was 40 to 50% greater ($P < 0.01$) than pigs fed ND 1, which was likely due to greater ($P < 0.01$) SAA intake for pigs fed ND 2 or 3 compared to pigs fed ND 1. Some SAA act as antioxidants, which may have spared VE and Se and masked any effect of Ox-L DDGS. Therefore, increased VE was unnecessary in nursery pig diets with Ox-DDGS. The inclusion of DDGS in sow diets reduced the Se and VE status of pigs, but not after weaning when MHD is a concern. It is unclear if antioxidant supplementation is needed in diets with Ox-L without increased levels of SAA.

Key Words: antioxidant, DDGS, oxidative stress

O091 **Effect of pellet quality and feeder adjustment on growth performance of nursery pigs.** J. Nemechek[1,*], M. Tokach[1], E. Frugé[2], E. Hansen[2], S. Dritz[1], R. Goodband[1], J. DeRouchey[1], J. Nelssen[1], *[1]Animal Science and Industry, Kansas State University, Manhattan, [2]Hubbard Feeds, Inc., Mankato.*

Two experiments were conducted to determine the effect of feeder adjustment and diet form on growth performance of nursery pigs. In Exp. 1, a total of 210 pigs (PIC 1050 × 327, 11.9 kg BW) were used in a 21-d trial with 7 pigs per pen and 5 pens per treatment. In Exp. 2, a total of 1,005 pigs (Fast × PIC sows × TR4 boars, 14.1 kg BW) were used in a 28-d trial with 26 to 28 pigs per pen and 6 pens per treatment. Treatments were arranged as 2 × 3 factorials with main effects of feeder adjustment and diet form. The 2 feeder adjustments were a narrow and wide adjustment (minimum gap opening of 1.27 and 2.54 cm, respectively). The 3 diet forms were meal, poor-quality pellets (70% pellets and 30% fines), and screened pellets with minimal fines. There were no interactions (P>0.19) between feeder adjustment and diet form.In Exp. 1, no differences (P>0.13) were observed in ADG (599 vs 612 g), ADFI (875 vs 898 g), or G:F (0.684 vs 0.682) among pigs fed from feeders with narrow or wide settings, respectively. Pigs fed the meal diet had increased (P<0.001) ADG (630, 594, 594 g) and ADFI (939, 875, 844 g) compared with pigs fed the poor quality or screened pellets. Pigs fed meal or poor quality pellets had decreased (P<0.004) G:F (0.671, 0.679, 0.704) compared with pigs screened pellets. In Exp. 2, pigs fed from the narrow adjustment had decreased (P<0.03) ADG (708 vs 730 g) and ADFI (1098 vs 1139 g) compared to pigs fed from the wide adjustment. There was no difference (P>0.70) in G:F (0.645 vs 0.641) among pigs fed from the wide or narrow adjustments. Pigs fed meal had decreased (P<0.03) ADG (703, 726, 730 g) compared with pigs fed poor quality or screened pellets, respectively, with no difference (P>0.25) in ADFI (1116, 1134, 1102 g) among diet forms. Pigs fed meal or poor quality pellets had decreased (P<0.01) G:F (0.630, 0.640, 0.663) compared with pigs fed screened pellets. Thus, feeding nursery pigs from a wide feeder gap may provide benefits in ADG and ADFI with no negative effects on G:F. Improved G:F was observed only in pigs fed the screened pellets. The percentage of fines in the diets must be minimized to obtain the expected benefits to feed efficiency from pelleting.

Key Words: diet form, feeder adjustment, nursery pig

O092 **Feed preference of nursery pigs fed diets with soybean meal, napus canola meal or juncea canola meal.** J. L. Landero[1,*], E. Beltranena[1, 2], R. T. Zijlstra[1], *[1]University of Alberta, [2]Alberta Agriculture and Rural Development, Edmonton, Canada.*

Inclusion of conventional dark-seeded (*B. napus*) and novel yellow-seeded (*B. juncea*) canola meal (CM) can potentially replace soybean meal (SBM) in pig diets. The aim of this study was to examine the preference of nursery pigs for diets containing 20% of either SBM, napus CM or juncea CM. Diets formulated to contain 2.36 Mcal NE/kg and 4.5 g standardized ileal digestible Lys/Mcal NE were offered in a paired choice as mash (Exp. 1) or pellets (Exp. 2) for 3 consecutive 7-d periods. Each period consisted of 4-d double-choice test and 3-d non-test. Dietary treatments were provided in 2 separate 4-space feeders in each pen: 1) SBM vs. napus CM, 2) SBM vs. juncea CM, or 3) napus CM vs. juncea CM. Position of the 2 feeders within and among pens was not or was switched daily in Exp. 1 and 2, respectively. Previous to the experiment and during adaptation periods, pigs were fed diets containing SBM (Exp. 1) or none of the feedstuffs tested (Exp 2). In Exp. 1, 216 pigs (9.4 ± 1.6 kg) were housed in 27 pens of 8 pigs (4 gilts and 4 barrows) and randomly allocated to the 3 dietary treatments in a 3 × 3 Latin square. In Exp 2, 144 pigs (8.9 ± 1.1 kg) were housed in 36 pens of 4 pigs (2 gilts and 2 barrows) and randomly allocated to the 3 dietary treatments in a 3 × 3 Latin square. Total glucosinolate and gluconapin content in juncea CM (10.8 and 9.4 μmol/g, respectively) were 2.2 and 7.3 times greater, respectively than in napus CM. Pigs preferred SBM over napus CM diet ($P < 0.001$; 83.9% vs. 16.1% and 80.9% vs. 19.1% for Exp 1 and 2, respectively) and pigs preferred SBM over juncea CM diet ($P < 0.001$; 89.9 vs. 10.1% and 84.2 vs. 15.8% for Exp 1 and 2, respectively). Napus CM was preferred on the 2-way choice with juncea CM diet ($P < 0.001$; 64.0% vs. 36.0% and 81.4% vs. 18.6% for Exp 1 and 2, respectively). In conclusion, high content of the glucosinolate gluconapin in juncea CM was associated with the reduced feed preference for juncea CM vs. napus CM.

Key Words: canola meal, diet preference, weaned pig

O093 **Simple assessment of piglet robustness in relation to nursery diet quality and feeding antibiotics.** C. Levesque[*], E. Miller, J. Zhu, K. de Lange, *Animal and Poultry Science, University of Guelph, Canada.*

Seventy-two pigs were used to assess the impact of nursery feeding program on the pig's ability to mount an immune response, e.g. robustness, based on delayed-type hypersensitivity (DTH) to *Candida albicans* and production of anti-ovalbumin (OVA) antibodies. Pigs were randomly assigned to: High (H), Low (L), and Very Low (VL) quality diets, with or without in-feed antibiotics (2750 ppm chlortetracycline) from weaning to 6 wk post-weaning. The H diets contained typical levels of blood plasma, fishmeal, whey and acidifiers. The L diets were based on corn and soybean meal with minimal fishmeal and whey for the first 7d post-weaning only; the VL diets were based solely on corn and soybean meal. Within dietary treatment, 6 pigs were assigned as Control and 6 as Vaccinated. Vaccinated pigs were immunized, by intramuscular injection, to induce antibody response and DTH as follows: on d 5 and 19 post-weaning pigs received 0.5 mg OVA, 0.5 mg killed *C albicans*, and 0.5 mg Quil A adjuvant in 1 mL phosphate buffer. Blood samples were obtained on d 4, 18, and 32 for determination of anti-OVA antibodies. The DTH was determined on d 17, where all pigs were given, by intradermal injection in the ear, 0.1 mg candin in 0.1 mL saline and ear thickness measurements were made using a spring-loaded caliper at 6, 24, and 48 h after injection. The immunization protocol induced an antibody response to OVA ($P < 0.001$) where the optical density increase was 0.08 for control pigs and 0.24 and 1.31 for the primary and secondary antibody response, respectively, in Vaccinated pigs. There was no effect of nursery diet on the antibody response to OVA. The DTH response following candin administration was greater ($P < 0.01$) for Vaccinated than Control pigs. Within Vaccinated pigs,