

165 Digestible energy content of corn- vs sorghum-based distillers dried grains with solubles in finishing pigs. C. Feoli*¹, J. D. Hancock¹, C. Monge¹, T. L. Gugle¹, S. D. Carter², and N. A. Cole³, ¹Kansas State University, Manhattan, ²Oklahoma State University, Stillwater, ³USDA/ARS, Bushland, TX.

A total of 120 finishing pigs (avg initial BW of 111 kg) was used in a 19-d experiment to determine the DE content of corn- vs sorghum-based distillers dried grains with solubles (DDGS). The reference diet was 97.5% corn with vitamins, minerals, and amino acids added to meet or exceed all NRC suggested nutrient concentrations. Treatments were corn-based (Sioux River Ethanol, Hudson, SD and MGP Ingredients, Atchison, KS) and sorghum-based (US Energy Partners, Russell, KS and Western Plains Energy, Oakley, KS) DDGS substituted as 50% of the reference diet in place of corn. The pigs were sorted by sex and ancestry and blocked by BW with 12 pigs/pen and two pens/treatment. Feed and water were consumed on an ad libitum basis. The pigs were allowed to adjust to the experimental diets for 4 d. Each morning for the next 2 d, grab samples of feces were collected from at least six of the pigs in each pen via rectal massage. The pigs were fed a common diet for 7 d and the treatments were reassigned with the only restriction to randomization being that a pen could not receive the same treatment twice. The end result was four observations per treatment for determination of DE. For the reference diet, digestibility of DM, N, and GE were 87.4, 74.5, and 85.4%, respectively, and DE of the corn itself was determined to be 3,322 kcal/kg. Comparisons among the treatments indicated that DDGS from corn had greater DE (223 kcal/kg) than DDGS from sorghum ($P < 0.04$). Additionally, DE was different among the sources of corn-based DDGS (3,628 vs 2,940 kcal/kg for Hudson vs Atchison, $P < 0.001$) and sorghum-based DDGS (3,205 vs 2,918 kcal/kg for Russell vs Oakley, $P < 0.05$). In conclusion, our results indicate that both substrate used in the fermentation process and plant of origin affect the energy value of DDGS when fed to finishing pigs.

Key Words: distillers dried grains, DE, pigs

166 Effects of corn- and sorghum-based distillers dried grains with solubles on growth performance and carcass characteristics in finishing pigs. C. Feoli*¹, J. D. Hancock¹, C. Monge¹, T. L. Gugle¹, S. D. Carter², and N. A. Cole³, ¹Kansas State University, Manhattan, ²Oklahoma State University, Stillwater, ³USDA/ARS, Bushland, TX.

A total of 176 finishing pigs (avg BW of 64 kg) was used in a 72-d experiment to compare the effects of corn- and sorghum-based distillers dried grains with solubles (DDGS) on growth performance and carcass characteristics. Treatments were a corn-soybean meal-based control diet and diets with 40% high-energy DDGS from Sioux River Ethanol, Hudson, SD (corn-based, crude fat of 10.2%, mean particle size of 353 μ m, and DE of 3,628 kcal/kg), 40% moderate energy DDGS from MGP Ingredients, Atchison, KS (corn-based, crude fat of 8.5%, mean particle size of 796 μ m, and DE of 2,940 kcal/kg), and 40% moderate energy DDGS from US Energy Partners, Russell, KS (sorghum-based, crude fat of 6.8%, mean particle size of 563 μ m, and DE of 3,205 kcal/kg). There were 11 pigs/pen and four pens/treatment with feed

and water consumed on an ad libitum basis until the pigs were slaughtered at an avg BW of 130 kg. For the control, high-energy DDGS, moderate-energy corn DDGS, and moderate-energy sorghum DDGS, ADG was 943, 891, 918, and 908 g/d, ADFI was 3.14, 2.92, 3.13, and 3.24 kg/d, and G:F was 300, 305, 293, and 280 g/kg, respectively. Data analyses indicated that pigs fed the control diet had greater ADG compared to pigs fed the DDGS treatments ($P < 0.003$). Among the DDGS treatments, the high-energy product supported lower ADG with less ADFI, but gave greater G:F than the moderate energy DDGS sources ($P < 0.06$). As for carcass data, dressing percentage (74.8, 73.7, 72.7, and 73.6%, respectively) was greater ($P < 0.001$) for pigs fed the control vs DDGS treatments but percentage carcass lean (53.9, 53.5, 53.6, and 53.7%, respectively) was not affected ($P > 0.49$) by treatment. In conclusion, there was noteworthy variation among pigs fed diets with DDGS from different processors.

Key Words: distillers dried grains, sorghum, pig

167 Effects of dried distillers grain with solubles on grow-finish pig performance. S. K. Linneen*, M. D. Tokach, J. M. DeRouchey, S. S. Dritz, R. D. Goodband, J. L. Nelssen, R. O. Gottlob, and R. G. Main, Kansas State University, Manhattan.

Three experiments were conducted to determine the effects of increasing dried distillers grains with solubles (DDGS) sourced from the same ethanol manufacturing facility on growth performance of grow-finish pigs. All experiments were conducted in the same commercial research facility using 7 (Exp. 1), 10 (Exp. 2), and 9 (Exp. 3) replications per treatment with 24 to 26 pigs/pen in Exp. 1 and 2, and 25 to 28 pigs/pen in Exp. 3. Diets were formulated on a total amino acid basis in Exp. 1 and a TID basis in Exp. 2 and 3. In Exp. 1, 1,050 pigs (50.1 kg) were used in a 28-d study in a 2×3 factorial with either 0 or 15% DDGS with 0, 3, or 6% added fat. Overall, there were no DDGS \times fat level interactions ($P > 0.14$). Adding DDGS to the diet did not affect ($P > 0.74$) ADG (942 vs 942 g/d), ADFI (2,140 vs 2,148 g/d) or G/F (0.44 vs 0.44). Adding fat to the diet increased (linear, $P < 0.01$) ADG (908, 943, 976 g/d) and G/F (0.422, 0.440, 0.457). In Exp. 2, 1,038 pigs (46.3 kg) were used in a 56-d study and fed diets with 0, 10, 20, or 30% DDGS. Increasing DDGS level in the diet decreased ADG (849, 858, 834, 835 g/d; linear, $P < 0.09$) and ADFI (1,946, 1,975, 1,913, 1,900 g/d; linear, $P < 0.05$). Although responses were linear, the negative response only occurred with greater than 10% DDGS. There were no differences in G:F (0.437, 0.435, 0.437, 0.440; $P > 0.38$). In Exp. 3, 1,112 pigs (50.1 kg) were used in a 56-d study and fed diets with 0, 5, 10, 15, or 20% DDGS. Pigs fed the control diets had increased ($P < 0.05$) ADG (934, 925, 939, 921, 894 g/d) compared to pigs fed diets containing 20% DDGS with others being intermediate. Increasing DDGS level in the diet tended to decrease ADFI (2.27, 2.20, 2.24, 2.18, 2.16 kg/d; linear $P < 0.09$). There was a quadratic ($P < 0.04$) improvement in G:F with increasing DDGS (0.41, 0.42, 0.42, 0.42, 0.41). In conclusion, approximately 15.0% DDGS sourced from this manufacturing facility can be added to diets before growth rate is reduced.

Key Words: dried distillers grain with solubles, pigs, growth