EFFECT OF FLOOR SPACING ON GROWTH PERFORMANCE OF ANAK 2000 FINISHER BROILER CHICKENS REARED IN CRUTECH OBUBRA CAMPUS POULTRY FARM

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Abstract

This study on effect of floor spacing on growth performance of Anak 2000 finisher broiler chickens reared in Cross River University of Technology, (CRUTECH) Obubra Campus Poultry Farm was designed to ascertain the most economic floor space necessary for optimum production of broiler chickens raised in that community. A total of 51 day-old Anak 2000 broilers chickens were randomly assigned to three treatments of 17 birds each and replicated three times with each replicate having 5, 6, 6 birds respectively in a completely randomized design (CRD) fashion. Three treatments of different floor spacings were chosen based on recommendation. The first treatment (A) has a floor space of $0.056m^2$/adult broiler. The second treatment (B) has floor space of $0.100m^2$/bird and the third (C) has floor space of 0.167nr/bird. The management system used was intensive deep litter and data collected were those of live weight, body weight gain. Feed consumption efficiency of conversion and mortality rate. The data collected were subjected to statistical analysis using analysis of variances and the result obtained showed significant ($P<0.05$) differences among groups with treatment B ($0.100m^2$/bird) ranking highest in body weight and body weight gains. It was therefore concluded that birds in . CRUTECH Obubra Campus poultry farm should be reared in a deep litter floor space of $0.100m^2$/bird.

Key Words: Flour Spacing, Growth Performance, Finisher Broiler Chickens, CRUTECH Poultry Farm.

Introduction

The rise in human population, urbanization, land tenure system and industrialization have become the thief of time robbing the agricultural enterprise the right to acquisition of land it had once enjoyed. It is becoming increasingly more difficult to secure land for any agricultural enterprise without huge financial involvement especially in the cities. Poultry business is therefore surviving in backyard settings and in few hands of well to do citizens who can afford the huge financial involvement. Poultry production requires limited land space and could effectively be carried out where arable crop production could not (Jull, 195 1). Broiler chickens are fast growing birds, reaching an average market weight of 1.5kg to 2.2kg within the period of 8 - 1'2 weeks (Oluyemi & Roberts (1979). Broilers are efficient converters of feed to meat such that any cost incurred in the course of production can easily be realized as marketable meat, Sibbald and Wolynetz (1987). Broiler meat is generally more acceptable in family menu chart and other occasions especially in the rural areas where storage facilities are lacking for large animal meat. It enjoys the advantage of being acceptable by all religious groups except few strict vegetarians (Williamson & Payne, 1978).

Most commercial broiler farmers in CRUTECI! locality in the quest to make much gain, over-stock their pen, leading to reduction in production and carcass quality (Smith. 1980). Bolton (1972) added that feed consumption would be depressed with decreased floor space. There is however dearth of information on the feed conversion efficiency with changes in stocking rate. The persistent yearly disease outbreak in some sections of the community among the poultry farmers calls for investigation.

Apart from the low patronage of poultry industry by the populace due to poor economic grouch and astronomical rise in the cost of feed-ingredients, housing or accommodation is another sensitive factor in the establishment of poultry enterprise (Feldkamp and Adams, 1973).

Judicious utilization of every available space is therefore essential for a successful broiler business enterprise (Esimohai, 1982). This study is therefore aimed at finding out the effect of floor

spacing on the growth performance of Anak 2000 finisher broiler chickens reared in CRUTECH, Obubra Campus Poultry Farms and the objective is to ascertain the most economic floor space necessary for optimum production of broiler chickens.

Materials and Methods

The study on the effect of floor spacing on growth performance of Anak 2000 broiler chickens was conducted in CRUTECH Poultry Farm. The poultry house was disinfected and heated prior to the arrival of the birds and kept ready for commencement of brooding. The brooding process lasted for five weeks before the actual treatment started.

Site Partitioning

A measuring tape was employed in the partitioning of the floor space areas for the purposes of the study. A floor space area of 0,056m^2/bird was measured out for 17 brooded chickens and further partitioned into three spaces in a ratio of 5:6:6 for the purposes of replication. This served as treatment A. Treatment B, otherwise known as control experiment, has a floor space of 0.100m^2/bird measured out for 17 brooded chickens and partitioned into three floor spaces in a ratio of 5:6:6 as replicates. A floor space area of 0.167m /bird was designated as treatment C and was measured out for 17 birds and replicated in the same proportion as Treatment A and B. The system used was intensive deep litter and the litter material was wood shavings. The design of the study was completely randomized design (CRD) and the demarcation of unit floor space was done by the use of Indian bamboo in a very closed gap fashion. A feeding trough space of 3 -5cm^2/bird and water drinkers space of 2.5 - 3.5cm^2/bird were provided for the birds in this study.

Animal Treatments

A total of 51 post-brooded Anak broilers of mixed sexes were used in this study. They were randomly assigned into three treatments of 0.056m^2/bird, 0.100m^2/bird and 0.167m^2/bird floor spaces with each space housing 17 birds. The birds were further divided into three in a ratio of 5:6:6 birds per replicate. The birds were fed ad libitum with broiler starter and finisher obtained from Pfizer.

Hanging feeding troughs were used for feeding of the birds to reduce the wastage of feed and the feeds were properly weighed before giving to the birds. The unconsumed feeds or left over feeds were equally weighed to determine the quantity of feed consumed by the birds. Clean drinking water was provided ad libitum. Two stage vaccinations against NCD (i.e. V_0 and Lasota) were carried out at 1 week and four weeks of age and Gomboro vaccination was carried out at 2 weeks of age. All other protocols involved in broiler production were observed and the birds were raised under natural 12 hours light/dark cycle.

Data collection was done once in a week between the hours of 8 to 10 O'clock in the morning and data collected include body weight by the use of weighing balance, live weight gain, feed consumption and mortality rate were calculated. The data collected were subjected to statistical analysis using analysis of variance and significance was determined at ($P<0.05$).

Data Presentation

Table I: Mean Live Weight in Grams/Bird .

Age of Birds in Weeks Treatments

(Floor Spaces)	5	6	7	8	9	10	11	12
0.056m^2/bird	800.00	887.22	993.33	988.55	1027.55	1121.44	1178.11	1223,55^c
0.100m^2/bird	800.00	1011.33	1130.55	1283.44	1491.44	1797.44	1915.33	2101.44^a
0.167m^2/bird	800.00	921.11	994.67	1113.89	1255.22	1385.77	1484.10	1594.66^b

Means with different super scribes are significant ($P<0.05$).

Table II: **Body Weight Gain in Grams/Week Age of Birds in Weeks**

Treatments

(Floor Spaces)	5	6	7	8	9	10	11	12	Total	Mean
0.056m²/bird	140.00	87.22	56.11	45.22	39.00	93.89	56.67	44.44	582.56	70.32±x12.21[c]
0.100m²/bird	140.00	211.33	119.22	52.80	208.00	308.00	117.80	186.11	1441.44	180.8±22.017[a]
0.167m²/bird	40.99	121.11	73.56	119.22	141.33	130.55	98.33	110.56	934.64	116.83 ±8.02[b]

Means with different super scribes are significant (P<0.05).

Table 111: Percentage Body Weight Change/Bird/Week Age of Birds in Weeks Treatments

(Floor Spaces)	6	7	8	9	10	11	12
0.056m²/bird	11.00	6.30	5.00	4.00	9.00	5.00	4.00
0.100m²/bird	26.45	11.78	13.52	16.21	20.52	6.50	9.72
0.167m²/bird	15.14	8.00	12.00	12.69	10.40	7.10	7.45

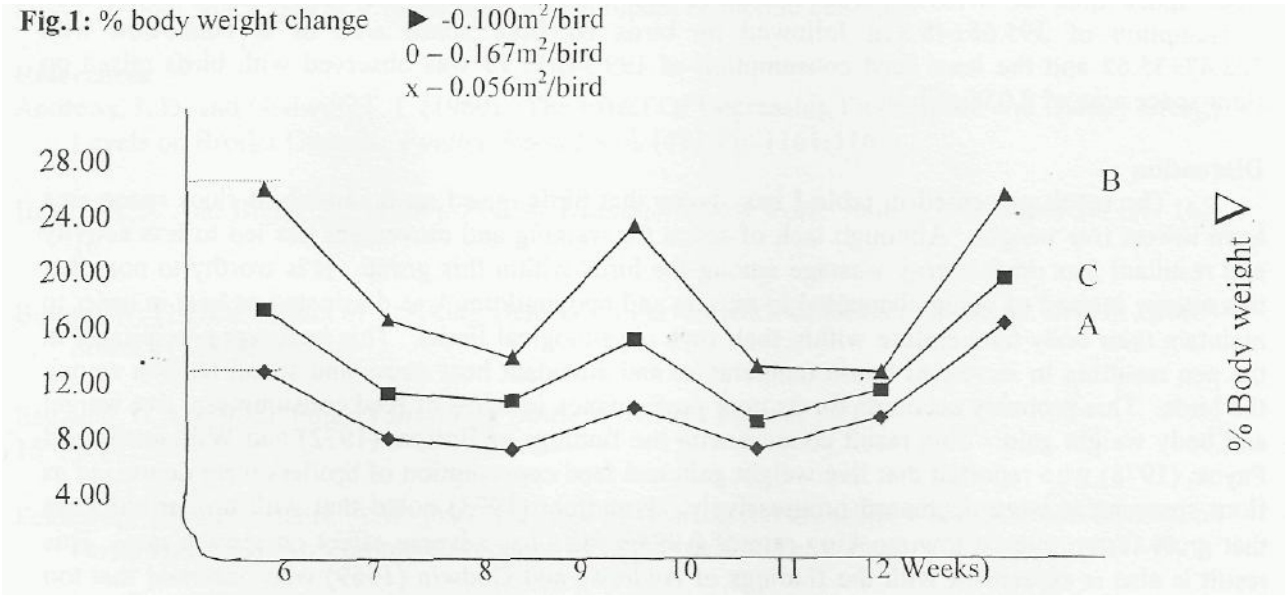

***Table IV: Feed Consumption in Grams/Bird/Week Age of Birds In Weeks* Treatments**

(Floor Spaces)	6	7	8	9	10	11	12	total	mean
0.056m²/bird	144.12	366.99	182.78	202.22	230.51	235.39	244.76	1396.78	199.54±!3.94
0.100m²/bird	185.29	226.47	286.18	337.65	385.00	411.35	432.35	2264.2	323.47±36.62
0.167m²/bird	205.88	292.35	32.84	393.88	463.23	522.94	558.63	2669.96	395.68±48.22

Result

Table 1 presents the live weight in grams per bird per week with birds on floor space area of 0.100m /bird or control treatment ranking highest with a terminal live weight of 2,101.44g. This was followed by birds on floor space area of 0,167m²/bird with a terminal live weight of 1594.66g and the highly stocked treatment (0.56m²/bird) having the least terminal live weight of 1222.55g. Results obtained showed a statistical significant (P<0.05) difference among the various treatments. The body weight gains in grams per week of the experiment was presented in table II with birds raised on floor space area of 0.100m/bird having the highest mean body weight gain of 180.18+22.17g followed by birds on floor space area of 0.167m²/bird with mean body weight gain of 116.83±8.02g and the birds on 0.056m /bird floor space area maintaining the least mean body weight gain. Statistical analysis of the result revealed significant (P<0.05) difference among the various treatments. Table III and Fig. 1 show percentage body weight change/bird/week and. the graphical presentation of the same.

The result shows a general increase in the percentage body weight change of the bird within the first 6 weeks of experiment followed by a decrease within week 7 and another general rise in the percentage body weight change, which was followed by another general terminal-decline in the percentage body weight

change. In all these observed changes, birds on floor space area of 0.100m/bird still maintained the lead with 26.45% followed by birds on 0.167m^2/bird floor space area with 15.14% and the least 11.0% came from birds on 0,056m /bird.

The quantity of feed consumed per bird per week was presented in Table IV and the birds on floor space area of 0.167m /birds consumed the highest quantity of feed with a mean feed consumption of 395.68±48.22g followed by birds on floor space area of 0.100m2/bird with 323.47±35.62 and the feast feed consumption of 199.54±13.99 was observed with birds raised on floor space area of 0.056m /bird.

Discussion

The result presented in table I has shown that birds raised on 0.56m2/bird floor space area have lowest live weight. Although Sack of space for walking and movement has led to less activity and resultant less draft energy wastage among the birds within this group. It is worthy to note that this energy instead of being channeled to muscle and bodybuilding was dissipated as heat in order to maintain their body temperature within their own physiological limits. This heat was precipitated in the pen resulting in increased house temperature and attendant heat stress and social tension among the birds. This probably accounts for its poor performance in terms of feed consumption, live weight and body weight gain. This result concurs with the findings of Bolton. (1972) and Williamson and Payne, (1978) who reported that live weight gain and feed consumption of broilers were depressed as floor space areas were decreased progressively, Proudfoot (1973) noted that with broiler chickens that grow faster, even a low stocking rate of 0.098nr/bird has adverse effect on growth rate. This result is also is agreement with the findings of Andrews and Godwin (1969) who observed that too high a house temperature of birds restricts appetite and retards activity and growth. This report however, disagrees with the observation of Bandy and Biggs (1959) who had held a contrary view on body weight gains with respect to increasing floor space areas/bird.

The significant ($P<0.05$) live weight, body weight gain and percentage body weight changes obtained in birds raised on floor space areas of 0.100mVbird when compared with those of 0.056rn/bird and 0.167m/bird may not be unconnected with its minimal draft energy wastage associational with birds sparsely stocked in the course of roaming up and down in the pen or dissipated energy wastage in form of heat associated-with high density stocked birds. This floor space is the ideal floor area for adult broiler chickens and it served as a control treatment in this study. The difference in body weight of birds raised on floor space area of 0.167m^2/bird and the control experiment (0.100 /bird) probably may be due to draft energy wastage incurred while roaming from one end of the pen to the other. This report is in line with the findings of Ruszler and Quisenbery (1969) who observed that low bird density provides room for draft energy wastage and hence, reduction in weight. The rapid growth of broilers is normally achieved within the first two months of life and this probably explains the high percentage body weight changes observed within the first 6 weeks. A sharp decline in percentage body weight changes was observed within week 7 in all treatments, which may not be attributed to treatment effect but rather may be due to accidental feed shortage within this said period.

A perusal of the result presented in Table IV indicates that the smaller the floor space area per bird, the smaller is the feed consumption. This decrease in feed consumption may be attributed to too high a temperature of the pens resulting from energy loss in from of heat by the birds. This observation agrees with the report of Bolton (1972) and Andrews and Godwin (1969) who observed that too high a house temperature of birds restricts appetite and retards activity and growth. Although other factors such as disease outbreak, predators, nutrition and climate could equally influence feed intake and body weight gain, it is note worthy to mention that such factors were seriously taken note of in the course of the experience.

In conclusion therefore, bird (broilers) reared in CRUTECH, Obubra Campus farm should be raised on floor space area of 0.100m /bird for maximum economic benefits.

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