

and 21 ( $P > 0.05$ ). Fecal *Escherichia coli* concentration was decreased ( $P < 0.05$ ) in pigs fed MOM2 (7.25 log<sub>10</sub> CFU/g) and MOM4 (7.27 log<sub>10</sub> CFU/g) diets when compared with those fed CON (7.42 log<sub>10</sub> CFU/g) diet. Results indicated that dietary supplementation with the blend of OAs and MCFAs at the levels of 0.2% or 0.4% improved growth performance and reduced diarrhea as indicated by reduced diarrhea score and reduced fecal *Escherichia coli* in weaning piglets that orally challenged with enterotoxigenic *Escherichia coli* K88.

**Key Words:** growth performance, *Escherichia coli* K88, organic acids and medium chain fatty acids  
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**225 Effects of feeding a finishing diet blended with different phases of nursery diets on growth performance of nursery pigs.** F. Wu<sup>1,\*</sup>, K. F. Coble<sup>2</sup>, C. W. Hastad<sup>2</sup>, J. M. DeRouche<sup>1</sup>, M. D. Tokach<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. C. Woodworth<sup>1</sup>, R. D. Goodband<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>New Fashion Pork, Jackson, MN.

In wean-to-finish systems, nursery diets are commonly blended with leftover finishing feed from the previous group. A total of 1260 pigs (initially 5.83 ± 0.21 kg and 21 d) were housed in a commercial research facility and used in a 47-d study to determine the effects of blending finishing diet into different phases of nursery diets on growth performance. Pens of pigs were blocked by BW and gender and allotted to 1 of 4 treatments (15 pens/treatment). Treatments included: standard nursery diets throughout (Control); or standard diets with 2.5 kg/pig of late finishing feed (0.81% SID Lys) blended at the beginning of Phase 2, 3, or 4. Phase changes were based on feed budgets of 2.5, 3.7, 3.7, 9.5, and 9.5 kg/pig in phase 1 to 5, respectively. Feed additions were recorded by robotic feeding system. Data were analyzed using GLIMMIX in SAS with fixed effect of blending phase and random effects of weight block and gender. From d 0 to 7, all pigs were fed the same Phase 1 diet and had similar performance. Compared with the control, blending finishing feed into Phase 2 decreased ( $P < 0.05$ ) ADG, ADFI, and G:F from d 7 to 14, G:F from d 21 to 28, ADG from d 28 to 35, and ADFI and G:F from d 35 to 47. Blending finishing feed into Phase 3 decreased ( $P < 0.05$ ) ADG and G:F from d 14 to 21, ADG from d 21 to 28, and ADFI and G:F from d 35 to 47 compared with control pigs. Pigs that received finishing diet blended in Phase 4 had decreased ( $P < 0.001$ ) ADG and G:F from d 21 to 28, but increased ( $P = 0.013$ ) G:F from d 35 to 47. Overall, blending the finishing diet into Phase 2 decreased ( $P < 0.05$ ) ADG and ADFI, but did not affect G:F compared with control pigs or those that had blended diet in Phase 4. Blending finishing feed into Phase 3 or 4 did not influence overall growth performance. In conclusion, feeding finishing feed during early nursery phase decreased growth performance; however, blending approximately 2.5 kg/pig of late finishing feed into nursery diets for pigs greater than 10 kg did not affect

overall growth performance.

**Key Words:** feed blending, growth, nursery pig  
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**226 Soluble fiber improved growth performance of weaned pigs challenged with enterotoxigenic *Escherichia coli*.** Q. Li<sup>1,\*</sup>, C. L. Loving<sup>2</sup>, N. K. Gabler<sup>1</sup>, E. R. Burroughs<sup>1</sup>, J. F. Patience<sup>1</sup>, <sup>1</sup>Iowa State University, Ames, <sup>2</sup>USDA National Animal Disease Center, Ames, IA.

Our objective was to evaluate the effects of soluble (10% beet pulp) versus insoluble dietary fiber (15% low-fat corn DDGS) with or without addition of exogenous carbohydrases on fecal score and shedding as well as performance of piglets challenged with enterotoxigenic *Escherichia coli* (ETEC). Sixty piglets (approximately 21-d age; 6.90 ± 0.07 kg) were randomly allotted to 6 treatments including: 1) NC: non-challenged negative control, 2) PC: F18 ETEC challenged positive control (NE = 2.68 Mcal/kg), 3) SF: soluble fiber + ETEC (NE = 2.53 Mcal/kg), 4) IF: insoluble fiber + ETEC (NE = 2.50 Mcal/kg), and 5, 6) SF or IF with enzymes + ETEC. The soluble fiber content in control, SF, and IF was 3.20, 5.43, and 2.87%, and 5.04, 9.56, and 10.16% for insoluble fiber, respectively. Pigs were orally challenged with ETEC on d 7 (0 d post-inoculation, dpi). Pigs were housed individually to record individual BW and feed intake on d 7, 10, and 14. Fecal swabs were collected to evaluate viable ETEC shedding score (SS: ranged from 0–4 with increasing shedding). Fecal scores (FS) were visually ranked every 2 d pre-challenge and daily post-challenge using 4 scales: 1 = solid; 4 = liquid. Fecal score were analyzed using a multinomial model in PROC GENMOD and all other data were analyzed using PROC MIXED of SAS (9.4). Pigs in PC had lower final BW (8.57 vs. 9.90 kg) and overall ADG (128 vs. 218 g) than NC ( $P < 0.05$ ). The SF improved ADG from 4–7 dpi (333 vs. 182 g) and overall ADG (224 vs. 128 g) compared with PC ( $P < 0.05$ ). The SF and IF improved G:F pre-challenge ( $P < 0.01$ ) and SF tended to improve G:F post-challenge ( $P < 0.10$ ). Enzymes had no impact on growth ( $P > 0.05$ ). The average SS in NC was lower than PC (0 vs. 2.46;  $P < 0.01$ ). The IF tended to increase SS on 3 dpi (3.05 vs. 2.00;  $P = 0.065$ ) and decreased SS on 7 dpi (1.85 vs. 3.13;  $P < 0.05$ ) compared to PC. Pigs in SF tended to have a lower SS on 7 dpi (2.10 vs. 3.13;  $P = 0.071$ ) than PC. The SF reduced SS on 3 and 5 dpi compared with IF ( $P < 0.05$ ). During 1–3 dpi, the odds ratio (OR) of NC in lower FS category

**Table 225.**

	Control	Blended diets			SEM	P-value
		Phase 2	Phase 3	Phase 4		
Overall						
ADG, g	514 <sup>a</sup>	493 <sup>b</sup>	502 <sup>ab</sup>	509 <sup>a</sup>	5.4	0.031
ADFI, g	736 <sup>a</sup>	711 <sup>b</sup>	720 <sup>ab</sup>	738 <sup>a</sup>	8.3	0.045

<sup>a,b</sup>Means with different superscripts within row differ ( $P < 0.05$ )