

Carcass traits of pigs fed diets formulated with metabolizable energy value of corn adjusted by prediction equation

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This study was carried out to evaluate the effect of adjustment of metabolizable energy (ME) value of corn by prediction equation to formulate the diets on carcass traits of pigs. One hundred and sixty eight pigs (84 gilts and 84 barrows; initial weight = 29.54 ± 3.69 kg) were housed in individual pens, following the randomized complete block design, with 14 pigs of each sex per treatment. Three geometric mean diameter (GMD) of corn particles (483 - fine; 632 - medium; 904 μm - coarse) were evaluated in a factorial arrangement with two methods of diet formulation (FORM) differing regarding the ME value of corn: FIX (value from feed composition table, Rostagno et al., 2011, corrected for 87.07% dry matter) vs ESTIMATED (value estimated for each GMD). The prediction equation consisted of two segments: $\text{ME} = [2845.41 + (0.9385 * \text{Density}) - (20.8784 * \text{Crude Protein})]$, if $\text{GMD} \leq 522.98 \mu\text{m}$ and $\text{ME} = [3105.75 - (0.4978 * \text{GMD}) + (0.9385 * \text{Density}) - (20.8784 * \text{Crude Protein})]$, if $\text{GMD} > 522.98 \mu\text{m}$. The estimated ME values of corn were 3.334, 3.280 and 3.145 kcal.kg^{-1} for GMD 483, 632, 904 μm , respectively. All diets were formulated to contain 3.230 kcal ME.kg^{-1} , however, when corrected using the ME value of corn estimated by the equation, the ME of diets formulated with the FIX method decreased with increasing particle size. The pigs were slaughtered with 115.81 ± 8.31 kg live weight. Data were analyzed using the GLM procedure of SAS, separately for each sex, including block, GMD, FORM and the interaction GMD vs FORM in the model. The means were compared by protected t test ($P < 0.10$). There was no interaction ($P > 0.10$) GMD vs FORM, neither effect of FORM in any variable evaluated in the barrows. In the gilts there was an interaction ($P < 0.10$) GMD vs FORM on backfat (BF) in the first rib, BF in the last rib, fat area, and fat/meat area ratio, which were greater in the treatment with GMD 483 μm and formulation by the ESTIMATED method than in the treatment with the same GMD and formulation by the FIX method. This result is probably due to the greater feed intake observed in that treatment, which resulted in an additional ME energy intake of 468 kcal. It was concluded that the equation developed was efficient to adjust the energy value of corn, considering the variation in particle size. However, the improvement of the proposed equation is necessary to achieve greater precision for prediction of corn ME values. The validation of the equation with lots of corn of different chemical composition and densities is also necessary to assess the efficacy of the equation concerning the variation of the other predicting variables.

Key words: carcass traits, corn, metabolizable energy, particle size, pigs, prediction equations