

RONOZYME® NP

The better phytase

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Introduction

Reducing feed costs without compromising the performance of animals with high genetic potential is a major profit driver in livestock farming systems. As global market forces increase the variability of cost of feed ingredients, so increasing efficiency and flexibility becomes the prime objective.

This is as true for phosphorus as for energy and protein. Phosphorus is an essential mineral in the nutrition of all classes of livestock. However most commercial diets are based on cereals and oilseeds in which the bioavailability of phosphorus is poor.

The reason the naturally occurring phosphorus is unavailable to animals is that it is present as phytate phosphorus which is a largely indigestible molecule.

It is indigestible because the digestive tracts of monogastric species do not have adequate concentrations of the phytase enzymes capable of releasing the phosphorus.

To ensure adequate available phosphorus, it has been traditional and cost effective to add sources of inorganic phosphorus. This has two consequences. The first is that its highly volatile price increases feed costs. The second is that all the unavailable phosphorus is excreted leading to increased environmental pollution with phosphates.

Feeding supplementary microbial phytases can increase the digestibility and utilization of phosphorus in cereals and oilseeds, therefore reducing feed costs and environmental pollution.

RONOZYME® NP is a new phytase offering from DSM Nutritional Products and Novozymes which is proven to deliver outstanding results in a range of monogastric production systems.



What is RONOZYME® NP?

RONOZYME® NP is the latest phytase offering of the RONOZYME® feed enzyme portfolio designed to meet the demands of modern production systems. It allows a higher release of phytate phosphorus, so allows greater reduction in feed costs through lower inclusion rates of inorganic phosphate.

Following extensive trials RONOZYME® NP is proven in pig and poultry systems, to **improve phosphorus metabolism and performance**. In addition, other minerals such as calcium, magnesium and trace minerals that are bound to the phytic acid are released for absorption. The higher intrinsic heat stability allows to survive in the digestive tract during feeding. It has even been shown to deliver higher cost effective results at levels in excess of traditional inclusion rates, offering the chance to further reduce inorganic phosphate supplementation rates for **better cost saving**.

RONOZYME® NP combines this exceptional effectiveness with outstanding ease of use. The CT form is the most **heat stable**, able to withstand the harsh conditions experienced in animal feed manufacture.

Available in **three different forms**, it can be easily incorporated into any feed manufacturing system while its flow and mixing characteristics mean finished feed quality is not compromised. It meets industry standards for homogeneity and safety in premix and feed production.

What does RONOZYME® NP do?

- Increases the availability of phosphorus from cereals and oilseeds
- Reduces the need for inorganic phosphate supplementation
- Increases performance in pigs and poultry
- Reduces environmental phosphate pollution
- More effective at higher inclusion rates than usual - so maximising increases in phosphate digestion

RONOZYME® NP...

...**better** phytase efficacy...

...**better** heat stability...

...**better** cost efficacy...

...for **higher profits**



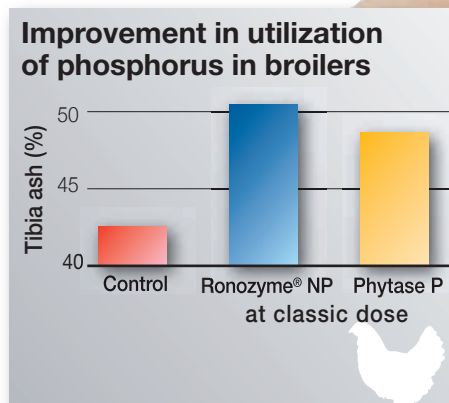
RONOZYME® NP – better phytase efficacy

Results from trials demonstrate the beneficial effect of RONOZYME® NP in pig and poultry units.

Improved phosphorus utilization

Animals fed RONOZYME® NP use phosphorus more effectively

Bone mineralisation, usually analyzed by assessing tibia ash content, is recognized as an effective measure of phosphorus utilization. Trials comparing RONOZYME® NP to control diets and a competitor product show significantly higher bone mineralization, and therefore better phosphorus utilization.



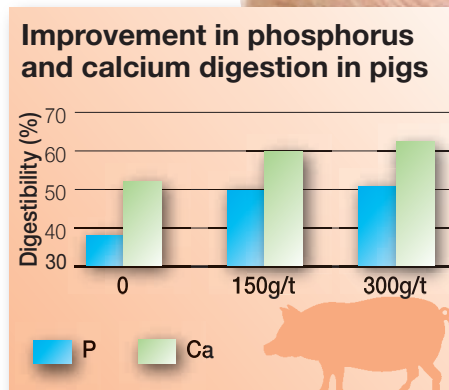
DSM France (CRNA), 2006

Improved phosphorus and calcium digestibility

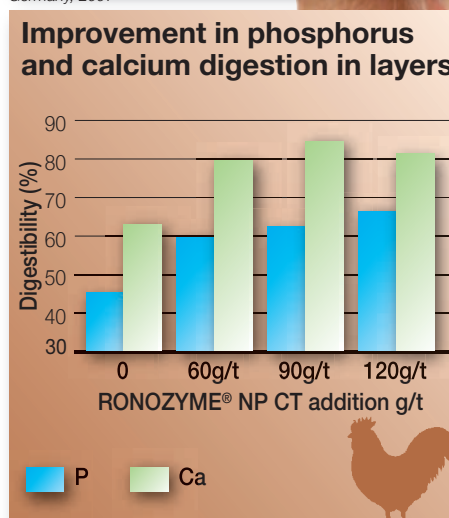
Animals absorb more and waste less

Trials with pigs and broilers show an increase in the absorption of both calcium and phosphorus with an increasing inclusion rate of RONOZYME® NP.

Cost effective responses are achieved at inclusion rates of 150ppm and higher suggesting higher inclusion rates will improve producer profits. At current low market prices for inorganic feed phosphates, LCF programs recommend a minimum of 200 ppm for meat poultry and pigs.



Germany, 2007



DSM France (CRNA), 2007

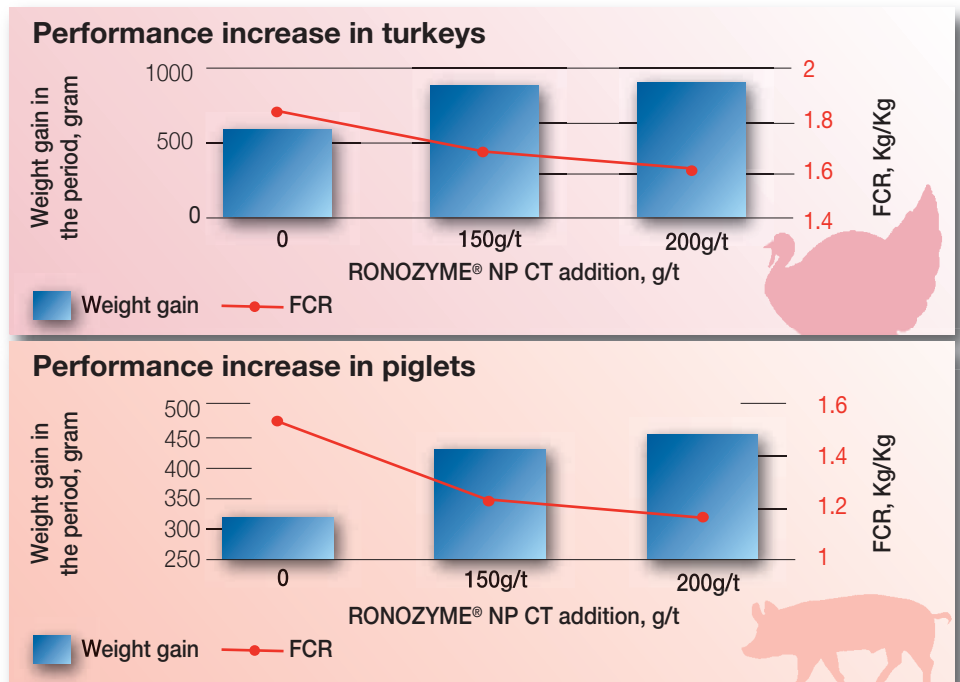


Improved animal performance

Animals fed RONOZYME® NP are more efficient

Daily liveweight gain and feed conversion ratio (Kg feed/Kg lwt gain) are widely accepted measures of animal performance in pig and poultry units with more efficient animals achieving high weight gains and a better feed conversion.

Trials with RONOZYME® NP show that supplemented animals grew faster and with superior feed conversion to unsupplemented animals. The advantages were more apparent at higher inclusion rates.

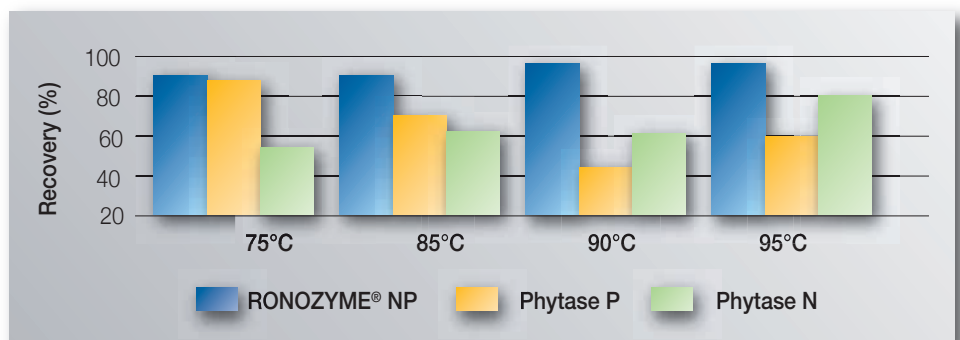


France, 2007

Better heat stability

RONOZYME® NP is able to work in the animal.

Under the harsh conditions experienced in feed manufacture, some enzymes can be degraded or destroyed. RONOZYME® NP (CT) with its improved CT formulation has outstanding heat stability up to 95°C. In addition it withstands attack by digestive enzymes in the gut of the animal. It gets to where it benefits the animal.

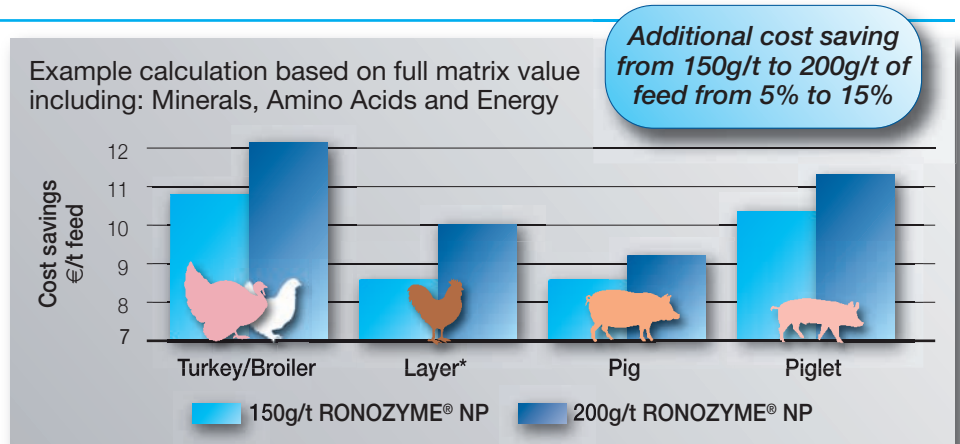


Denmark, 2009

Improved financial performance

Animals fed RONOZYME® NP give better margins.

Diets containing RONOZYME® NP show positive cost benefits across a range of matrix values and ingredient prices. These savings increase at higher inclusion rates of RONOZYME® NP with a today clearly interesting inclusion rate of 200g/t compared to the classic dose of 150g/t.



* 60% of Broiler dose

RONOZYME® NP - the choice is yours








RONOZYME® NP is available in three different forms, making it ideal for use in the full range of feed manufacturing systems.

RONOZYME®NP (CT) is the ideal choice for pelleted feeds as it is the most heat stable phytase available. It has superior handling properties being virtually dust free with excellent flowability and mixability.

RONOZYME®NP (M) is formulated for systems where feed is mildly processed. It is safe and easy to handle for your workers, flows and mixes easily and is virtually dust free. It is 5 times more concentrated than RONOZYME® NP (CT).

RONOZYME®NP (L) is the liquid form of the product which is ideally suited to post pelleting liquid applications. It is 2 times more concentrated than RONOZYME® NP (CT).

Recommended Inclusion Levels

	RONOZYME®NP (CT) g/t feed	RONOZYME® NP (M) g/t feed	RONOZYME® NP (L) g/t feed
 Broilers	150-300	30-60	75-150
 Layers	90-150	18-30	45-75
 Layer breeders	90-150	18-30	45-75
 Ducks	150-300	30-60	75-150
 Piglets	150-300	30-60	75-150
 Growing/finishing pigs	150-300	30-60	75-150
 Turkeys	150-300	30-60	75-150

The optimal dose of RONOZYME® NP may vary dependent on the species and stage of production. Please contact your DSM representative for further details.

Additional regulatory information is available from DSM Nutritional Products' eCommerce website: <https://webshop.dsm.com/wwwasera/html>

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Quality for Life™ is the mark of quality, reliability and traceability. It means that DSM customers are getting the best nutrition & health ingredients, knowing the source on which they depend.

Quality for Life™ means sustainability. It symbolizes our commitment to our environment, consumer, our business partners, our people and the regulatory framework that governs our operations.

With the Quality for Life™ seal, we provide peace of mind for you and for your customers.

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