



# **ANALYTICAL SERVICES** **FEED, INGREDIENTS** **AND FORAGES**

SGS North America's Agricultural Services laboratories have the equipment and experience necessary to service for your complete feed testing needs. With cutting edge technology and the latest testing methods, SGS laboratories are fully equipped to handle your needs. Our trained scientists and technicians hold Ph.D. and Master degrees in chemistry and microbiology, in addition to years of laboratory experience. Our laboratories are ISO 17025 accredited and are recognized by several food and feed associations as approved laboratories.

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**SGS**

## PROXIMATE ANALYSIS

Proximate analysis is a series of tests that determines the amounts of protein, fat, moisture, ash and fiber in feed products. Using this information, the nutritional value of the feed can be determined allowing rations to meet producers' needs. SGS uses wet chemistry methods to determine the amounts of protein, fat, moisture, ash and fiber in feedstuff. Calculations are added to give nutritional value for animal feeds.

### PROTEIN ANALYSIS

Carbon and nitrogen percentages are determined in grains, forages and co-products (DDGS – Dried Distillers Grains with Solubles and soybean meal) by combustion followed by chromatographic separation of components. The samples are dried, weighed, and placed into an Organic Elemental Analyzer for combustion and quantification. The percent protein can be calculated from the percentage of nitrogen present.

### FAT ANALYSIS

The percentage of crude fat present in feeds, cereal, grains, forages and co-products can be determined by extracting a dried sample using an automated Soxhlet unit (Soxtherm). The percent crude fat is reported by calculating the ratio of fat extracted to the original sample weight.

### MOISTURE ANALYSIS

The percentage of moisture present in grains, forages and co-products is determined by drying the sample. The ratio between the final and original weight of the sample gives us the percent moisture.

### ASH ANALYSIS

The percentage of inorganic residual material present in grains, forages and co-products is determined by burning the sample at high temperature. The percent ash is reported by weighing the difference between the starting and final weights of the sample.

### FIBER ANALYSIS

The percentage of crude fiber, ADF and NDF present in feeds, cerealgrains, forages and co-products can be determined by dissolving soluble components such as cellulose, hemicelluloses, and lignin with sulfuric acid and potassium hydroxide. The undigested material is dried, weighed, and then incinerated. The difference between the content of ash and undigested material is the crude fiber.

### NIR (NEAR INFARED REFLECTANCE)

Various feed, forage and co-products are capable of being analyzed by NIR technology. Common analyses include protein, fat, moisture, fiber and starch. The sample is scanned for multiple wavelengths between 1100 and 2500 nm for reflectance, and the scan is compared to scans of samples of known wet chemistry and scans. Calibration sets are composed of a large number of scans of known samples to provide robust and stable calibrations for each different feedstuff.

### SUPPORTING ANALYSIS

COLOR appears to be an indicator of quality and nutrient digestibility in DDGS. SGS provides a color analysis test using a color measurement spectrophotometer which measures the reflected color.

PARTICLE SIZE is an important factor in DDGS. Samples with large particlesize may require further grinding to improve uniformity and optimize nutrient digestibility.

### MICROBIAL ANALYSIS

Testing for bacterial contamination is an important part of a feed safety monitoring program. The presence of *E. coli*, *E. coli* 01:157, *Salmonella* or *Listeria* can be determined with a standardized PCR (Polymerase Chain Reaction) protocol. Traditional plate testing and culture identification is also available.

### CONTAMINANTS

Melamine, mycotoxins, veterinary drug residues such as antibiotics, and hormones may be concentrated in products after processing. These contaminants may harm animals and humans in concentrated levels. Testing of specific contaminants need to be identified for analysis. These contaminants may be determined with use of the LC MSMS, GC MS, or PCR technologies.

### CONTACT DETAILS

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