

## Effects of tallow and DDGS on pig performance and carcass characteristics

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Previous research results from the University of Minnesota have shown that feeding increasing dietary levels of corn dried distiller's grains with solubles (DDGS) reduces pork fat firmness. These negative effects are primarily caused from feeding high (> 20%) dietary levels of DDGS, which contains approximately 10% corn oil and consists of high levels (~60%) of linoleic acid. In order for pork producers to continue to achieve diet cost savings by feeding high levels of DDGS, while minimizing the negative effects on pork fat quality, we conducted an experiment to determine if supplementing 5% beef tallow (saturated fat source) to grower-finisher diets containing 30% DDGS will alleviate the negative effects of DDGS on pork fat firmness, while supporting acceptable growth performance and % carcass lean. Therefore, the objective of this study was to assess the effects of feeding 30% DDGS diets, with and without 5% supplemental beef tallow, to growing-finishing pigs on growth performance and carcass quality characteristics. Three hundred fifteen, mixed sex pigs ( $32.4 \pm 1.89$  kg initial BW) were blocked by BW and assigned randomly to 1 of 4 dietary treatments in a 3-phase feeding program (30-60 kg, 60-90 kg and, 90-120 kg BW). Gilts and barrows were housed separately in the wean to finish barn at the Southern Research and Outreach Center in Waseca, Minnesota, but fed mixed sex diets. A total of 40 pens were utilized (10 pens per treatment, 7-8 pigs per pen). Diets were formulated to meet or exceed NRC (1998) requirements based on a 350 g lean gain/day, and had similar available P and SID Lys:ME basis across treatments within each phase. Dietary treatments consisted of a conventional corn-soybean diet (CON), CON containing 30% DDGS (DDGS), CON containing 5% beef tallow (TAL), and CON with 30% DDGS and 5% tallow (DGT). Belly firmness was measured by calculating the belly flop angle by draping the belly, skin side down, on a smoke stick and measuring the distance between the inner edges. Color scores of belly fat and backfat were obtained using a Hunter MiniScan XE Plus Spectrophotometer. Data were analyzed as a 2 x 2 factorial arrangement of treatments utilizing the Proc Mixed functions of SAS with a random effect of block and fixed effects of DDGS and tallow. There were no tallow x DDGS interactions. Average daily gain did not differ among treatments. As expected, ADFI was lower for pigs fed diets containing tallow due to higher caloric density ( $P < 0.05$ ), and resulted in higher G:F for pigs fed TAL and DGT than CON and DDGS ( $P < 0.05$ ). There were no differences among treatments for HCW, dressing %, and loin depth. Pigs fed TAL had greater backfat depth ( $P < 0.05$ ) compared to the other treatments, resulting in lower % carcass lean ( $P < 0.05$ ) compared to CON and DDGS. Pigs fed CON and TAL had similar, but a higher degree of belly firmness ( $P < 0.05$ ) compared to pigs fed DDGS and DGT. Hunter L\* and b\* values for backfat and belly fat were greater ( $P < 0.05$ ) for pigs fed CON and TAL diets compared to DDGS and DGT, but all values were within currently accepted NPPC pork fat color standards. In summary, adding 5% tallow to diets containing 30% DDGS had no impact on ADG and improved G:F compared to pigs fed the control and 30% DDGS diets, but reduced backfat and increased % carcass lean compared to pigs fed 5% tallow diets. However, adding 5% tallow to grower-finisher diets containing 30% DDGS did not improve belly firmness.

**Key words:** DDGS, tallow, pig performance, carcass characteristics