

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

## U.S. Leads Way in Phytase Research to Aid in Livestock Digestion

A Cornell University scientist has received accolades for his work in the area of new generation novel phytase enzymes from bacterial genes. His work has positively impacted some 1.3 billion pigs and 100 billion chickens. It has also saved costs for livestock producers and reduced phosphorus runoff from the farm contributing to enhanced environmental sustainability.

According to Cornell, he was among the first to demonstrate that nutrients – phosphorus, calcium, zinc and iron – are more bioavailable when animal feed is supplemented with phytase.

Phytase is an enzyme that assists livestock with digestion. Using it as a feed additive helps farmers reduce the cost of animal feed and reduces the amount of inorganic phosphorus released in the environment. Excess phosphorus causes pollution in water, which, in turn, causes greenhouse gas emissions.

### How Does it Work

Phytate is the primary storage of phosphorus in feedstuffs of plant origin. Phytate-bound phosphorus is mostly unavailable to pigs, with digestibility in the range of 20 to 30%. Phytase is an enzyme that acts on phytate to release phosphorus in a form available to pigs. Phytate also forms complexes with protein and minerals, preventing nutrient absorption.

Phytase is an enzyme that catalyzes the release of phosphorus from phytate. The sources of phytase with respect of swine nutrition are: endogenous phytase, microbial phytase, intrinsic plant phytase, and exogenous microbial phytase added to the diet. The exogenous microbial phytases are typically derived from bacteria or fungi with the most beneficial effects generated within the dose of phytase necessary to destroy 30 to 40% of the dietary phytate and enhance feed digestion.

The efficacy of phytase varies with phytase characteristics, which are determined based on phytase origin (bacterial or fungal phytase), phytase generation (first or new generation), and site of action of phytase on phytate. The most important characteristics influencing phytase efficacy include activity in the upper digestive tract, affinity to phytate, and resistance to degradation.

Beyond the phytase characteristics, several factors influence the efficacy of phytase, including the amount of phytate in the diet, the amount of phytase added to the diet, and diet formulation, with pelleting formulations having the greatest impact on phytase quality in hog rations.

Recommendations to improve phytase stability include sourcing heat stable phytase, storing phytase in pure form, and maintaining temperature and humidity.

The U.S. has several phytase enzymes suppliers including:

- Axtra® PHY GOLD by Dupont Nutrition and Biosciences
- Grainzyme by Agrivida, Inc.
- Natuphos® E by BASF

Sources: The Pig Site; January 14, 2022. Kansas State University Applied Swine Nutrition; Cite as: Gebhardt, Jordan T., Robert D. Goodband, Joel M. DeRouchey, Mike D. Tokach, and Jason C. Woodworth, 2021.



During 2021, Equine Nutrition experts at Mad Barn studied over 6000 equine diets and evaluated weanlings, broodmares, pasture pets, racehorses and other equine species. The analysis of these diets indicated significant trends in feeding practices.

## Equine Nutrition Experts Study Horse Diets



Diets were evaluated based on expected nutrient requirements based on physiological status, weight and activity level. They found the vast majority of diets provide too much energy, protein and iron while providing not enough of certain minerals, such as sodium, as well as antioxidants, such as selenium and vitamin E. When horses exceed their energy requirements, it leads to weight gain and higher risk of metabolic dysfunction and laminitis. Diets with deficiencies in key vitamins and minerals

can also negatively affect health.

Analysis of the more than 6000 diets indicated 84.5% of all diets oversupplied energy, 98% of all diets oversupplied protein, 100% of diets oversupplied iron, while 71% undersupplied electrolytes like sodium and 50% undersupplied selenium and vitamin E.

Mad Barn's research indicated that most horses have aspects of their health that need special attention when formulating a diet, such as mood balance, gut issues, or metabolic concerns. Of all the horses evaluated, 86% of all owners reported at least one health-related concern.

Common signs of a nutrient deficiency or imbalance in horses include:

- Changes in mood, appetite and stamina
- Dull coat
- Poor hoof quality
- Loss of topline or weak topline
- Muscle soreness
- Poor mobility
- Abnormal growth and development
- Slow recovery from exercise or illness

With a balanced diet of quality forage and compound feed and nutrient supplements, along with sound management practices, most common health concerns can be mitigated.

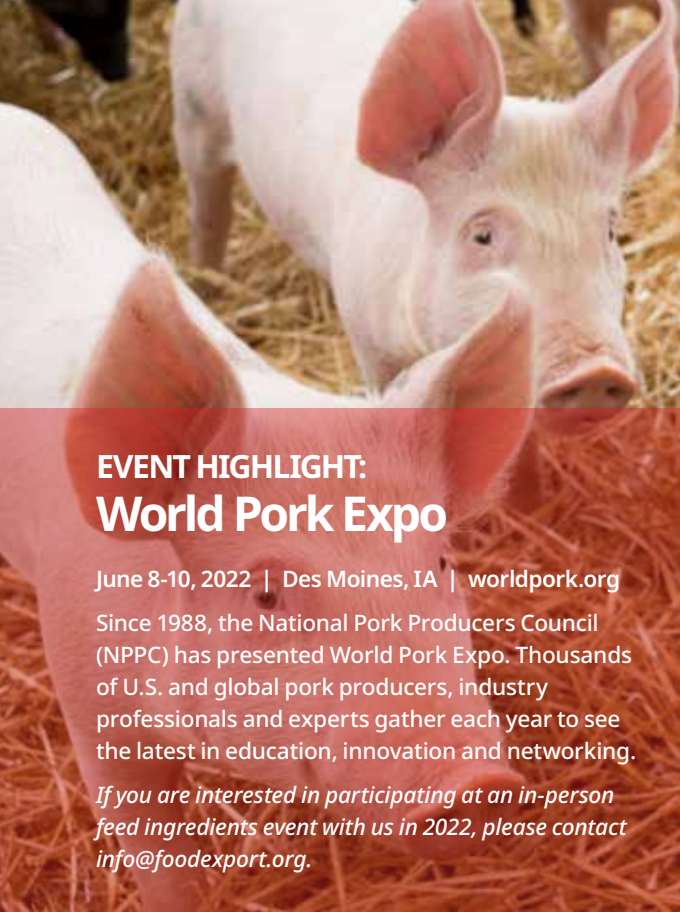
“Buyers Missions provide great opportunities to meet U.S. suppliers. Food Export asked me what kinds of ingredients I was looking for and they found reliable suppliers, saving time in my search. I could meet various people working in the same industry, which allowed me to build new networking relationships. I am still doing good business with U.S. suppliers that I met through one-on-one meetings during these events. This is a great program!”

Ms. Karren Ho | Cham Trading | South Korea

### trend & data spotlight

The swine feed market was valued at \$135.30 billion in 2019 and is expected to register a CAGR of 4.1% during the forecast period, 2020-2025. According to Food and Agricultural Organization (FAO), 50% of the global pig population is concentrated in China followed by EU and U.S.





## EVENT HIGHLIGHT: World Pork Expo

June 8-10, 2022 | Des Moines, IA | [worldpork.org](http://worldpork.org)

Since 1988, the National Pork Producers Council (NPPC) has presented World Pork Expo. Thousands of U.S. and global pork producers, industry professionals and experts gather each year to see the latest in education, innovation and networking.

*If you are interested in participating at an in-person feed ingredients event with us in 2022, please contact [info@foodexport.org](mailto:info@foodexport.org).*

## innovation spotlight

### Animal Nutrition Expert Documents How Whey Flavor Impacts Piglet Feeding

For all hog producers, the piglet weaning process is a critical time in the farrowing stage to prepare piglets for the next step in the feeder nursery.

Ioannis Mavromichalis, animal nutrition industry expert wrote in the Jan/ Feb 2022 publication of [Feed Strategy](#) about feed intake post weaning. He recommends that piglets should be at 200-250 grams of feed per day post weaning, but barn managers report struggles with getting piglets to eat in the first few days post weaning until hunger forces them to do so.

Mavromichalis experience and research indicates that the type of feed ingredients aren't so much the issue as the flavor of the ingredients. For example, two whey ingredients of equal quality will produce different results based on the palatability of the whey. He has watched these changes immediately change consumption from 40 g to 150g per day in newly weaned piglets when a sweeter flavored whey is introduced.

All whey is not created equal and you should check with your feed supplier about drying temperature and type of processing. Of course, the easiest method is tasting each batch. The Midwest is home to many high-quality whey producers with the latest technology and research in whey production and feeding.

## featured products



For more information about these or other featured products please email: [feedlink@foodexport.org](mailto:feedlink@foodexport.org)

### Deproteinized Whey Powder/Whey Permeate Dairy Products Incorporated Eden Prairie, Minnesota

Whey permeate (also known as deproteinized whey) is most commonly used in piglet feed. It is also an excellent choice for calf milk replacer and poultry feed. Whey permeate includes protein with a high level of carbohydrate (lactose). [dairyproductsinc.com](http://dairyproductsinc.com)



### Nu-BIND® RIBUS, Inc. | St. Louis, Missouri

Nu-BIND™ is a blend of five ingredients that provides the binding necessary for the production of natural and organic dietary supplements and is designed to act as an alternative to synthetic binders previously considered vital in making tablets and capsules. [ribus.com](http://ribus.com)



### LPB800 Great Lakes Bio Systems, Inc. Sturtevant, Wisconsin

A concentrated direct-fed microbial for drinking water or dry feed, blended precisely to optimize the systemic functions of terrestrial and aquatic animals. Achieves the most favorable levels of systemic toxin elimination, enhanced immune response and maximized nutritional uptake. [greatlakesbiosystems.com](http://greatlakesbiosystems.com)



### SRC Meat & Bone Meal Bridgepathway LLC | Jericho, New York

Meat & Bone Meal is the rendered product from mammal tissues. An excellent source of protein (amino acids) and minerals for use in poultry feed, swine feed, pet food, or as an organic fertilizer. [bridgepathway.com](http://bridgepathway.com)

### Equine Plus SCD Probiotics | Kansas City, Missouri

Equine Plus™ is an equine digestive feed additive with 12 probiotic species to help enhance your horse or foal's daily health. Probiotics have been found to stabilize horse digestive systems. Equine Plus may help promote a balanced gut flora and healthy hindgut function, contributing to better overall health. [scdprobiotics.com](http://scdprobiotics.com)



### Grain Sorghum United Sorghum Checkoff Program Lubbock, Texas

A resource-conserving crop that can be used in various feed ingredients, not only does sorghum fit well into feed rations but it has an ease of feed acceptance with little-to-no tannins and a low incidence of mycotoxins. [sorghumcheckoff.com](http://sorghumcheckoff.com)





## U.S. Sorghum Provides High Quality Feed Solution

The U.S. is the number one producer of sorghum in the world. The U.S. sorghum crop for feed and Industrial use is 100% tannin free and entirely non-GMO with producers throughout the Midwest in Kansas, South Dakota, and Nebraska, as well as other key production regions of the U.S.

We recently had a chance to speak with Brent Crafton, the Director of Feed Ingredient Utilization for the United Sorghum Checkoff Program to learn more about their work and how sorghum can be an important feedstuff.

**Q** Is sorghum a good fit for a specific species or is it an option for livestock, poultry and aquaculture industries?

**A** Animal agriculture is one of the most important markets for U.S. sorghum production. Grain sorghum, Forage sorghum and Silage sorghum are utilized in the beef, swine, dairy, and the pet food industries and we've even begun extensive research for its use in aquaculture and poultry where we anticipate seeing positive results.

**Q** How should the feed industry be using sorghum?

**A** Sorghum is a great source of energy in a ration and can be used as an intermediate or secondary protein source that complements other protein sources in the ration. Sorghum is a smart choice for animal agriculture for numerous reasons. Not only does sorghum fit well into feed rations, it also has an ease of feed acceptance with respective species. Modern U.S. sorghum hybrids contain approximately 98-99% the energy content of corn, while recent studies have observed 98-103% the feeding value of corn in swine diets. For example, sorghum can replace all corn, wheat or barley in diets fed to all classes of swine.

**Q** What are some of the feed trends you are seeing and how is U.S. Sorghum meeting them?

**A** Certainly. Traceability and sustainability are big trends we are seeing. Sorghum is the Resource Conserving Crop™ that can support animal nutrition programs from the grain, stalks or leaves as a resource conserving ingredient. We've also worked to begin to validate a variety of sustainability metrics to highlight the resource conserving benefits of U.S. sorghum including the fact that it does not contribute to deforestation and it is a less water intensive crop compared to other feed grains.

Crafton closed by recommending that anyone interested in learning more about the benefits of sorghum as a feed ingredient visit <https://www.sorghumcheckoff.com/industry/> to see up to date research by livestock species.



## BENEFITS OF SORGHUM USE IN SWINE PRODUCTION

- 1** Sorghum demonstrates **98% to 103%** the feed value of corn
- 2** Grain sorghum can completely replace all the corn, wheat or barley in all swine diets as the primary energy source
- 3** Proper processing can increase digestible energy content by 3%
- 4** Pigs fed sorghum-based diets had less linoleic acid and polyunsaturated fatty acids in back- and jowl-fat than pigs fed corn
- 5** Reduced feed costs
- 6** Contains greater digestible phosphorus than corn, meaning less phosphorus excreted, increasing environmental and economic advantages
- 7** Low incidents of mycotoxin contamination
- 8** Improves pork fat quality due to a more favorable fatty acid profile and lower iodine level. The low iodine value of grain sorghum allows more flexibility in diet formulation
- 9** 100% of U.S. sorghum is non-GMO
- 10** U.S. feed-grade sorghum is tannin-free

For more detailed information, please visit: <https://www.sorghumcheckoff.com/news-and-media/newsroom/2016/09/02/feed-value-benefits-swine/>



## U.S. House passes Ocean Shipping Reform Act

- Sets requirements for operating a shipping exchange involving ocean transportation in the foreign commerce of the U.S.
- Prohibits ocean common carriers and marine terminal operators from retaliating or discriminating against shippers because such shippers have patronized another carrier or filed a complaint
- Requires the Federal Maritime Commission (FMC) to publish and annually update all its findings of false certifications by ocean common carriers or marine terminal operators and all penalties assessed against such carriers or operators
- Requires ocean common carriers to adhere to minimum service standards that meet the public interest
- Directs the FMC to establish rules prohibiting ocean common carriers and marine terminal operators from adopting and applying unjust and unreasonable demurrage and detention fees
- Requires ocean common carriers to report to the FMC each calendar quarter on total import and export tonnage and the total loaded and empty 20-foot equivalent units per vessel that makes port in the U.S.
- Authorizes the FMC to initiate investigations of an ocean common carrier's fees or charges and apply enforcement measures, as appropriate
- Revises annual reporting requirements for the FMC on foreign laws and practices to include practices by ocean common carriers

The current situation report for ASF notes that the disease has been reported in 32 countries. The disease was first reported in 1978 on the Italian island of Sardinia where it is endemic. However, as early as 2005 most outbreaks were in African countries. In 2007, the disease was confirmed in the Caucasus region of Georgia and spread to neighboring countries affecting domestic pigs and wild boar. The first occurrence of ASF was

## African Swine Flu Update

reported in the European Union (EU) in 2014 and since then, numerous EU countries have been affected by this devastating pig disease that continues to be reported in 16 countries (during 2020 / 2021). Two European countries have managed to eradicate the disease: Belgium (event resolved in March 2020) and Czech Republic (event resolved in April 2018).

In August 2018, the virus leapt to China which represented the first occurrence of ASF in Asia. Since then, the disease has continued to spread in the Region, affecting 16 countries as of 2021. In September 2019, the first occurrence of ASF in Oceania was reported by Timor-Leste, followed by Papua New Guinea (March 2020). And in July 2021 the disease reappeared in the Americas after an absence of almost 40 years, having been introduced in Dominican Republic and later in Haiti.

- Asia is reporting a new recurrence in Hong Kong as of January 12, and Russia is starting a new recurrence as of January 12.
- Ongoing events include those in Hungary, Italy, Latvia, Romania, Russia.

- New events were recorded in Thailand starting November 28 and Latvia January 4. A first occurrence is being recorded for North Macedonia on December 29 and Italy on January 5.
- In total, since January 2020 ASF has been reported as present in five different world regions in 32 countries, affecting more than 1,000,000 pigs and more than 28,000 wild boars (data reported through INs and FURs), with more than 1,500,000 animal losses.

The World Organization for Animal Health has an active monitoring and reporting protocol and recommends implementation of strict biosecurity measures to strengthen early disease detection systems, in particular where there is evidence of circulation of low virulent strains of African swine fever virus (ASFV) and to promptly notify any cases of ASF to the OIE.

### Purdue University Receives Grant for ASF Rapid Test Development

COVID-19 test technology is allowing for the research and development of a similar test for African Swine Fever. Mohit Verma, a professor of agricultural and biological engineering in Purdue University's College of Agriculture, will lead a research team that recently received \$1 million from the National Animal Health Laboratory Network and the National Animal Disease Preparedness and Response Program.

It is believed a rapid test can provide a tool for diagnosis and control of the spread of ASF with results in as little as one hour. Rapid portable tests are available internationally but lack the accuracy of laboratory techniques. A field test may be available within the next two years.

## news & trends

### U.S. Ports Seek Backlog Solutions

For more than a year, industry organizations have been working with the U.S. Department of Agriculture (USDA) and port authorities to solve backlog problems in U.S. ports. One partnership includes the USDA and the Port of Oakland, CA where the USDA has set up a 25-acre "pop-up" site to facilitate the filling and removal of empty shipping containers.

### Commodity Markets Show Optimism

Corn, soybean and other crops are set to continue to outperform previous years, but ongoing challenges related to the pandemic, logistics issues, rising cost of inputs (including fertilizer and fuel), inflation and geopolitical challenges including the Ukraine-Russia conflict will provide economic flash points despite increased farm income and positive trade influences. Economists are expecting continued GDP growth across most agricultural sectors and room for higher pricing as demand increases.



### USDA Launches Mobile Market App

The USDA Market News Mobile Application provides producers and everyone else in the supply chain with instant access to current and historical market information. The initial version of the free app includes nearly 800 livestock, poultry and grain market reports, with additional commodities added throughout the coming year.

*If you are a buyer or a seller and interested in participating in any of our in-person events and learning more, please contact [info@foodexport.org](mailto:info@foodexport.org)*

### Labor Shortages Shaping Feed Mill Technology

All-time high labor shortages are causing innovative technology to adapt at breakneck speeds. Robotics, sensors, artificial intelligence and camera vision technology are all accelerating to replace labor where positions have not been able to be filled. Experts suggest that an automation solution isn't a one and done addition, but plans for maintenance, remote support and cyber security must also be addressed, as well as upskilling of existing labor to operate new equipment.



### Agriculture Industry Sets Its Sights on New Farm Bill

Industry leaders are already addressing issues and needs that will lay the foundation for the next farm bill in 2023. Not only will farm safety net provisions be part of the discussion, but challenges associated with rising input costs, equipment changes and needs and even climate change-related technology.

### 2022 Alltech Agri-Food Outlook Reveals Global Feed Data

The eleventh edition of Alltech's annual feed production survey includes data from more than 140 countries and more than 28,000 feed mills. It is estimated that international feed tonnage has increased by 2.3% and 10 countries control 65% of the world's feed. North America saw steady growth of 1.9% over the last year, and the U.S. remained the second-largest feed-producing country globally, behind China. The big winner was Asia-Pacific with the largest regional growth of 5.7%. Asia was also home to several of the top 10 feed-producing countries, including China, India and Japan.

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## events

- **Pet Food Ingredients Buyers Mission at Petfood Forum**  
May 2, Kansas City, Missouri
- **Food Show PLUS!™ at Interzoo**  
May 24-27, Nuremberg, Germany
- **Value-Added Feed Ingredients Buyers Mission at the World Pork Expo** June 8, Des Moines, Iowa
- **Focused Trade Mission to Hong Kong for Pet Food**  
August 15-16, Hong Kong
- **Focused Trade Mission to China for Pet Food**  
August 17-19, Shanghai & Beijing, China
- **Value-Added Feed Ingredients Buyers Mission at the World Dairy Expo** October 5, Madison, Wisconsin
- **Food Show PLUS!™ at FIGAP**  
October 19-21, Guadalajara, Mexico