158 Effects of distillers dried grains with solubles (DDGS) on gaseous emissions of finishing pigs. H. J. Kim, S. D. Carter*, M. R. Bible, K. F. Coble, and T. M. Walraven, *Oklahoma State University, Stillwater.*

Two experiments were conducted to determine the effects of feeding DDGS on gaseous emissions by finishing pigs. In each experiment, 80 crossbred pigs were housed in an environmentally-controlled building with 4 identical rooms (20 pigs/room) containing 2 exhaust fans. Airflow and gas concentrations were measured and used to calculate gas emissions. Pigs were stratified by BW, sex, and ancestry, and randomly assigned to 1 of 4 rooms. In Exp. 1, diets were randomly allotted in a 4 × 4 crossover design with 4 rooms and 4 dietary phases. The 4 dietary treatments included corn-soybean meal diets containing 0, 10, 20 or 40% DDGS (88% DM, 27.8% CP, 0.75% S). All diets, within phase, were balanced on standardized ileal digestible Lys and digestible P. Each phase consisted of a 1-wk adjustment period followed by a 3-wk airflow and gas measurement period. Airflow was similar ($P > 0.10$) for all rooms. Increasing DDGS increased (linear, $P < 0.05$) the concentration and emission rates of NH_3, H_2S, CO_2, CH_4, and N_2O in the exhaust air. When calculated on a per pig basis, the emissions of these gases were increased (linear, $P < 0.04$) with increasing DDGS. Emissions of CH_4 and H_2S per pig were increased >200% for pigs fed 40% DDGS. In Exp. 2, pigs were fed either a control diet or a diet containing 25% DDGS (87% DM, 28.6% CP, 0.50% S) for the entire finishing phase. L-Lys HCl, L-Trp, and L-Thr were used to equalize CP content of the DDGS diet with the control diet. Unlike Exp. 1, the concentration and emission of NH_3 was similar ($P > 0.10$) for pigs fed both diets most likely due to the equalization of CP content. However, H_2S concentration and the emission rates of H_2S and CH_4 were increased ($P < 0.06$) by 157% and 188%, respectively, for pigs fed DDGS. The concentration and emissions of CO_2 and N_2O were not affected ($P > 0.10$) by diet. These results suggest that feeding DDGS will markedly increase CH_4 and H_2S emissions; however, NH_3 emissions can be controlled with amino acid use in DDGS diets. This work was partially funded by the National Pork Board.

Key Words: pigs, diet, gaseous emissions

159 Effects of sorghum dried distillers grains with solubles on finishing pig growth performance, carcass characteristics, and fat quality. K. M. Sotak*, T. A. Houser, R. D. Goodband, M. D. Tokach, S. S. Dritz, J. M. DeRouchey, J. L. Nelssen, B. L. Goehring, and G. R. Skaar, *Kansas State University, Manhattan.*

A total of 288 finishing pigs (58.8 kg BW) were used in a 73-d study to determine the effects of sorghum dried distillers grains with solubles (DDGS; 28% CP; 8.0% crude fat) in sorghum- or corn-based diets on growth performance, carcass characteristics, and fat quality. Pigs were allotted to 1 of 6 dietary treatments (6 pens/treatment) which included: sorghum-based diets with 0, 15, 30, or 45% sorghum DDGS (diets 1 to 4 in Table 1.); a sorghum-based diet with 30% corn DDGS (diet 5 28.9% CP, 9.8% crude fat), and a corn-based diet with 30% corn DDGS (diet 6 in Table 1). The diets were formulated to 0.95%, 0.83%, and 0.71% SID lysine in phases 1, 2, and 3, respectively. Overall, increasing sorghum DDGS from 0 to 45% reduced (linear, $P < 0.01$) ADG and increased (linear, $P < 0.01$) backfat iodine value (IV), while fat color became less red (a*; linear, $P < 0.01$) and tended to be less yellow (b*; linear, $P < 0.06$). No differences were observed in growth performance or backfat IV among pigs fed corn- or sorghum-based diets with 30% corn DDGS. However, pigs fed the sorghum-based diet with sorghum DDGS had fat color that was less yellow (b*; $P < 0.03$) than pigs fed the sorghum-based diet with corn DDGS. Pigs fed the sorghum-based diet with 30% sorghum DDGS also had decreased backfat IV ($P < 0.01$) and fat that was whiter (L*; $P < 0.02$) than those fed the sorghum-based diet with corn DDGS. Pigs fed sorghum with 30% sorghum DDGS had decreased ($P < 0.01$) backfat IV than pigs fed corn with 30% corn DDGS. Feeding a sorghum-based diet with 30% sorghum DDGS produces firmer pork fat than those fed corn-based diets with 30% corn DDGS which may have an important role in pork export markets.

Table 1.

	Diet							Linear	Corn DDGS vs. Sorghum
Item	1	2	3	4	5	6	SED	DDGS	DDGS[a]
ADG, kg/d	1.05	1.02	0.99	0.99	1.02	1.02	0.02	0.01	0.88
G:F	0.33	0.33	0.33	0.32	0.34	0.34	0.01	0.26	0.93
Backfat IV	58.7	60.7	64.8	69.2	68.7	68.6	1.23	0.01	0.01
Fat L*[b]	84.8	85.4	85.7	85.4	83.9	84.9	0.70	0.43	0.29

[a]Sorghum grain with 30% sorghum DDGS vs. corn grain with 30% corn DDGS.

[b]L* is on a scale of 0 to 100 (0 = black; 100 = white).

Key Words: corn, DDGS, finishing pigs, sorghum

160 Effects of lowering corn dried distillers grains with solubles (DDGS) and wheat middlings (Midds) with or without the addition of choice white grease (CWG) prior to marketing on finishing pig growth performance, carcass characteristics, carcass fat quality, and intestinal weights. M. D. Asmus*, J. M. DeRouchey, J. L. Nelssen, M. D. Tokach, S. S. Dritz, R. D. Goodband, and T. A. Houser, *Kansas State University, Manhattan.*

A total of 228 pigs (46 kg BW) were used in a 92-d study to determine the effects of withdrawing high fiber diets 19 d before market on growth performance, carcass characteristics, fat quality, and intestinal weights of finishing pigs. Pigs were allotted to 1 of 7 dietary treatments (5 or 6 pens/treatment). Treatments were arranged in a 2 × 3 factorial plus control with main effects of added CWG (0 or 3%) during the withdrawal period (d 73 to 92) and fiber levels of low (corn-soybean meal diet), medium (9.5% Middlings and 15% corn DDGS) or high (19% Middlings and 30% corn DDGS) during the withdrawal period. Pigs were fed high fiber (19% Middlings and 30% corn DDGS) diets from d 0 to 73. Control pigs were fed low fiber corn-soybean meal diets from d 0 to 92. There were no CWG × fiber interactions ($P > 0.13$) except for jowl iodine value (IV) which increased (linear $P < 0.03$) with increasing DDGS and Middlings only when CWG was added to the diet during the withdrawal period. Adding CWG during the withdrawal period increased ($P < 0.02$) ADG (0.82 vs 0.88 kg/d) and G:F (0.29 vs 0.31) leading to an overall (d 0 to 92) improvement ($P < 0.02$) in G:F. Carcass yield and backfat depth increased (linear, $P < 0.05$) when low fiber diets were fed from d 73 to 92. Pigs fed high DDGS and Middlings had increased ($P < 0.001$) jowl IV, with a larger increase when CWG was added. Feeding low levels of DDGS and Middlings during the withdrawal period decreased (linear, $P <$