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Assessment of cassava as a partial substitute for maize in local chicken diets: Performance and economic evaluation

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Abstract

The growing demand for maize for industrial and domestic uses in Nigeria has led to increased costs of poultry products. This poses a risk of resource-constrained households failing to meet the daily protein requirements, especially for children, in the absence of an effective maize replacement in poultry diets. This study aimed to evaluate the feasibility of substituting maize with cassava in local chicken diets and its impact on performance and economic viability. The research was conducted at the livestock research station of Michael Okpara University of Agriculture Umudike (MOUAAU) in 2023. A total of 160 local chickens were randomly assigned to four treatments in a completely randomised design, with each treatment group containing four levels of cassava inclusion at 0%, 25%, 50%, and 75% in the diets compared to maize-based commercial feed as a control. Each treatment was replicated four times, with ten birds per replicate. Over 180 days, the chickens were assessed for performance parameters including growth rate, feed intake, and feed conversion ratio. Additionally, an economic analysis was conducted to evaluate the cost-effectiveness of cassava inclusion in the diets. Results indicated that birds fed diets with a medium dose (50%) of cassava had the highest feed intake at 1 to 24 and 1 to 35 days of age among the cassava-based diets. However, a significant decrease in body weight was observed at 75% cassava inclusion, and the feed conversion ratio was highest at 50% cassava inclusion. Our data show that chickens fed diets with 50% cassava inclusion exhibited similar growth rates, feed intake, and feed conversion ratios compared to those fed maize-based diets. Furthermore, economic analysis showed that substituting maize with cassava at this level could yield potential cost savings without compromising performance. This study demonstrates the feasibility of incorporating cassava as a partial replacement for maize in local chicken diets, particularly at the 50% inclusion level. The findings indicate that such dietary modifications can not only maintain performance but also offer economic benefits to poultry producers. Further research is recommended to explore optimal inclusion levels and the long-term effects on chicken health and production.

Keywords: Cassava, economic analysis, livestock diet, local chickens, maize, performance