young grass/good maize silage 45 – 50%
    - Mature grass/legume silage's 60 – 65%
    - Average 55%

Acid Detergent Fibre (ADF)

- A measure of the amount of indigestible material in the silage.
    - Average 35%
    - Range 25 – 50%
- High NDF and ADF values will also show low DMD, energy and protein values.

Ash %

- This will give a measure of the mineral content of silage.
- Ash values over 10% usually indicate soil or organic manure contamination at time of harvest which can increase the risk of diseases such as listeriosis, Iritis (inflammation of the eye) and botulism.
- Soil is a rich source of iron and aluminium. This can cause a mineral imbalance in the animal as iron locks up copper and aluminium interferes with the uptake of phosphorous.

Intake Value

- This is a relative measure of how much silage the animal is likely to eat.
- It takes into account the digestibility, dry matter and ammonia levels of the silage.
- High DMD will increase intake value.
- High ammonia will decrease intake value.
- HFIS is for beef cattle
    - Range 50 – 115 (115 indicating high dry matter, DMD and low ammonia) Average = 75
- SIP is for dairy cows
    - Range 60 – 130 (130 indicating high dry matter, DMD and low ammonia)

The Ideal Silage

Dry matter 25%+

DMD 70%+

ME >11.0 MJ/kgDM

FME >70% of ME

CP 15%+

pH 3.8 – 4.2

NDF 50 – 55% (500 – 550 g/kg DM)

Ammonia < 10%

Lactic acid 8 – 12 % (80 – 120 g/kg DM)

Lactic acid % of total acid >65%

Ash 5%

Additives

Powerstart

- Sourced from Genus ABS additives, who have been supplying farmers with silage additives since the early 1990's.

- The logic behind one of the most prominent additive suppliers is simple: cows that have higher intakes hold better condition and are more likely to get in-calf.

- Principles behind the additive:
    - 1,000,000 bacteria are added to each gram of forage.
    - The bacteria covert sugar into lactic acid.
    - Lactic acid is very palatable
    - Because the bacteria work very quickly more sugar is preserved – further enhancing palatability, and more of the highest quality protein is conserved.

Take the guess work out of silage making. Use Powerstart to guarantee rapid fermentation, minimal energy losses and extremely palatable high intake silage- everytime.

7 REASONS TO CHOOSE POWERSTART®

- **Powerstart®** is the **only** silage additive to contain *Lactobacillus plantarum* Aber F1, which can access **more of the sugars in the grass**.
- This ensures a more rapid fermentation which means nutrients are better preserved to give a **more nutritious feed**.
- Aber F1 **only** produces lactic acid which is **more palatable** than other fermentation acids produced such as acetic acid (vinegar).
- This means **Powerstart®** produces a better smelling and more palatable silage – **silage cows are keen to eat**.
- If silage is more palatable, **cows will eat more**.
- Higher intakes of a silage higher in true protein and sugars mean that the rumen is more effective which means **more production from forage** and lower purchased feed costs.
- And now **Powerstart®** has been shown to **reduce calving to conception interval by 10 days**, worth £50 per cow. And it is the only silage additive proven to have this effect.

	Fed Powerstart treated silage	Not fed Powerstart treated silage
Herds	49	54
Cows	11621	13415
Average herd size	237	238
Calving to conception interval	125	135

Source – RMS herd sample 2011
Statistical significance P < 0.05