

Application Note

Maize Silage



Introduction

Maize silage is widely used for feeding cows. In order to obtain the desired feed mixture it is important to know the major components and the feeding value of the maize silage.

NIR analysis is a widely used method for analysing maize silage, but to get the desired analytical results you normally have to dry and grind the samples prior to analysis. This is a cumbersome and time consuming procedure, which takes 2 days from sample has been received until it is ready to be analysed.

With the AgriQuant B8 from Q-Interline you can analyse many types of forage including your maize silage samples within 5 minutes for important parameters without drying and grinding of the sample. The AgriQuant B8 is scanning up to 375cm² of your sample offering real representative scanning.

If you still need to do analysis of dried and ground samples, don't worry. The AgriQuant B8 will analyse both dry and wet maize silage on the same analyser, making it the obvious choice for most labs.

Analyser: AgriQuant B8 with Spiral Sampler

The AgriQuant B8 is based on the latest generation FT-NIR technology and has the following main features:

- Cutting edge spectral performance
- Patented sampling technology
- Very easy to operate and maintain
- Strong software package with InfraQuant and Horizon QI
- No scheduled maintenance

Analysis:

The sample is analysed by reflection measurement in a glass tube with lids, which is rotating – and moved forward – during analysis. By rotating the glass tube and bringing it forward at the same time a very large area of the sample is scanned ensuring representative scanning and that effects from product heterogeneity are reduced. The AgriQuant B8 will scan up to 375 cm² of the sample which is almost 20 times larger than the area scanned using a petri dish solution.

The glass tube has a large opening for easy filling. After analysis the sample can easily be removed securing smooth work flows.

Visit our homepage www.q-interline.com to see a video of the AgriQuant B8 in operation and read about the experiences of the French company Capinov.

Calibration

The AgriQuant B8 is calibrated against certified methods for the different components.

Calibration Performances

60-80 samples of wet fresh maize silage have been used for the modelling of protein, starch, cellulose and D-cell while 150 samples of wet - fresh and fermented -silage have been used for the dry matter calibration. The material was taken directly as received at the laboratory and put into the glass tubes. Repeatability test has been done with a sample of grass measured 5 times.

Maize	Range %	NIR SECV
Dry Matter	18-48	0.83
Protein	4-9	0.27
Starch	6-40	1.25
Cellulose	16-23	0.71
D-Cell	60-74	0.76

Table 1: Performance of the wet maize silage calibrations

The following table shows the performance obtained for dried and ground maize silage.

Maize	Range %	NIR SECV	Repeatability
Protein	6-10	0.37	0.08
Fibre	14-34	0.73	0.07
In Vitro	62-80	1.52	0.48
Starch	1-38	1.28	0.11
NDF	30-64	1.38	0.16
ADF	18-31	0.76	0.15
pH	3.7-4.1	0.072	0.018
Lactic Acid	2.7-7.2	0.43	0.064
Acetic Acid	1-4.4	0.26	0.077
Ammonium No.	0-0.11	0.008	0.003

Table 2: Performance of the dry maize silage calibrations

Conclusion

The AgriQuant B8 is a strong FT-NIR analyser for many types of forage including wet and dry maize silage. The AgriQuant B8 will supply you with the analytical result for wet maize silage in approximately 5 minutes, eliminating the drying and grinding step.

The AgriQuant B8 offers real representative scanning and is the obvious choice for heterogeneous samples like forage, wood chips, energy crops, soil etc.

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