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Effects of dietary crude protein content on growth performance and fecal compositions of grower-finisher pigs [1]

Tein-Ming Su [2] Wei-Zhi Liu [2] Yi-Hsiang Weng [2] Cheng-Hsun Chung [2] and Hsiu-Wen Ou [2] [3]

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Abstract

The purpose of this study was to investigate the effects of feeding grower-finisher pigs with diets with different crude protein contents and raising them in wet-pad cooling feces scraped pig houses on pig growth performance, feces composition, water consumption, wastewater volume and wastewater quality in the pig house. A total of 224 LD (Landrace ♀ × Duroc ♂) and 224 LYD [(Landrace ♀ × Yorkshire ♂) ♀ × Duroc ♂] grower-finisher pigs with an average weight of about 39 kg were raised in a wet-pad cooling feces scraped pig houses, and the control group (HCP group) and the experimental group (LCP group), 224 animals each, were divided into 8 pens and 28 animals per pen, and fed with high crude protein and low crude protein diets, (the crude protein content of the diet was reduced by 3% and essential amino acids were added), respectively. The feeding trial was terminated when pigs reached average body weight is about 120 kg and feed and water were provided ad libitum during the experimental period. The growth performance and feces compositions of the pig, water consumption, wastewater amount, and wastewater quality of the pig house were measured. The results showed that the feed intake of pigs in the HCP group during the growth period was greater ($P < 0.001$) than that of the LCP group. The total nitrogen concentration in the feces of the LCP group were approximately 18.0% lower than those of the HCP group during the pig grower period, and were reduced by 17.2% during the finisher period. The water consumption and wastewater amount of the pig house in the finisher period are 22.23 and 6.13 L/d/head respectively, both are significantly higher than the 15.63 and 3.57 L/d/head in the growth period. The concentrations of chemical oxygen demand, biochemical oxygen demand, suspended solids, total nitrogen, total phosphorus, zinc, potassium, sodium and magnesium of wastewater in the finisher period were all higher than those in the growth period ($P < 0.05$). In summary, feeding the LCP group diet has no significant impact on the growth performance of grower-finisher pigs, and can reduce the total nitrogen concentration of feces. The application of wet-pad cooling feces scraped pig houses has the effects of saving water consumption and reducing the amount of wastewater.

Key words: Fecal composition, Grower-finisher pig, Growth performance, Low crude protein diet.

(1) Contribution No. 2810 from Taiwan Livestock Research Institute (TLRI), Ministry of Agricuiture (MOA).
(2) Livestock Management Division, MOA-TLRI, HsinHua, Tainan 71246, Taiwan, R. O. C.
(3) Corresponding author, E-mail: hwou@mail.tlri.gov.tw.