

glycine. Pigs fed diets containing fish oil or silicon tended to have higher surface abnormality severity scores ( $P < 0.06$ ) than pigs fed BCAA, methionine/threonine, or the combination diet. Pigs fed the control diet tended to have higher underlying articular cartilage severity scores ( $P < 0.09$ ) than pigs fed fish oil, proline/glycine, silicon, Cu/Mn, or methionine/threonine. Occurrence of growth plate lesions was unaffected by diet ( $P > 0.18$ ). Total severity score tended to be reduced ( $P < 0.14$ ) in pigs fed methionine/threonine or the combination diet compared with pigs fed fish oil or the control diet. In summary, these data indicate that feeding nutrients or additives related to cartilage metabolism tended to influence the severity of OCD lesions.

**Key Words:** Pigs, Osteochondrosis, Cartilage

**177 Effects of continuous or intermittent ractopamine HCl feeding on late finishing pig growth performance.** C. N. Neill\*, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. L. Nelssen, J. M. DeRouchey, C. N. Groesbeck, and K. R. Brown, *Kansas State University, Manhattan, KS*.

A total of 110 barrows (PIC) with an initial BW of 70.0 kg were used in a 56-d growth trial with 2 pigs per pen and 11 pens per treatment to evaluate the effects of continuously feeding Ractopamine HCl (RAC), RAC withdrawal, or intermittent RAC feeding on finishing pig performance. Diets were sorghum-soybean meal-based and formulated to contain 1.0% lysine with or without 10 ppm RAC. The five treatments were: 1) control diet (no RAC) fed for 56 d; 2) RAC fed for 56 d; 3) RAC fed for 21 d, control for 14 d, then RAC for 21 d; 4) control fed for 7 d, RAC fed for 21 d, control fed for 7 d, then RAC fed for 21 d; and 5) control fed for 35 d, then RAC fed for 21 d. There was a treatment by week interaction for ADG ( $P < 0.001$ ). From d 0 to 21, pigs fed RAC had increased ( $P < 0.001$ ) ADG and G:F compared with pigs fed the control diet. Pigs fed RAC for 56 d had greater ( $P < 0.05$ ) ADG and G:F from d 0 to 21, but were not different from control pigs by d 56 (see table). When RAC was fed for 21 d then withdrawn for either 7 or 14 d and re-fed for 21 d, these pigs had the same overall ADG and G:F as pigs only fed RAC the last 21 d. Pigs fed RAC for only the last 21 d had increased ( $P < 0.05$ ) ADG compared with control pigs. In conclusion, withdrawing RAC for 7 or 14 d after feeding for 21 d and re-feeding for 21 d provided a similar response to feeding RAC for only the last 21 d before market.

**Table 1. Ractopamine fed during these days**

Item	None	0 to 21 and		7 to 28 and		SE
		0 to 56	35 to 56	35 to 56	35 to 56	
ADG, kg	1.01 <sup>b</sup>	1.04 <sup>ab</sup>	1.08 <sup>ab</sup>	1.08 <sup>ab</sup>	1.10 <sup>a</sup>	0.043
ADFI, kg	3.43	3.29	3.45	3.36	3.51	0.111
G:F	0.29	0.32	0.31	0.32	0.31	0.012

<sup>ab</sup> Means in the same row without common superscript differ ( $P < 0.05$ ).

**Key Words:** Finishing pig, Intermittent, Ractopamine withdrawal

**178 The effects of increased dietary energy concentration on the performance and economics of growing-finishing pigs housed in a commercial facility.** A. D. Beaulieu\*, J. F. Patience, M. Rivard, and D. Gillis, *Prairie Swine Centre, Inc., Saskatoon, SK, Canada*.

If gut capacity is limiting energy intake, then increasing dietary energy concentration should improve growth. In a previous experiment however, no difference in performance was observed among pigs receiving diets with increased DE. The objective of the present experiment was to examine the performance and economic impact of elevating the dietary energy concentration in the diet of growing-finishing pigs housed under commercial conditions. A commercial barn was chosen to provide an environment different from that used in previous studies. A total of 720 pigs ( $36.85 \pm 0.98$  kg, mean  $\pm$  SE), blocked by gender and initial weight, were assigned to receive diets formulated to contain 3.20, 3.35 or 3.50 Mcal DE/kg. Dietary energy was increased by wheat and tallow (maximum 4%) replacing barley. A constant dlys:DE ratio was maintained across treatments and decreased as the pigs grew. Actual DE concentration, determined at the mid-point of each of three phases, averaged 3.12, 3.30 and 3.43 Mcal/kg. From 37 to 80 kg BW, ADG ( $0.93, 0.98, 1.03 \pm 0.05$  kg/d) and feed efficiency ( $0.40, 0.41, 0.43 \pm 0.01$ ; 3.12, 3.30, 3.43 Mcal/kg respectively) improved with increasing dietary energy ( $P < 0.05$ ). Feed intake was unchanged ( $P > 0.10$ ); thus DE intake increased with increasing DE concentration ( $P < 0.05$ ). Conversely, from 80 to 120 kg BW, ADFI decreased as DE concentration increased ( $P = 0.02$ ) and ADG and feed efficiency were similar among treatments ( $P > 0.05$ ). Treatment did not affect carcass backfat thickness, lean yield, index, or value ( $P > 0.10$ ). Loin thickness tended to increase with DE concentration ( $P = 0.08$ ). The coefficient of variability of BW on d 57 (first pull) averaged 12.2, 11.5 and 12.2% for the 3.12, 3.30 and 3.43 Mcal DE/kg treatments, respectively. An economic analysis, conducted using 5 yr mean feed and market prices, indicated an advantage for the lower energy diets. Increased dietary energy concentration improved the growth of commercially housed pigs, but only up to 80 kg BW. Overall (37 to 120 kg) performance was not affected by dietary energy concentration.

**Key Words:** Swine, Dietary energy, Tallow

**179 Evaluation of yellow field peas in growing-finishing swine diets.** G. I. Petersen\* and J. D. Spencer, *JBS United, Inc., Sheridan, IN*.

This study evaluated the effects of feeding yellow field peas (WFP 0097) as a replacement for corn and soybean meal in pig growing-finishing diets. Pigs (750 Ausgene x Ausgene) were allotted to one of three treatments in a randomized complete block design trial with ten replicate pens per treatment. Pigs were allotted by sex and placed in pens (25 pigs per pen) allowing for 0.74 square meters per pig. Treatments consisted of a corn-soybean meal control, a low pea inclusion with peas added to replace approximately 45% of the soybean meal in the control treatment, and a high pea inclusion that replaced 100% of the soybean meal in the control treatment. Pigs were fed in five phases during the course of the trial. The five phases were fed from 30-45 kg, 45-65 kg, 65-80 kg, 80-100 kg, and 100-120 kg. All diets were formulated to contain similar energy and digestible lysine concentrations, and were adequate in all other nutrients. All peas and corn used for diet formulation were ground through a roller mill. Pigs had ad libitum access to feed and water throughout the trial. Body weight and feed intake measurements were taken weekly for the initial four weeks, then every