

Table 133.

Treatment:	1	2	3	4	5	6	
Portion ground:	—	—	Corn	Corn	Diet	Diet	
Item Diet form:	Meal	Pellet	Meal	Pellet	Meal	Pellet	SEM
ADG, kg	421	430	402	454	416	451	11
ADFI, kg	650	627	632	658	641	644	14
G:F	0.649	0.686	0.636	0.690	0.650	0.701	0.009
Caloric efficiency, Mcal/kg gain							
ME	5.18	4.90	5.28	4.87	5.17	4.79	0.07
NE	3.72	3.53	3.80	3.50	3.72	3.44	0.05
Final BW, kg	20.1	20.3	19.6	20.7	20.0	20.6	0.4

133 Effects of corn particle size, complete diet grinding, and diet form on 11- to 20-kg nursery pig growth performance and caloric efficiency. J. A. De Jong^{1,*}, J. M. DeRouchey¹, M. D. Tokach¹, R. D. Goodband¹, S. S. Drittz¹, C. W. Hastad², ¹*Kansas State University, Manhattan*, ²*New Fashion Pork, Jackson, MN*.

A total of 996 mixed sex pigs (initially 11.1 kg BW and 40 d of age) were used in a 21-d study to determine the effects of corn particle size, complete diet grinding, and diet form on growth performance. Pigs were allotted to 1 of 6 dietary treatments (6 pens/treatment and 28 pigs/pen) in a completely randomized design. The same corn–soybean meal–based diet containing 30% corn dried distillers grains with solubles (DDGS) and 10% wheat middlings (midds) was used for all treatments. The 6 treatments were 1) roller-mill ground corn (737 μ) fed in meal form, 2) treatment 1 fed in pellet form, 3) hammer-mill ground corn (324 μ) fed in meal form, 4) treatment 3 fed in pellet form, 5) complete mixed diet reground through a hammer mill (541 μ) fed in meal form, and 6) treatment 5 in pellet form. Overall (d 0 to 21), a tendency ($P < 0.09$) for a diet form $\times$ corn particle size interaction was found as ADG and ADFI decreased when corn was finely ground and fed in meal form but increased when fed in pelleted form. Reducing particle size of the corn did not influence G:F. There were no effects of fine grinding the complete mixed diet compared to only grinding the corn. Pelleting diets improved ($P < 0.04$) ADG, G:F, ME and NE caloric efficiencies (Mcal/kg gain), and final BW. The interaction of diet form $\times$ corn particle size and numerical decreases in intake of pigs fed fine ground complete diet suggests that finely ground feed fed in meal form may reduce palatability of the diet; however, fine grinding may improve performance if the diet is pelleted. In conclusion, pelleting diets significantly improved performance and fine grinding corn tended to improve performance when fed in pelleted form. No additional improvements were found when the complete mixed diet was finely ground compared to only grinding corn.

Key Words: DDGS, feed processing, nursery pig, wheat middlings

134 Efficacy of xylanase on growth performance, nutrients digestibility, and digesta fermentation metabolites in nursery pigs fed wheat based diets. M. C. Walsh^{1,*}, E. Kiarie², H. Bento¹, H. Simmins¹, M. Nyachoti³, ¹*DuPont Industrial Biosciences- Danisco Animal Nutrition, Marlborough, United Kingdom*, ²*DuPont Industrial Bioscience- Danisco Animal Nutrition, Waukesha, WI*, ³*University of Manitoba, Winnipeg, MB, Canada*.

Two experiments were conducted to investigate the efficacy of supplemental xylanase on growth performance, ileal and total tract digestibility of nutrients (AID and ATTD), and ileal short chain fatty acids (SCFA) concentrations in pig fed wheat based diets. Two basal diets were prepared using either hard or soft wheat as the major cereal grain and met the NRC (1998) nutrient specifications, with the exception of DE, which was 95% of recommendations. Diets were formulated for two phase feeding (phase I, weaning to 15 kg BW and phase II, 15 to 25 kg BW) and fed with or without 2000 U of xylanase (Danisco, Marlborough, UK). All diets included 1% celite as an indigestible marker. In Exp.1, 96 pigs (approximately 7.0 kg) were assigned to 1 of 4 diets giving 6 pens/diet (4 pigs/pen). Feed intake and BW were measured weekly and at the end of each phase, fresh fecal samples were collected on a pen basis for determination of ATTD. In Exp.2, phase II diets used in Exp.1 were fed to 4 ileal cannulated barrows (approximately 27 kg) in a 4 $\times$ 4 Latin square design with one added column to give 5 observations per diet. Each period lasted for 7 d: d 1 to 5 for adaptation and d 6 to 7 for digesta collection for determination of AID and SCFA concentration. All data were analyzed as a 2 $\times$ 2 factorial with main effects of wheat, xylanase, and the associated 2-way interactions. In Exp.1, there was no interaction ($P > 0.10$) between xylanase and wheat type. Xylanase increased ($P < 0.05$) ADFI and nutrients digestibility whilst pigs fed hard wheat had improved ($P < 0.05$) ADG, ADFI, and nutrients digestibility compared to pigs fed soft wheat. In Exp.2, an interaction between wheat and xylanase was observed for AID of DM and leucine ($P < 0.05$) with xylanase increasing AID of DM and leucine in soft but not hard wheat. The main effects were such that xylanase increased AID of energy, NDF, and N and ileal lactic acid whereas pigs fed soft wheat had greater ($P < 0.05$) AID