Effects of Mill Type and Particle Size Variation on Diet Flowability, Growth Performance and Carcass Characteristics of Finishing Pigs. A total of 200 pigs (DNA Line 241 × 600; Initial BW 55.3 kg) were used in a 75-d growth trial. Pigs were randomly assigned to pens with either 5 barrows or 5 gilts per pen. Pens were then randomly allotted to 1 of 4 treatments balanced by BW and gender with 10 pens per treatment. Treatments were arranged as a 2 × 2 factorial design with 2 mill types (3-high roller mill; RMS, Model 924 or a hammermill; Bliss, model 22115) and 2 particle size variations (standard vs high). Increasing corn particle size variation was accomplished by blending 30% 400 µm corn, 40% 600 µm corn and 30% 800 µm corn. Diets were fed in 3 dietary phases from 56 to 76, 76 to 100, 100 to 129 kg. On d 75, pigs were transported to a commercial packing plant for processing and determination of carcass characteristics. The average analyzed complete diet mean particles sizes were 497, 540, 503, and 520 µm for the roller mill standard, roller mill high, hammermill standard, and hammermill high treatments, respectively. Diet flowability was calculated using angle of repose (AOR), percent compressibility, and critical orifice diameter (COD) measurements to determine the composite flow index (CFI). The AOR were 34.2, 33.0, 35.4, and 36.2°, COD were 32.0, 31.3, 30.0, and 33.0 mm, compressibility’s were 18.7, 18.4, 17.0, and 15.7%, and CFI were 52.9, 55.4, 53.9, and 52.2, for the roller mill standard, roller mill high, hammermill standard, and hammermill high treatments, respectively. There were no interactions or main effects of mill type on growth performance or carcass characteristics. However, increased particle size variability resulted in a marginally significant decrease (P < 0.083) in ADG. The ADG were 1.00, 0.96, 1.00, and 0.98 kg and G:F were 0.374, 0.371, 0.369, and 0.365 for pigs fed the roller mill standard, roller mill high, hammermill standard, and hammermill high treatments, respectively. In conclusion, mill type used to grind corn and increasing particle size variation did not impact flowability metrics. In addition, mill type used to grind corn did not influence performance of finishing pigs, while increasing particle size variation led to a marginal reduction in ADG.

Key Words: Particle Size, Finishing Pigs, Feed Processing