

fed Paylean. As Paylean dosage increased, loin fat percentage decreased (linear, $P < .04$) and loin crude protein percentage increased (linear, $P < .01$). In addition, as Paylean dosage increased, belly moisture and crude protein percentage increased (linear, $P < .05$) while belly fat percentage decreased (linear, $P < .001$). The results indicate that pigs fed Paylean and increasing levels of lysine will have less loin marbling and belly firmness compared to control pigs.

Key Words: Paylean®, Lysine, Finishing Pigs

187 Interactive effects between Paylean® (Ractopamine HCl) and dietary lysine on finishing pig growth performance, carcass characteristics and tissue accretion. M. J. Webster*, R. D. Goodband, M. D. Tokach, J. A. Unruh, J. L. Nelssen, S. S. Dritz, D. E. Real, J. M. DeRouchey, J. C. Woodworth, and T. A. Marsteller¹, *Kansas State University, Manhattan, KS*, ¹*Elanco Animal Health, Indianapolis, IN*.

A total of 432 pigs was used to evaluate the effects of Paylean and dietary lysine on finishing pig growth performance, carcass characteristics and tissue accretion. The 12 dietary treatments included Paylean (0, 5, and 10 ppm) and 4 levels of lysine. For pigs fed no Paylean, lysine levels were 0.6, 0.8, 1.0, and 1.2%. For pigs fed Paylean, lysine levels were 0.8, 1.0, 1.2, and 1.4%. Dietary treatments were fed from 79 to 109 kg. There were three pigs per pen and 12 pens per treatment (six pens of each sex). Pigs were weighed and feed disappearance was recorded every 7 d for the 28 d period. One pig per pen was harvested on d 14 (midpoint) and d 28 (endpoint) of the experiment. Carcass parameters were taken at 24 h postmortem and one side of each carcass was ground and sampled for proximate analysis. At the beginning of the experiment, twelve pigs (6 of each sex) were harvested, ground, and sampled for proximate analysis. In the 28 d period, there was an increase (linear, $P < .001$) in ADG and G/F as Paylean increased. For pigs fed Paylean, increasing dietary lysine increased and improved (quadratic, $P < .07$ and $P < .04$) overall ADG and G/F, respectively. Pigs fed increasing Paylean had increased (linear, $P < .01$) live weight, yield, hot, and cold carcass weights, lean percentage, and loin eye area. Furthermore, as Paylean levels increased, leaf fat, tenth rib backfat, and average backfat thickness decreased (linear, $P < .01$). Additionally, by adding Paylean or lysine to the diet, there was an increase (linear, $P < .0001$ and quadratic, $P < .02$, respectively) in moisture and protein accretion and a decrease (linear, $P < .01$) in fat accretion. The results indicate that pigs fed Paylean need at least 1.0% dietary lysine to optimize growth, carcass parameters, and tissue accretion.

Key Words: Paylean®, Lysine, Finishing Pigs

188 Effects of lysine and energy density of performance and carcass traits of finishing pigs fed ractopamine. D.C. Brown*¹, J.K. Apple¹, C.V. Maxwell¹, K.G. Friesen¹, M.E. Davis¹, R.E. Musser², Z.B. Johnson¹, and T.A. Armstrong³, ¹*University of Arkansas*, ²*The Pork Group, Rogers, AR*, ³*Elanco Animal Health, Greenfield, IN*.

A total of 216 crossbred barrows and gilts (Yorkshire x Landrace females mated to Dekalb EB sires) were used to test the effects of energy density (E) and lysine-to-energy ratio (Lys) on performance and carcass characteristics of finishing pigs fed ractopamine. Pigs, with an average initial BW of 84 kg, were blocked by weight and sex and assigned to one of 36 pens. Pens were randomly assigned to 1 of 6 dietary treatments arranged in a 2 x 3 factorial design, with two levels of E (3.30 or 3.48 Mcal/kg of ME) and three lysine-to-energy ratios (1.7, 2.4, or 3.1 g lysine/Mcal). Ractopamine was included in all diets at a level of 10 mg/kg, and pigs were fed the experimental diets for 28 d prior to harvest. Individual pig weights and feed disappearance were recorded weekly to calculate ADG, ADFI, and G:F. Upon completion of the feeding trial, pigs were transported to a commercial pork harvest/processing plant, and hot carcass weight (HCW) was recorded. After the 24 h chilling period, fat and LM depths at the 10th rib were measured with a Fat-O-Meater, and used to calculate standardized lean yield (SLY). Overall main effects means are reported where no E x Lys interaction ($P > 0.05$) was observed. Results indicate that to optimize lean tissue deposition in pigs fed ractopamine, 3.3 Mcal/kg is sufficient energy, and the Lys to energy ratio may be higher than reported in the literature and higher than levels currently utilized in the industry.

Item	Energy (Mcal/kg)			Lysine (g/Mcal)			
	3.30	3.48	SE	1.7	2.4	3.1	SE
ADG, kg	0.640	0.679	0.02	0.579	0.660	0.741 ^c	0.03
ADFI, kg	2.15	2.08	0.04	2.12	2.13	2.09	0.05
G:F	0.298 ^a	0.326 ^b	0.01	0.272	0.310	0.355 ^c	0.01
HCW, kg	78.3	78.5	0.50	76.3	79.5	79.2 ^c	0.63
Fat depth, mm	19.1 ^a	20.2 ^b	0.39	20.7	19.3	19.0 ^d	0.49
LM depth, mm	59.1	58.7	0.69	56.7	59.3	60.7 ^c	0.85
SLY, %	51.4 ^a	50.6 ^b	0.30	50.1	51.2	51.7 ^c	0.37

^abE effects ($P < 0.05$). ^cLinear Lys effect ($P < 0.01$).

^dLinear Lys effects ($P < 0.02$).

Key Words: Swine, Ractopamine, Energy x Lysine Level

189 The efficacy of Paylean® (ractopamine hydrochloride) addition to late-finishing swine diets in a controlled cycling hot environment. J.D. Spencer*¹, C.A. Stahl¹, A.M. Gaines¹, D.C. Kendall¹, G.F. Yi¹, J.W. Frank¹, E.P. Berg¹, D.J. Jones², and G.L. Allee¹, ¹*University of Missouri, Columbia, MO*, ²*Elanco Animal Health, Greenfield, IN*.

To determine the efficacy of Paylean addition to late-finishing swine diets during high ambient temperatures, seventy-two barrows (Newsham x PIC 327) (81 kg) were utilized in a growth study with a 2 x 2 factorial arrangement of treatments with two controlled environments (constant 21°C, 50% relative humidity (TN), or a cycling temperature 27 to 35°C (HS)) and two levels of Paylean addition (0 or 10 ppm). Nutrient content was the same in both diets (1.15% lysine, 3513 kcal ME/kg). There were six replicate pens/treatment with three pigs/pen. Pigs were weighed and scanned via real-time ultrasound for measurement of 10th rib backfat (BF) and loin eye area (LEA) weekly. Pigs were harvested at approximately 105 kg for pH and color measurement of the ham and loin. During the growth trial (d 0-26), there was no interaction between temperature and Paylean level ($P > .15$). HS reduced ADFI (HS vs. TN) (1.78 vs. 2.58 kg/d; $P < .01$), ADG (.54 vs. .88 kg/d; $P < .01$) and G:F (.30 vs. .34; $P < .01$). Paylean addition, independent of environmental temperature, improved ADG (0 vs. 10 ppm) (.67 vs. .75 kg/d; $P < .09$) and G:F (.30 vs. .34; $P < .01$). Paylean addition did not significantly affect feed intake ($P > .10$). Additionally, HS reduced BF accretion (+.05 vs. +.25 cm; $P < .01$) and LEA gain (+3.56 vs. +7.50 cm²; $P < .01$). Paylean addition also reduced BF accretion (+.20 vs. +.10 cm; $P < .08$) but increased LEA gain (4.64 vs. 6.43 cm²; $P < .08$), regardless of temperature. Paylean had no affect on meat quality. Hams and loins from pigs reared in the hot environment had a significantly higher ultimate pH ($P < .05$). Supplementing late-finishing swine diets with 10 ppm Paylean resulted in similar improvements in ADG (10 and 14%) and GF (14 and 18%) (TN, HS, respectively) in both environments. Paylean addition also reduced BF and increased LEA accretion in both environments with no affect on meat quality attributes.

Key Words: Swine, Ractopamine, Temperature

190 Effect of ractopamine on optimum dietary phosphorus regimen for pigs. T.R. Lutz* and T.S. Stahly, *Iowa State University, Ames, IA*.

Ten replications of individually-penned gilts from a high-lean strain were utilized to determine the effect of ractopamine (RAC) on the optimum dietary available phosphorus (AP) regimen. At 70 kg BW, pigs were randomly allotted to a corn-soybean meal basal diet (.08% AP) adequate in all nutrients except AP. The basal diet was supplemented with mono-dicalcium phosphate to create six AP concentrations (.08, .13, .18, .23, .28, .33%) and ractopamine HCL to create two RAC concentrations (0 vs. 20 ppm). A constant Ca/AP ratio of 2.5:1 was maintained in each diet. BW gain and feed intake were recorded weekly for 5 weeks and total urine output was collected via urinary catheter the last two days of each 7-day period. Over the five periods, RAC improved ($P < .01$) BW gain (1075 vs. 934 g/d) and gain/feed ratio (431 vs. 371 g/kg), but lowered ($P < .01$) P content of BW gain (4.66 vs. 4.05 g/kg) and urinary P excretion (219 vs. 67 mg/d) independent of dietary AP. The magnitude of change in BW gain and P content of BW gain was reduced in later periods of growth. Dietary AP additions also improved ($P < .01$) daily BW gains and P accretion, P content of BW gain, and efficiency of feed utilization ($P < .07$). To achieve maximum BW gain, the amount of AP needed was not altered by RAC. However, when defining P needs as