# Silage Testing:
# Interpreting Results
## Practical Guide

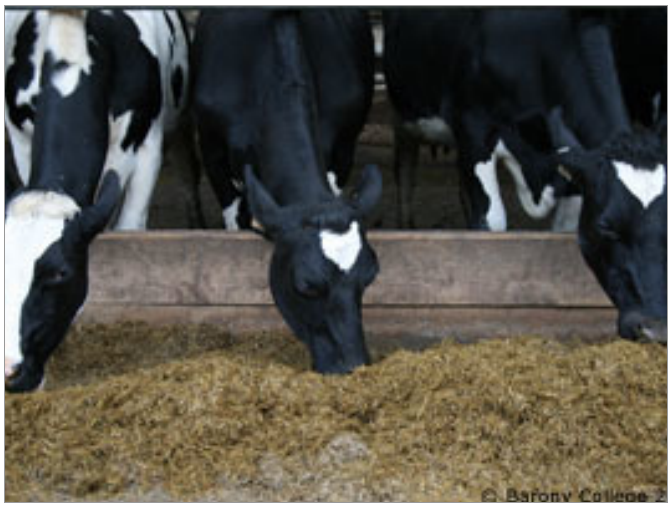
Farming for a Better Climate

Testing silage is paramount to ensure the nutritional needs of the animals being fed are met. Silage quality can vary considerably from year to year on farm, big differences can even be found within a pit. Regular testing of silage can allow for silage to be utilised well and therefore require less purchased feeds; this in turn could help to reduce the farm carbon footprint.

The main results to consider from a silage analysis are the energy, protein and dry matter composition.

However, there are a number of other results that are important to understand.

Mineral analysis of the silage can also give further in-depth information to help with ration planning.




**This practical guide looks at helping to maximise performance of housed cattle by improving the use of silages.**

## Testing process

When collecting a sample it should be representative of the pit. If there are multiple cuts then these should be sampled separately. If sampling a pit face, take a sample in the form of a W across the face (see overleaf). This will help to give an average of the pit. Creating a 'pit map' can be useful. Have a diagram showing where each field of silage is in the pit. By sampling these separately the best and worst fields can be identified. This can help in the decision making for reseeding fields. It also allows for more accurate analysis as each field is likely to be similar in quality.

A similar process should take place with bales. Take a subsample from several bales from the same batch. Each pit should be sampled individually as should each cut of silage. Spear sampling allows bales to be sampled without being opened.

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www.farmingforabetterclimate.org

www.fas.scot/

www.agrecalc.com

The European Agricultural Fund for Rural Development: Europe investing in rural areas
Scottish Government Riaghaltas na h-Alba gov.scot
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# Silage Testing; Interpreting Results

Most silages are tested using Near Infar-Red Spectroscopy (NIRS). This involves analysing the light spectrum reflected from the silage. Changes to silage quality create subtle differences that the machine can pick up. This is based of thousands of silage tests using 'wet chemistry'. By using NIRS it has allowed the process to be carried out in minutes rather than days. The technology has now advanced to allow testing on farm, meaning the process can be even faster. These results allow for accurate rationing to be made to improve the performance of the animal.

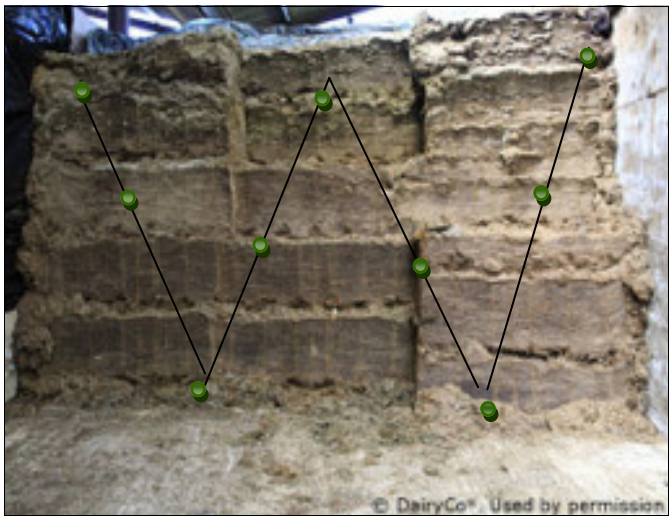
Sampling 6 weeks after the silage is in the pit will allow for fermentation to be completed and also allow for a ration to be made before the silage is fed. Having this prepared before animals are housed will reduce the risk of performance being compromised at housing.

The results will also give some estimation as to the quantity of silage in the pit. Since a volume measurement of the pit is based on fresh weight, the drier the silage is the more there is going to be for animals to eat. This can allow for planning to be made in advance if silage stocks are going to be lower than required. Making decisions around this early can allow for cheaper supplementary feeds to be bought to allow the silage stock to last longer.

Compare the results with the conditions in which the silage was made to asses why the silage has analysed like it has. For example if the energy is higher this year, was the silage cut earlier than usual? High sugars can indicate sunny weather before cutting. Compare the results for individual fields against each other. This way poorer grass growing fields can be identified and prioritised for action.

The potential acid loading (PAL) of the silage is also important. PAL is made up of the acid content of the silage and the acid that will be produced by the microbes during fermentation of silage in the rumen.

In a very wet silage (<20% dry matter) the amount of lactic acid can be anywhere between 40-160 g/kg DM. In comparison at the other extreme end, very dry silage (50-70% dry matter) produces only around 10-30 g/kg DM. The reason is that wet silages must produce more acid in order to reduce the pH enough to stabilise the fermentation, and prevent any secondary fermentation.
The digestibility (D value) is another important factor in determining the PAL of silage. A higher D value, silage will increase the level of acid produced by the rumen bugs.




*Samples should be taken in a 'W' shape when taking a face sample*

Some analyses will highlight in red if the PAL is above 900 (meq/kg DM), this would indicate it is a wet silage with a high D value. Generally if silage is being fed alone and has a high enough neutral detergent fibre (NDF) or is being fed with straw this would not be a problem. However, there is a particular risk where silage is fed with large amounts of starchy cereals (e.g. barley, wheat) producing even more acid in the rumen, which will result in acidosis. If possible, in this scenario it would be advisable to replace some of the cereals in the ration with a source of digestible fibre, for example: soya hulls, citrus pulp, oat feed or sugar beet pulp.

**Key points -**

- Test 6 weeks after harvest to allow fermentation to be completed
- Take a representative sample across each pit/bale stack
- If taking face samples take at least 1 per month
- Learn from the analysis to alter your silage making next season