

Let's Talk About Enzymes...

Hostazym® X improves the digestibility of cereals and protein byproducts in poultry

Hostazym® X, through its unique production process of surface fermentation on wheat bran, has been shown to be a very efficient enzyme complex. The choice of wheat bran as a substrate for the surface fermentation is inspired by the fact that wheat bran contains a complex fibre structure which resembles the one present in the most important feed materials as for instance corn, rye, wheat and barley. This means that Hostazym® X produced by *Trichoderma* on wheat bran will work very efficiently on degrading all different types of feed materials. This is one of the points of differentiation between Hostazym® X and our competitors; where we state that Hostazym® X will always perform on any type of feed.

A recent trial conducted in the Netherlands proves this statement (see also Technical Bulletin 34). In a digestibility trial with broilers, it was found that the inclusion of Hostazym® X at 1500 EPU/kg in different types of feed containing high levels of one specific cereal or protein source, increased the metabolisable energy from 33 kcal/kg (rapeseed meal 10%) to 120 kcal/kg (DDGS 30 %) (Fig. 1). This increase in energy was partly due to a better fat digestion by using Hostazym® X (Fig. 2; increase of 1.2 to 7.7 % in fat digestibility). However, it was also linked to a better digestion of nutrients, as the quantity of faecal droppings decreased when using Hostazym® X (Fig. 3; Hostazym® X action on entrapped nutrients ('cage effect')). A reduction in water consumption was also noted during the trial, indicating that viscosity in the gut was reduced by Hostazym® X ('viscosity effect').

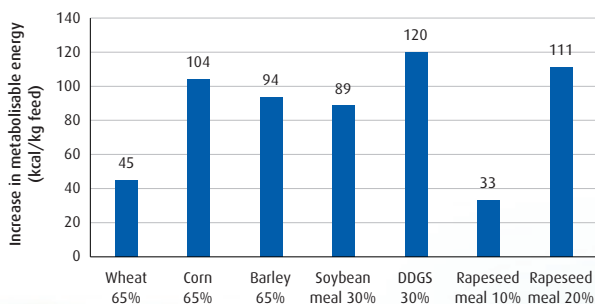


Figure 1. Increase in ME (kcal/kg feed) by the inclusion of Hostazym® X

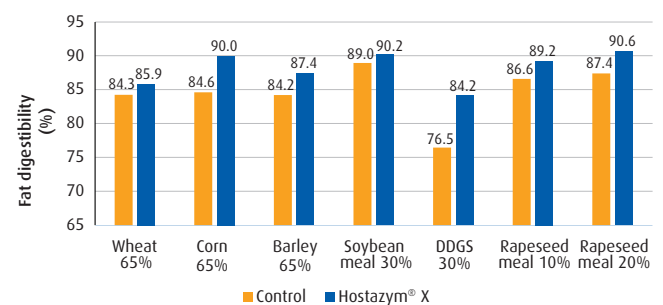


Figure 2. Increase in fat digestibility (%) by the inclusion of Hostazym® X

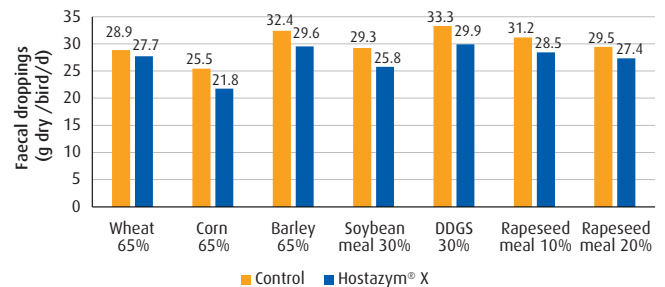


Figure 3. Reduction in faecal droppings (g dry matter/bird/d) by the inclusion of Hostazym® X

CONCLUSION:

The inclusion of Hostazym® X at 1500 EPU/kg led to

- ✓ an increase in metabolisable energy of all raw materials tested
- ✓ an increase in fat digestibility
- ✓ a reduction in dry faecal droppings, showing an increased digestibility of the feed dry matter
- ✓ a reduction in water consumption, leading to a lower risk of wet litter

Hostazym® X positively influences broilers microflora

In two recent trials Hostazym® X has shown positive performance results and an influence on the composition of the microflora in the caeca of broilers. Both trials took place in Poland at Piast facilities. The tested birds were raised in a commercial house of 10.000 birds equipped with floor pens for the test groups.

The trial was set to measure broiler zootechnical performance from 0 to 41 days, ileal nutrient digestibility and microflora populations (in birds 25 days old).

Trials design:

- 240 Ross 308, female
- 10 replica pens of 24 birds per treatment
- production environment (10.000 birds house with floor pens inside for test groups)
- 3 phase feeding, mash diets

Average Diet composition and nutrients	Starter	Grower	Finisher
Wheat/Maize/SBM	50/10/30	40/25/25	35/30/25
CP (%)	21.5	19.5	18.5
dig. Lys (%)	1.33	1.09	0.96
AME (kcal/kg)	2900	3050	3100

Treatments:

Treatment	Dose (U/kg)
Control	-
Control + Hostazym® X	1500 EPU/kg
All treatments with OptiPhos® at 250 OTU/kg	

Measurements:

- Zootechnical performance: Body Weight Gain (BWG), Feed Conversion Ratio (FCR) and EPEF (European Production Efficiency Factor)
- Digestibility: ileal protein digestibility and energy digestibility
- Microflora profile and intestinal conditions: pH, total bacteria count determined in samples of caecal content of 25 day old broilers

Key observations:

- Control birds zootechnical performance was very good and significantly above breed specifications. Hostazym® X added to the control feed significantly increased zootechnical performance. (Figure 1)

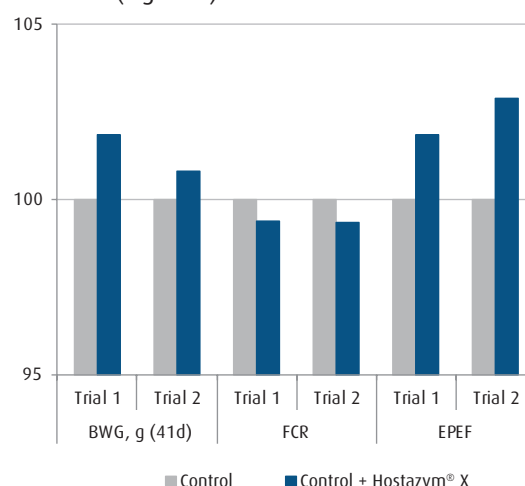


Figure 1. Broilers performance improvement (% over control) by Hostazym® X

$$\text{Note: EPEF} = \frac{\text{Liveability}_{(\%)}}{\text{FCR} \times \text{Age}_{(\text{days})}} \times \text{Final Body Weight}_{(\text{kg})} \times 100$$

- Protein digestibility and AME were consistently improved by the addition of Hostazym® X to the diets (Figure 2)

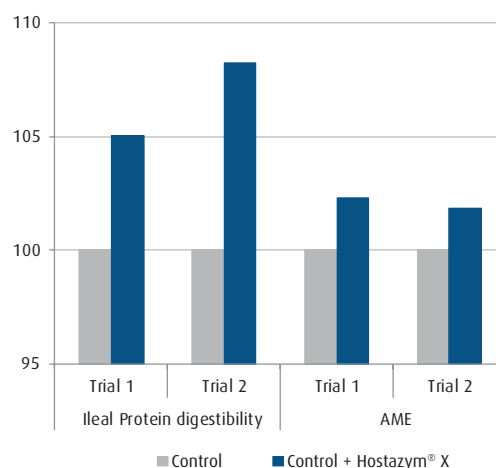


Figure 2. Ileal protein digestibility and AME improvement (% over control) by Hostazym® X

$$\text{Note: AME}_{(\text{kcal/kg})} = \text{GE}_{(\text{diet kcal/kg})} - \left[\text{GE}_{(\text{digesta kcal/kg})} \times \left(\frac{\text{TiO}_2 \text{ diet } (\%) }{\text{TiO}_2 \text{ digesta } (\%)} \right) \right]$$

GE - gross energy

TiO2 - titanium oxide used as digestibility tracer



- The addition of Hostazym® X to the diet had a significant effect on caecal pH, the pH drop can be explained by the increased growth of positive bacteria, namely from *Lactobacilli* group. (Figure 3 and 4)

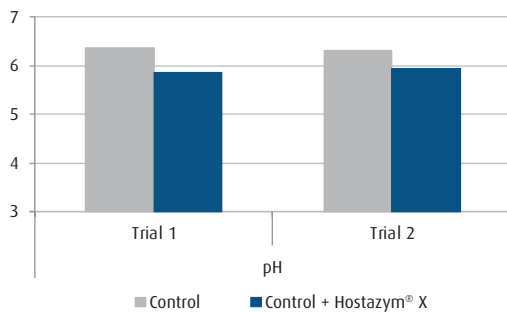


Figure 3. pH changes (from caecal samples of 25 days old birds)

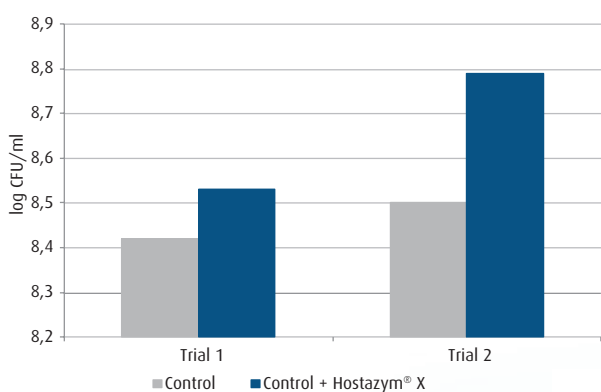


Figure 4. Microbiota profile: *Lactobacilli* count (from caecal samples of 25 days old birds)

- Both trials, showed consistency of results, which supports the Hostazym® X mode of action:

- by release of nutrients from the feed resulting in additional performance
- by promoting the growth of the positive/beneficial microflora (prebiotic effect) due to a specific profile of fermentable oligosaccharides that reach the caeca and are used by the bacteria

CONCLUSION:

- ✓ Hostazym® X proved to be a superior enzymatic complex to achieve optimal animal performance.
- ✓ Hostazym® X stimulates the growth of positive microflora, which was consistently demonstrated by the increase of *Lactobacilli* population at caeca level together with a significant drop of pH.
- ✓ The consistent response of Hostazym® X in improving nutrient digestibility over various raw materials supports the use of a nutritional matrix for feed reformulation.

Let's Talk About Enzymes...

Hostazym® X improves the digestibility of cereals and protein byproducts in poultry

Hostazym® X, through its unique production process of surface fermentation on wheat bran, has been shown to be a very efficient enzyme complex. The choice of wheat bran as a substrate for the surface fermentation is inspired by the fact that wheat bran contains a complex fibre structure which resembles the one present in the most important feed materials as for instance corn, rye, wheat and barley. This means that Hostazym® X produced by *Trichoderma* on wheat bran will work very efficiently on degrading all different types of feed materials. This is one of the points of differentiation between Hostazym® X and our competitors; where we state that Hostazym® X will always perform on any type of feed.

A recent trial conducted in the Netherlands proves this statement (see also Technical Bulletin 34). In a digestibility trial with broilers, it was found that the inclusion of Hostazym® X at 1500 EPU/kg in different types of feed containing high levels of one specific cereal or protein source, increased the metabolisable energy from 33 kcal/kg (rapeseed meal 10%) to 120 kcal/kg (DDGS 30 %) (Fig. 1). This increase in energy was partly due to a better fat digestion by using Hostazym® X (Fig. 2; increase of 1.2 to 7.7 % in fat digestibility). However, it was also linked to a better digestion of nutrients, as the quantity of faecal droppings decreased when using Hostazym® X (Fig. 3; Hostazym® X action on entrapped nutrients ('cage effect')). A reduction in water consumption was also noted during the trial, indicating that viscosity in the gut was reduced by Hostazym® X ('viscosity effect').

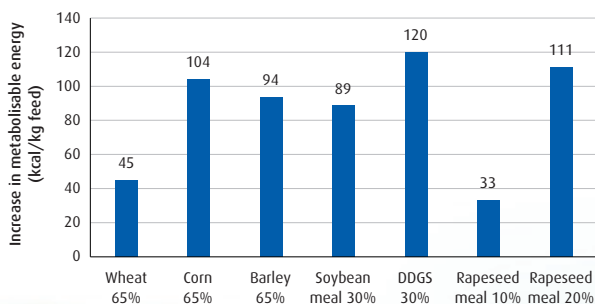


Figure 1. Increase in ME (kcal/kg feed) by the inclusion of Hostazym® X

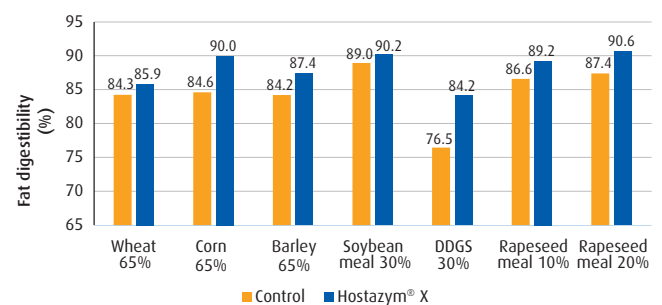


Figure 2. Increase in fat digestibility (%) by the inclusion of Hostazym® X

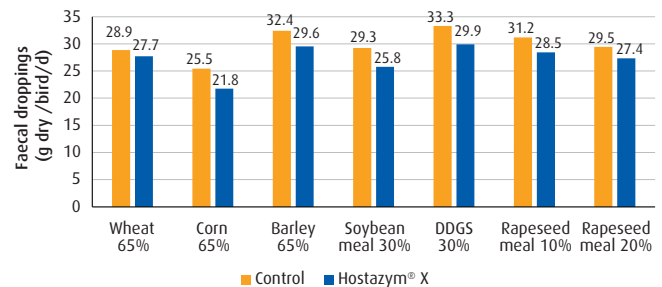


Figure 3. Reduction in faecal droppings (g dry matter/bird/d) by the inclusion of Hostazym® X

CONCLUSION:

The inclusion of Hostazym® X at 1500 EPU/kg led to

- ✓ an increase in metabolisable energy of all raw materials tested
- ✓ an increase in fat digestibility
- ✓ a reduction in dry faecal droppings, showing an increased digestibility of the feed dry matter
- ✓ a reduction in water consumption, leading to a lower risk of wet litter