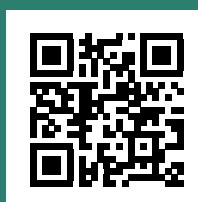


Releasing additional energy and nutrients from cereal grains by releasing encapsulated nutrients and reducing viscosity by affecting both soluble and insoluble arabinoxylans.

We bring progress to life



Scan to know more
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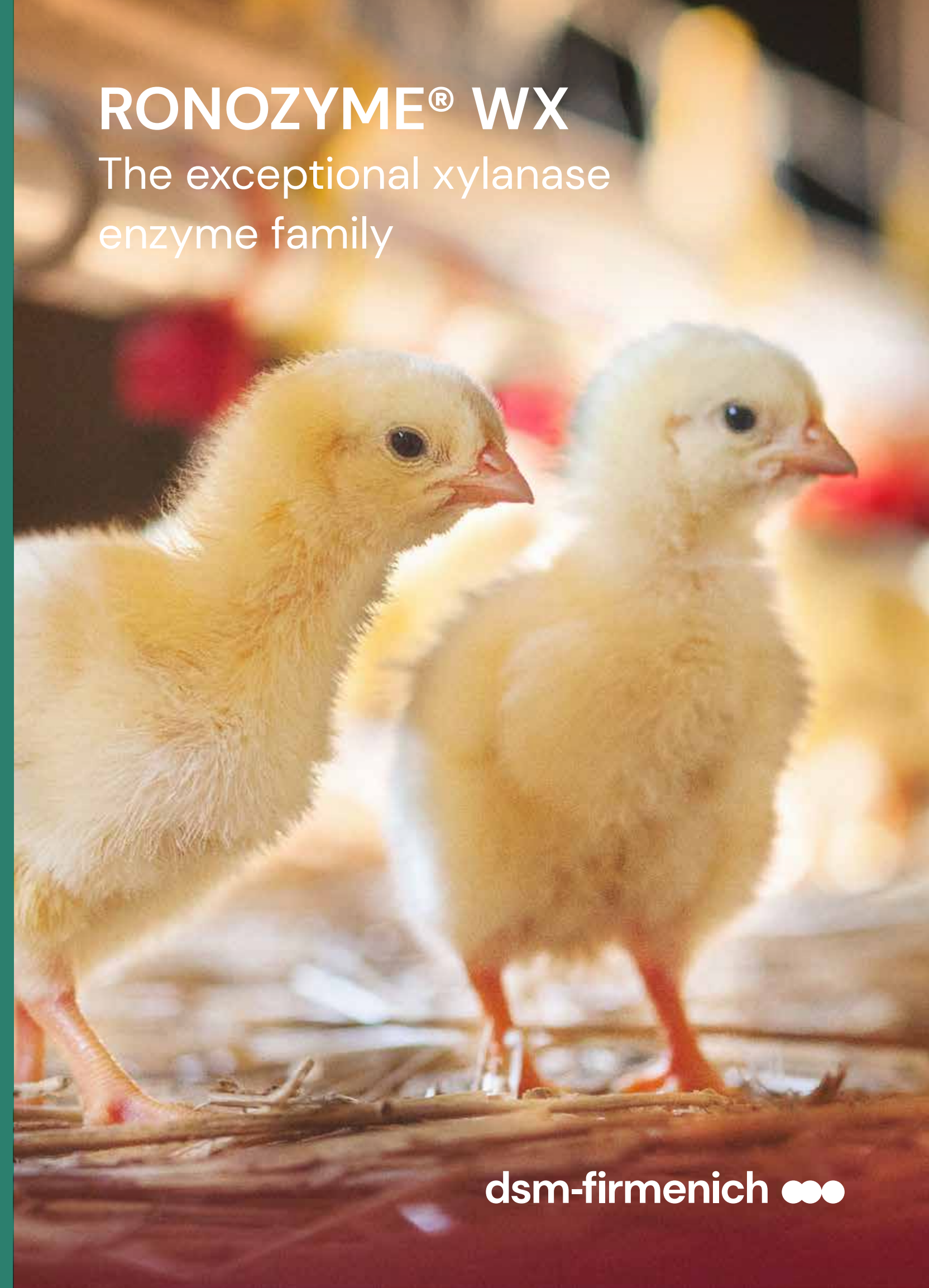


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October 2023

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RONOZYME® WX

The exceptional xylanase enzyme family



dsm-firmenich 

FO6_RonozymeWX_P_EN_1023_MBR

The poultry producer's first choice in NSP enzymes

RONOZYME® WX is a highly efficacious xylanase enzyme developed to meet the demands of modern poultry production. Its characteristics include exceptional heat stability, a broad pH range and a high, consistent activity level. These features allow the product to be one of the best carbohydrase enzyme in corn, sorghum or wheat based diets and those diets which may include cereal by-products. More specifically, RONOZYME® WX is a source of endoxylanase which hydrolyzes arabinoxylans and xylans in the feed.

Derived from *Thermomyces lanuginosus* spp., an organism that thrives in hot, dry conditions, RONOZYME® WX retains its activity even under high pelleting temperatures.

Polysaccharides and their role in feed

Plant polysaccharides or long chain carbohydrates function as a major nutritional component in the diet, providing energy required for growth and development. Non-starch polysaccharides (NSPs), however, are a dietary component that is unavailable to poultry.

This is because the digestive tracts of poultry species do not contain the enzymes

required for NSP breakdown. There are many types of NSP molecules. Types and amounts of NSPs vary by grain which are represented in Figure 1. NSP levels can vary depending on grain variety and the location in which it has been grown.

As shown in Figure 1, grains have an NSP content of approximately from 4% to 17%. Arabinoxylans are NSPs which have an antinutritive effect. The insoluble arabinoxylans found in cereal grains encapsulate nutrients such as starch and

protein so they pass through the digestive system without being absorbed. Moreover, insoluble arabinoxylans reduce the digestibility of nutrients by increasing the viscosity of digesta. RONOZYME® WX acts on these arabinoxylans to reduce viscosity and allow once encapsulated nutrients to become available for use by the bird (Figure 2).

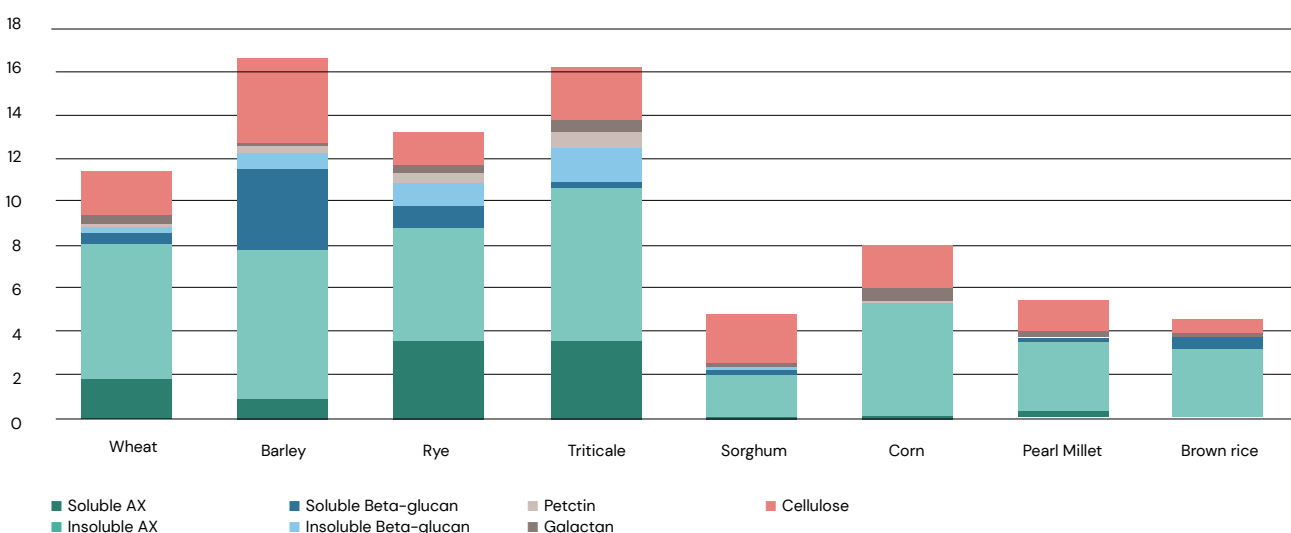
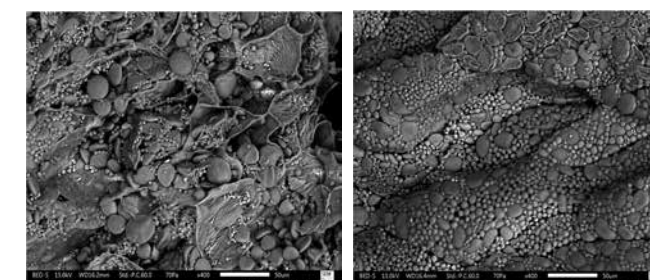


Figure 1. Levels of NSP present in grains (% DM)

Heat stable and reliable

Enzymes are proteins that have specific and complex structures essential for their activity. Exposure to heat for extended periods of time can result in structural changes to the protein that renders the enzyme inactive.



Control, Wheat (electron microscopy) After incubation with RONOZYME® WX 2000 CT, Wheat (electron microscopy)

Figure 2. RONOZYME® WX xylanase degrades cell wall structures (arabinoxylan) in cereal grains

As the degree and duration of heat processing at feed mills has intensified, enzyme stability has become a key concern. RONOZYME® WX2000 CT and RONOZYME® WX5000 CT, the granulated form of the xylanase enzyme, offers excellent thermostability. This is a result of the intrinsic characteristics of the enzyme, which originates from an organism that thrives in hot, dry conditions, and the added protection provided by the patented coated thermostable (CT) formulation (Figure 3).

Trials show the exceptional heat stability of RONOZYME® WX Enzyme Family

A study conducted at the Biotechnological Institute in Kolding, Denmark tested the activity of seven enzymes after pelleting at high temperatures (Figure 4). Only RONOZYME® WX2000 CT retained more than 80% of its

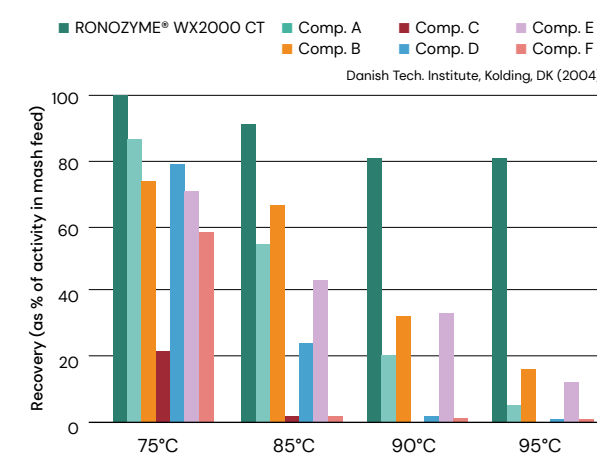


Figure 4. RONOZYME® WX 2000 CT vs competitor xylanases, Comparison of residual enzyme activity after different pelleting conditions

original mash activity at a temperature of 203°F/95°C.

Activity in competitive products at this excessive temperature was measured at less than 15%.

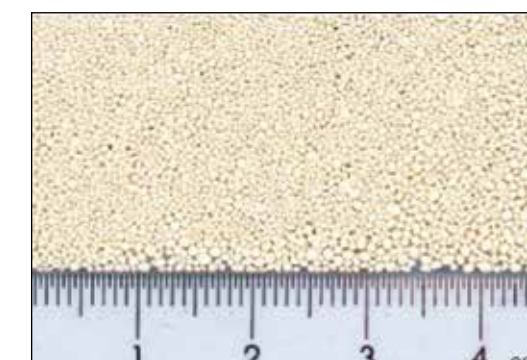


Figure 3. The granular form of RONOZYME® WX2000 CT

Added benefits of granulation

Other benefits of the granulated CT enzyme are its dust-free nature and flowability. Both of these advantages contribute to its excellent mixability in both premixes and feeds. And, because RONOZYME® WX2000 CT and RONOZYME® WX5000 CT are dust-free, losses of the active ingredient are minimized during feed preparation, while essentially eliminating exposure to dust-related allergic reactions. The Heubach filter method is used to measure dust emission from feed additives.

Improving the performance and profitability of poultry diets

A study was conducted in Belgium with DIFs (Digestibility Improvement Factor) showed significant (P<0.05) improvements in feed conversion (1.2% for 100 & 3.5% for 200 FXU/kg feed dose) when compared with an untreated control. Results show that producers can lower the feed cost with matrix application and still get extra efficiency using RONOZYME® WX products.

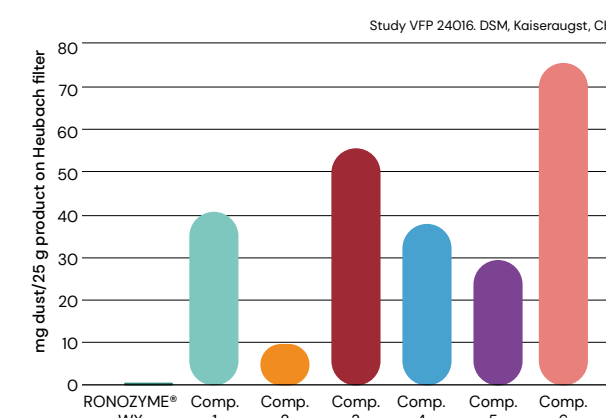


Figure 5 illustrates the low dust content of RONOZYME® WX 2000 CT compared to other enzyme products.

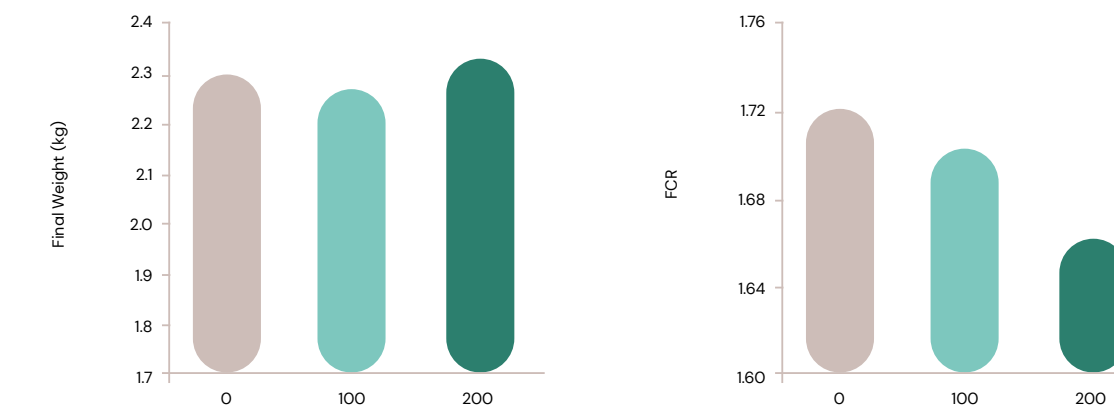


Figure 6: Results of DIF trial, Belgium

In another similar study from the Institut fur Kleintierforschung in Merbitz, Germany, there was a 2.1% improvement in feed conversion and a significant (5%, P<0.05) improvement in weight gain when RONOZYME® WX was fed and performance was compared to the untreated control (Figure 7).

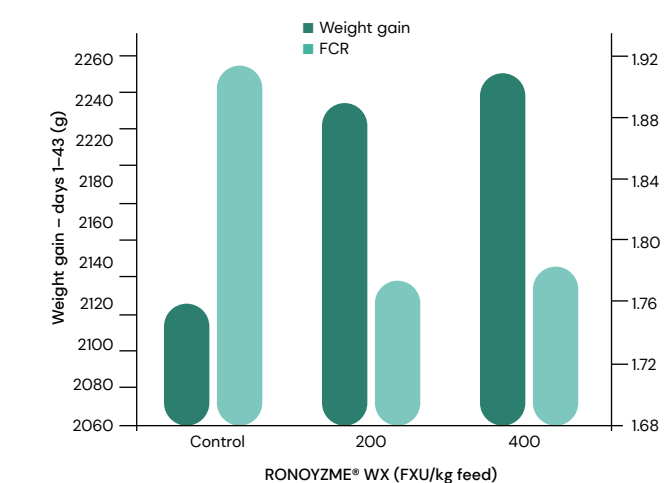


Figure 7. Results of performance trial, Germany

Product information

RONOZYME® WX is available in several product forms to fit different feed processing applications:

- RONOZYME® WX2000 (CT) is a coated non-dusty, light brown granulate with a minimum xylanase activity of 2.000 FXU/g.
- RONOZYME® WX5000 (CT) is a coated non-dusty, light brown granulate with a minimum xylanase activity of 5.000 FXU/g.
- RONOZYME® WX2000 (L) is a yellow to light brown aqueous liquid with a minimum xylanase activity of 2.000 FXU (W)/g with 1.16 g/ml density.

Recommended dose range

Practical dose range is given on basis of cost-effective response. Dose, product form and DIF recommendations may vary according to different raw material type and level inclusion in feed. Please contact your DSM-firmenich expert to get detailed information.

| | Recommended enzyme activity (FXU/kg feed) | RONOZYME® WX 2000 CT (g/ton) | RONOZYME® WX 2000 (L) (g/ton) | RONOZYME® WX 5000 (g/ton) |
|----------|---|------------------------------|-------------------------------|---------------------------|
| Broilers | 100-300 | 50-150 | 50-150 | 20-60 |
| Turkeys | 100-400 | 50-200 | 50-200 | 20-80 |