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Improve chicken feeding with local resources in The Gambia

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Abstract

Poultry production is vital for livelihoods in the Gambia, particularly in rural and peri-urban areas where chickens contribute to food security, income generation, and cultural practices. However, high feed costs, seasonal shortages, disease, and dependence on imported commercial feed constrain both backyard and commercial systems. The Tanji Education Center for Permaculture (TEC) seeks to strengthen local chicken production by experimenting with sustainable, low-cost feeding strategies using locally available resources.

This study evaluated two home-formulated, low-cost rations – one with (RB) and one without bloodmeal (RTEC) – that were balanced using a formulation software to ensure nutritional adequacy. Their effects on body weight, feed intake, feed conversion ratio (FCR), feed costs per kilogram body weight, and body condition score (BCS) were compared with those of a commercial feed.

A seven-week feeding trial was conducted at TEC using fifteen chickens, five per treatment, individually housed in cages within a randomised block design.

The commercial diet outperformed both local formulations across all parameters. Birds fed the commercial feed achieved significantly the highest weekly weight gain (160 g), whereas RB (73.3 g) and RTEC (62.0 g) supported less than half. Feed intake was greatest in the control group (125 g/day), slightly lower in RB (116 g/day), and significantly lower in RTEC (104 g/day). FCR and feed costs per kilogram body weight followed the same trend, with the commercial diet showing the most favourable FCR (5.84) and lowest cost (263 GMD), compared with RB (11.43; 604 GMD) and RTEC (19.54; 968 GMD). BCS values confirmed significantly better growth in birds fed the commercial diet. Post-trial feed analysis revealed that RB and RTEC were deficient in metabolisable energy, crude protein, and essential amino acids, and contained higher crude fiber. These nutritional limitations likely explain their reduced performance.

Overall, while locally produced poultry feeds are relevant for improving feed autonomy in the Gambia, the evaluated rations did not meet the nutritional needs of chickens and commercial feed remains the most effective option under current conditions. Nevertheless, this study provides a foundation for refining local feed formulations, improving nutrient balance, and assessing ingredient palatability and acceptance.

Keywords: Feed intake, growth performance, local feed formulation, poultry, The Gambia