

# The peace of mind knowing that your animals are getting the consistent intake they need to *thrive*.

## Reducing variation and improving accountability

Variation can and must be controlled to respond appropriately to wildly fluctuating feed ingredient and livestock markets, variations in nutrient ingredients of feedstuffs and escalating consumer demands for accountability in the animal production industry. Feed ingredients must be safe, traceable and of known nutrient composition. Green house gases and nutrient excretion in manure must be minimized. Food safety must be documented and consistent. Animals must be fed and otherwise treated properly. Precision animal nutrition is now possible and desirable through Reveal™.

## How to apply to your business?

Producers of meat, milk and egg have to respond to market volatility and ingredient availability. Reveal™ NIR is a timely, precise nutrient measurement tool that gives our customers the ability to make better decisions on ingredients to buy, how to optimize them in animal diets, and how to audit finished feed. This Reveal™ system utilizes near infrared spectrum technology paired with Internet access to the global Cargill system, giving you an effective and efficient way to measure, manage and communicate nutrients in real time. That way you can take action and capture value quickly.

## Consider five ways Reveal™ Calibrations creates value;

1. Increases your confidence in purchasing and formulation decisions and quality control of ingredients and feeds
2. Provides access to Cargill's strong expertise in nutrition, additives, management, software and services
3. Optimizes your formulation with NIR linked to Cargill software models
4. Offers long-term support for your company through constant fine-tuning of calibrations
5. Increases your total company margin.

## The value you gain



## Revolutionize your feed management with Reveal™ Calibrations



## We bring world of insights right to your door

With more than 500 research professionals working in 17 state-of-the-art innovation and technology application centers around the globe, we pride ourselves on having the deepest knowledge across livestock, poultry and aquaculture in global. When our team arrives at your door, they're equipped with unrivaled biological modeling tools to tailor solutions that will help your animals or your customer's animals perform better.

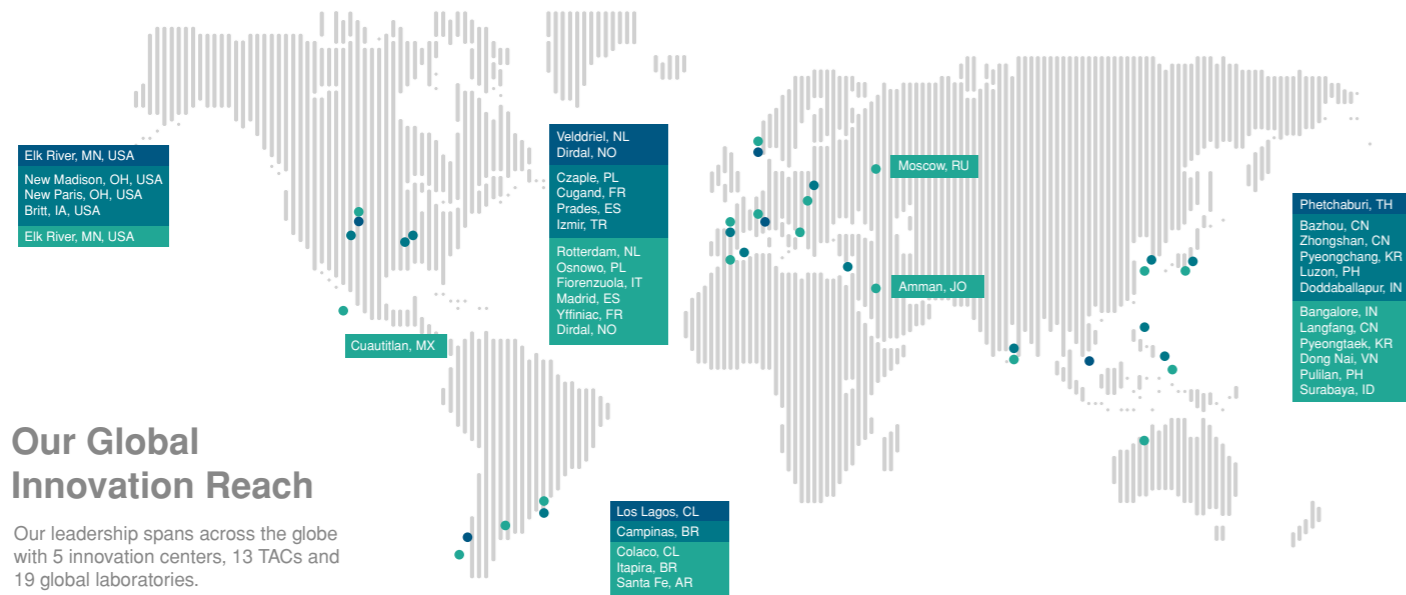
The Cargill Nutrition System consists of more than 2 million nutrient samples and the world's largest Near Infrared Reflectance (NIR) feed database is the foundation for much of what we do. Explore our innovation capabilities below.

The Reveal™ analysis service provides real-time analysis results instantly via the calibrations supported by 19 accredited laboratories of Cargill. The service works by utilizing the global NIR calibrations, the world's first integrated system connected global Cargill database NIR device to scan samples and then compare them against the Cargill laboratories to provide precise, lab quality results.

To enhance our commitment to quality each of our Wet Chemistry Laboratories participates in several cross-check and proficiency programs for both wet chemistry and NIR. These would include:

- BIPEA (includes over 1,350 laboratories worldwide)
- Data is cross-checked with Cargill Laboratories

Reveal™ offers the largest database in the world and giving our proprietary calibrations a higher degree of precision.



### Our Global Innovation Reach

Our leadership spans across the globe with 5 innovation centers, 13 TACs and 19 global laboratories.

- Innovation Centers
- TACs
- Global Laboratories

## Our Services

### 1. Laboratory Solutions

Wet chemistry analysis for ingredients or complete feed samples. Report enables adjustment of formulations and better evaluation of suppliers based on accurate information of nutrient values.

### 2. NIR Calibration/ Validation

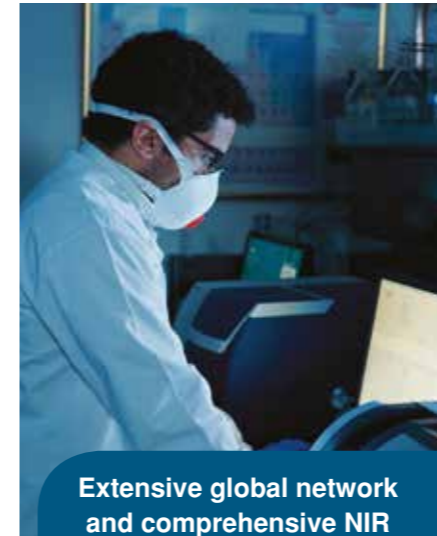
On-site NIR calibration of machines at customers' locations to generate NIR values for better formulations.

### 3. NIR Machine/ Training Support

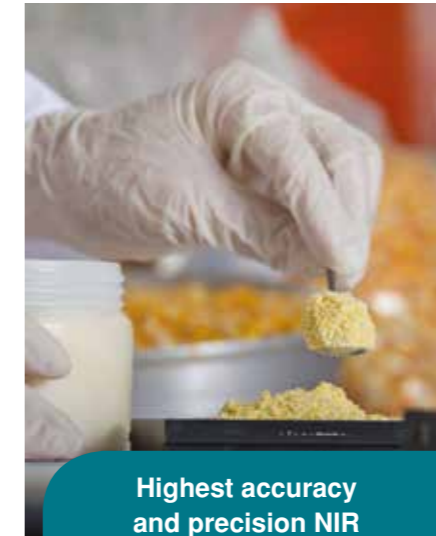
Set-up of NIR equipment in customers' laboratories with calibration services and ongoing training.

### 4. Reveal™ Nutrient Matrix

Generates report based on NIR Technology (ingredient or spectra) findings for the analyzed ingredient or complete feed sample. Enables adjustment of formulations and better evaluation of suppliers based on accurate information of nutrient values.



Extensive global network and comprehensive NIR capabilities



Highest accuracy and precision NIR models



Largest NIR database in the world

> 2,000,000 samples and 200 different ingredients

> 400 NIR instruments

Online **network**

> 12,000,000 nutrients analyzed every year

**Audit, QC and training Services**

Nutritional **Dialogue**

**Largest NIR Database enables your business to make the most accurate formulation decisions to optimize feed quality.**

Connecting your business to the technology you need.

### How does Reveal™ NIR work?

Near Infrared Reflectance Spectroscopy (NIRS) is the study of the absorption of near infrared (NIR) light (energy) by molecules. It is part of molecular spectroscopy, which is the study of the interaction of electromagnetic waves and matter.

All organic samples have a unique fingerprint. Samples representing a type of ingredient are analyzed in the Cargill laboratory for their chemical constituents (moisture, fat, protein, etc.). A database of samples with corresponding laboratory analysis is established. Through a complex mathematical process, calibration files are developed from which analytes of interest can be predicted. When a sample is scanned using near infrared, the unique light patterns are correlated to the calibration files and a prediction is generated.

Calibrations must accurately model the relationship between the reference values (the laboratory analysis) and the spectra (the light ray patterns) for all reasonable samples of the product.

### Why do you need Reveal™ Calibrations?

Animal producers can no longer tolerate the economic consequences of avoidable variation in feed cost, nutrient composition of diets, and animal performance. Reveal™ Service with Cargill global database – hardware and software - required to make significant advances in precision of animal nutrition exists.