

MilloGram



OUR MISSION: Providing Quality Feed for Quality Food.

Nutrition and Quality Laboratory Expands Capabilities

A Dedication to Quality From the Very Beginning

The Wenger Group, Inc. was founded in 1944 in Rheems, PA, and the first iteration of the Company consisted of a single milling location that also had a storefront and sold all types of feed and household goods including coal. Wenger's was dedicated to helping our customers grow in a variety of ways and providing for many of their farming and business needs.

This attention to customer needs expanded in 1980 with the creation of the Company's first Quality Assurance Program and further expanded in 2003, when the Company earned triple ISO certification in Quality (ISO 9001), Environmental Management (ISO 14001), and Occupational Health and Safety (ISO 45001) by the International Organization for Standardization. Seven of the Company's ten locations are ISO-certified, and the discipline of the system shapes all we do. With its position among the

top five commercial feed manufacturers by volume in North America, the triple-ISO certification clearly distinguishes and differentiates The Wenger Group in the segment.

The Wenger Group's commitment to quality and consistency continued thereafter with getting seven of the ten milling locations USDA Process Verified. This certification, in addition to assuring the right process, saves individual customers time, effort, and the cost associated with having to perform their own audits. Non-GMO and Organic feeds are available from two locations. In addition, the Company's original mill in Rheems is Safe Quality Food Certified. All Wenger mills meet Food Safety Modernization Act requirements.

In 2019, the Company revitalized its positioning in the industry by adopting the component of differentiation and diversification to its growth strategy with the addition of seasoned



Left to right: Joe Diller, Dr. Fausto Solis, Morgan Noll, Barbara Marsh, Jesse Sanders, LuAnn Gerlitzki, Renee Heinaman, and Dr. Raj Kasula.

talent and infrastructure focusing on innovation, research, and product development toward establishing nutrition advisory in the segment and enhancing the customer experience. Our Nutrition and Sales teams are partners in building stronger relationships with our customers by being an active participant in helping them achieve their production objectives.

Innovation and Research is a defining feature of Wenger Feeds and a key component of our partnership with our customers. Our Nutrition Services function utilizes commercial research houses and partners with universities and independent research facilities to develop nutritional strategies and diet management techniques that improve your on-farm results and protein production. We test and evaluate the latest ingredients and nutrition principles in real-world conditions and bring our innovations directly to you.

The Company's Nutrition and Quality Laboratory is the key piece of this strategic partners commitment. The Wenger Group is proud to have established a full-fledged laboratory to carry out over 90% of ingredient, feed, and process control

testing in-house with further expansion planned. This laboratory has three main functions: support for our robust nutrition and quality control program, support for our innovation and research, and services to customers.

Capabilities and Resources of The Wenger Nutrition and Quality Laboratory

Fundamental Capabilities

“The Nutrition and Quality Laboratory at The Wenger Group is the key component of our commitment to nutrient channel management in our mission to be the ‘nutrient company.’ Our laboratory is capable of testing ingredients and feed for two fundamental sets of parameters—the nutrients and the quality. Testing for nutrients ensures the ingredient is the right profile and quantity of nutrients, while testing for quality ensures the same nutrients are available to livestock in the proportions offered, which is the primary purpose of feed, and our Lab is adequately equipped with state-of-the-art equipment,” says Dr. Kasula, Vice President and Chief Nutrition Officer.



Ingredient and Feed Testing

Owing to the benefit of lowered costs and shortened turn-around time, the Nutrition and Quality Laboratory is able to test a larger number of ingredient and feed samples to minimize variance of composition, which helps in formulating precision rations avoiding costly over-formulation or potentially harmful under-formulation of nutrients. Analyses are performed with Near-infrared spectroscopy (NIR), which is especially useful for those who use concentrate programs.

Forage Testing

Forage testing is a key benefit for our dairy customers and is available through our Forage Testing Unit of the laboratory. Forage testing provides the nutritional value of pasture, hay, or silage. It is important to know the nutritional value of your inputs to ensure an efficient feed ration and mineral supplementation program for optimal milk and milk component production.

Nutrient Testing Capabilities

Proximate Analysis

Proximate analysis gives us the big picture of the major components that make up our feed. In proximate analysis, we can tell how much water, protein, fat, fiber, and ash is in our finished feed. Together, these components comprise 90 to 95% of the feed by weight. Our nutritionists use these tests of our ingredients when creating feed formulas.

Moisture

Moisture or water is the most important nutrient as it, to a large extent, influences the nutritional and storage quality of feed. It needs to be in the right amount. Too much water may lead to feed spoilage, but too little can be detrimental to nutrient availability to the livestock. We test moisture by drying the sample in an oven and weighing the loss. To do this well, we need a scale that is precise. Our scales are accurate and frequently calibrated to comply with Wenger System and ISO Quality standard requirements. We capture the data directly into a computer reducing any possibility of an input error.

Protein

All protein contains nitrogen. By testing a feed or ingredient for nitrogen, we can calculate how much protein is in the feed. This testing methodology produces a measurement of crude protein, and the industry has been using this test for about 140 years. Old methods require harsh chemicals like sulfuric acid. While these tests are effective, they are also time consuming and dangerous. Modern methods use oxygen and heat to



burn the sample and detect the nitrogen gas liberated from the sample. These methods are much more environmentally safe as well as being cost effective and efficient.

Our modern equipment can run up to 64 samples at a time and generates a new protein result every 3 minutes. Protein is important because every function in an animal's body maintenance and production requires protein. Amino acids are organic compounds that combine to form proteins, and their requirement is determined by the species. At The Wenger Group, the rations are formulated to balance species specific amino acids (not total protein), and our advanced equipment helps us assay for these in-house.

Fat

Fats, one of the three main macronutrient groups in a diet, along with carbohydrates and proteins, are the major and dense source of food energy for many animals, and they play important structural and metabolic functions. The fat content needs to be balanced—too little and the animal will be short on energy, too much and the animal could reject the feed or not grow as expected.

Fats and oils do not dissolve in water but do dissolve in solvents like ether or hexane. To test for fat, we dissolve it in a solvent, evaporate the solvent, and then weigh the collected fat. These solvents are hazardous and polluting to the environment and, therefore, need special care. Our advanced equipment instrument contains the solvents in a closed vessel and recovers about 90% of them in a separate container for reuse making this method safe, effective, and environmentally sound.

Fiber

Fiber comes from the cell walls of plants and seeds. Some parts of plants have more fiber (seed coats) than others (the center of the seed). We test for fiber by chemically digesting all the non-fiber components in the feed or ingredient and weighing what is left. This method used to be done by hand using beakers and filter funnels, which is a time-consuming process. Our advanced equipment can test up to 12 samples automatically. It can test for Crude Fiber (CF) and its constituent components, Acid Detergent Fiber (ADF), and Neutral Detergent Fiber (NDF).

We keep an eye on fiber as it is not easily digested by most simple stomached animals, where they pass on to hind gut to only benefit the harmful microorganisms. Livestock need some fiber for digestive health, but if they receive too much, it tends to impede the animal's ability to absorb nutrients such as minerals. Knowing the Crude Fiber (CF), Acid Detergent Fiber

(ADF) and Neutral Detergent Fiber (NDF) of our ingredients, nutritionists can develop feeds with the right amount of fiber while maintaining the gut health of the animal.

Minerals (Ash)

Ash is the measure of mineral component of an ingredient or feed. It is the portion that does not combust. Minerals, such as calcium, phosphorus, magnesium, manganese, zinc, copper, iron, selenium, etc., are key to skeletal structure, production, and various metabolic processes of the livestock. Ash tests for all the minerals in the feed. These may include salt, calcium carbonate, and phosphate. We test for it by burning the sample at (600°C or 1100°F) and weighing what does not burn. While the components that make up ash may be important nutrients like minerals, it helps identify potential contaminants or adulterants or empty fillers like sand and dirt that provide no nutritional value.

Vitamins

Vitamins are critical to the health of our animals. The time and cost of vitamin analysis has made monitoring this prohibitive. The LC-MS/MS is a game changer here. Mass Spectrometers can detect organic molecules based on their mass and the mass of their breakdown products. It is able to detect very precisely the amount of that specific molecule in a complicated mixture like feed. Our lab is in the process of developing methods for assay of vitamins, which will be available soon.

Quality Control Capabilities

Our Quality Control capabilities include testing the ingredients, finished feed, and processing conditions for delivery of designed physical form and nutrient aspects of feed. This includes a plethora of physical, chemical, physio-dynamic, microbiological, toxicological, and process control parameters as applicable that affect the ingredient's suitability to be included in our feed just to ensure your animals receive the right nutrients. Our standard Ingredient Approval Process, Supplier Approval Process, and Supplier Monitoring Process ensure the quality and regulatory compliance of all our suppliers and their products. Our quality management system includes processes that include controls for controlled and regulated ingredients such as medications, lot controls for shelf life alerts, sequencing and flushing for feeds.

We test actual ingredients and update our ingredient specifications regularly with the current nutrient values. This is important as our feed is manufactured with natural and processed ingredients that vary from factors such as crop cycle location



and season. By closely monitoring our ingredient quality, we can tailor our diets to these changes, reducing nutrient variation, thus increasing your confidence.

Good Water Quality Improves Health & Performance

The Nutrition and Quality Laboratory offers an array of water tests including hardness, pH, iron, nitrates, sulfates, *E.coli*, and total coliform. If you are interested in using our water testing services, sterile water collection bottles are provided and a specific sample gathering protocol must be followed.

MYCOTOXIN TESTING

Mycotoxins are toxic chemical substances that are produced by certain molds found in soil. Agricultural crops may be infected by the molds before, during, and after harvest if they find favor-

able temperature, moisture, and nutrients. Mycotoxins, when consumed by animals or humans, can produce harmful effects that vary by species, amounts, and length of time consumed.

The Wenger Group has a robust Mycotoxin Risk Management program implemented across its mill network. Testing for select mycotoxins is performed at the point of receipt for grains using diagnostic strips and a comprehensive one in the laboratory that includes aflatoxins, ochratoxins, T2, DON (vomitoxin), fumonisins, and zearalenones.

With our new LC-MS/MS (Liquid Chromatography – Tandem Mass spectroscopy) method we can test for a number of mycotoxins at the same time in any feed, forage, grain, or ingredient.

TESTS AVAILABLE

Feed & Ingredient

Proximate

NIR

Proximate (moisture, protein, crude fat, and crude fiber)

Forage Package

Amino Acids

Wet Chemistry

Moisture

Crude Protein (CP)

Crude Fat/Ether Extract (EE)

Crude Fiber (CF)

Acid Detergent Fiber (ADF)

Neutral Detergent Fiber (NDF)

Ash

Protein Quality Tests

KOH Solubility

Urease Activity

Macro and Trace Mineral

Analysis

Calcium

Phosphorus

Magnesium

Zinc

Manganese

Copper

Iron

Cobalt

Sodium

Potassium

Chloride

Sulfur

Heavy Metal Analysis

Silver

Arsenic

Cadmium

Chromium

Mercury

Nickel

Lead

Selenium

Vanadium

Complete heavy metals package

Mycotoxins

Liquid Chromatography-Mass Spectrophotometer

LC-MS/MS

Aflatoxin (B1,B2,G1,G2)

DON (Vomitoxins)

T-2 /HT-2 Toxin

Fumonisin (B1,B2,B3)

Zearalenone

Ochratoxin

Neosolaniol (NEO)

Diacetoxyscripenol (DAS)

Complete Mycotoxin Panel

Rosa Method

Aflatoxin

DON (Vomitoxins)

T-2 Toxins

Fumonisin

Zearalenone

Egg Testing

Haugh Units

Shell Strength

Shell Thickness

Yolk Pigmentation

Water Quality Testing

Total Coliforms

Nitrate/Nitrite

Hardness

Minerals

(Ca,Mg,Na,K,Fe,S,Mn,Zn)

pH

Miscellaneous Tests

Sieve Analysis (grind size)

Pellet Durability

Yeast and Mold Count

Feed Nutrient Tracking

Flow Characteristics

See your Relationship Manager our web site for test order forms:
www.wengerfeeds.com/products/laboratory-services/



Dr. Raj Kasula
Vice President and
Chief Nutrition Officer



Dr. Fausto Solís
Nutrition Services Manager



Chris Olinger
Nutrition Coordinator



Justin Collins
Quality and Food Safety
Manager



Jesse Sanders
Manager, Nutrition and Quality
Laboratory

Support for Our Innovation & Research

Innovation and research activities of the Company are supported by four in-house research facilities including a pullet farm, a caged layer farm, a cage-free layer farm, and a grow-finish swine farm. Several exploratory and applied research projects are carried out on a continuous basis in generating data that supports innovative approaches to improving the performance of livestock and reducing costs of ingredients, including field

The Company's commitment to quality and science towards nutrition advisory and enhancement of customer experience is led by highly qualified and seasoned professionals.

Laboratory. Eggshell strength, eggshell thickness, egg yolk pigmentation, Haugh Units, are tested to name a few.

The Nutrition and Quality Laboratory of The Wenger Group complies with the AAFCO Proficiency program for ingredient and feed analysis and is working towards additional milestones of accreditations of local and global agencies in pursuit of excellence.

Our Resources and Yours: Our People

The Company's commitment to quality and science towards nutrition advisory and enhancement of customer experience is led by highly qualified and seasoned professionals. The

team's expertise and professional services are available to our customers at all times. trials with our customers. These studies call for testing of several ingredient, feed, production, systemic, organ and production-related parameters, which is supported by our team at the Nutrition and Quality

team's expertise and professional services are available to our customers at all times.

Dr. Raj Kasula **Vice President & Chief Nutrition Officer**

Dr. Kasula earned a Doctor of Veterinary Science, a master's degree in Animal Nutrition and Immunology from Marathwada Agricultural University, India, and is a certified Professional Animal Scientist by ARPAS. Raj has an extensive background and experience spanning over 30+ years globally across 30+ countries in animal feed and nutrition, technical support, product development, and research and development with several science-based global companies.

Dr. Fausto Solís **Nutrition Services Manager**

Dr. Solís earned a Ph.D. in Poultry Science from the University of Arkansas and has been with The Wenger Group since 2016. Prior to Wenger's, Dr. Solís was the Technical Manager, Nutritionist, and Director of the Nutrition Division for Instituciones Pecuarias Dominicanas S.A., an integrated agricultural company located in the Dominican Republic. He previously served as Manager of the Agricultural Services Department for the Caribbean Region for Nestle, S.A.

Chris Olinger **Nutrition Coordinator**

Chris Olinger earned a B.S. in Agricultural Economics from Purdue University. He has spent his career in agriculture serving as a grain merchandiser and layer complex manager before joining the Nutrition Department in 2005. Chris has taken on various roles including working in formulation, research and development, ingredient quality, and the laboratory.



Barbara Marsh
Lab Technician

Morgan Noll
Ingredient Quality Technician

Renee Heinaman
Manufacturing Assistant

LuAnn Gerlitzki
Manufacturing Technician

Joe Diller
Forage Lab Technician

Quality Team

Justin Collins

Quality and Food Safety Manager

Justin Collins has spent his career in feed manufacturing for several regional feed manufacturers before coming to Wenger's in 2019. With experience in both operations, safety, and quality assurance, Justin leads a team that oversees quality assurance at our ten locations and coordinates heavily with the laboratory.

Jesse Sanders

Manager - Nutrition & Quality Laboratory

Jesse Sanders holds a B.S. in Plant Science from Penn State University and has held numerous positions specializing in quality control for both human and animal products. Jesse joined The Wenger Group in 2013 and currently oversees a five-person team at the Company's Quality Assurance Laboratory.

Barbara Marsh

Lab Technician

Barbara Marsh attended Jackson Community College and received an associate degree in Science. She also attended Michigan State University's Animal Technology program and worked at the University's Veterinary Clinical Center Large Animal Department as a Veterinary Technician for seven years. She transitioned to Quality Control and worked as a Quality Control Analyst for Wyeth Laboratories for 13 years and as Quality Assistant for Land O'Lakes Purina Feed for more than 4 years. She has worked as a Laboratory Technician for The Wenger Group for 13 years.

Morgan Noll

Ingredient Quality Technician

Morgan Noll joined the team in 2019 and performs a wide variety of tests in the laboratory including preparing samples, testing samples using the NIR, egg testing, and more.

Renee Heinaman

Manufacturing Assistant

Renee Heinaman has been a key part of our Quality Assurance team since 2015. She performs pellet durability testing, organizes and tests samples, and manages specialty sampling and testing for key customers.

LuAnn Gerlitzki

Manufacturing Technician

LuAnn Gerlitzki holds an associate degree from Harrisburg Area Community College and has been part of the Wenger team for 17 years. She originally worked as a Quality Assurance Technician keeping inventories of medications, updating formulas, and using the NIR to test ingredients. She still works in Quality, performs tests on manufacturing equipment, and keeps detailed documentation of all tests and procedures.

Joe Diller

Forage Lab Technician

Joe joined the team in 2020 and works in the forage testing lab. He completes forage analysis and tests required for the dairy nutrition team in order to formulate and understand the variation present in farm-grown feed ingredients.

See your Relationship Manager or our web site for test order forms: www.wengerfeeds.com/products/laboratory-services/



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 Nutrition and Quality
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