An experiment was conducted to determine the effects of added Zn level on growth performance and hemoglobin of nursery pigs. A total of 673 pigs (initial BW = 6.0 kg) were used in a 45-d trial. There were 3 treatments based on added Zn level: 100, 2,000, or 3,000 mg/kg from Zn oxide. Experimental diets were fed for 21 d. After that, pigs were fed a common corn and soybean meal-based diet with 100 mg/kg added Zn for 24 d. There were 8 replicates per treatment. Pigs were weighed approximately every 10 d to evaluate growth performance, and blood samples were collected for hemoglobin analysis. Data was analyzed with SAS MIXED procedure. From d 0 to 10, there was a linear improvement (P < 0.05) in ADG, ADFI, and G:F with increasing Zn level. From d 10 to 21, increasing Zn level resulted in higher ADFI (linear, P = 0.009). However, there was no difference (P > 0.10) in ADG and G:F. From d 0 to 21, pigs fed increasing added Zn had improved (linear, P < 0.05) ADG and ADFI. From d 21 to 45, pigs previously fed high levels of added Zn had higher ADFI (linear, P = 0.023), but there was no evidence for differences (P > 0.10) for ADG and G:F. Overall (d 0 to 21), pigs fed increasing added Zn levels had improved (linear, P < 0.05) ADG, ADFI, and final BW. A quadratic response (P < 0.05) was observed for hemoglobin on d 10 and 45, with no differences (P > 0.10) observed on d 21. In summary, pigs fed high levels of added Zn presented improved growth performance. Although the response was linear in nature, the differences between pigs fed 2,000 or 3,000 mg/kg Zn were minimal for the response variables evaluated.

### PSIV14

**Influence of Feed Grade Amino Acid Inclusion Level in Late Nursery and Grower Diets Fed to Pigs from 10 to 35 Kg.** Hadley Williams¹, Mike D. Tokach², Jason C. Woodworth³, Joel M. DeRouchey⁴, Robert D. Goodband⁵, Zach Post⁴, Chad W. Hastad⁴, Keith Haydon⁴, ¹Kansas State University, ²Department of Animal Sciences & Industry, Kansas State University, ³Department of Animal Sciences & Industry, College of Agriculture, Kansas State University, ⁴New Fashion Pork, ⁵CJ America

A total of 912 pigs (PIC TR4 × (Fast LW × PIC L02)) were used in a 43-d trial to evaluate the influence of feed grade amino acid levels in late nursery and grower diets containing 30% dried distillers grains with solubles (DDGS) on growth performance. Pigs were randomly assigned to pens (19 pigs per pen) and pens were randomly allotted in weight blocks to 1 of 4 dietary treatments with 12 pens per treatment. Treatment diets were fed in 2 phases from 10 to 19.5 kg and 19.5 to 35 kg with digestible lysine at 1.31 and 1.15%, respectively. Predetermined orthogonal contrasts were used to evaluate linear or quadratic effects based on percentage of digestible lysine from intact protein versus feed grade lysine. Dietary treatments contained low, medium, high, or very high levels of feed grade amino acids with L-lysine added at 0.25, 0.40, 0.55, and 0.70% of the diet, respectively, with all other amino acids added as needed to meet minimum ratios relative to lysine (60% Ile; 58% Met and Cys; 65% Thr; 19% Trp; 72% Val). Overall, from d 0 to 43, there was an increase (quadratic, P< 0.020) in average daily gain (ADG) and average daily feed intake (ADFI) with pigs fed increasing levels of feed grade amino acids having the greatest gain and feed intake at the medium and high inclusion of feed grade amino acids, respectively. For overall gain:feed (G:F), pigs fed the medium level of feed grade amino acids had improved G:F (P=0.002) compared to pigs fed the high and very high feed grade amino acids with the pigs fed the low feed grade amino acids intermediate. In summary, feeding pigs medium levels of feed grade amino acids resulted in increased ADG and G:F during the late nursery and grower period.
PSIV-15  Influence of Particle Size of Enogen Feed Corn and Conventional Yellow Dent Corn on Lactating Sow Performance. Hadley Williams¹, Mike D. Tokach², Jason C. Woodworth², Robert D. Goodband³, Joel M. DeRouchey², Steve S. Dritz⁴, Haley Wecker¹, Hilda I. Calderon⁵, ¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Kansas State University, ³Department of Animal Sciences & Industry, Kansas State University, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Kansas State University, ⁵Department of Statistics, College of Arts and Sciences, Kansas State University

A total of 107 sows (Line 241; DNA, Columbus, NE) across 4 batch farrowing groups were used to evaluate the effects of corn source and particle size on sow and litter performance. Treatments were arranged in a 2×2 factorial with main effects of corn source (Enogen® Feed corn (Syngenta Seeds, Downers Grove, IL) or conventional yellow dent corn) and ground corn particle size (600 or 900 µm). Sows were blocked by parity and BW upon arrival to the farrowing house. There were approximately 27 sows per treatment, sow was considered the experimental unit, dietary treatment was a fixed effect, and sow group and block were used as random effects. Main effects of corn source and particle size as well as their interactions were tested. From farrowing to weaning, there was a tendency for a source×particle size interaction (P=0.065) for sow BW change. Sows fed 900 µm Enogen Feed corn had decreased BW loss compared to sows fed other treatments which were similar in BW change. Sows fed 900 µm Enogen Feed corn had greater feed intake compared to the sows fed 600 µm Enogen Feed corn. There was a tendency for a particle size main effect (P<0.10) for litter ADG (2,849 vs 2,635 g/d) and total litter gain (45.7 vs 42.3 kg), with sows fed corn ground to 600 µm having increased litter ADG and total litter gain compared to sows fed corn ground to 900 µm. In summary, there were few differences in sow or litter characteristics among corn sources. Reducing particle size...