Effect of Varying Levels of Dietary Fiber Fractions On Energy Value of Feeds, Nutrient Digestibility and Growth Performance of Broilers and Growing Pigs

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Degree	MS
Course	Animal Science
Study	Thesis
Year	2015

Abstract

The research project consisted of three (3) studies: Study one was conducted to determine the effect of feeding cassava meal and cassava residue pellet in growing broilers on apparent total tract digestibilities (**% ATTD**) of dietary fiber and energy, and to determine the relationship of these values to their apparent metabolizable energy; Study two was conducted to determine the effect of eubiotic lignocellulose on growth performance, fecal consistency, ATTD of nutrients and dietary fiber, caloric efficiency, and economic return in growing pigs; and finally, Study three was conducted to determine the best extension approach to disseminate knowledge and information to farmers in Cambodia. In Study one, results showed that % ATTD of GE and AME was greatest ($P < 0.001$) in the diet with 100% PCM and the least ($P < 0.001$) for the diet with 100% CRP. On a DM basis, the AMEn measured in PCM was greater (4,177 kcal/kg; $P < 0.001$) than the value in CRP (3,009 kcal/kg) fed to growing broilers. The ADF and NDF concentration in the cassava products were negatively related ($P < 0.01$) with ATTD of GE ($R^2 = 0.96$ and $R^2 = 0.92$, respectively) and AMEn ($R^2 = 0.924$ and $R^2 = 0.885$, respectively). There were no differences in excreta DM of broilers fed diets with corn-soy only and corn-soy diets with CRP, PCM, and their blends. For Study two, there were no effect on growth performance, caloric efficiency, and fecal quality scores of growing pigs fed in increasing levels of eubiotic lignocellulose. Increasing levels of eubiotic lignocellulose added to growing pig diets decreased (linear, $P < 0.05$) ATTD of DM, GE, CP, crude fat, and NFE. Addition of increasing levels of eubiotic lignocellulose increased (linear, $P = 0.002$) feed cost per pig and (linear, $P = 0.04$) feed cost per kg gain. For Study three, the most applicably used approach in the livestock extension service providers was the participatory approaches especially the agricultural extension participatory and the cost sharing approaches. In conclusion, the level of dietary fiber particularly the ADF fraction negatively affected the energy value and nutrient digestibility of diet and feed ingredients. Therefore, the level and type of dietary fiber should be considered in broiler and swine diets to maximize production efficiency. Livestock production can increase as farmers adopt the new knowledge and practice; and the knowledge generated by Study 1 would be best disseminated using the participatory approach to Cambodian farmers.