

138 Faba bean and field pea protein concentrates as replacements for specialty proteins in nursery diets for weaned pigs. C. K. Gunawardena^{*1}, R. T. Zijlstra¹, L. A. Goonewardene^{1,2}, and E. Beltranena^{1,2}, ¹University of Alberta, Edmonton, Alberta, Canada, ²Alberta Agriculture and Food, Edmonton, Alberta, Canada.

Specialty protein feedstuffs are an expensive component of diets for weaned pigs, and cost-effective alternatives should be developed to ensure that feed costs can be contained. The effect of replacing three specialty protein sources (5% soy protein concentrate, 5% corn gluten meal, 5% menhaden meal) with the air-classified protein fractions of zero-tannin (< 1%) hulled faba bean (16%), dehulled faba bean (16%), or field pea (17.5%) in nursery diets on daily feed disappearance, weight gain, and feed conversion in 3-week-old weaned pigs was tested in this experiment. In total, 192 crossbred Hypor pigs (7.5± 1.4 kg at 27d) were used to evaluate the four diets. The wheat-based test diets contained 10% SBM and 10% whey permeate and were formulated to provide 3.60 Mcal DE and 3.3 g SID Lys/Mcal DE. Two barrows and two gilts per pen had ad libitum access to the test diets from the pen self-feeder for 28 d starting one week post-weaning (20 d), for a total of 12 pen observations per diet. Pigs were individually weighed and pen feed disappearance was measured weekly. Measured for the entire study period, protein source did not affect daily feed disappearance, weight gain, or feed:gain, indicating that changes in specialty protein sources at the specific dietary inclusion levels did not affect growth performance. In conclusion, faba bean and field pea protein fractions are cost effective replacements for specialty protein sources in diets for weaned pigs.

Table 1. Effect of dietary protein source on daily feed disappearance, weight gain and gain:feed

	Hulled Fababean Protein Concentrate	De-hulled Fababean Protein Concentrate	Field Pea Protein Concentrate	Specialty Proteins	SEM
ADF, g/d	648	654	685	662	14
ADG, g/d	483	484	504	486	12
Gain:feed	0.758	0.758	0.755	0.740	0.01

Key Words: Air-classification, Fababeans, Weaned pigs

139 Full-fat oat groats for weaned pigs. P. Leterme^{*1}, B. Ross-nagel², A. Samaraweera¹, and J. F. Patience¹, ¹Prairie Swine Centre Inc., Saskatoon, SK, Canada, ²University of Saskatchewan, Saskatoon, SK, Canada.

High-fat oat groats (HFOG; 9.5% oil and 17% crude protein) could be an ingredient of interest for weaned pigs. Two experiments were carried out to determine their nutritional value and the growth performances of weaned pigs fed graded levels of HFOG. Eight pigs were fed with a diet composed of 95% HFOG and 5% of minerals, including an indigestible marker. After fecal sample collection, the pigs were killed, 4h after the last meal, and the ileum content was collected. The DE content was 3,724kcal/kg DM and oil digestibility was 0.6. The apparent ileal digestibilities of N and lysine were 0.80 and 0.78, respectively. For the growth study, a control diet was formulated with 63% wheat, 16% soybean meal, 2% fish meal, 3.5% blood cells, 7% whey, 4.5 % canola oil, minerals and amino acids. Three other diets were formulated to contain 15, 30 or 45% of the diet, at the expense of wheat and soybean meal. All the diets contained 2.35 Mcal NE/kg DM and 11 g SID Lysine/kg DM. The 192 pigs (6.8 kg, 1 week after weaning) were distributed in 48 pens of 4 pigs (2 males, 2 females) and the 4 treatments were randomly allocated to the pens. The pigs were weighed weekly for 4

weeks. No difference in daily gain, feed intake and feed conversion was observed between treatments ($P > 0.05$). The combined, average values of daily gains were 229, 427, 612 and 726 g/d, respectively, for the 4 consecutive weeks. In conclusion, HFOG can replace wheat in rations for nursery pigs.

Key Words: Pigs, Oat groats, Nutritional value

140 Impact of increasing levels of soybean hulls on nitrogen and energy digestibility in growing pigs. D. M. Sholly^{*1}, B. E. Aldridge¹, K. L. Saddoris², A. L. Sutton¹, and B. T. Richert¹, ¹Purdue University, West Lafayette, IN, ²Akey, Lewisburg, OH.

Eight barrows (avg initial BW=19.7 kg) were surgically fitted with simple T cannulas to determine the N and energy digestibility of diets with soybean hulls (SH) in growing pigs. Pigs were allowed a 10 d recovery and acclimation period to metabolism crates. The experiment was designed as a replicated 4 × 4 Latin Square. Each 2 wk feeding period included a 9 d adjustment to experimental diet, 3 d total collection, and 2-12 hr ileal collections. The basal diet was formulated to meet or exceed dietary requirements (NRC, 1998), and contained 17.95% CP, 0.95% Lys, and 0.25% avail. P. The basal diet was fed at 9% BW.75 and divided into two equal meals (0700 and 1900 hr); SH was supplemented in addition to the basal diet feeding. The 4 dietary treatments were: 1) Basal-no added SH; 2) Basal + 3% SH; 3) Basal + 6% SH; and 4) Basal + 12% SH. Pigs were weighed at 2 wk intervals to adjust feed intake. Total collection of feces and urine were used to determine nitrogen and energy digestibility. A linear increase in pig ADG (0.57, 0.70, 0.62, and 0.73 kg/d; $P < 0.04$) and ADFI (1.32, 1.32, 1.41, and 1.46 kg/d; $P < 0.001$) were observed as pigs were fed 0-12% SH, respectively. Fecal N output linearly increased (9.1, 9.6, 10.5, 11.9 g/d; $P < 0.05$), urinary N increased quadratically (12.0, 10.8, 10.5, 12.7 g/d; $P < 0.001$) and N intake increased linearly (40.0, 42.4, 44.5, 49.9 g/d; $P < 0.001$) as SH inclusion increased from 0-12%, respectively. No differences in N digestibility among diets (avg=76.5%; $P > 0.27$) or periods were observed. However, the amount of N absorbed and retained increased linearly ($P < 0.004$) with increasing SH. Gross energy intake increased over period ($P < 0.001$) due to increased feed intake and among the diets due to dietary energy differences with additional SH. Energy digestibility was not different among diets (avg=76.9%; $P > 0.05$). Results from this experiment suggest additional supplementation of 3-12% SH does not change overall dietary N or energy digestibilities and may reduce urinary N excretion with up to 6% SH addition.

Key Words: Soybean hulls, Diet digestibility, Pigs

141 Effect of glycerol and soy oil on pellet mill production efficiency and nursery pig performance. C. N. Groesbeck^{*}, L. J. McKinney, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, J. L. Nelssen, S. S. Dritz, A. W. Duttlinger, and K. C. Behnke, Kansas State University, Manhattan.

A study was conducted evaluating the effects of glycerol, soy oil, and a 50:50 soy oil/glycerol blend on pellet mill production efficiency and nursery pig performance. The 7 treatments included a corn-soybean meal-based diet with no added soy oil or glycerol (control), the control diet with 3 or 6% added soy oil, 3 or 6% added glycerol, and 6 or 12% additions of a 50:50 soy oil/glycerol blend. Diets were steam