Title: The effect of regrinding major feed ingredients to improve pellet quality, pig performance and producer profitability - NPB#12-146 revised

Investigator: Mark Knauer

Institution: North Carolina State University

Date Submitted: July 13, 2014

Scientific abstract: Two experiments were conducted to evaluate the effect of regrinding major feed ingredients on pellet quality and pig performance. In experiment 1, six swine finishing diets were evaluated for pellet quality. Diets consisted of two levels of dried distillers grains with solubles (DDGS, 0% & 30%), two particle sizes of DDGS (680 & 480 microns) and two particle sizes of soybean meal (1070 & 470). Each treatment was replicated 4 times, with each batch being 2000 lb. and representing an experimental unit. In experiment 2, mixed sex pigs (n = 760) were housed at a producer research facility from July to November, 2013. Housing consisted of a curtain sided barn with mechanical ventilation and totally slatted flooring. Pen was the experimental unit. The experimental design consisted of a 2 x 2 factorial, with two particle sizes of DDGS (640 vs. 450 microns) and two levels of pellet fines (0 vs. 25%). The four treatments were randomly assigned to pens with 10 replicates per treatment. Data were analyzed by analysis of variance using PROC GLM in SAS (SAS Institute, Inc, Cary, NC). In experiment 1, corn-soy diets had 1.6% lower (P<0.05) pellet durability index (PDI) and 9.5% lower modified PDI (P<0.01) in comparison to diets containing 30% DDGS. Regrinding soybean meal in corn-soy diets tended (P=0.07) to improve PDI by 2.3% and tended (P=0.06) to improve modified PDI by 5.8%. Within DDGS diets, regrinding soybean meal did not improve (P=0.19) PDI, but improved (P<0.05) modified PDI by 4.3%. Across all treatments, regrinding soybean meal improved (P<0.05) PDI by 1.5% and improved (P<0.05) modified PDI by 4.7%. Regrinding DDGS had no effect (P>0.05) on PDI or modified PDI. Batches pelleted in the morning had greater (P<0.01) PDI and greater (P<0.05) modified PDI in comparison to those pelleted in the afternoon (91.4 vs. 89.4 and 70.5 vs. 65.9, respectively). In experiment 2, regrinding DDGS did not impact (P>0.05) ADG (1.85 vs. 1.84), ADFI (4.89 vs. 4.86) or F:G (2.64 vs. 2.64) in comparison to unground DDGS. A low level of pellet fines did not improve (P>0.05) ADG (1.86 vs. 1.84), ADFI (4.90 vs. 4.85) or F:G (2.64 vs. 2.64) in comparison to a greater level of pellet fines. Results suggest adding DDGS and regrinding soybean meal improves pellet quality in swine finishing diets. Yet regrinding DDGS did not improve pellet quality or pig performance.