
229 Use of wheat gluten in nursery diets.

C. M. De Mille*, M. J. Azain, C. R. Dove,
A. Yin, *University of Georgia, Athens.*

Wheat gluten (WG) is a high protein ingredient (75% CP) that is commonly used in pet food and milk replacers, but not commonly used in swine diets. An experiment was conducted to evaluate the optimal level of WG inclusion in phase 1 diets as a partial replacement for plasma protein (PP) and fish meal (FM). Pigs ($n = 135$, BW = $6.1 + 0.1$ kg, 45 pens, 3 pigs/pen) were weaned at approximately 21 d and blocked according to weight. All diets were formulated to meet or exceed the 2012 NRC standards. All phase 1 diets had 1.50% SID Lysine and contained 27.5% whey. There were 5 dietary treatments: 1) PC (5% PP, 5% FM), 2) NC (2.5% PP, 2.5% FM), 3) NC+2.5% WG, 4) NC + 5% WG, and 5) NC + 7.5% WG. WG was added at the expense of corn. Test diets were fed for 14 d post-weaning, followed by a common phase 2 diet for an additional 7 d. The phase 2 common diet had 1.35% SID Lysine, 10% whey, and 3% FM. The study was conducted as a randomized complete block design with a positive control. Contrast statements were used to determine linear and quadratic effects of WG. Overall (0–21 d), there was a quadratic effect of the level of WG on ADG (356, 398, 377, and 362 g/d for pigs fed 0, 2.5, 5, and 7.5% WG respectively, $P < 0.05$). Pigs fed the NC had reduced ADG compared to the PC treatment (356 vs. 394 g/d, $P < 0.05$). There was a quadratic effect of level of WG on ADFI (432, 471, 446, and 433, respectively for pigs fed 0, 2.5, 5, and 7.5% WG, $P < 0.05$). Pigs fed the NC had reduced intake compared to those fed the PC (432 g/d vs. 471 g/d, $P < 0.05$). There was no effect of diet on G:F. In this study, 2.5% WG was the optimal level of inclusion. The results indicate that reduction in the content of PP and FM in the phase 1 diet results in a loss of performance which was restored with the addition of 2.5% WG.

Key Words: growth performance, nursery pigs,
wheat gluten
doi: 10.2527/asasmw.2017.12.229

230 Effects of dietary standardized ileal digestible Ile:Lys ratio on growth performance of 6 to 11 Kg pigs.

A. B. Clark^{1,*}, M. D. Tokach¹, J. M. DeRouchey¹, S. S. Dritz¹, K. J. Touchette², R. D. Goodband¹, J. C. Woodworth¹, ¹*Kansas State University, Manhattan*, ²*Ajinomoto Heartland, Inc., Chicago, IL.*

Two experiments evaluated standardized ileal digestible (SID) Ile:Lys on nursery pig growth performance. In Exp. 1, 280 pigs (PIC 327 × 1050, 6.7 kg BW) were fed experimental diets for 12 d with 8 replications and 5 pigs/pen. In Exp. 2, 280 pigs (DNA 600 × 241, 6.0 kg BW) were fed experimental diets for 18 d with 8 replications and 5 pigs/pen. Pens were allotted in a randomized complete block design to 1 of 7 treatments containing 40, 44, 48, 52, 54, 58, or 63% SID Ile:Lys. Dietary SID Lys was 1.28 and 1.24% for Exp. 1 and 2, respectively. Diets contained

1.5% spray dried blood cells and 10% field peas. Responses were evaluated with base models and dose response best fitting models. In Exp. 1, ADG increased linearly and ADFI and G:F had quadratic responses as SID Ile:Lys increased. For ADG, quadratic (QP), broken-line linear (BLL), and broken-line quadratic (BLQ) dose response models had similar fits reporting maximum ADG at 64.7, 52.0, and 52.0% SID Ile:Lys, respectively. For ADFI, BLL breakpoint occurred at 50.6% and QP maximum at 56.2% SID Ile:Lys. In Exp. 2, ADG and ADFI increased quadratically as SID Ile:Lys increased. For ADG, BLL and QP had similar fits with maximums at 51.8% and 58.3% SID Ile:Lys, respectively. For ADFI, QP maximum was 57.2% SID Ile:Lys and BLQ breakpoint at 52.0% SID Ile:Lys. In summary, the SID Ile:Lys requirement for 6 to 11 kg pigs ranges from 52% for ADG and ADFI using broken line models to as high as 64% using quadratic models.

Key Words: isoleucine, nursery pigs, swine
doi: 10.2527/asasmw.2017.12.230

231 Effects of replacing an enzymatically modified soybean meal (HP300) with a corn/yeast protein by-product (Gold Pro) on performance and health status of nursery pigs.

F. B. Sandberg*, S. J. England, T. M. Fakler, K. T. Soltwedel, M. R. Bible, *Furst McNess Company, Freeport, IL.*

The objective was to evaluate complete replacement of enzymatically modified soybean meal (HP300, HP) with a corn/yeast protein by-product (Gold Pro, GP) during Days 0–21 post-weaning on performance and health of 1009 weaned pigs with an average BW of 6.1 kg (SE ± 0.11) with 27–31 pigs/pen and 6–8 replications/treatment in a large scale commercial research facility equipped with a Fancom feeding system. Pigs were blocked by BW, sex, sow farm, location within barn, and immediately on arrival were randomly allocated to one of five meal dietary treatments: 100HP (100%HP), 25GP (75%HP:25%GP), 50GP (50%HP:50%GP), 75GP (25%HP:75%HP), and 100GP (100%GP). All diets were formulated to meet NRC 2012 requirements. Gold Pro replaced HP300 on lb for lb basis in the ration and synthetic amino acids, minerals, and fat were added to ensure all diets were equal and met NRC 2012 requirements. Pens of pigs were weighed and feed disappearance recorded on d 0, 21, and 49, which were used to calculate ADG, ADFI, and G:F. Pigs that did not respond to injectable antibiotics were removed, tagged, and placed in sick pens. At the end of the experiment, the dead (% mortality) and pulled (% morbidity) pigs were determined. Injectable treatments were recorded daily. Data were analyzed as a randomized complete block design using GLM procedure in Minitab with Fisher's LSD to determine differences between dietary treatments. For d 0–49, there were no differences ($P = 0.113$) observed for ADG. Pigs fed 100GP had a greater overall G:F ($P = 0.027$) compared to all other treatments. Improved G:F occurred during d 21–49, when all pigs were on a