

Also, PUN was decreased in all diets compared with pigs fed Diet 1 (6.6, 7.5, 6.6, 8.2 vs 13.1 mg/dL). The results of these Exp indicate that supplementing Gly and L-Arg together to a low CP C-SBM diet with 0.34% Lys + Met, Thr, Trp, Ile and Val restored the decrease in GF caused by the addition of Arg to the diet.

Key Words: pigs, low crude protein, amino acids

154 Impact of dietary energy level and ractopamine on growth performance, carcass characteristics, and meat quality of finishing pigs. R. B. Hinson^{*1}, B. R. Wiegand¹, M. J. Ritter², S. N. Carr², and G. L. Allee¹, ¹University of Missouri, Columbia, ²Elanco Animal Health, Greenfield, IN.

Seventy-two TR-4 × C22 barrows (Initial BW = 99.8 kg) reared in individual pens were allotted to one of 6 dietary treatments in a 2 × 3 factorial design with 2 levels of ractopamine (RAC, 0 and 7.4 ppm, Paylean[®], Elanco Animal Health) and 3 levels of dietary energy (High: 3,538 kcal ME, Medium: 3,369 kcal ME, Low: 3,318 kcal ME) to determine the effects of the feeding of RAC and dietary energy levels on performance, carcass characteristics, and meat quality. High energy diets were corn-SBM with 4% added fat, medium energy diets were corn-SBM with 0.5% added fat, and low energy diets were corn-SBM with 0.5% added fat and 15% wheat middlings (WM). Diets within RAC levels were formulated to contain the same g SID Lys:ME (0 ppm: 1.82, 7.4 ppm: 2.65). Individual pig weights and feed disappearance were recorded at the beginning and conclusion of the study. On d 21, pigs were harvested for determination of carcass characteristics and meat quality. No RAC × energy level interactions were observed for any parameters of interest. Final BW (125.2 vs. 121.1 kg), ADG (1.2 vs. 1.0 kg/d), and F:G (2.57 vs. 3.30) were improved ($P < 0.001$) with the feeding of RAC. The feeding of the low energy diets reduced ($P < 0.001$) final BW and ADG when compared to the high energy diets. Feed:Gain was impaired ($P < 0.002$) when the medium and low energy diets were compared to the high. Feeding RAC increased ($P < 0.05$) HCW (93.6 vs. 89.9 kg) and LEA (51.2 vs. 44.2 cm²). Loin pH decline was reduced ($P < 0.05$) with the feeding of RAC. The feeding of the low energy diets reduced ($P < 0.001$) HCW when compared to the high and medium energy diets and reduced ($P < 0.03$) 10th rib BF when compared to the high energy diet. These data suggest that the feeding of RAC effectively improved performance and carcass characteristics while having little to no detrimental effects on meat quality. Reductions in energy content of the diet by adding 15% WM resulted in reductions in ADG, F:G, and 10th rib BF. There were no RAC × energy level interactions, which indicate that the improvements resulting from RAC are present, regardless of energy level of the diet.

Key Words: pigs, ractopamine, dietary energy

155 Effects of increasing standardized ileal digestible lysine to metabolizable energy ratio on performance of 55 to 80 kg gilts in a commercial finishing environment. N. W. Shelton^{*}, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. L. Nelssen, and J. M. DeRouchey, Kansas State University, Manhattan.

A 28-d growth trial was conducted to estimate the lysine requirement for PIC (1050 × 337) gilts from 55 to 80 kg. A total of 1,092 gilts (initially 55.2 kg) were allotted to 1 of 6 diets with standardized ileal digestible (SID) lysine/ME ratios of 1.89, 2.12, 2.35, 2.58, 2.81, and 3.04 g/Mcal. All diets contained 0.15% L-lysine HCl and 3% choice white grease and were formulated to meet or exceed all other requirements as recommended by NRC (1998). Desired lysine levels were achieved by altering

the corn and soybean meal levels in the diet. Dietary total lysine levels were 0.75, 0.84, 0.92, 1.01, 1.10, and 1.19%. Seven replicate pens per treatment were used with approximately 26 pigs per pen. Both ADG (0.90, 0.89, 0.95, 0.97, 0.98, and 0.96 kg/d; SE=0.015) and G:F (0.42, 0.42, 0.44, 0.46, 0.45, and 0.46; SE=0.008) improved (linear, $P < 0.001$) as SID lysine/ME ratio increased, with little difference at levels above 2.58 g/Mcal. As the SID lysine/ME ratio increased, ADFI (2.14, 2.10, 2.16, 2.11, 2.19, and 2.11 kg/d; SE=0.043) was not influenced ($P > 0.70$). Daily SID lysine intake (14.1, 15.6, 17.8, 19.0, 21.5, and 22.3 g/d; SE=0.365) and SID lysine intake per kg of gain (15.7, 17.5, 18.7, 19.6, 22.0, and 23.2 g; SE=0.352) increased (linear, $P < 0.001$) as lysine level increased in the diet. In summary, gilts in this trial required approximately 20 g SID lysine per kg of gain and 2.58 g of SID lysine per Mcal of ME for optimal performance from 55 to 80 kg.

Key Words: lysine, growing pigs, growth

156 Evaluation of the prediction of the net energy content of canola meal and full-fat canola seeds in growing pigs. C. A. Montoya^{*}, K. Neufeld, P. Kish, and P. Leterme, Prairie Swine Centre Inc., Saskatoon, SK, Canada.

Currently, canola meal (CM) is not used to its full potential in swine nutrition, due to a lack of confidence in its nutritional quality, namely its net energy (NE) content. It is perceived as a poor energy source because it has a low oil content and high protein and fibre contents. Full-fat canola seeds (FFCS) could provide the required energy but here, again, little information is available on their digestible energy (DE) or NE content. This study aimed to evaluate the validity of the NE content of CM and FFCS by measuring the growth rate of pigs and the feed conversion ratio of diets based on these canola products and formulated with the NE system. The DE content of the canola products was first measured during a digestibility trial where the CM or FFCS were mixed with a basal diet (2/3 of the basal diet and 1/3 of CM or FFCS/kg). A total of 18 growing pigs (36 kg; 6/treatment) were kept in individual metabolic cages for 18 d and their feces were totally collected for the last 10 d. The NE content was estimated by means of a prediction equation based on the DE content and chemical composition of the feedstuffs. The DE and NE content of CM and FFCS obtained was as follows: 3.51 and 4.99 Mcal DE/kg DM and 2.41 and 3.53 Mcal NE/kg, respectively. Two separate growing studies were then conducted with a total of 72 growing pigs (initial bodyweight: 30 kg) for 35 d. The pigs were fed diets containing barley, wheat, soybean meal and graded levels of either FFCS (0, 5, 10 and 15 %) or CM (0, 7.5, 15 and 22.5 %). Each diet was tested on 18 growing pigs (9 females and 9 males). No difference in average daily gain or feed conversion ratio was observed between the treatments, whatever the canola product. In conclusion, the values of NE content obtained here for CM and FFCS seem to be correctly estimated. Moreover, growing pigs tolerate diets containing up to 22.5 and 15 % of CM and FFCS, respectively.

Key Words: canola meal, pig, energy

157 Efficacy of different porcine circovirus vaccination regimens on pig performance. B. E. Bass^{*1}, J. W. Frank¹, Z. B. Johnson¹, C. V. Maxwell¹, and P. R. Dubois², ¹University of Arkansas, Fayetteville, ²Cargill Pork, Wichita, KS.

An experiment was conducted to evaluate the efficacy of different circovirus (PCV) vaccination regimens on the performance of pigs from nursery to slaughter. This study was completed in the University