

Maximise yields and minimise costs through improved silage

The pressure on farmers to maximise yields and minimise costs through improving silage and optimising rations to maintain profitability has never been greater.

by **Ricardo Lanfranco**,
**National Dairy Business
Development Manager,**
Eurofins Agro, UK.
www.eurofins.co.uk/agro

Current silage testing methods have been around in the UK since the 1960s. They involve using fresh samples to gain an insight into the composition and properties of ruminant nutrition, referencing outdated databases using standard wet Near-Infrared Spectroscopy (NIRS) analysis. While the method does work and analysis in the laboratory takes under a minute, using outdated databases is undeniably having an impact on the accuracy and therefore on the extent to which farmers and nutritionists can rely on these results.

Through the traditional methods, there is a very real danger that the results could lead to improperly nutritionally balanced feed, hampering efforts to get the very most from livestock yield and disadvantaging those using it.

To give dairy farmers the advantage which their counterparts in other areas of the globe are already benefitting from, due to investment in testing innovations, a new analytical method is being introduced to the UK. This method analyses samples that are dried and ground before they are NIR scanned, leading to more accurate results than traditional wet NIR methods.

Although NIRS testing using dried and ground samples rather than fresh forage samples has previously been available elsewhere in the world, particularly in the Netherlands, it is not something dairy farmers in Britain have previously had access to.

The importance of testing

Understanding the precise composition of feedstuffs is vital in

order to know what is necessary to optimise the diet of cattle.

As farmers, feed firms and agriculture consultants will know, giving cattle exactly the right nutritionally balanced feed will bring about optimised and increased milk yield, and crucial cost efficiencies.

It is something many in the industry understand the importance of, but until now the testing available in the UK has not been able to provide results which really arm farmers and nutritionists with truly accurate insights to enable them to rely fully on the technology.

NIRS

NIRS works by irradiating a sample with a near-infrared light. The resulting reflection provides information on the nutritional composition of samples, when compared against a database of reference values. Specific calculation (calibration) rules can also be applied to local feed value systems.

The technology to scan wet samples has been available for several decades now. However, the limitations of using wet silage for analysis are now understood more fully, resulting in a move towards the new testing method where silage is ground and dried before being NIR scanned. This method provides a number of benefits over wet analysis.

Benefits

By drying the sample and removing the moisture, a much more confident prediction of the make-up of the material can be made, giving farmers a greater insight into what they are feeding their cattle.

Drying a sample first removes the moisture, which can act like a 'fog', distorting the reflection and compromising accuracy. The grinding process then converts samples into a powder-like state, giving a more homogenous sample, which in turn gives more accurate, reliable and repeatable results.

Unlike fresh samples that are frozen and thawed, subsequently



Silage analysis with innovative SCiO technology.

changing their structure, a dried sample does not degrade over time. This means that the sample materials can be kept for further analysis at a later date.

The success of the NIRS approach depends on the size and specificity of the database used. The dried and ground scan is interrogated against a more extensive database covering a greater range of material types. These databases are updated and expanded constantly to reflect the changing nature of silage over time.

Until now, the UK has only had ready access to grass, maize and whole crop silage data.

Using dried NIRS analysis, the breadth of feed samples that can be analysed in the laboratory is vastly increased, and can include silages such as grass, maize, wheat, lucerne, barley, oats and peas, fresh grass, hay, haylage, Total Mixed Ration, concentrates and standard raw materials such as beans, soya, rape, bread, and maize germ.

On-farm testing

The latest advance in testing has been the advent of the on-farm feed analysis solution which complements more in-depth laboratory testing.

The patented technology from Israeli-based Consumer Physics has been tested using calibrations by Eurofins Agro UK and was officially launched in the UK this year.

The hand-held connected smart sensor enables farmers and nutritionists to analyse the dry matter of a variety of silage types on

location in less than a minute, using world-leading SCiO technology.

Using pocket-sized technology linked to the user's smart phone, the NIR spectrometer takes a series of readings from the same sample to provide a summary of the dry matter in less than 60 seconds.

This approach enables farm managers, herd managers and nutritionists to troubleshoot variations, adjust rations based on real-time data, request an in depth dry NIR silage analysis be performed due to the changing nature of silage nutrients, and ensure consistent dry matter across time. Farmers can test dry matter daily and adjust for weather events such as rain or snow as they happen.

The cloud-based solution includes regular app updates and new calibration developments. Additional forage types and attributes can be delivered seamlessly to the users, and it has already been received well by early UK adopters of the technology.

One of the advantages of the on-farm analysis is the real-time insight into dry matter variation over time, which also gives an indication of whether further in-depth laboratory testing may be necessary to fine-tune animal rations to realise crucial cost efficiencies and optimise yield.

The technology is not intended to replace laboratory analysis but rather to complement it by giving farmers instant insight into rumination nutrition in addition to the more in-depth reports they would receive from laboratory testing. ■