Application Note AN N286

FT-NIR Analysis of Cereals

The cost of animal nutrition represents the largest operating cost for most commercial livestock producers. In order to maintain an optimum balance between feed costs and productivity, all feed ingredients should be analyzed for nutrient concentration and these values are then used to formulate the rations and required supplements. However, the included feedstuffs vary widely in composition, due to origin, seasonal changes or year. Fourier Transform Near Infrared spectroscopy (FT-NIR) provides a fast and effective solution for analyzing cereals as raw materials e.g. for feed production in order to optimize the production steps and monitor the final product quality.

Easy Sample Analysis with FT-NIR

Bruker Optics offers the most comprehensive range of FT-NIR solutions for quality control and formulation adjustments. Samples can be analyzed non-destructively in seconds, saving costs by reducing time and reagent use. Analyzing by FT-NIR in the lab or at-line close to the production requires just filling an easy-to clean cup with the solid sample and presenting it to the analyzer. Liquid samples like oils or molasses can be analyzed in disposable vials with the same spectrometer.

Ready to use Calibration Packages

A set of universal FT-NIR calibrations for the analysis of cereals are available. These calibrations help you to achieve a superior quality control, leading to an enhanced performance of your products.

FT-NIR spectroscopy offers a rapid, accurate and non-destructive tool for the analysis of:

- Moisture
- Fat
- Protein
- Fiber
- Ash
- Starch

In addition Bruker FT-NIR instruments are supported by 3rd party suppliers of more specialized calibration packages and of special services, e.g. analysis of Amino Acids in cereals.

Cereals

Barley
Corn/Maize
Oat
Rice
Sorghum
Triticale
Wheat

Performance Statistics

Property		Data Set			Calibration		Validation	
Name	Unit	n	Min	Max	R^2	RMSEE	R^2	RMSEP
Ash	%	2297	0.4	12.6	93.1	0.67	92.6	0.71
Fat	%	780	0.2	7.2	90.7	0.31	90.5	0.33
Fibre	%	673	0.2	12.8	92.0	0.56	90.1	0.61
Moisture	%	1856	8.1	17.4	93.8	0.34	94.2	0.36
Protein	%	1903	4.9	18.0	98.0	0.37	98.4	0.34
Starch	%	426	15.2	79.3	99.3	1.40	98.9	1.65

FT-NIR Spectrometers: Bruker Optics offers various FT-NIR spectrometer models for lab, at-line and on-line applications:

TANGO

Touch-screen operated FT-NIR analyzer for routine use in the lab and atline.

MPA II

Multi Purpose Analyzer for maximum flexibility with ease-of-use.

MATRIX-F

Process monitoring with probes and contact-less sensor heads.

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