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DIETARY EFFECT OF SUBSTITUTING MIXED SAW DUST FOR WHEAT OFFAL ON INTERNAL ORGAN AND LINEAR BODY MEASUREMENT OF BROILER FINISHER

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ABSTRACT: *Dietary effect of substituting mixed saw dust for wheat offal on internal organ and linear body measurement of broiler finisher was conducted using ninety (90) broilers. The broilers were allocated to three dietary treatments consisting of three (3) replicates of ten (10) birds in each replicate. Three dietary treatments were formulated with the mixed saw dust substituting wheat offal at 0%, 35 and 70% level of inclusion respectively. The experiment lasted for four (4) weeks. The experiment was arranged in a Completely Randomized Design (CRD). Data obtained was analyzed using ANOVA. At the end of the experiment, result showed that there were significant (p< 0.05) difference in the values recorded for the internal organ of broiler across the treatment. The highest liver weight (1.62%) was recorded for birds fed control diet, while the lowest liver weight (1.50%) was recorded for birds on T3. Birds on T1 and T2 had a liver value which is statistically similar and differs from birds on T3. The lowest value (0.40%) recorded for heart was observed in broiler fed with (35%) T2, while the highest heart value (0.50%) was recorded for broiler fed diet 3. The highest kidney weight (0.50%) was recorded for birds on control diet, while the lowest kidney weight (0.32%) was recorded for birds diet 2. Birds on diet 2 had the highest spleen weight, while the lowest spleen weight (0.00%) was recorded for birds on control diet. For linear body weight however, It was observed that the values recorded for all linear body parameters were significantly (P<0.05) differences across the dietary treatments, with the exception of body length, shank length and girth length which showed no significant differences across the dietary treatments. The highest value (2591.00g) of final live weight was noticed in birds fed control diet, while the lowest value (2394.00g) of final live weight was recorded for birds on treatment 3. There were significant (P<0.05) different in the value obtain for average weight gain across the dietary treatment. The value obtained fluctuates as the substitution level of mixed sawdust for wheat offal increased. The highest value (1313.00g) of weight gain was recorded for birds on control, while the lowest value (1119.00g) was obtained in birds on diet 2.It can be concluded that mixed saw dust can be given to birds without having any negative effects on the organ weight and the linear body measurement of broiler birds*

KEYWORDS: broiler, internal organ, measurement, mixed saw dust, wheat offal

INTRODUCTION

Poultry make a significant contribution to human nutrition and economic sustenance. They provide substantial amount of high quality protein inform of meat and table eggs. According to (5) poultry yield the quickest return of investment compared to other livestock species. They are efficient converters of feed, meat and eggs in a short period of time. Apart from their use as source of food, poultry provide useful by-product for manufacturing industry. The feathers are used in making pillows and mattresses; their dropping is used as manure, which is very rich in plant nutrients. Despite all these advantages, the development of poultry industries is affected by the following reasons: poultry production is largely confined to the free range type, disease and problem associated with the feed. In Nigeria, inadequate leading constitute are major problem of poultry production. Poultry, being mono-gastric heavily compete with human for food. Feed alone constitute about 85% of the cost of production (6). This growing demand for poultry meat has resulted in pressure on breeders, nutritionist and growers to increase the growth rate of birds, feed efficiency, size of breast muscle and reduction in abdominal fatness. These improvements are mainly due to high heritabilities of body weight and body composition during breeding (2).

MATERIALS AND METHODS

Experimental site

The experiment was carried out at the Teaching and Research Farm, Oyo State College of Agriculture Igboora, Nigeria. The experimental area lies in savannah forest zone on latitude $7^{o}15^{I}$N and longitude $3^{0}30^{I}$E, with an elevation 140m above sea level

Experimental Ingredient

The saw dust used in the experiment was obtained from the local saw mill at Igboora, Oyo State.

Experimental birds and management

A total of 90 day old broiler chicks were used for the study. The birds were weighed individually and allocated into 9 brooding units. Each unit housed 11 birds and were offered one of the three (3) dietary treatments such that there were 3 replicate assigned to each dietary treatment to the rearing unit which house 11 broilers chickens per replicate and they were offered one of the three dietary treatments for the duration of the experiment

Experimental Diet

Three experimental diets were formulated for the broiler finisher's phase. Experimental diets were introduced from 4-8 weeks and fed for the duration of the experiment. Three substitution level of mixed saw dust substituting wheat offal at 0, 35% and 70% levels respectively.

Table 1: Proximate analysis of mixed saw dust

Component	Percentage (%)
Dry matter	86.60
Crude protein	10.50
Crude fibre	18.99
Ether extract	18.90
Ash	3.00
Nitrogen free extract	35.21
Metabolizable energy (kcal\kg)	3184.48

Table 2: Gross composition of experimental diet (4-8 weeks)

Ingredients	T1 (0%)	T2 (35%)	T3 (70%)
Maize	58.00	58.00	58.00
Soyabean	27.00	27.00	27.00
Wheat offal	10.00	6.50	3.00
Sawdust	00.00	3.50	7.00
Limestone	2.00	2.00	2.00
Bone meal	2.00	2.00	2.00
Broiler premix	0.25	0.25	0.25
Salt	0.25	0.25	0.25
Methionine	0.25	0.25	0.25
Lysine	0.25	0.25	0.25
Total	100	100-	100
Metabolizable energy	2906.52	2952.67	2998.57
Crude protein	19.65	19.143	19.20

A kg premix contains vitamin A; 110,000,000iμ Vitamin D; 2,500,00iμ, Vitamin E; 20,000mg Vitamin K_3; 3000mg, Vitamin B_3; 3.00mg Vitamin B_2; 7000mg, Vitamin B_6; 500mg Vitamin B_{12}; 25mg, Panthotenic acid; 10,000mg, folic acid; 800mg, Biotin; 50mg Manganese; 80,000mg, Iron; 40,00mg, Zinc; 60,000mg, Copper; 800mgCobalt; 250mg, Iodine; 1,000mg, Selenium (1%); 150mg, Chlorine, 200,000mg and Anti oxidant; 100,00mg.

Parameters measured

The following are the internal organ evaluation parameters measured on broiler fed experimental diets: live weight, Liver, Heart, Gizzard, Kidney, Lung, Spleen, Proventiculus, Bile, GIT weight and GIT length

Statistical Analysis

Data obtained in the study were subjected to statistical Analysis of Variance and mean value of variables showing significant ($p<0.05$) difference were separated using Duncan's multiple range test (1).

RESULTS AND DISCUSSION

Result

Result showed that there were significant ($p< 0.05$) difference in the values recorded for the internal organ of broiler across the treatment. The highest liver weight (1.62%) was recorded for birds fed control diet, while the lowest liver weight (1.50%) was recorded for birds on T3. Birds on T1 and T2 had a liver value which are statistically similar and differs from birds on T3. The lowest value (0.40%) recorded for heart was observed in broiler fed with (35%) T2, while the highest heart value (0.50%) was recorded for broiler fed diet 3. The highest kidney weight (0.50%) was recorded for birds on control diet while the lowest kidney weight (0.32%) was recorded for birds diet 2. Birds on diet 2 had the highest spleen weight, while the lowest spleen weight (0.00%) was recorded for birds on control diet

For linear body weight however, It was observed that the values recorded for all linear body parameters were significantly ($P<0.05$) differences across the dietary treatments, with the exception of body length, shank length and girth length which showed no significant differences across the dietary treatments. The highest value (2591.00g) of final live weight was noticed in birds fed control diet, while the lowest value (2394.00g) of final live weight was recorded for birds on treatment 3. There were significant ($P<0.05$) different in the value obtain for average weight gain across the dietary treatment. The value obtained fluctuates as the substitution level of mixed sawdust for wheat offal increased. The highest value (1313.00g) of weight gain was recorded for birds on control, while the lowest value (1119.00g) was obtained in birds on diet 2.

Table 3: Dietary effect of substituting mixed saw dust for wheat offal on internal organ evaluation of Broiler finisher (4-8wks)

Organs weight (% live weight)	T1 (0%)	T2 (35%)	T3 (70%)	SEM
Liver (%)	1.62^{a}	1.58^{ab}	1.50^{c}	0.03
Kidney ((%)	0.050^{a}	0.32^{c}	0.38^{b}	0.04
Spleen (%)	0.00^{b}	0.08^{a}	0.08^{a}	0.02
Bile (%)	0.00^{c}	0.12^{ab}	0.13^{a}	0.03
Heart (%)	0.46^{b}	0.40^{c}	0.50^{a}	0.02
Lung (%)	0.46^{b}	0.51^{a}	0.41^{c}	0.02
Proventriculus	0.31^{b}	0.28^{c}	0.50^{a}	0.06
Whole gizzard	2.70^{ab}	2.65^{c}	2.72^{a}	0.02
Empty gizzard	1.70^{b}	1.86^{a}	1.63c	0.06
GIT weight (g)	90.00^{c}	110.00^{a}	108.00^{ab}	5.19
GIT length (cm)	80.00b	$77.00b^{c}$	93.00^{a}	4.01

^{a,b,c} means along the same row with the same superscript are significantly different ($p<0.05$)

Table 3: Linear measurement of broiler fed mixed sawdust as a substation for wheat offal

Parameters	T1 (0%)	T2 (35%)	T3 (70%)	SEM ±
Initial weight (g)	1278.00	1410.00	1248.00	40.63
Final weight (g)	2591.00[a]	2529.00[b]	2394.00[C]	47.48
Weight gain (g)	1313.00[a]	1119.00[bc]	1146.00[b]	49.54
Body length (cm)	6.00[a]	5.00[b]	5.00[b]	0.27
Thigh length(cm)	12.00	12.00	12.00	0.00
Shank length (cm)	14.00	14.00	14.00	0.00
Girth length (cm)	6.00	6.00	6.00	0.00

a,b,c means along the same row with the same superscript are significantly different ($p<0.05$)

DISCUSSION

There were significant ($p<0.05$) difference in the value recorded for internal organ of broiler across the dietary treatment. This result confirmed the findings of (4), who reported that there were significant ($p<0.05$) difference in all the internal of broiler fed mixed saw dust experimental diet. The study showed that the broiler fed diet 3 which is an unconventional feed ingredient recorded lowest value ((1.50%) of liver . The study showed that the broiler fed control diet recorded the highest weight value of liver (1.62%) weight while broiler fed diet 3 recorded lowest value of the live (1.50%). The result of this study disagree with the findings of (3) who reported that an elicited highest of various organs as growth of organ when insufficient protein and amino acid are available. The weights of heart as percentage of live weight fluctuate across dietary treatment. The study disagree with the findings of (7) who reported that the quality and fat content of the cashew kernel meal (15.54%) elicited increase activity in the heart of the chicken fed diet four, thus leading to increase observed in the weight of heart in birds fed diet four which is numerical and respectively above those of diet 4, diet 3, 2 and 1 respectively.. The broiler fed (35%) mixed saw dust recorded the lowest kidney value 0.32 while the highest kidney value (0.41%) was obtained in broiler fed 0% mixed sawdust based diet which is an unconventional feed ingredient. This result negate the findings of Odunsi (1999) who observed higher value of kidney in bird fed diet 3 this can be attributed to the increase in the activity of kidney enzymes to detoxify the available anti nutritional factors present in the text ingredient while the lowest value of kidney weight in diet 4 is understandable knowing that cashew nut meal as not been known to be high in toxic substances like some other oil seed.

Based on the result obtained from the study, the value recorded for thigh length, shank length and girth length were numerically the same across the dietary treatments. This implies that the broiler fed 0%, 35% and 70% substitution level of mixed sawdust for wheat offal showed no significant ($P>0.05$) difference across the dietary treatments. This result was in line with Bafunso (2013) who reported that no significant ($P>0.05$) difference in the body length of cockerels raised on cage system and litter system. The result obtained for the final live weight and weight gain was

significant (P<0.05) difference across the dietary treatment. The result of this study confirmed the finding of Kumuyi (2016) who reported that dietary fibre aid a healthier digestive process and supports the muscles and nerves.

CONCLUSION AND RECOMMENDATION

Conclusion

It could be concluded that the use of mixed saw dust is a good non-conventional feedstuff that could be substituted for wheat offal without adverse effect on internal organs and linear body measurement of broiler birds evaluation of broiler fed experimental diet.

Recommendation

Based on the result of this thesis, It could be recommended that monogastric farmers should be encouraged to adopt these alternative feed resources, mixed saw dust in place of wheat offal which is a conventional feed resource to enhance good health status of the animal.

REFERENCES

1. Duncan, D. B., (1955). Multiple Range and F Test Biometrics. 11:1-42.
2. Duval E., Berry C., Baeza E., Sante V., Astruc T., Remignon H., Le Pottier G., Bently J., Beaumont C., Fernandez X. Genetic parameters of meat technological quality traits in a grand – parental commercial line of turkey.Genet. Sel.Evol. 2003 pp17.
3. Green, Harvey (2006) Wood: Craft, Culture, History Penguin Books, New York, page 403, ISBN 978-1-1012-0185-5
4. Ogungbenro S. D, Bamgbose A. M, Oso A. O, Sogunle M. O, Akinosun A. A, and Oseni T. A. (2016).The performance characteristics of poult.fed cashew nut meal-maize offal as partial for maize proceeding of 18th Annual conference of animal science association of Nigeria pp242-245.
5. Oluyemi, J.A. and Roberts, F.A. (1988).Poultry Production in Warm-wet Climate (Low cost edition).
6. Onifade, A. A. 1993. Comparative utilization of three dietary fibresource by broiler chickens. PhD. Thesis submitted to the Department of Animal Science, University of Ibadan, Nigeria.
7. Owoade, A. A. (2001). A lecture on poultry health and disease symptoms University of Ibadan.Pp.29 -36.
8. WHO 2005. *Air Quality Guidelines for Europe*, 2nd ed. WHO regional publications.European series, No. 91. Copenhagen: WHO Regional Office for Europe.