

Grass Silage Quality

Under an organic system where at least 60% of the diet dry matter must come from forage and the cost of supplementary bought in organic concentrates are expensive, high quality conserved forage is critical for successful feeding of the pregnant ewe.

The unreliable summer weather in Wales and the problems of making hay under an organic system from leafy grass/clover swards means that the bulk of conserved forages are now in the form of silage and the majority of this in the uplands is baled.

Approximately 38 million tonnes of grass silage are made in the UK annually. At least half of this is fed to dairy cows, the bulk of the rest to cattle. There are no reliable statistics for the quantity or quality of silage made for feeding to sheep and whilst it is known that there is a huge variation in quality of silage made in Wales, relatively few farmers have their silage analysed on a regular basis.

The objective of silage making is to conserve the forage quickly and cleanly, with minimum of loss in feed value. There are many factors that influence the final quality of silage achieved. These include:-

- the species and variety of grasses and clovers
- soil fertility and manure management
- the stage of growth and timing of the cut
- wilting
- chop length
- additive use,
- and for clamp silages - silo filling and silo management
- soil contamination

Obviously the weather prior to and at harvest time has a major impact but apart from changing cutting date, there is little farmers can do to mitigate against the impact of adverse weather.

Silage additives

The main reason for using silage additives is to ensure a good fermentation and minimise ensiling losses. These are available as live bacteria or as acid. The effects of additives on silage quality have been extensively studied and in general responses have been positive. Whilst these are increasingly used routinely on silages to be fed to the dairy herd, relatively few silages made for feeding to sheep are treated with additive and especially where the silage is baled. They are recognised as useful insurance in difficult weather but there is now plenty of evidence to support both the economic and production benefits that can be achieved by using a silage additive.



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With at least 60% (and usually a lot higher %) of the daily dry matter intake being fed as forage, it is obvious that an assessment of silage quality should be fundamental to assessing the need, type and quantity of supplementary feed for the ewe in late pregnancy. Providing a **representative** sample of the silage being fed can be taken, a full and detailed silage analysis should be carried out. Some basic but very useful assessments can be done on farm. The technique is well described in the following:-

<http://www.grassdevcentre.co.uk/documents/409.02 - Silage On Farm.pdf>

Silage analyses are carried out by several commercial and feed company laboratories and with increasing sophistication of analytical techniques, many parameters are now being reported. A useful guide to interpreting the results of an analysis is given in the following

<http://www.grassdevcentre.co.uk/documents/407.02 - Silage Analysis.pdf>

The most important parameters are :-

Dry matter	A measure of the moisture content of the silage.
pH	This is a measure of the acidity, and is generally higher on baled silage as it is drier and has undergone less fermentation.
Ammonia N	Expressed as a percentage of total N, it provides an indication of the extent to which protein in the crop at harvest has been broken down during the fermentation stage. Ammonia along with other undesirable protein breakdown products will reduce intake.
Volatile fatty acids	One of the objectives in making high quality silage is to achieve a rapid fermentation in which the sugars in the grass are converted to acids. In well fermented silages, the main acids produced are lactic acid and the volatile fatty acids (VFAs), principally acetic acid. Poorly fermented silages tend to be characterised by the presence of butyric acid.
D value and Energy (ME) level	It is largely a reflection of the maturity of the grass at cutting. This along with fermentation quality is the most important factor influencing silage intake, and thus nutrient supply from the silage.
Crude Protein	Along with figures describing protein quality, this is needed to make a decision on the amount and type of supplementary protein needed.
Sugars	Important because sugars are a valuable source of readily available energy for the rumen microorganisms.
Intake potential	This is an estimate of the amount of the silage that would be consumed by an animal when fed as the sole feed. Achieving a high intake is vitally important.

(Information provided at a recent workshop on Feeding the Breeding Ewe by Dr David Peers, ADAS)