

Effect of exogenous xylanase on performance of fed corn/soya based diets. H. Schulze¹ and R. G. ell², ¹Finfeeds International Ltd., Marlborough, UK ²Bunge Industries Ltd., Corowa, Australia.

As much current interest in the potential of suitable in-feed enzymes to improve digestibility and productive performance in pigs. A study in pigs (average initial BW 42 kg) was conducted to evaluate the effect of supplementing a corn/soya-based diet with two different xylanases derived from *Trichoderma longibrachiatum*, providing the xylanase activity levels. Forty-four pigs were randomly assigned to dietary treatments (positive Control (+ve), negative Control (-ve + xyl1, -ve + xyl2). The +ve diet contained 73% corn, soybean and 6.9% -ve diet, 20% corn was replaced by wheat mid without adjusting energy and nutrient contents. The +ve diet had 3460 kcal DE/kg and 1.20% total lysine, compared with 3270 kcal DE/kg and 1.28% total lysine for the -ve diet. Feed intake and growth rate were measured over a 42-d experimental period. To predict carcass composition, backfat (P2) was measured by real time ultrasound at the beginning and end of the experiment. Over the entire experimental period, mean daily liveweight gains were 776, 706, 781 and 765 g (P = .01) for the +ve, -ve, -ve + xyl1 and -ve + xyl2, respectively. Feed conversion ratios were 2.05, 2.30, 1.83 and 2.40 (P = .076), respectively. Backfat thickness increased numerically (P = .194) by 0.6 or 1.0 mm, respectively, compared with both controls. The inclusion of 20% wheat middling in the -ve control group reduced backfat thickness by 9% at similar feed intake, indicating that physico-chemical properties of the wheat middlings prevent an increase in feed intake to compensate for the lower energy content of the diet. Pigs fed -ve + xyl1 had similar feed intake compared to the -ve group, yet achieved similar growth rates to the +ve group. Pigs fed -ve + xyl2 diet increased feed intake. It is concluded, that depending on the enzyme source and dietary responses might vary. In the present study, addition of xylanase reduced the costs of feed / kg gain by 15% compared with +ve control.

Key Words: Pig, Xylanase, Performance

3 Growth performance and apparent digestibility of weaning pigs fed diets containing low stachyose soybean meal. C. R. Risley¹ and T. Lohrmann², ¹Continental Grain Company, Chicago, IL, ²Optimum Quality Grains, L.L.C., Des Moines, IA.

In two trials, a total of 404 weaning pigs (18 days old and BW = 5.77 kg) were blocked by weight and randomly assigned to one of four treatments in a 2x2 factorial arrangement to evaluate the effect of low stachyose soybean meal on growth performance and apparent digestibility of energy, protein, phosphorus, and dry matter. Main effects were: 1) complex prestarter diets; and 2) level of low stachyose SBM (0%, 15% or 30%). Pigs were fed their respective dietary treatments for the first 4 weeks postweaning, after which, a common starter diet was fed to all pigs. During week 3 postweaning, chromic oxide (.05%) was added to the diets as an indigestible marker and feed and fecal samples (3 pigs per pen) were collected to determine apparent digestibility coefficients. Pigs fed complex prestarter diets had significantly (P < .001) greater ADG (14 vs 13.05 kg), ADG (391 vs 346 g/d), G:F (.983 vs .916) and ADFI (398 vs 378 g/d; P < .013) compared to pigs fed simple prestarter diets. Pigs fed prestarter diets containing 30% low stachyose SBM tended to have greater body weights (13.74 vs 13.23 kg; P < .102), gained more feed (399 vs 376 g/d; P < .073) and had significantly greater ADG (380 vs 355 g/d; P < .039) compared to pigs fed diets not containing low stachyose SBM. Dietary treatments had no effect on feed conversion (P > .603). No diet complexity by low stachyose SBM inclusion level interaction was observed (P > .646). Pigs fed diets containing low stachyose SBM had poorer apparent digestibility coefficients for CP (68.14 vs 71.62%; P < .02) and dry matter (95.27 vs 95.95%; P < .01), but had a better apparent digestibility coefficient for phosphorus (62.52 vs 55.49%; P < .001) than pigs fed diets not containing low stachyose SBM. In summary, the incorporation of low stachyose SBM in prestarter diets tended to improve performance and the apparent digestibility of phosphorus.

Key Words: Pigs, Digestibility, Soybean Meal

694 Effect of lignin from different origins in combination with carbohydrases in pig diets on digestion processes. C. Wenk*, R. Messikommer, and G. Bee, Institute of Animal Science ETH-Zurich, Switzerland.

Lignin in plant materials is well known to limit nutrient availability of monogastric animals, due to cell wall lignification. In a free form it can bind to organic substances and minerals which decrease their absorption. This phenomenon has a positive effect for the host animal if toxins like ammonia, nitrate or carcinogens are absorbed. However, a negative effect can be expected if nutrients like proteins or trace elements get unavailable or enzymes are inactivated. Due to the beneficial technological properties, lignin is often used in diets for pigs and poultry. In two experiments with growing pigs from 22 to 105 kg body weight the effect of four different lignin sources on the digestibility of energy, nitrogen and dietary fiber fractions (experiment two) and the interaction with a carbohydrase was evaluated. Both experiments were set up as a 2x3 factorial latin square design. The following lignin sources were examined: experiment one: Ca-lignin sulfonate (Attisol F) (2.5%) and oak bark (1%); experiment two: Ca-lignin sulfonate (Lignobond) (5%) and sulfur-free lignin (Alcell) (5%). The basal diet was based on cereals. In each trial, six male castrates per treatment were used. After an adaptation period of 17 days, feces were collected for four days. Digestibility was measured with the indicator method. Energy and nitrogen digestibility of the basal diet was high in both experiments (d(E) = .845; d(N) = .834). The supplementation of the basal diet with the carbohydrase did not affect the digestibility. The dietary supplementation with the different lignin sources had a negative effect on d(E) and d(N). The combination with the carbohydrase enabled a complete compensation of the negative effect of Attisol F and oak bark. For Lignobond only a slight and for sulfur-free lignin no compensation could be observed. It can be concluded that free lignin inactivates extensively the activity of exogenous enzymes in pig diets. The carbohydrase supplementation affected positively the NDF digestibility, whereas no significant effect was determined for ADF.

Key Words: Pig, Carbohydrase, Lignin

695 Effects of increasing high protein, whey protein concentrate and spray-dried animal plasma on growth performance of weaning pigs. G. S. Grinstead*, R. D. Goodband, J. L. Nelsens, M. D. Tokach, and B. Riebold, Kansas State University, Manhattan.

Two 35-d growth trials were conducted to evaluate increasing high protein, whey protein concentrate (HPWPC, 73% CP, 6.8% lysine) and spray-dried animal plasma (SDAP) on weaning pig performance. In both trials, pigs were blocked by weight, equalized for sex and ancestry, and allotted to one of five dietary treatments with six pigs/pen and six pens/treatment. Diets were based on a corn-soybean meal, 20% dried whey control diet, or the control diet with added SDAP (2.5 or 5.0%) or HPWPC (2.5 or 5.0%). Diets were formulated to contain 1.5% lysine (Exp. 1) or 1.4% lysine (Exp. 2) and fed from d 0 to 14 after weaning in a pellet form. From d 14 to 35, all pigs were fed a corn-soybean meal diet (1.35% lysine, .9% Ca, .8% P). In Exp. 1, 180 pigs (initially 5.7 kg and 21-d of age) were used. From d 0 to 14 after weaning, there were no differences in ADG or ADFI for pigs fed any of the experimental diets; however, increasing HPWPC, increased G:F (linear, P < .01). In Exp. 2, 180 pigs (initially 5.0 kg and 17-d of age) were used. From d 0 to 14 after weaning, ADG, ADFI, and G:F increased with increasing SDAP (linear, P < .05). Increasing HPWPC improved ADG and G:F (linear, P < .05; see table below). In either study, protein sources fed from d 0 to 14 had no effect on growth performance from d 0 to 35. In conclusion, with heavier and older pigs (Exp. 1), increasing SDAP or HPWPC had no effect on ADG or ADFI; however, with lighter and younger pigs (Exp. 2), increasing SDAP or HPWPC improved growth performance from d 0 to 14.

	Control	Spray-dried Animal plasma, %		Whey Protein Concentrate, %		SEM
		2.5	5.0	2.5	5.0	
D0 to 14						
ADG, g	227	262	290	266	277	12.1
G:F	.76	.83	.85	.85	.91	.03

Key Words: Pigs, Animal Plasma, Whey Protein Concentrate