

# Xylamax®

Unique xylanase scientifically designed for consistent premium performance



All plant material used in Poultry diets contains fiber. Fiber is not necessarily indigestible by birds since some types of fiber are soluble and some are more complex than others. Complex fibers are indigestible. A typical corn-SBM diet is considered highly digestible with only 88-90 percent energy digestibility. The indigestible 10-20 percent energy of the diet consist of fiber molecules or nutrients that are entrapped by these fibers, mainly phytates and Non-Starch Polysaccharides (NSP). There are various types of NSPs. The most common type of NSPs are classified as xylans. Xylans make up to 43 percent of the entrapped indigestible NSPs.

NSPs are present in two forms: water-soluble and water-insoluble. Depending on the type of grain used in a diet, 1-38 percent of xylans are soluble xylans and 62-99 percent are insoluble xylans. Grains commonly used in animal diets, such as wheat and corn, as well as other ingredients such as Soybean meal, contain higher concentrations of insoluble xylans; up to 99 percent of the xylans in the diet. To fully utilize energy in feed, formulating diets to include an enzyme with the activity needed to break down both soluble and insoluble xylans is essential. Xylamax®, a modified GH11 Endo-xylanase, was engineered with this goal in mind, where it degrades both types of xylans releasing additional energy (kcal) and make it available for the birds. For this reason, Xylamax is compatible with a wide variety of ingredients, making it the best xylanase for animal diets. Xylamax also degrades xylan substrates to 2-5 unit xylooligosaccharides (XOS), shorter carbohydrates chains, which are used as nutrients by beneficial bacteria in the gut while depriving pathogenic bacteria in the lower gut from feeding on the larger carbohydrate chains. Xylamax creates a symbiotic gut environment while optimizing animal performance.

**Q:** Other products on the market have multiple xylanases or a combination of other enzymes. Does that make them a better product than Xylamax?

**A:** More does not always means better, the balance between nutrients available to the animals is paramount, and the effect of various enzymes are not always positive. The wrong combination of enzymes, like anything, can be detrimental to the animals. Xylamax has outperformed other xylanases, enzyme combinations, and other additive products available on the market, even those that contain multiple enzymes, xylanases or other combinations, in growth performance trials. An enzyme without proper activity for xylan degradation may result in nutrient imbalance, especially when a nutrient-value is given to such product, otherwise known as matrix values. Such nutrient imbalance will negatively impact animal performance and allow pathogenic bacteria to dominate in the gut. Therefore, when selecting a product, choose a product that is safe, economical, and with proven performance such as Xylamax.

**Q:** How does Xylamax compare against the leading competitors?

**A:** Xylamax is uniquely formulated with poultry gut environment and feed manufacturing process in mind. Xylamax is thermostable and the most active in its class of xylanases under the gut environment found naturally in a bird. In other words, Xylamax can withstand the high pelleting temperature and works in a wide range of pH. Xylamax activity starts in the duodenum, it is maximized in the jejunum/ileum section of the small intestines where most nutrients are digested and absorbed. This allow the birds to receive more nutrients and utilize them for production of meat or eggs.

**Q:** I hear about Xylamax having excellent pH activation rate, what does that mean?

**A:** The poultry gut has a wide pH range from 3 to 8. The fibers are broken down as feed pass through the digestive track. However, fiber digestion occurs primarily in the small intestines where this section of gut has a neutral/low-alkali pH of 6 to 7.5. Therefore, an effective enzyme product must survive the dramatic change of pH, and demonstrate maximum activity in small intestines where the digestion take place. Xylamax demonstrates its maximum activity at the pH levels found in the jejunum and ileum, where the activity is about 35 percent higher than regular GH11 xylanases, and 80 percent higher than the typical Cocktail GH10 xylanase. Which indicates Xylamax's ability in unlocking nutrients in the ideal segments of the bird's gut and leads to more nutrients' availability for the birds.

GH11 xylanase dissolves both soluble and insoluble xylans.

Xylamax is most active at pH levels in the jejunum and ileum, and is about 35 percent higher than the regular GH11 xylanases and 80 percent higher than the typical GH10 enzyme cocktail.

Xylamax liberates between 120-150 kcal more for animals

Xylamax has been shown to improve feed conversion by 4-5 points

**Q:** Why is activity at a certain temperature so important when we talk about enzymes?

**A:** Each enzyme has a temperature range where the enzyme is active and where its activity is optimized. When an enzyme is present in an environment with temperature outside of its range, the enzyme is either not active or being denatured. Poultry have the average body temperature between 40.6–41.7 degrees Centigrade. Thus, an effective enzyme for poultry should have optimal activity at the animal's body temperature. Xylamax was designed with poultry in mind. Therefore, the optimal temperature range for Xylamax overlaps with poultry body temperature, which allows optimal activity releasing nutrients available to the birds.

**Q:** Does this mean that Xylamax either works best with pH or temperature?

**A:** Enzymes are biocatalysts or bioactive proteins and their activities are regulated by temperature and pH. Both temperature and pH are essential for an enzyme to function properly. Xylamax is a product designed specifically to perform in poultry, where the xylanase activity is optimal at the bird's internal body temperature, and at the pH level in the small intestines where fiber digestion occurs.

**Q:** Xylamax looks good on paper but how does it perform in production trials?

**A:** BRI is dedicated to understanding how Xylamax works not only in the lab but also in commercial production systems around the world. We have completed over 50 trials to investigate various inclusion levels, performance outcome comparing to competitor products, and supplementation in disease challenged or non-challenged production scenarios. The results varied based on different circumstances, production goals, and the application of the product. BRI encourages producers to work with their technical service partners to find the best fit for your organization and let the results speak for themselves.

**Q:** Is Xylamax a thermostable enzyme, and does it stand the pelleting process?

**A:** Xylamax has been shown to be thermostable at most pelleting temperatures and conditions. Its unique structure allows the active enzyme to remain stable and not denature even under the high temperatures and frictions during pelleting.

**Q:** Does all this make Xylamax much more expensive than alternative enzymes?

**A:** All products are not created equally. When compared to competitors' products Xylamax provides a higher energy matrix and is 34-85 percent more cost competitive (depending on region and competitive product comparison) than other xylanases on the market. That means paying less per kcal and getting a more efficient product, which means the return on investment is much greater.

**Q:** This all looks great in theory but what does it mean for me?

**A:** Xylamax has been scientifically proven to be most efficient at the pH and temperature within a bird, higher efficacy than other xylanases, as well as cost efficiency to customer operations. Reformulating diets to include Xylamax versus competitive product will result in feed cost savings, and an increased flock uniformity. If used in an on-top application, it can improve feed conversion rates by as much as 4-5 points and provide a significant body weight gain. This has been demonstrated in many customers trials.

**Q:** Are there any other benefits of Xylamax?

**A:** Since Xylamax reaches peak activity in the most beneficial portion of the gut where nutrients are typically digested and absorbed, it significantly improves animal's digestibility and performance. Xylamax breaks down the xylans into shorter sugar chains called xylooligosaccharides (XOS). These short chain XOS feed the beneficial bacteria and lesser XOS will be passed to the hindgut, so pathogenic bacteria are unable to use them as a nutrient source, and therefore cannot grow and multiply. This is clearly demonstrated by an increase in the total bacilli (beneficial bacteria) count in the ceca, and lower counts of clostridia and other pathogens in the ceca. As a direct impact on reducing the xylan content in the gut, Xylamax decreases digesta viscosity in corn and wheat diets which also aids in prevention of pathogenic bacteria growth. With all the capability mentioned, Xylamax provides a prebiotic effect reflected by stabilizing healthy gut microbiota and contributing to overall gastrointestinal fitness in birds.

Designed, Developed  
and Tested by:



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