

FOOD EXPORT ASSOCIATION OF THE MIDWEST USA AND FOOD EXPORT USA – NORTHEAST

U.S. Feedlink

A publication highlighting information about the U.S. animal feed and pet food ingredients and additives industries

Aquaculture Ingredients & Trends

Aquaculture has seen significant growth globally in recent years. According to the USDA, the demand for fish and seafood in the US has seen a 30% increase over the last three decades, and it continues to rise. Likewise, the International Trade Administration reports an annual growth rate of 3.6% globally. With it, so does the need for efficient, sustainable, and nutritionally-complete aquaculture feeds.

The Midwest U.S. aquaculture feed industry plays a critical role in supporting this expansion, driving innovation to meet environmental, economic, and nutritional challenges. Great Lakes Bio Systems in Wisconsin demonstrates this innovation by developing and manufacturing natural, eco-friendly aquaculture products that support both the environment and aquatic animals for today's needs and future generations.

Key Ingredient Structures in Aquaculture Feed

The nutritional needs of aquatic species vary. American Pharmaceutical Innovations Company® is focused on producing quality feed such as AMPHIGOUTGONE Aquaculture, a concentrated liquid blend of amino acids and vitamins specially formulated to improve fish and shrimp sustainable production by reducing feed costs and minimizing negative effects on the environment. Dr. Al MacKar of American Pharmaceutical Innovations Company shares, "Fish nutrition isn't one-size-fits-all. Their diets shift with species, life stage, and whether the goal is growth or omega-3 content."

According to the Food and Agriculture Organization of the U.S., high-quality aquaculture feed typically comprises proteins, lipids, carbohydrates, vitamins, and minerals.

- 1. PROTEINS** Proteins serve as the primary source of amino acids, essential building blocks for fish growth, tissue development, and vital bodily functions. Traditionally, fishmeal has been a primary protein source. Due to environmental concerns and rising costs, alternative protein sources are becoming increasingly popular, including plant-based proteins and insect meal, among others.
- 2. LIPIDS** Fats and oils provide energy and essential fatty acids like omega-3s, which are crucial for fish health and human nutrition. Marine oils have traditionally been used, but algal oils and plant-based oils are gaining traction.
- 3. CARBOHYDRATES** Carbohydrates, derived from grains like corn and wheat, serve as an energy source and binding agent in aquafeeds. The availability of these grains in the Midwest supports feed formulation while keeping costs manageable.
- 4. VITAMIN AND MINERAL ADDITIVES** Feed additives enhance feed efficiency, improve gut health, and ensure water quality in aquaculture systems. Common additives that are also produced in the Midwest include probiotics, prebiotics, enzymes, antioxidants, and other vitamins and minerals.

Industry Trends and Innovations

The aquaculture feed industry in the U.S. is evolving rapidly to address the challenges of sustainability, cost-efficiency, and nutritional optimization. Key trends have emerged and are driving innovation in ingredient sourcing, feed formulations, and production practices:

(continued on back cover)



featured products



For more information about these or other featured products please email: feedlink@foodexport.org



 **Agrarian Solutions**
Nappanee, Indiana

Convert Gel contains a blend of direct-fed microorganisms, L-form bacteria, and pathogen-focused proteins to manage production challenges without antibiotics, ensuring safety and effectiveness.



  **Dairy Products Incorporated**
Eden Prairie, Minnesota

Dried Whey Product is a by-product of Italian cheeses, used in multi-applications.



 **ME-PRO**
FOR BETTER AQUACULTURE
Houdek Manufacturing
Brookings, South Dakota

Launched in 2024, Protéger is a fermented, plant-based protein ingredient. Protéger is produced utilizing sustainably, and traceably produced plant meals. The result is a 70+% protein that also provides pet diets with isoflavones, prebiotics, postbiotics, and with low allergenicity. Though Protéger is highly digestible in a variety of species, our particular focus is in companion animals; dogs and cats.



 **American Pharmaceutical Innovations Company (AmPharma)**
Darien, Illinois


Amphi-ELEC PWR is a water-soluble electrolyte concentrate for poultry, designed to prevent and correct dehydration and acid-base imbalances caused by stress. It combines chelated minerals and amino acids to enhance bioavailability and support immune function. It addresses stress-related conditions like heat, overcrowding, and infections, promoting health and egg production.



 **Enzyme Development Corporation**
New York, New York

Ficin, a non-GMO protease from the latex of Ficus species (tropical fig tree), is approved for use by AAFCO for Pet Food and Animal Feed. Ficin functions similarly to other plant proteases, such as Papain and Bromelain, but has a lower deactivation temperature, making it ideal for processing applications that need to deactivate at a lower temperature.



 **Milk Specialties Global**
Eden Prairie, Minnesota

With over 30 years of research and proven performance, Energy Booster is the high-quality, made-in-the-USA fat source that you can trust to always provide the best outcomes for your cows, for your bottom line, and for all the people in your organization that count on you to deliver without fail.



Bunge Creative Solutions Center
Chesterfield, Missouri

Bunge soy protein concentrate powders and textures deliver high-quality protein with nine essential amino acids for growth and lower anti-nutritional factors to support easier digestion for poultry, piglets, calves, pet and aqua. The textured options provide excellent craveable "meaty bite" and "chew". They are sustainably made to support your carbon goals.



 **Great Lakes Bio Systems**
Sturtevant, Wisconsin

HP800 is a liquid probiotic blend for the further enrichment of shrimp and crustacean feeds. HP800 is to be used as an acute feeding product for keeping the hepatopancreas in a constant state of peak performance.



  **Nutech Biosciences Inc.**
Oneida, New York

An essential additive (supplement) utilized for adjusting DCAD and supplying dietary Magnesium and calcium to improve the calcium status of cows at the time of calving.

supplier directory

For more information about these or other companies please email: feedlink@foodexport.org

Agrarian Solutions

Nappanee, Indiana

agrariansolutions.com

Global leader in beneficial cell-wall deficient (L-Form) bacteria-based technologies that enhance health, performance, and reproductive efficiency of livestock and poultry. Our proprietary, research supported, L-form bacteria products fortify animals' defense mechanisms against environmental challenges such as mycotoxins and ensure peak health and performance.

American Pharmaceutical Innovations Company

Darien, Illinois

americanpharma.net

Manufacturer and distributor of top-quality veterinary health products. AmPharma is a one-stop solution for all veterinary health products including enzymes, probiotics, toxin binders, anti-stress, growth promoters, acidifiers, vitamin mixes, amino acids, chelated minerals and trace elements, herbal products and feed additives both in powder and liquid forms. AmPharma Products are focused on enhanced immunity-less disease, better feed-utilization, and higher growth rate and production which leads to an outstanding return on investment.

Bunge Creative Solutions Center

Chesterfield, Missouri

bunge.com

Bunge's PurePro conventional textured soy protein concentrates and soy protein concentrates are a cost-effective and high-quality source of nutrition for piglets, calves, fish and pets. At 69% minimum protein on a dry basis, they provide all nine essential amino acids and are highly digestible. Additionally, PurePro soy protein concentrates are low in anti-nutritional factors such as oligosaccharides, trypsin inhibitors, and antigens to help support gut health and immunity.

Dairy Products Inc.

Eden Prairie, Minnesota

dairyproductsinc.com

We take nothing for granted – not our 29-year position as the industry's unrivaled leader and not your desire to get the very best and most for your investment. From dairy ingredients of the highest quality to innovative specialty services to peace-of-mind risk management programs, DPI keeps you far ahead of the herd. At DPI, it's our job to diminish the risk, lessen the stress and maximize your profits. Our Risk Management and Specialty Programs offer our partners the opportunity to forecast and flourish, while sleeping a bit sounder. The dairy ingredients we offer are fresh, functional, and naturally healthy for human consumption, all made in the U.S. Featured items: Whey Powders.

Enzyme Development Corp.

New York, New York

enzymedevelopment.com

EDC has been providing a wide range of enzymes for the animal feed industries for 70 years. EDC is the only producer of Papain and Ficin in the western hemisphere and offers an OMRI-certified papain for organic feed.

Great Lakes Bio Systems, Inc.

Sturtevant, Wisconsin

greatlakesbio.com

LAA1000 is a highly-concentrated, highly versatile amino acid formula. It is designed as an additive for feed milling, or for the enrichment of standard aquatic feed. This formula is particularly beneficial for high-density farming and is attractive for its cost-effectiveness. LAA1000 optimizes digestive capability, and supercharges the efficient uptake of proteins, lipids, phosphorous and carbohydrates from the feed to achieve higher growth rates, and increased ability to fend off disease.

Michigan

STATE FEATURE

9.5M+

acres operated

45.3K

farms operated
in the state

\$4.3B

in agricultural
exports – USTR

TOP FEED INGREDIENTS



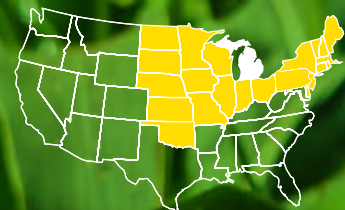
Corn



Soybeans



Hay



Food Export States

Michigan

Source: USDA

Houdek Manufacturing

Brookings, South Dakota
houdeknature.com

Meeting the world's needs for sustainable, traceable, high performance protein is in our nature! We're Houdek – leading the world in leveraging the power of fermentation to produce extraordinary plant-based proteins for use in aqua and animal feeds (especially pets!). Our signature products are ME-PRO® for shrimp and fish feeds and Protéger, for pet diets.

Milk Specialties Global

Eden Prairie, Minnesota
milkspecialties.com

MSG is also a leading manufacturer of animal feed products. The company has been manufacturing finished milk replacer products and milk replacer ingredients for nearly 80 years. In addition, Energy Booster® rumen bypass fats supplements and RPMet™ amino acid supplements are category-leading products for high performing dairy cows.

Nutech Biosciences Inc.

Oneida, New York
nutechbiosciences.com

Nutech Biosciences Inc. is a science-based company leading the industry in providing innovative solutions for the Animal Nutrition industry. We believe in keeping your animals productive and healthy and our customers profitable, so our team is dedicated to achieving these everyday solutions for a better future.

SCD Probiotics

Kansas City, MO
scdprobiotics.com

Elevate your livestock management with SCD BioLivestock. Wielding the power of science in every drop, our liquid probiotic feed and water additive optimizes nutrient absorption, gut balance and immune functions. And the best part is that BioLivestock works for your whole farm. Simple to administer to all your animals as a feed or water additive. This probiotic for chickens, ducks, geese and turkeys is also a probiotic for large animals like horses, cows, pigs, sheep and goats.

Universal Probiotics

Linwood, Kansas
universalprobiotics.com

Universal Probiotic products include a unique and proprietary blend of Probiotic Bacteria, yeasts and molds combined with Prebiotics. This encourages and creates a more favorable microbiome in the digestive system of the animal ingesting it.

Vesta Nutra

Indianapolis, Indiana
vestanutra.com

We aim to revolutionize supplements with top-tier health and wellness products. We prioritize high-quality, eco-friendly ingredients and encourage innovative formulations. Our research team continually explores new data to create groundbreaking dietary supplements, surpassing expectations and benefiting global health and well-being.

Oklahoma

STATE FEATURE

32.9M
acres operated

70.3K
farms operated
in the state

\$2.4B
in agricultural
exports – USTR

TOP FEED INGREDIENTS



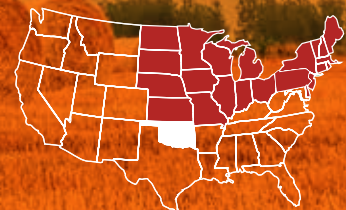
Hay



Wheat



Corn



■ Food Export States
■ Oklahoma

Source: USDA

For more information about these or other featured products please email: feedlink@foodexport.org



SCD Probiotics

Kansas City, Missouri

SCD BioLivestock is a patented combination of live, multi-strain, beneficial probiotics plus their bio-fermented post-biotics that equip your animals with the best internal system to optimize their food's nutritional content and defend against stress and disease. OMRI-listed for use in organic production, SCD BioLivestock is a super concentrate that can be added to feed or water.



Universal Probiotics

Linwood, Kansas

Universal Probiotics Poultry Supplement is specifically designed to improve the overall health and wellbeing for all Poultry species taking the supplement. The overall increased microbiome health of the poultry has resulted in improved gut health to minimize many poultry diseases and impacts like Necrotic Enteritis.



Vesta Nutra

Indianapolis, Indiana

Vesta's premium Vitamin D3 is a crucial nutrient for companion animals, facilitating essential mineral absorption for optimal bone health. It also enhances immune function, supports cognitive abilities, and promotes joint and muscle health. Overall, Vitamin D3 is integral to maintaining the comprehensive well-being of animals. Vesta® applies an advanced manufacturing process for the most competitive price.



Pet Food Ingredients and Ingredient Trends

The Building Blocks of Pet Nutrition

Pet food ingredients are at the core of providing pets with balanced and nutritious diets and the Midwest U.S. region of the United States is perfectly positioned to lead the industry with its abundant agricultural resources, innovative processing capabilities, and commitment to quality and sustainability. Pet owners increasingly prioritize health and wellness for their pets through ingredient quality, sourcing, and functionality prompting the pet food industry to innovate and diversify the ingredients used in its formulations.

Protein Sources

Proteins are the cornerstone of pet nutrition, essential for muscle development, immune function, and overall vitality. Traditional animal-based proteins still dominate the market but for allergy and sustainability concerns as well as dietary preferences, alternative proteins continue to gain popularity. Among the most popular alternative proteins in companion animal foods are plant-based proteins.

Carbohydrates and Fiber

Carbohydrates serve as energy sources and provide structure to pet food, but grain-free diets have increased the use of alternative carbohydrate sources.

Fats and Oils

Healthy fats like omega-3 and omega-6 contribute to energy, coat health, and brain development. Plant-based oils are increasingly used for their beneficial fatty acid profiles.

Vitamins and Minerals

Micronutrients are vital for overall health and are often added to pet food in premixes to ensure balanced nutrition. Natural sources of vitamins are also popular due to their appeal to health-conscious consumers.

Functional Ingredients

Functional ingredients are frequently added to pet food and treats for added nutrition. Common additives include probiotics and prebiotics like those offered by Universal Probiotics, immune-support supplements like those offered by Vesta Nutra, and other functional ingredients such as glucosamine and chondroitin, omega-3s, and beta-carotene widely offered by Midwest feed and additive companies.

Sustainability and Ingredient Sourcing

Sustainable ingredient sourcing has become a focal point for the pet food industry and will always be a priority for Midwest growers and feed manufacturers. Producers are increasingly transparent about the origins of ingredients, emphasizing locally sourced, organic, and non-GMO options to align with consumer values.

Pet food ingredients are evolving to meet the dual demands of pet health and consumer preferences. From sustainable proteins to functional additives, the focus remains on delivering high-quality, nutritionally complete diets tailored to the unique needs of pets. With its unmatched agricultural productivity and deep-rooted history in responsible farming practices, the Midwest continues to shape the future of pet nutrition by setting benchmarks in sustainability and quality.

Aquaculture Ingredients & Trends *(continued)*

1. Enhanced Nutrition and Functional Feed Solutions

With advances in dietary science, specialized feed and nutrient-rich additives are tailored to the unique nutritional requirements of various species by carefully adjusting levels of proteins, fats, carbs, vitamins, and minerals to boost growth rates, enhance feed efficiency, and promote overall well-being to supporting improved immunity, resistance to stress, and disease resistance.

2. Sustainability Focus

Environmental concerns are driving a shift toward sustainable feed ingredients. Reducing the use of wild fishmeal and fish oil is a priority. Innovations in plant-based and alternative proteins, as well as repurposing food waste for feed, are helping address these concerns. Few understand this better than Houdek Nature of South Dakota, manufacturer of Prairie Aquatech, a product dedicated to producing sustainable, protein-rich, plant-based feed for over a decade.

3. Precision Nutrition

Advances in nutritional science are enabling more precise formulations tailored to specific species and life stages. Precision nutrition reduces feed waste, improves growth rates, and optimizes feed conversion ratios.

“The Midwest has always had both pride and humility to be a place that can grow food for the world. With innovation like our fermentation technology, we get to build on that history by transforming what we grow into novel ingredients that are used and across the world.”

Sue Lancaster, Chief Commercialization Officer | Houdek Manufacturing, South Dakota

4. Digital and IoT Integration

Technology is playing a growing role in aquaculture feed management. IoT devices and software solutions allow producers to monitor feeding patterns, water quality, and fish health, reducing feed wastage and enhancing productivity.

5. Regional Expansion

The Midwest U.S., traditionally associated with land-dwelling agriculture, is very involved in aquaculture feed production. With its abundant supply of grains and plant-based proteins, the region is perfectly positioned to support land-based and recirculating aquaculture systems.

By leveraging innovation, advanced

technologies, and regional strengths like those in the Midwest, these trends collectively position the Midwest aquaculture feed industry to meet growing demand while prioritizing sustainability and efficiency. Chief Commercialization Officer for Houdek Manufacturing, Sue Lancaster, reflects on Midwest U.S. capabilities, “The Midwest has always had both pride and humility to be a place that can grow food for the world. With innovation like our fermentation technology, we get to build on that history by transforming what we grow like soy and corn into novel ingredients right here in the Midwest that are used in the Midwest and across the world.”

Regulatory and Market Dynamics

The U.S. aquaculture feed industry operates under strict regulatory guidelines to ensure food safety and environmental protection. The FDA oversees the approval of feed ingredients and additives, while state agencies often handle feed labeling and compliance. Growing consumer demand for sustainably farmed fish and seafood is encouraging producers to adopt best practices and third-party certifications.

The Road Ahead

As aquaculture expands to meet the needs of a growing population, the role of aquaculture will only increase in importance. Innovations in sustainable ingredients, advanced feed formulations, and technology-driven production practices are shaping the future of the industry.

With its robust agricultural base and commitment to innovation, the Midwest U.S. is well-equipped to lead and poised to thrive in supporting domestic fish and seafood production and contributing to global food security by developing aquaculture feeds that are both efficient and environmentally responsible.

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events

- Value-Added Feed Ingredients Buyers Mission at IPPE
Atlanta, Georgia | January 2025
- Feed Show PLUS! At VIV Asia
Bangkok, Thailand | March 2025
- Pet Food Ingredients Buyers Mission at Petfood Forum
Kansas City, Missouri | April 2025

- Feed Show PLUS! for Aquaculture at Seafood Processing Global
Barcelona, Spain | May 2025
- Value-Added Feed Ingredients Buyers Mission at World Pork Expo
Des Moines, Iowa | June 2025
- Value-Added Feed Ingredients Buyers Mission at World Dairy Expo
Madison, Wisconsin | October 2025

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