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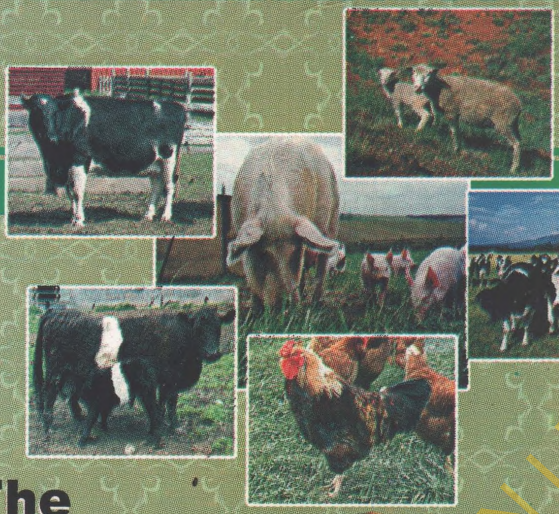

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PERFORMANCE AND CARCASS TRAITS OF BROILERS FED 'WOOD ASH DIGESTED' MAIZE COBS BASED DIETS FORTIFIED WITH GRANDIZYME

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Abstract

The growth and carcass traits of broilers were investigated using 200 unsexed day old chicks. Wood ash digested maize cobs (WADMC) fortified with grandizyme at graded levels were incorporated in the diet and used to assess the performance and carcass traits of the experimental birds. In a completely randomized design, 40 birds were assigned to each of the five dietary treatments A-E. The control A had no WADMC and no enzyme, while diets B, C, D and E had 5, 10, 15 and 20% inclusion levels of WADMC respectively with 5g of the enzyme per 100kg of feed. Starter diets with these inclusions were fed to birds from day-old. Data collected include the feed intake, weight gain, organ and carcass weights. The results obtained revealed that the birds fed diets B, C and D digested the maize cobs based diets fortified with enzymes betterl as reflected in the primal cuts from carcass and were significantly different ($P<0.05$) than from treatments A and E. The feed intake of birds in treatment A and E significantly differed from that of treatments B, C and D. Birds in treatment E recorded high incidence of prolapsed. It could be concluded that the performance and carcass characteristics of WADMC based diets at 10 and 15% levels of inclusion fortified with 5grams of enzyme was better than those on 5 and 20%.

Keywords: Wood ash, Maize cobs, Enzyme, Broiler

Introduction

The most important factors militating against broiler production in Nigeria is the cost of feed which has been estimated to be over 70% of the intensive poultry production (Ogunfowora,1984) consequently, it becomes important that alternative feed stuffs are sought to replace the conventional ones whose availability is becoming problematic due to high competition for its use by other livestock species. Maize cobs are seen littering the surroundings, markets and streets thus constituting a nuisance. The present study seeks to evaluate the use of maize cobs as a replacement for wheat offal. Limitations in its use in poultry diets stems from its high fibre content and low digestibility.

There are several reports on the roles of dietary fibre (DF) on Livestock and human nutrition among which are promotion of the process of digestion, supply of unidentified growth factors, minerals and vitamins, and reduction of blood sugar (Babatunde *et al.*, 1975). It has also been reported that high level of DF reduces food digestion and nutrient absorption and utilization (Babatunde *et al.*, 1975.)

Aruby and Pierson (2003) however, stated that enzymes have been used for many years to supplement the bird's developing endogenous enzymes in breaking down complex food substances. Many commercial brands of exogenous enzymes with potentials of overcoming some of the limitations of using agricultural by-products in livestock rations are available in the *Nigerian* Livestock Feed Market. However, the choice of appropriate enzymes for a particular feed material is important. Amongst the promising ones include biovet-YC binder. In animal feed, activated maize cob enzyme are soluble powder formed by pyrolysis of organic materials which has shown to have absorbent properties of a wide variety of drugs and toxic agents. In recent years, many synthetic biovet-yc binders have been introduced in the market (Nahm 1995). The use of enzyme to enhance the utilization of fibrous feed is well documented (Rosen, 2000). The objective of this experiment is to understudy and evaluate the performance of broilers fed with dietary inclusion of maize cob digested with wood ash that is fortified with enzyme

Materials And Methods

The experiment was carried out at Oyo State College of Agriculture Igbo Ora (OYSCAI). Dried maize cobs were collected from the feed mill of the Oyo state College of Agriculture. Wood ash was collected from a bakery in Igbo-Ora, it was filtered to remove all unwanted materials and was soaked in water at the rate of 500g per liter. The residue was removed and the milled maize cobs were soaked in the lyre solution for a period of 72 hours and after that, it was sundried to a constant weight. Biovet – Yc enzyme that was used in the experiment was purchased. It was recommended to be included at the rate of 500g/tonne of feed.

The birds were fed ad-libitum on commercial broiler starter diet for 4 weeks. Water was also given ad libitum. At the end of fourth week, birds were randomly allotted into five treatments of 40 chicks per treatment in a Completely Randomized Design (CRD). 40 birds were assigned to each of the five dietary treatments A-E. The control A had no WADMC and no enzyme, while diets B, C, D and E had 5, 10, 15 and 20% inclusion levels of WADMC respectively with 5g of the enzyme per 100kg of feed. Each diet was fed to each treatment of 40 birds in four replicates each from day-old. The composition of the starter finisher diets are presented in Table 1.

A total of two hundred (200) unsexed day old broiler chicks were used for the experiment. The broilers were housed in a deep litter pen. The dietary treatment was

fed to the 40 birds of four replicates from four weeks old. Vaccination were carried out when due. The weighed feed and cleaned water were supplied *ad libitum*.

Data Collection and Analysis

The initial body weight (IBW) of the birds was recorded. Subsequently weight records were taken on weekly basis. Feed intake was taken daily and mortalities recorded. Weight gains were taken weekly and carcass characteristics were taken in the biological laboratory. All the data obtained were analyzed statistically using SAS software.

Table 1: Gross composition of Starter and Finisher diets (%)

Ingredient	**Starter Composition**	**Finisher composition**				
		Treatment A	Treatment B	Treatment C	Treatment D	Treatment E
Maize	52.00	46.00	46.00	46.00	46.00	46.00
Maize cobs	00.00	0.00	5.00	10.00	15.00	20.00
Wheat offal	10.00	20.00	15.00	10.00	5.00	0.00
Soybean meal	13.00	13.00	13.00	13.00	13.00	13.00
Groundnut Cake	13.00	12.00	12.00	12.00	12.00	12.00
Fishmeal	6.00	2.00	2.00	2.00	2.00	2.00
Bone meal	3.00	4.00	4.00	4.00	4.00	4.00
Oyster shell	2.00	2.00	2.00	2.00	2.00	2.00
Premix	0.25	0.25	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25	0.25
Total	100	100	100	100	100	100
Calculated Nutrients						
Crude Protein	22.11	20.86	20.70	20.25	19.98	19.68
Crude Fiber	3.45	3.37	4.07	5.01	5.17	5.82
Metabolisable Energy	2838.45	2803.30	2776.5	2749.62	2742.62	2720.71

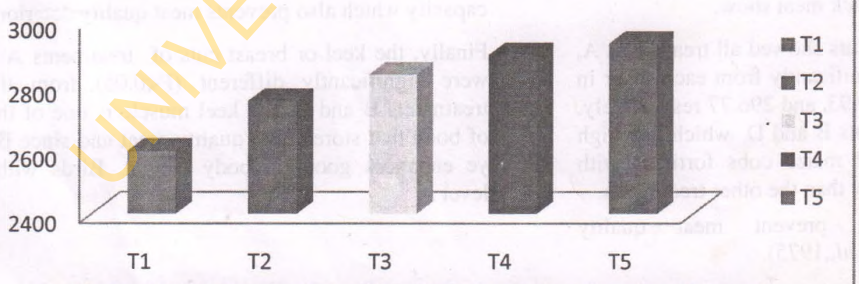

Fig 1: Weight gain (g) of birds fed varying levels of wood ash treated maize cobs based diet fortified with enzyme

Table 2: Primal cuts and organ weights of broilers fed wood ash treated maize cob - based diets fortified with enzyme (g)

	Treatment A	Treatment B	Treatment C	Treatment D	Treatment E	SEM
Head	5.03[a]	4.81[b]	5.20[a]	4.94[b]	4.93[b]	2.22
Neck	5.45[b]	5.21[c]	5.60[b]	6.14[a]	5.50[b]	2.64
Gizzard	7.93[ab]	7.13[ab]	7.09[b]	8.04[a]	6.83[c]	3.39
Liver	4.83[a]	3.17[b]	3.26[b]	2.96[b]	2.93[c]	4.43
Back	20.56[b]	20.58[b]	21.46[a]	20.29[b]	23.45[a]	7.24
Wing	12.60[a]	12.31[a]	13.41[a]	11.86[b]	12.59[a]	4.60
Thigh +drumstick	29.75[a]	28.34[b]	31.99[a]	27.08[c]	29.67[a]	10.12
Shank	6.96[b]	7.20[a]	7.70[a]	7.60[a]	5.76[b]	3.63
Breast	290.83[a]	264.70[c]	284.50[b]	240.13[c]	294.87[a]	9.70
Live wt	2595.57	2750.25	2831.63	2893.41	2928.1	31.84
Initial Wt	128.07	126.50	130.07	124.04	131.02	

[abcd:] Means on the same row with different superscripts are significantly (P<0.05) different

SEM: Standard Error of mean

Discussion

The results obtained for weight gain at the end of the eighth week (figure 1) shows that TE was significantly (P<0.05) different in values for both starter and finisher stages for the five treatments. The gradient increased in size and values. However, TA had the least value (P>0.05).

The study showed distinctive effects on the primal cuts of the broiler carcasses. Values obtained for gizzard in that with maize cob fortified with treatment level because the more the inclusive level of maize cob fortified with grandizyme the higher the response of the body growth rate and the back meat show.

The Thigh and drumstick cuts showed all treatments A, C, and E did not differ significantly from each other in their values of 297.57, 319.93, and 296.77 respectively. However, birds in treatments B and D which had high inclusion levels of treated maize cobs fortified with grandizyme were less meaty than the other treatments.

inclusion in treatments prevent meat quality deterioration (Babatunde *et al.*,1975).

showed significant differences between TD, TE, and TC while TA and TB showed no significant difference in their sizes.t appears however that maize cobs fortified with grandizyme treatment level helps in preventing veterinary intervention.

As for the back cuts there were significant differences (P <0.05) observed between the TC and TE as reflected in values obtained all the treatment back value to the other

The shanks of treatments B,C and D wer significantly different (P<0.05) in values because shank is another part of the body responsible for good calcium storage capacity which also prevents meat quality deterioration.

Finally, the keel or breast cuts of treatments A and E were significantly different (P<0.05) from that of treatments B and D.The keel muscle is one of the part of body that stores high quality meat and since Biome-ye enhances goodood body weight. Birds with high level in .

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