Application Note

Pig Feed

interline
spectroscopic analytical solutions

Introduction

Production of pig feed requires precise control over the different components based on the final product specifications. NIR analysers have widely replaced the traditional methods, since they can run a large amount of samples in a short time. The AgriQuant B1 can be placed in the production area and be operated by plant personnel. The AgriQuant B1 will deliver analysis results for your pig feed samples in less than one minute.

Analyser: AgriQuant B1

The AgriQuant B1 is based on the latest generation FT-NIR technology and has the following main features:

- Cutting edge spectral performance and best signal to noise ratio on the market
- Very easy to operate and maintain
- Strong software package with InfraQuant and Horizon QI
- Very low maintenance costs. The AgriQuant B1 has no scheduled maintenance and the light source has an expected lifetime of 10 years.

Analysis:

The sample is analysed by reflection measurements in a 125ml glass jar with lid, which is rotating during analysis. By rotating the glass jar the sample is constantly mixed, ensuring representative sampling and that effects from product heterogeneity are reduced.

The glass jar has a large opening for easy filling. The lid ensures that the sample is stored under stable conditions and protected from influence from the surroundings. After analysis the sample is easily stored or send to reference analysis.
If many samples have to be analysed, the size of the glass jar has plenty space for a barcode, which is easily read with a barcode reader connected to the AgriQuant B1

See a video presentation of the AgriQuant B1 on our homepage: www.q-interline.com and experience how easy it is to perform the analysis on the AgriQuant B1.

Calibration

The AgriQuant B1 is calibrated against certified methods for the different components.

The NIR region contains both combination and overtone information. The most sensitive bands are those derived from the O-H, N-H and C-H stretch regions. In order to compensate for path length changes due to scattering effects from the sample, all spectra were pre-processed using Multiplicative Scatter Correction and mean centring. A Partial Least Squares (PLS) model was developed based on the analytical and spectral data.

Calibration Performances

Table 1 shows the performance of the calibrations developed for all the components with chemical reference analysis available. Repeatability tests were performed measuring the same sample 10 times. Performance was tested using a set of 18 unknown samples calculating the SEP (Standard Error of Prediction) value.

Property	Range %	NIR SECV Ungrinded	Repeatability	SEP
Protein	13 – 21	0.60	0.20	0.60
Fat	2.5 – 8.5	0.39	0.13	0.48
Starch	17 – 45	1.70	0.70	2.2
Sugar	3.5 – 12	0.50	0.20	0.60
Ash	4 –8	0.26	0.14	0.41
Raw Cell Matter	2.5 – 11	0.54	0.28	0.36
Moisture	10.5–14.5	0.20	0.10	0.30
Density	0.53 –0.67	0.02	0.01	0.02
Phosphorus	0.3 – 0.75	0.04	0.02	0.04

Table 1: Performance of the pig feed calibrations

Conclusion

The AgriQuant B1 is a strong FT-NIR analyser for pig feed, supplying results in less than one minute for multiple components. With the AgriQuant B1 you can eliminate individual analysis on each constituent and save on manpower, training and time.

The AgriQuant B1 can be placed in the lab or in the factory. The intuitive InfraQuant software guides the plant personnel through the steps of the analysis and the results are displayed with easy to understand color codes. With barcode option it is possible to measure many samples each hour making the AgriQuant B1 an excellent choice for the feed factory or lab.

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Rev. 18.12.2011