



Application Note AN 285

FT-NIR Analysis of Feed Ingredients

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 a wide range of raw materials 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:

- Moisture
- Fat
- Protein
- Fiber
- Ash

The following more specialized parameters are available if applicable:

- Starch
- Total Sugar
- ADF
- NDF

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 feed ingredients.

List of Feed Ingredients

Cereals

Barley
Corn/Maize
Rice
Sorghum
Triticale
Wheat

Cereal By-products

Corn/Maize
■ Gluten Feed
■ Gluten Meal
Wheatfeed (Midds)

Animal Proteins

Blood Meal
Bone Meal
Feather Meal
Fish Meal
Meat and Bone Meal
Poultry By-product Meal

Oil Seeds and By-products

Rapeseed/Canola
■ Expeller
■ Meal
■ Unground/whole
Soybean
■ Expeller
■ Ground
■ Meal
Sunflower
■ Expeller
■ Ground
■ Meal

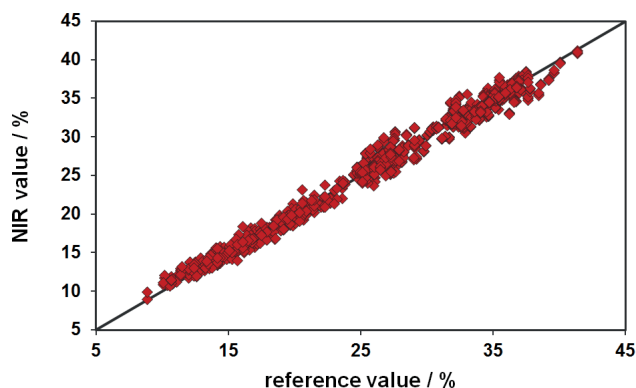
Other By-products

Biscuit Meal
Distillers Grains (DDGS)

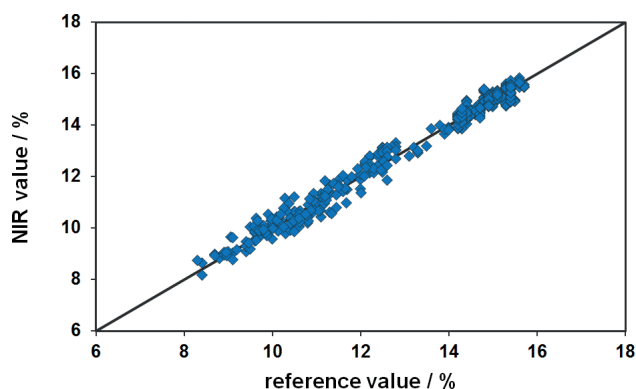
Bruker Optics strives to continuously optimize its portfolio of calibration methods. Therefore additional products may already be available on request.

Validation Results for Various Ingredients

Sunflower: Protein Content



Wheat: Moisture Content



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



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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