

Unlocking extra production value with enzyme and probiotic combinations

At a time when poultry producers are struggling to cope with volatile conditions and the prospect of a future with reduced antibiotic growth promoter usage, it is becoming clear that their profitability depends on achieving both optimal bird nutrition and a balanced gut microbiota.



Janet Remus

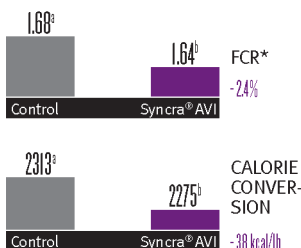
Technical Services Director Americas
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Enzymes and probiotics have a well documented role to play in improving healthy performance, offering enhanced digestion and absorption of nutrients as well as improvements in growth uniformity within flocks.¹

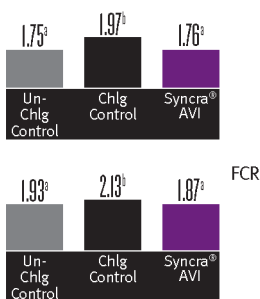
Multiple trials at independent research organisations have proven that a combination of xylanase, amylase, protease and multi-strain *Bacillus* offers superior performance results throughout the production cycle as a result of complementary modes of action:

- Xylanase breaks down non starch polysaccharides (NSPs), specifically soluble and insoluble arabinoxylans, which in turn reduces digesta viscosity, releases trapped nutrients and improves feed passage rates).² The released arabinooligosaccharides may also have a prebiotic effect in the gut.³
- Amylase increases the hydrolysis and digestibility of starch, resulting in improved energy release.⁴
- Protease improves digestibility of protein⁵, disrupts interactions of proteins with starch and fibre in the diet⁶ and reduces anti-nutritional factors e.g. residual trypsin inhibitors.⁷
- Multi-strain *Bacillus* probiotics establish and maintain a beneficial microbial population in the gut of the bird. This makes the gut environment less conducive to colonization by microorganisms that may have a negative impact on animal performance.⁸

Low challenge model[†]



High challenge model^{††}



[†] Meta-analysis of 6 trials, 1-42 days

^{††} 2 trials: *Clostridium perfringens* challenge

^{ab} Values without a common superscript are significantly different (P<0.05)

* FCR corrected 3 points for every (0.22 lb) difference in body weight versus control

Syncra[®] AVI is a *Bacillus subtilis* 3 strain probiotic and xylanase, amylase, protease combination

Specific healthy nutrition benefits shown from multiple broiler trials include:

- A 14% net improvement (at current feed costs) in relative cost per pound live weight gain for *Clostridium perfringens* challenged birds, as well as equivalent growth rate and FCR compared to the unchallenged control.
- An approximate three-to-one return on investment, even for low challenge birds, resulting from significantly improved digestibility and support of gut health.
- A 2.5% improvement in gross profit when phytase, xylanase, amylase, protease and *Bacillus* combinations were used instead of an antibiotic growth promoter. This is based on current price of live weight of chickens and feed cost (DuPont internal data).

¹ Barletta, 2010; ² Choct, 2006; ³ Mirzaie *et al.*, 2012; ⁴ Cloetens *et al.*, 2008; ⁵ Courtin *et al.*, 2008; ⁶ Fernandez *et al.*, 2000;

⁷ Gracia *et al.*, 2003; ⁸ Barletta, 2010; ⁹ Zanella *et al.*, 1999; ¹⁰ Romero *et al.*, 2013a;

¹¹ Yu *et al.*, 2007; ¹² Cowieson and Adeola, 2005; ¹³ Caine *et al.*, 1998; ¹⁴ Lee *et al.*, 2010

To find out more about the superior benefits offered by combined enzyme and probiotic solutions, go to <http://animalnutrition.dupont.com/productservices/combined-solutions/>

