
0972 Digestible calcium requirement for 100 to 130 kg pigs. L. A. Merriman^{*1}, C. L. Walk², C. M. Parsons³, and H. H. Stein³, ¹*University of Illinois, Urbana-Champaign*, ²*AB Vista, Marlborough, United Kingdom*, ³*University of Illinois at Urbana-Champaign, Urbana*.

An experiment was conducted to determine the digestible calcium requirement by pigs from 100 to 130 kg. Ninety pigs (average initial BW = 99.89 ± 3.34 kg) were randomly allotted to 15 experimental diets. Each diet was fed to 6 replicate pens using a randomized complete block design. Fifteen corn and soybean meal-based diets were formulated and all diets had the same concentrations of phytate and Na. Diets were formulated using a 3 × 5 factorial design with diets containing 0.11, 0.21, or 0.31% standardized total tract digestible (STTD) P and 0.12, 0.29, 0.46, 0.61, or 0.78% total Ca (0.08, 0.18, 0.29, 0.38, or 0.49% STTD Ca). The P concentrations ranged from 48 to 152% of the STTD P requirement and the Ca concentrations ranged from 27 to 173% of the total Ca requirement. Experimental diets were fed for 28 d and pigs were individually housed. Pig and feeder weights were recorded at the beginning and at the conclusion of the experiment to calculate ADFI, ADG, and G:F. On d 28, all pigs were euthanized and the right femur was extracted. Ash, Ca, and P concentrations were determined from the de-fatted, dried femurs. Results indicated that as dietary concentrations of STTD Ca increased, the ADFI and ADG decreased (main effects of Ca, $P < 0.05$), regardless of the dietary concentration of P. Models to predict ADFI [ADFI = 3.6782 – 1.2722 × STTD Ca (%); $P = 0.001$] and ADG [ADG = 1.2141 – 0.6230 × STTD Ca (%); $P = 0.008$] were dependent only on the concentration of STTD Ca, but not on the STTD of P. There were no effects by STTD Ca or STTD P on G:F indicating that the negative effects of STTD Ca on ADG was a result of reduced ADFI. Linear increases were observed for bone ash, bone Ca, and bone P as dietary concentrations of STTD Ca increased for all levels of STTD P (interaction, $P < 0.001$). In conclusion, results from the experiment support the current requirements (NRC, 2012) for Ca and STTD P, and feeding beyond the requirements for Ca (0.46% total Ca; 0.29% STTD Ca) or STTD P (0.21) is detrimental to growth performance of pigs.

Key Words: bone ash, calcium, pigs, phosphorus