



Application Note AN N287

FT-NIR Analysis of Feed

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 raw materials as well as finished feeds 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 finished products in the feed industry 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 different types of:

- Ruminant Feed (Calf, Dairy & Beef Cattle)
- Poultry Feed (Chick, Broiler, Breeder, Layer)
- Pig Feed (Piglet, Weaner, Grower, Finisher, Sow)
- Horse Feed
- Aqua Feed

on various parameters like

- Moisture
- Fat
- Protein
- Fiber
- Ash

The following more specialized parameters are available if applicable:

- Starch
- Minerals (Ca, Na, K, P)

Performance Statistics Poultry Feed

Property		Data Set			Calibration		Validation	
Name	Unit	n	Min	Max	R ²	RMSEE	R ²	RMSEP
Ash	%	1871	1.0	14.5	77.6	1.07	68.3	1.36
Fat	%	3280	0.5	24.1	95.2	0.50	95.7	0.49
Fibre	%	2402	0.1	27.7	94.7	0.90	94.5	0.70
Moisture	%	4127	4.6	16.3	88.2	0.48	81.2	0.42
Protein	%	5058	4.0	47.4	95.3	0.97	92.0	0.84
Starch	%	1217	4.8	57.3	98.9	1.09	95.2	1.37

Performance Statistics Ruminant Feed

Property		Data Set			Calibration		Validation	
Name	Unit	n	Min	Max	R ²	RMSEE	R ²	RMSEP
Ash	%	459	2.9	15.0	85.7	0.86	83.5	0.91
Fat	%	1454	1.5	18.0	95.0	0.47	89.6	0.37
Fibre	%	347	0.8	16.8	96.8	0.76	92.6	1.07
Moisture	%	1999	5.3	17.0	88.3	0.40	86.4	0.43
Protein	%	2628	8.1	39.1	92.8	0.87	92.2	0.78
Starch	%	1467	0.6	58.6	97.9	1.50	97.8	1.60

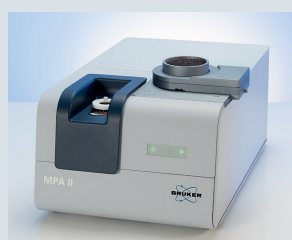
FT-NIR Spectrometers: Bruker Optics offers various FT-NIR spectrometer models for lab, at-line and on-line applications:

TANGO



FT-NIR analyzer for routine use in the lab.

MPA II



Multi Purpose Analyzer for maximum flexibility.

MATRIX-I



At-line analysis with optional NEMA4/IP66 protection.

MATRIX-F



Process monitoring with probes and measurement heads.

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