

Comparative Evaluation of Feed Conversion Efficiency and Mortality Rate of Two Broiler Strains under the Same Dietary Conditions

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Abstract: This study is aimed at comparing the feed conversion efficiency and mortality rate of Hubbard and Arboracre commercial broiler chicks treated under the same dietary and environmental condition. A total of 200 broiler chicks comprising of one 100 Hubbard and one hundred Arboracre strains were used in the comparative evaluation of their feed conversion efficiency and mortality rate from day old to 56 days (8 weeks) of age. Body weight was taken three times in a week. Feed intakes as well as the mortality rate were taken daily. Data obtained from body weight and feed intake were computed statistically to obtain the feed conversion efficiency. Hubbard broiler strain shows the feed conversion efficiency of 111.6247 ± 2.8487 , 82.35 ± 1.0879 , 58.72 ± 0.75536 and 45.4407 ± 0.80352 at 2, 4, 6 and 8 weeks of age while Arboracre strain attained the feed conversion efficiency of 114.615 ± 4.1562 , 89.105 ± 2.79432 , 75.8299 ± 0.75536 and 54.3710 ± 0.80352 at 2, 4, 6 and 8 weeks of age. Hubbard broiler strain has the mortality rate of 17.5% while arboracre strain has the mortality rate of 26.5% at 8 weeks of age. Under the same management system, arboracre strain showed superiority in feed conversion efficiency and mortality rate over Hubbard strain.

Keywords: Broiler strain, dietary condition, feed conversion efficiency, feed intake, mortality rate

INTRODUCTION

Survivability and feed conversion efficiency is an important parameter in assessing the potential of strains of birds and a feeding programme being a measure of the ratio of feed intake to weight gain. The major objective of poultry feeding is the conversion of feed stuff into human food (Jahan *et al.*, 2006). The continuous search for improving the conversion of feed into body weight in modern poultry production has been considered a critical point in broiler rearing (Apta and Kayode, 2007). The economic important of poultry feeding becomes apparent when it is realized that 60-70% of total production cost of poultry is feed cost. For this reason the efficient use of feed is extremely important in broiler production. Acute shortage of meat protein has been one of the nutritional problems facing African countries (Olusanya, 2003). The rapidly increased population in African countries calls for quick and more efficient intervention by means of increased food production and more strategically improved animal protein intake. Using staple food to increase production of live stock to alleviate animal protein shortage will not solve the problem but will rather aggravate food shortage (Akpa *et al.*, 2007). The solution to this problem lies in the way of increasing live stock production and particularly through increased production of prolific and short cycle life stock species like broiler (Agwunobi, 2005). The objective of this

study is to compare the mortality rate and feed conversion efficiency of two broiler strain under the same dietary system.

MATERIAL AND METHODS

Experimental site: The experiment was conducted at the poultry section of Department of applied science, Tudun Wada, Kaduna south local Government area Kaduna state, Nigeria between February and March, 2010. Kaduna state is located between latitude $9^{\circ}03'N$ and $11^{\circ}32'N$ of the equator and Longitude $6^{\circ}05'N$ and $8^{\circ}83'E$ of the green witch meridian. The climate is tropical comprising of dry harmattan, hot humid and raining seasons. The seasons vary with cool to hot season being longer than the raining season (Adeyinka *et al.*, 2006).

Experimental plans: A total of two hundred broiler chicks comprising of 100 Hubbard and 100 Arboracre stain used in this study were purchased from a commercial distributor in Kaduna. The birds were individually weighed and wing tagged for ease of identification in subsequent body measurements.

The two broiler strains were allocated to separate pens and reared on deep litter system. The birds were fed *ad libitum* with commercial broiler starter ration containing 23% crude protein for the first five weeks of life followed by finisher containing 20% crude protein.

Water was made available constantly. Routine medication was administered at the appropriate time.

Data collection: Body weight was obtained from each bird thrice a week. Feed intakes were recorded on daily basis. Mortality rate were also recorded when observed. Body weight and feed intake were taken in Grams using manual scale calibrated in kilograms. Body weight measurement is carried out in the morning before feed is allocated.

Statistical analysis: Data obtained from body weight and feed intake were computed statistically to obtain the feed conversion efficiency using statistical package for the social science (spss) version 15.0 incorporated (2008). The independent sample t test by Gusset (1957) each at 5% level of significance was used to compare the feed conversion efficiency between the two strains. Z test concerning proportion by Fisher (2003) was used to compare the mortality rate between the two strains.

RESULTS AND DISCUSSION

The means and standard error in respect of the feed conversion efficiency of Hubbard and Arboracre strains at 2, 4, 6 and 8 weeks of age are presented in Table 1. The values obtained for each of the broiler strain decreases progressively from 2 weeks to 8 weeks of age. Arboracre strain exhibited consistent superior feed conversion efficiency over Hubbard strain at each age group.

The mean feed conversion efficiency of 114.615±4.156, 89.1052±2.79436, 75.8242±1.96564 and 54.3710±0.80352 obtained for Arboracre strain at 2, 4, 6 and 8 weeks of age respectively (Table 1) were higher than those of 111.6247±2.8487, 82.3586±1.0879, 58.7299±0.75536 and 45.4407±0.41804 for Hubbard strain at 2, 4, 6 and 8 weeks of age. This could be attributed to strain differences. The feed conversion efficiency obtained from this study was higher than those for Anak, Arboracre and Hubbard strain at 4, 6 and 8 weeks of age reported earlier by Jahan *et al.* (2006). The higher values obtained in this study could be attributed to feed type, genetic make up or management system differences.

The mortality rate for both Hubbard and Arboracre strains over the entire 8 weeks of experiment are presented in Table 2. Arboracre strain had the mortality rate of 26.3% while Hubbard strain had the mortality rate of 17.5% (Table 2). This may be due to differences in breed use. The mortality rates obtained from this present study were higher than those obtained by Amakiri *et al.* (2008) and Fanimu *et al.* (2007) at 8 weeks of age using Anak strain. This may be due to differences in breeds' use or management system. The results obtained from this study confirmed the fact that

Table 1: Mean ± standard error for feed conversion efficiency for hubbard and arboracre strain at 2, 4, 6 and 8 weeks of age

Age (weeks)	Broiler strain	N	F.C.E.
2	A	99	114.615±4.1562
	H	96	111.6247±2.8487
4	A	88	89.1052±2.79436
	H	90	82.3586±1.0879
6	A	75	75.8242±1.96564
	H	81	58.7299±0.75536
8	A	75	54.3710±0.80352
	H	80	45.440±0.41804

Key: A-Arboracre strain; H-Hubbard strain; F.C.E- Feed conversion efficiency; N-Number of observation

Table 2: Mortality rate for hubbard and arboracre strain at 8 weeks of age

Age	Strain	Mortality rate (%)
8	A	26.3
8	H	17.5

Key: A= Arboracre strain; H = Hubbard strain; % = percentage

genotype sets a ceiling on feed conversion efficiency and survivability because in this present study, nutrition and other environmental factors were uniform.

In conclusion from this study, Arboracre strain has been seen to exhibit superior feed conversion efficiency and lower survivability over Hubbard strain $p>0.05$. On comparative basis, farmers may opt for Arboracre strain principally for purpose of minimizing feed usage and obtaining more profit.

REFERENCES

- Adeyinka, I.A., O.O. Oni, B.I. Nwagu and F.D. Adeyinka, 2006. Genetic parameter estimates of body weight of naked neck broiler chicken. *Int. J. Poult. Sci.*, 5(6): 509-592.
- Agwunobi, S.A., 2005. Performance characteristics of broiler fed *colanitida* pot husk based diet. *Mooj. Agric. Res.*, 2(2): 153-158.
- Akpa, G.N., E.O. Ijoman and P.A. Onimisi, 2007. Relationship between feed type and feed conversion efficiency in broiler chickens Nigeria *Soc. Anim. Prod.*, 7(4): 497-499.
- Amakiri, A.O., A. Monsi, S.C. Teme and P.N. Ede, 2008. Performance of broiler chicken exposed to flame and fumes from stimulated crude petroleum burning. *Niger. J. Anim. Prod.*, 35(2): 170-177.
- Apata, D.F. and R.M.O. Kayode, 2007. Growth performance and immune response of broiler fed diets supplemented with *Lactobacillus bulgaricus* Culture. *Niger. Soc. Anim. Prod.*, 25(1): 520-524.
- Fanimu, A.O., A.V. Jegede, O.M.O. Idowu and A.A. Adenuga, 2007. Effect of dierty L. Carnitine suplemetation in diets performance and carcass quality of finishing broilers. *Niger. Soc. Anim. Prod.*, 2(4): 18-21.
- Fisher, R.A., 2003. Simplify distribution of student normal distribution. *Econometrica*, 2(5): 24-31.

- Gusset, W., 1957. Students-t test for approximate normal population. *J. Am. Statist. Soc. Sci.*, 15 (1): 19-24.
- Jahan, M.S., M. Assaduzzaman and A.K. Sarka, 2006. Performance of broiler fed on mash, pellet and crombles. *Int. J. Poult. Sci.*, 5(3): 265-270.
- Olusanya, S.A., 2003. Effect of graded levels of iron fortified locally produced natural vitamine premix on the performance of broiler. *Niger. J. Anim. Prod.*, 30(2): 192-196.