

214 The effects of deoxynivalenol on growth performance in nursery pigs. S. L. Johnston¹, J. F. Patience², D. Gillis², M. De La Llata^{*1}, S. A. Hansen¹, and A. D. Beaulieu², ¹Hubbard Feeds, Mankato, MN, ²Prairie Swine Centre, Inc., Saskatoon, SK, Canada.

A 22 d experiment was conducted to determine the effect of the mycotoxin deoxynivalenol (DON) on feed intake, gain, and feed efficiency of nursery pigs. Eighty nursery pigs (initial weight = 9.03 kg), were allotted to 2 treatments with 5 pens of gilts and 5 pens of barrows and 4 pigs per pen for each treatment. The 2 treatments were; 1) a diet with no detectable DON contamination; and 2) a diet with 1.57 ppm DON from naturally contaminated corn. Deoxynivalenol concentration in the corn and treatment diets was determined using ELISA methods. All pigs were fed a common diet for 13 d after weaning; at that time they were weighed and feeding of treatment diets started. Pigs were weighed on d 9, d 17, and d 22 after the initiation of treatment diets. Feed efficiency was higher in the pigs fed DON contaminated feed for d 0 – 9 ($P < 0.06$) but not for any other feeding period or overall ($P > 0.20$). For d 0 – 9 and d 9 – 17 there was no effect of DON on ADFI ($P > 0.20$). From d 17 – 22 feeding diets contaminated with DON decreased ADFI by 10.0% (1,178 vs 1,060 g/d; $P < 0.07$). For the overall feeding period, ADFI decreased by 5.6% (823 vs. 777 g/d; $P < 0.03$). For d 0 – 9 and d 9 – 17 there was no effect of DON on ADG ($P > 0.20$). However, from d 17 – 22, ADG decreased by 13.7% (771 vs. 665 g/d; $P < 0.04$) and for the overall feeding period it was decreased by 4.9% (577 vs. 549 g/d; $P < 0.10$). Feeding diets naturally contaminated with 1.57 ppm DON decreased ADFI and ADG in nursery pigs.

Key Words: deoxynivalenol, mycotoxin, pig

215 Effects of mycotoxin binders and a liquid immunity enhancer on the growth performance of wean-to-finish pigs. J. Y. Jacela*, S. S. Dritz, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, and J. L. Nelssen, Kansas State University, Manhattan.

A total of 1,120 pigs (BW=7.2 kg) were used in a study to evaluate the effects of 2 mycotoxin binders and a liquid immunity enhancer product (ARNap) on growth performance of wean-to-finish pigs. Pigs were randomly assigned to 1 of 4 treatments balanced by initial average BW within gender (10 pens/trt). Treatments were: 1) control standard phase-fed diets based on corn and soybean meal with DDGS (20 to 35%) fed for 132 d, 2) treatment 1 with mycotoxin binders Biomannan fed from d 0 to 55 and T-BIND fed from d 0 to 132, 3) treatment 1 with Biomannan and T-BIND fed from d 0 to 132, and 4) treatment 3 with ARNAP administered through the water lines of pens continuously for 7 d every 3 wk. The binders and the liquid immunity enhancer product were obtained from Biotech Development Company, Inc. (Dexter, MO). Pig weights and feed disappearance were obtained every 2 wk. Average BW, ADG, ADFI, and G:F were determined. Ingredients were not tested for nor artificially contaminated with mycotoxins. Analysis of complete feed did not detect the presence of mycotoxins. Overall, there were no treatment-by-gender interactions ($P > 0.73$). As expected, gender differences were noted as barrows had greater

($P < 0.01$) ADG and ADFI but poorer ($P = 0.02$) G:F than gilts. The addition of mycotoxin binders and ARNAP did not affect ADG ($P = 0.73$), ADFI ($P = 0.77$), G:F ($P = 0.97$) from d 0 to 132. In conclusion, in the absence of mycotoxin contamination, the additives had no effect on wean-to-finish pig performance.

Table 1. Effect of mycotoxin binders and ARNAP on pig performance.

	Treatment				SEM
	1	2	3	4	
T-BIND	-	+	+	+	
Biomannan (d 0 to 55)	-	+	+	+	
Biomannan (d 55 to 132)	-	-	+	+	
ARNAP	-	-	-	+	
BW, kg					
d 0	7.2	7.3	7.3	7.2	0.12
d 132	105.7	106.1	106.4	106.7	0.65
d 0 to 132					
ADG, kg	0.743	0.744	0.748	0.751	0.0051
ADFI, kg	1.69	1.70	1.71	1.71	0.017
G:F	0.439	0.439	0.437	0.439	0.0035

Key Words: growth, mycotoxin binder, pig

216 Effects of increasing hominy feed in diets on finishing pig performance. M. L. Potter*, J. Y. Jacela, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, and J. L. Nelssen, Kansas State University, Manhattan.

A total of 1,035 finishing pigs were used in an 84 d growth trial to evaluate the effects of increasing corn hominy feed on finishing pig growth performance. Pens of pigs with a similar number of barrows and gilts were blocked by average initial BW and randomly allotted to 1 of 4 dietary treatments in a randomized complete block design with initial weights balanced across treatments. Treatments were increasing levels (0, 12.5, 25, and 37.5%) of hominy feed added to a corn-soybean meal-based diet. All treatment diets were fed in 4 phases formulated for BW ranges of 36 to 59, 59 to 82, 82 to 104, and 104 to 141 kg with SID lysine levels of 0.96, 0.82, 0.72, and 0.64%, respectively. Hominy feed inclusion was constant among phases and was assigned a ME value of 3,210 kcal/kg for diet formulation. Chemical analysis indicated hominy feed contained 90.4% DM, 9.5% CP, 4.4% fat, 3.6% ADF, 10.0% NDF, 2.8% CF, 2.35% Ash, 0.02% Ca, and 0.51% P on an as-fed basis. Increasing hominy feed linearly decreased ($P < 0.01$) ADG and ADFI from d 0 to 84. Regardless of treatment, there were no differences ($P > 0.54$) in G:F. The lower feed consumption and poorer growth rate resulted in pigs fed diets containing any level of hominy feed weighing less than pigs fed standard corn-soybean meal-based diets on d 84. These data indicate that adding hominy feed as an alternative ingredient in swine diets is a viable option; however, a decrease in performance should be considered when deciding if it is cost-effective to include hominy feed in finishing diets.

Table 1. Effect of hominy feed inclusion in diets on finishing pig performance

Item	0	Hominy, %			SEM ¹
		12.5	25	37.5	
Pens/treatment ²					
D 0	10	10	10	10	—
D 84	8	9	10	8	—
D 0 to 84					
ADG, kg	1.02	0.97	0.96	0.93	0.010
ADFI, kg	2.87	2.68	2.68	2.59	0.042
G:F	0.36	0.36	0.36	0.36	0.004
Weight, kg					
D 0	36.0	35.7	36.0	36.1	0.93
D 84	121.7	116.9	117.4	114.9	1.18

¹The highest SEM among treatments is reported due to lost observations.

²Pens were removed due to diet delivery error or loss of integrity.

Key Words: hominy, growth, pig

217 Effects of feeding ractopamine HCl (Paylean) for various durations on finishing pig performance and carcass characteristics. M. L. Potter*, S. S. Dritz, M. D. Tokach, J. M. DeRouche, R. D. Goodband, and J. L. Nelssen, *Kansas State University, Manhattan.*

A total of 627 pigs (109.5 kg) were used in a 21-d trial to evaluate the effects of feeding ractopamine HCl (RAC; Elanco Animal Health, Greenfield, IN) for different durations on performance of heavy weight pigs. On d 0, 24 mixed-gender pens of pigs were blocked by BW and randomly allotted to treatments (8 pens/treatment) with BW balanced across treatments. Treatments were a control diet without RAC (CTRL) or a diet with 5 ppm RAC fed for the last 14 (14D) or 21 d (21D) prior to marketing. On d 7, the 4 heaviest pigs per pen were marketed. From d 0 to 7, 21D pigs had greater ($P = 0.01$) ADG and lower ($P = 0.01$) ADFI than CTRL and 14D pigs. From d 7 to 21, 14D pigs had improved ($P \leq 0.04$) ADG and G:F compared with CTRL and 21D pigs. There was no difference in overall ADG among treatments, but ADFI was lower ($P < 0.01$) and G:F improved ($P < 0.01$) for pigs fed RAC compared with CTRL pigs. There were no differences ($P \geq 0.32$) in live BW marketed or HCW. After adjustment to a common HCW, 21D pigs had reduced (21.9 ± 0.40 mm vs. 20.2 mm; $P < 0.01$) backfat depth (BF), increased (60.0 ± 0.66 mm vs. 62.0 ± 0.65 mm; $P = 0.01$) loin depth (LD), and improved ($51.6 \pm 0.20\%$ vs. 52.6% ; $P < 0.01$) percentage lean compared with CTRL pigs. While 14D pigs had intermediate responses for LD and BF these pigs had a higher ($52.2 \pm 0.20\%$; $P = 0.04$) percentage lean than CTRL pigs. Thus, for heavyweight pigs, G:F and ADFI responses are achieved with either duration of RAC feeding, but the magnitude of the carcass response to feeding RAC appears duration dependent.

Table 1. Effect of ractopamine HCl on performance of finishing pigs

Item	CTRL	14D	21D	SEM	TRT, P <	CTRL & 14D vs. 21D, P <
D 0 to 7						
ADG, kg	1.04	1.09	1.26	0.061	0.04	0.01
ADFI, kg	3.59	3.58	3.40	0.055	0.04	0.01
G:F	0.29	0.30	0.37	0.015	<0.01	<0.01
D 7 to 21						
ADG, kg	0.94	1.02	0.89	0.029	<0.01	—
ADFI, kg	3.49	3.22	3.13	0.066	<0.01	—
G:F	0.27	0.32	0.28	0.008	<0.01	—
D 0 to 21						
ADG, kg	0.98	1.05	1.02	0.030	0.14	—
ADFI, kg	3.53	3.35	3.23	0.054	<0.01	—
G:F	0.28	0.31	0.32	0.008	<0.01	—

Key Words: growth, Paylean, pig

218 Evaluation of a fortified nutrient pack (FNP) and graded levels of Lys on growth performance and total tract apparent digestibility of nutrients in 100-kilogram pigs. V. D. Naranjo*¹, S. L. Johnston², T. D. Bidner¹, R. Musser³, and L. L. Southern¹, ¹LSU Agricultural Center, Baton Rouge, LA, ²Hubbard Feeds Inc., Mankato, MN, ³Soda Feed Ingredients, Mankato, MN.

The effect of FNP (0 or 0.10%) and graded levels of SID Lys (0.30, 0.40, 0.50% for barrows; 0.35, 0.45, 0.55% for gilts) on growth performance and apparent total tract digestibility (1% acid insoluble ash as marker) of DM, CP, and GE in 100-kg pigs was assessed. The FNP contained fumaric, malic, citric, phosphoric, and lactic acids, L-carnitine, chromium picolinate, inulin, d-pantothenic acid, and niacin. A total of 90 pigs (n = 48 barrows and n = 42 gilts; initial BW = 100 kg) were allotted within sex to 6 dietary treatments with 3 pens of 2 or 3 pigs per pen in a 2 x 3 factorial arrangement. Fecal samples were collected on d 12 and 13 (phase 1) and on d 26 and 27 (phase 2) and combined within day, pig, and pen at the end of each phase. In barrows, overall ADG (831, 928, 978 g/d; $P = 0.01$) and G:F (0.25, 0.28, 0.28; $P = 0.06$) were linearly increased as SID Lys increased. The FNP addition reduced overall ADG (876 vs. 948 g/d $P = 0.07$), but ADFI and G:F were not affected ($P > 0.10$). There was a quadratic effect ($P < 0.03$) in DM (87, 84, 85%) GE (85, 81, 81%), and CP (71, 66, 72%) digestibility during phase 2 and GE (68, 64, 71%; phase 1) digestibility as SID Lys increased. The FNP addition ($P < 0.08$) increased DM (84 vs. 82%; phase 1), and DM (86 vs. 84%), and CP (71 vs. 69%) digestibility during phase 2. In gilts, overall growth performance was not affected ($P > 0.10$) as SID Lys increased or with FNP addition. There was a linear effect ($P < 0.07$) in GE (64, 67, 72%; phase 1), CP (67, 72, 71%; phase 2), and a quadratic effect ($P < 0.06$) in CP (80, 82, 80%; phase 1), DM (84, 85, 83%; phase 2), and GE (81, 82, 79%; phase 2) as SID Lys increased. The FNP addition increased CP (81 vs. 79%; $P = 0.06$) digestibility during phase 1. Based on these results, the inclusion of FNP improved DM and CP digestibility in barrows and CP digestibility during phase 1 in gilts, but overall ADG was reduced in barrows and growth performance was not affected in gilts.

Key Words: finishing pigs, digestibility