Title: Assessment of Corn Distillers Dried Grains with Solubles (DDGS) from Ethanol Production on Performance and Carcass Quality of Growing-Finishing Swine – NPB #07-152

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Scientific Abstract:

An experiment involving 560 crossbred pigs (28 replications of 4 to 6 pigs/pen) was conducted at 9 stations to assess the effects of dietary levels of DDGS on pig performance from 32 to 120 kg BW and on firmness of carcass fat. Fortified corn-soybean meal diets containing 0, 15, 30 or 45% DDGS were fed in 3 phases. A common source of DDGS (supplied by ADM, Decatur, IL) analyzing 89% DM, 26.3% CP, 0.96% Lys, 0.18% Trp, 9.7% fat, 34.6% NDF, 0.03% Ca, and 0.86% P was used at each station. Diets were formulated to contain 0.83, 0.70, and 0.58% true ileal digestible (TID) Lys during the 3 phases with diets changed at 60 and 91 kg BW, respectively. DDGS replaced corn and soybean meal, and up to 0.22% L-Lys and 0.04% Trp were added to maintain constant TID levels in each phase. At each station, 2 pigs from each pen in 2 replications were killed and a midline backfat core was obtained for fatty acid (FA) analysis and I value. In most cases, there were differences among stations, but station x treatment interactions were few. Gain was reduced in pigs fed the higher levels of DDGS during phase I (950, 964, 921, 921 g; quadratic, P < 0.03) and overall (944, 953, 924, 917 g; linear, P < 0.03), but ADFI (2.73, 2.77, 2.69, 2.70 kg) and feed/gain (2.90, 2.91, 2.92, 2.96) were not affected (P > 0.05). Backfat was reduced linearly (P < 0.02) by DDGS (22.6, 22.6, 21.4, 21.6 mm) but differences in LM area (47.4, 47.4, 46.1, 45.4 cm²) and carcass fat-free lean (51.9, 52.2, 52.4, 52.1%) were not detected (P > 0.05). Flex measures obtained at 6 stations indicated less firm bellies (linear, P < 0.001) as DDGS levels increased (lateral flex: 11.9, 8.6, 8.4, 6.6 cm; vertical flex: 26.1, 27.4, 28.2, 28.7 cm). Saturated and monounsaturated FA in subcutaneous fat decreased (P < 0.001) and polyunsaturated FA increased (P < 0.001) with increasing DDGS in the diet. Iodine values (calculated from the FA data) were 61, 68, 75, and 83 (P < 0.001) in the inner layer of backfat. In this study, feeding diets with 30 or 45% DDGS did not have major effects on pig performance, but resulted in softer bellies and higher iodine values in backfat lipids. This project was funded by the National Pork Checkoff.