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"Challenges to Organic Farming and Sustainable Land Use in the Tropics and Subtropics"

Performance of Growing Broiler Chicks Fed Bambara Groundnuts (*Vigna subterranea*)

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Abstract

Introduction:

The lack of sufficient animal protein in human diets in the tropics could be attributed to the high cost of animal production. This cost could be reduced by using unconventional plant protein sources for livestock feeding. Bambara groundnut is one of such sources. Bambara is a legume, which grows in the tropics and subtropics. Its nutrient content (CP—22 % DM, starch—30 % DM, EE—9 % DM, GE—19 $^{MJ}/_{kg\ DM}$) necessitates its experimentation as livestock feedstuff. Experiments were therefore designed to test its performance on growing broilers.

Method:

120 12-day old broiler chicks, kept in individual metabolic cages, were used in 2 experiments. In the first experiment, 50 were equally allotted into a control (no bambara) and 4 experimental groups (about 20, 40, 60 and 80 % crushed bambara (3 mm) inclusion level diets). In the second, 70 chicks were allotted to a control and 6 experimental groups, comprising of about 20, 80 and 100 %, normal and autoclaved bambara. The control diets contained Soyabean meal, wheat and Soyabean oil, mixed in proportion conforming to the CP, EE and GE in bambara. Diets were balanced for amino acids, vitamins and minerals. All diets were isoproteinous, isoenergetic. Feed and water were provided ad libitum. Each experiment lasted 15 days. The metabolisability of energy and nutrients were determined by use of a marker (TiO_2).

Results:

There was no significant difference in Feed intake. There were significant drops in weight gain and FCR when the inclusion level exceeded 60 % and 80 % respectively. Birds fed bambara as sole feed performed more than 75 % of the control. Autoclaving brought no significant improvement in performance. ME showed a decreasing tendency with increasing bambara. OM retention decreased steadily with increasing bambara. Autoclaving tended to improve OM retention.

Conclusion:

Bambara, up to 60 % inclusion level, shows a great potential in broiler ration and if the price of bambara is considerably lower than other organic feeding components in a feed, then bambara stands ideal to be used as a sole feed in the tropics and subtropics. It may alleviate the problems caused by the competition between man and his animals for the conventional food / feedstuff.

Keywords: Bambara Groundnut, broilers, FCR, livestock, nutrient retention

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