

# Nonruminant Nutrition: Growing-Finishing Nutrition and Management

**78 The effects of diet form and feeder design on growth the performance of finishing pigs.** A. J. Myers\*, R. D. Goodband, M. D. Tokach, S. S. Dritz, J. M. DeRouchey, and J. L. Nelssen, *Kansas State University, Manhattan*.

Two studies were conducted to determine the effects of diet form (meal vs. pellet) and feeder design (dry vs. wet-dry) on finisher pig performance. Experiments were arranged as 2 × 2 factorials with 11 replications/treatment. In Exp. 1, 1,290 pigs (initial BW 46.8 kg) were used in a 91-d trial. Pelleted diets averaged 35% fines throughout the study. Overall, pigs fed pelleted diets (0.86 kg/d) or via wet-dry feeders (0.86 kg/d) had greater ( $P < 0.07$  and  $0.01$ , respectively) ADG than those fed meal diets (0.83 kg/d) or with dry feeders (0.83 kg/d). A diet form × feeder interaction ( $P < 0.01$ ) was observed for G:F. Pigs fed meal or pelleted diets via a wet-dry feeder had similar G:F (0.319 and 0.320, respectively), but pigs fed pelleted diets in dry feeders had poorer G:F than pigs with meal diets in dry feeders (0.349 and 0.369, respectively). In Exp. 2, 1,146 pigs (initial BW 38.2 kg) were used in a 104-d study. From d 0 to 28, a diet form × feeder interaction ( $P < 0.01$ ) was observed for ADG. Pigs fed pelleted diets from a dry feeder (0.58 kg/d) had decreased ADG compared with pigs fed meal diets from the same feeder type (0.66 kg/d) while there was no difference in wet-dry feeders based on diet form (0.63 and 0.67 kg/d, respectively). Pigs fed pelleted diets (0.392) had poorer ( $P < 0.01$ ) G:F compared with those fed meal diets (0.443). This appeared to be due to poor pellet quality (39.6% fines). From d 42 to 86, pellet quality improved (4.4% fines) and a diet form × feeder interaction ( $P < 0.05$ ) was observed for ADG. Pigs fed meal diets in a dry feeder (0.96 kg/d) had lower ADG compared with pigs fed pelleted diets in dry feeders (1.03 kg/d) or pigs fed either diet in wet-dry feeders (1.05 and 1.06 kg/d, respectively). Overall, pigs fed with wet-dry feeders had increased ( $P < 0.02$ ) ADG and ADFI, and poorer G:F compared with those with dry feeders, while pigs presented pelleted diets had better ( $P = 0.05$ ) G:F compared with those presented meal diets. Pigs provided high quality pellets via dry feeders had increased growth performance compared with pigs fed meal diets. Conversely, if pellet quality was poor, G:F benefits associated with pelleting were lost.

**Key Words:** feeder, finishing pig, growth, pelleting

**79 Impact of a ractopamine feeding strategy on growth, efficiency and carcass traits in finishing pigs.** G. D. Gerlemann\*, S. N. Carr<sup>2</sup>, M. J. Ritter<sup>2</sup>, and G. L. Allee<sup>1</sup>, <sup>1</sup>*Porktech LLC, Columbia, MO*, <sup>2</sup>*Elanco Animal Health, Greenfield, IN*.

The objective was to determine the effects of feeding ractopamine hydrochloride (RAC; Paylean, ELANCO Animal Health, Greenfield, IN) on growth performance and carcass traits of finishing pigs with 2 separate harvest dates. Pigs with an average weight of 104 kg were allotted to 3 treatments in a RCBD with start date as the blocking factor. Treatments consisted of 2 RAC treatments: RAC step-up (5 ppm for 17 d followed by 10 ppm for 14 d), constant RAC (7.4 ppm for 31d), and a control. Isocaloric corn-soy diets (control 0.65 TID lys; RAC 0.94 TID lys) that met nutrient requirements were fed. Pen weights and feed disappearance were recorded on d 0, 17 and 31. Pigs were marketed to a commercial harvest facility d17 and 31. The heaviest 20% of the pigs within each pen were marketed on d17, standardizing pens to 17 or 18 pigs per pen. The remaining pigs in each pen were then marketed on d31. Hot carcass weight (HCW), loin depth (LD), backfat depth (BF), and percent lean (PL) were then collected at the plant. Data were ana-

lyzed by using PROC Mixed of SAS. No differences ( $P > 0.05$ ) were observed between the RAC step-up and constant treatments so data were pooled and compared with the control. During period 1 (d 0–17) RAC improved ( $P < 0.01$ ) ADG (1.19 vs. 1.03 kg) and G:F (0.38 vs. 0.33). In period 2, (d 17–31) RAC improved ( $P < 0.01$ ) ADG (1.21 vs. 1.12 kg) and G:F (0.34 vs. 0.31). Overall results show RAC improved ( $P < 0.0001$ ) ADG (1.20 vs. 1.07 kg) and G:F (0.36 vs. 0.32). In the pigs marketed at d 17, RAC increased ( $P < 0.03$ ) LD (61.84 vs. 59.91 mm), HCW (101.23 vs. 99.36 kg), and yield (74.60 vs. 74.15%). In pigs marketed at d31, RAC decreased ( $P < 0.05$ ) BF (21.10 vs. 22.14 mm), while increasing ( $P < 0.01$ ) LD (62.70 vs. 59.41 mm), PL (52.11 vs. 51.39), HCW (103.10 vs. 99.12 kg), and yield (74.76 vs. 74.09%). Overall, RAC increased ( $P < 0.01$ ) LD (62.48 vs. 59.53 mm), PL (52.02 vs. 51.38), HCW (102.69 vs. 99.16 kg), and yield (74.72 vs. 74.09%). Feeding RAC at a constant dose or in a step-up program improved growth performance and carcass traits compared with the control, evident up to 31 d.

**Key Words:** swine, ractopamine

**80 Impact of tylosin phosphate and ractopamine hydrochloride alone or in combination on N metabolism in finishing pigs.** C. M. Pilcher\*, R. Arentson<sup>2</sup>, and J. F. Patience<sup>1</sup>, <sup>1</sup>*Iowa State University, Ames*, <sup>2</sup>*Elanco Animal Health, Greenfield, IN*.

Ractopamine hydrochloride (RAC) is a nutrient repartitioning agent added to diets in late finishing to increase weight gain, feed efficiency and carcass leanness. Tylosin phosphate (TP) is a macrolide antibiotic used in swine diets to control diseases such as ileitis and swine dysentery and to improve growth performance. There is very limited information on the effect of these 2 products when used in combination. The objective of this study was to evaluate the effect of TP and RAC alone or in combination on whole-body N metabolism in finishing pigs fed corn-soybean meal or corn-soybean meal-dried distillers grains with solubles (DDGS) based diets. A total of 72 PIC gilts (initial BW = 107.4 ± 0.50 kg) were blocked by weight and randomly assigned to a 2 × 2 × 2 factorial arrangement of treatments: TP (0 or 44 ppm), RAC (0 or 5 ppm) and DDGS (0 or 30%). When RAC was included, diets were formulated to contain an additional 0.2% SID Lys. Pigs were housed individually and fed treatment diets for 17 d. TP treated pigs were administered 66 mg tylosin per liter of water for 3 d before receiving treatment diets. Feed was provided twice daily, as much as the pigs could consume within 1 h per meal (ADFI = 2.98 ± 0.045 kg/d). Water was provided to the pigs between feeding periods, ad libitum (ADWI = 7.76 ± 0.23 kg/d). Feces and urine were collected during 2 sampling periods on d 7 and 8 and d 15 and 16. DDGS inclusion reduced apparent total tract digestibility (ATTD) of N (81.2 vs. 83.3;  $P < 0.0001$ ) and N retention (45.5 vs. 49.7% of N intake;  $P < 0.01$ ); however, there were no interactions between the response to DDGS and the responses to TP or RAC. RAC increased ATTD of N (83.7 vs. 80.8%;  $P < 0.0001$ ) and N retention (38.6 vs. 30.0 g/d;  $P < 0.0001$  and 50.1 vs. 45.2% of N intake;  $P < 0.001$ ). For N retention (g/d), there was an increase in the response to RAC when TP was present in the diet (TP × RAC interaction;  $P < 0.05$ ). TP also tended to improve ATTD of N (82.6 vs. 81.9%;  $P = 0.054$ ), but did not affect total N excretion. In conclusion, RAC increased N retention, TP may enhance the response to RAC, and the inclusion of DDGS did not affect the responses to either TP or RAC.

**Key Words:** ractopamine, tylosin phosphate, swine