143-AGR

Title: Performance Impacts of Dietary Energy in a Laying Hen Strain at Late Phase of Production

There is limited research on how dietary energy influences calcium absorption, which is vital for developing efficient feeding strategies in laying hens to enhance eggshell quality, and overall productivity of birds. The study was carried out to determine how dietary energy levels impact Ca homeostasis in laying hens at the late production phase and to understand egg production and shell quality. A metabolic study was conducted that consisted of a total of thirty-six ISA brown laying hens at the late phase of production (~ 65 weeks) randomly allocated in 18 cages to one of three dietary treatments with low (T1), medium (T2), and high levels (T3) of energy (11.50, 12.75, and 13 MJ/kg, respectively) with the same level of dietary calcium. Each treatment consisted of 6 replicate cages (2, 2 birds/cage). The experiment was conducted over a 6-week period. The following performance parameters were measured for all treatment diets: egg production %, egg weight, feed intake, feed conversion ratio (FCR), and body weight gain. Results were analyzed using one one-way ANOVA t-test through the SAS software (SAS Institute, Inc, Cary, NC, USA). The performance results showed that at the end of the trial, the T2 diet had higher ($p < 0.05$) egg production (92.3%), and body weight (1832 gm) compared to the T1 diet (71.79% egg production, 1557.5 gm body weight) and T3 diet (78.84% egg production, 1754.58 gm body weight). Further, there were no differences ($p>0.05$) in feed intake, egg weight, or FCR between treatment diets. The research is in progress and aims to assess physiological markers such as differences in digestibility of Ca, blood calcium levels, hormonal profiles, tibia bone mineral content, and the expression of calcium-related genes. These additional analyses will provide deeper insights into the mechanisms underlying the observed effects and help refine dietary strategies for optimal performance, shell quality, and skeletal health.