

Performance of Two Breeds of Broiler after Brooding to Slaughter Stage

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Abstract: This study is aimed at deterring performance of broiler from matter brooding stage to maturity. 60 birds were obtained for each breed from difference hatchery in difference state of Nigeria. Making 120 birds in all, this study started from 5th week old to slaughter age parameters that are examined in this experimental research are weight gain, feed conversion ratio and feed efficiency, the two breeds are place under the same rearing condition, feeding and management. The result shows that Anak 2000 average weight gain is (1. 25kg) after censuring average feed of (14.5kg) while Abor – arca has (1.11kg) average weight gain after consuming (13.56kg) of feed. The result were also subjected to chi – square Analysis i. e the feed conversion ratio, feed efficiency and weight gain. The chi square analysis revealed that there is significant difference ($P < 0 .001$) in performance of the two breeds in relation to the parameter mentioned above i.e. weight gain, feed efficiency and feed conversion ratio.

INTRODUCTION

Broiler chickens are grown around the world in both temperate and tropical condition and under a wide range agricultural system, to produce a large variety of chicken products.

The birds must be feed on appropriate diet in other to attain their genetic potential in each of the situation, so as to supply the right amount of energy, protein, essential amino acids, minerals, vitamins and trace element for man that consume them.

Broiler is a fast growing meat type of small animal – production, as scare of animal protein, it is very relevant in meeting the protein requirement of developing economy such as Nigeria, it is very easy to establish than other source of animal protein, these is because of their maturity period is very short, it required very small space and little capital and these make it possible to be practice by small scale farmers, compare to that of other Mōnogastric and ruminant animals like pig, sheep, goat – and cattle, that their years of maturity is very long, they required large space and hurge capital, which cannot be practice by small scale farmers.

There are different breeds of broiler reared around the world, firstly the domestic hen (*Gallus Dimensions*), has been with us for a long time originally domesticated in prehistoric times, hens were kept by the Egyptians, Chances and Romans.

Their common ancestor is generally believed to hare been the jungle fowl (*Gallus gallus*), a small Asiatic bird, beautifully adapted to life in the tropical foreats of the East. They lived in a flock which had a dominant male and a definite social pecking order, its feet, is large and sharp claws has evolved to scratch the soft leaf – littered ground. It beak was hard and pointed ideal for pecking for the first half of twentieth century commercial breeders and hatcheries were supplying about 300 breed of chickens around over the world most of them breeds so called land races or local breeds, most of strain in the three categories below are referred to as the hybrid vigour these are egg produce meat and egg producer and meat producers. The meat and egg producer (duat purpose breeds) and meat producers are classified as the heavy weight bread commonly used in broiler production the white Cornish (wc) and while Plymouth rock (WPR) are characterised by low egg production. Important meat producer bread are known for mush broodiness fast growing chicks and heavy weight at maturity. Broiler birds of heavy weight ranges between 1.5.3.5 kg depending on age and breed strain development feed and housing provided. Broiler is a major factor to be considered in fast meat agricultural business, the consideration of production in

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reference to two different breeds of broiler under same breeding internal and external environment condition including feeding quantity yield in body weight has led to the options of Anak 2000 and Abar – arca, course of the study is aimed at comparing the performance under, weight gain time to attain maturity, the conversion efficiency of difference breeds of broiler (ANAK 2000 and ABOR – ARCA) as placed under the same rearing condition with the aimed of select ring the better favoured and acceptable breeds for producers and at large promote efficiency in poultry industry.

The world protein dietary need is below required standard, dependency on large animal portion in supplying the required protein is mad equate, the study choose to search for alternative to the protain supply of the developing and under develops countries. Through the production of small animal especially meats type of poultry birds e.g broiler. Broiler meat type is characterized by various factor, such as feed conversion to meat at the time of specific market weight, two breeds are considered for all production parameter, to aid in the choice of breed better for producer. The project is concern on the issue of government agricultural policy formulation and take an outward look into private sector involvement.

Data obtained from this study will help to improving the issue of falling protein shortage, scarcity as a result of poor managerial skill limited with poverty

MATERIALS AND METHODS

Research Methodology:

The research method used in this type is the experimental approach type of research in which the researcher investigates a group of birds for the purpose of providing an accurate and quantitative description about the topic

Site of the Study:

The farm is located in the premises of Tai Solarin University of Education Ijagun Ijebu – Ode Department of agricultural science Farum. It is located within the latitude 04n and longitude 06.28s.

Housing and Management:

Two commercial breed of broiler chicken commonly grown in Nigeria market were utilized in this study 60 birds per breeds were used for the experiment. Two breeds were hatched in different hatchery. Two weeks to the arrival of the broiler chicks, the pen was washed with detergent and the floor was covered up with- wood shaving, feed and water were supply ad – labium throughout the experiment period. Feeders, drinkers and scale are also present in order to make the experiment effective and give accurate result during this period.

Routing Management:

The chicks were place in similar equipped housing units where all breed are been grown on the same management and nutrition require NR,(1984) daily routine Works were carried out and that include washing of the drinkers, and feeder providing water and feed on daily bases changing of litter when necessary. In the pen the drinkers were washed every day and refilled with water mixed with “Blovit Spper” for feed supplementation and additive vitamins to the chicks and vaccination. To measure at 5th weeks to 9th weeks the following parameters weight gain, feed in take were monitored and disease prevented by using “IODASTERYL” Polyvalent iodopherous disin fement with detergent action

Heath Management:

Vaccination schedule bee vigorously adhere to, litters were change in every 2 weeks interval and wet spot are done away with to prevent disease out break and prevention module as mentioned above.

Methodology:

120 broiler birds were raise for four (4) weeks as brooding stage for the per experimental period production record and farm record information chart were developed for the purpose of the analysis.

Research Population:

The population of the study comprise 60 Anak 2000 and 60 ABOR – ARCA. Each collected from two (2) different production location and different state in Nigeria.

Research Instrument:

Statistical explanations were used to analysis the data collected and the result are interpreted for easy of common former understanding.

Method of Data Analysis:

The information or the data collected from the experimental research were placed for scientific analysis, the purpose of this research study were subjected to statistical analysis. The data were analysed through the use of chi-square method analysis the chi – square was used to analyse the hypothesis at all level of significant.

RESULTS AND DISCUSSIONS

This result and discussion was arrived at due to the practical observation of the broiler breeds i. e Anak 2000 and Abor – Arca performance. The study started immediately at 5th week old, i. e after brooding and was concluded when they were 9th week old. This clearly shows that within this period, it is enough to ascertain their performance e.g weight gain, feed conversion ratio and feed efficiency. The following table therefore reveals the records of the practical aspect of this research study.

Table 1 shows that Anak 2000 breed has a slightly higher weight gain to of Abor – Arca. It also shows that weight of Anak 2000 breeds at the beginning was 0.39kg and on the 9th week it has increased by 1.25kg having consumed 14.5kg of feed while the Abor – arca breed started with 0.360kg weight and on the 9th week has 1.11kg increase having consumed 13.56kg of feed.

It can be seen from the table above that at 5th week, Abor – Arca has the higher value for feed conversion ratio (FCR) (0.25) while Anak 2000 has feed conversion ratio of 0.04, but at 6th weeks both bred recorded same value for FIR at 7th week FCR for Anak 2000 increased to 0.12 while Abor – arca FCR increased to 0.09 which is still lower than that of Anak 2000. at 6th week and 8th the feed conversion ratio of the two breed decrease, which can be due to some circumstance such as management practices.

It can be seen table 3 that’s at 5th week Anak 2000 has the higher feed efficiency (F E) (21 . 43, compared to Abor – arca (4.0) it also shows that, feed efficiency for Anak 2000 at 6th weeks increased to (39.48) while that of Abor – arca also increased to(37.5) though still lower than that of Anak 2000. at 7th week FE for Anak 2000 decreased to (8.33) and that of Abar – arca also decreased to (11.25) at 9th week, feed efficiency for Abar – arca decreased to 11.11 while that of Anak 2000 also fall to (6.88). on total Anak has higher value of FE total of (11.6) compared to that of Abor – arca (12.2).

For the purpose of this study, we shall subject these results to chi -square analysis i.e for feed conversion ratio, feed efficiency and weight gain as follows.

Where:

- E, = Expected Frequency
- R t = Rows Total
- Ct = Column total
- G t = Grand Total

The frequencies were calculated below

$$e_1 = \frac{0.19 \times 0.29}{0.53} = 0.10$$

$$e_2 = \frac{0.19 \times 0.24}{0.53} = 0.09$$

$$e_3 = \frac{0.34 \times 0.29}{0.53} = 0.19$$

$$e_4 = \frac{0.34 \times 0.24}{0.53} = 0.15$$

Table 1: Result of Average Weight Gain and Average Feed Intake

Week	ANAK 2000			ABOR - ARCA		
	Average Weight Gain (kg)	Average Weight kg	Average Weight Gain (kg)	Average Weight Gain (kg)	Average Weight Gain (kg)	Average Feed Intake (kg)
4	0.390	-	-	0.360	-	-
5	0.432	0.042	0.9	0.380	0.20	0.8
6	0.470	0.038	1.5	0.420	0.04	1.5
7	0.710	0.24	2.0	0.660	0.24	2.7
8	0.870	0.16	4.0	0.840	0.18	3.5
9	1.64	0.77	5.3	1.29	0.45	5.0
	1.25KG	14.5KG		1.11KG	13.56kg	

Table 2: Feed Conversion Ratio (Fcr) = Weight Gain Feed Intake

Week	Anak 2000			Abor - Arca		
	Weight Gain (kg)	Feed Intake (kg)	F. C. R (KG)	Weight Gain (kg)	Feed Intake (kg)	F. C. R (KG)
5	0.042	0.9	0.04	0.20	0.8	0.25
6	0.038	1.5	0.03	0.04	1.5	0.03
7	0.24	2.0	0.12	0.24	2.7	0.09
8	0.16	4.0	0.04	0.18	3.5	0.05
9	0.77	5.3	0.15	0.45	5.0	0.09
		0.086			0.082	

Table 3: Feed Efficiency (F E) = Feed Intake Weight Gain

Week	ANAK 2000			ABOR - ARCA		
	Weight Gain (kg)	Feed Intake (kg)	F. E.	Weight Gain (kg)	Feed Intake (kg)	F. E.
5	0.042	0.9	21.43	0.20	0.8	4.0
6	0.038	1.5	39.47	0.04	1.5	37.5
7	0.24	2.0	8.33	0.24	2.7	11.25
8	0.16	4.0	25	0.18	3.5	19.44
9	0.77	5.3	6.88	0.45	5.0	11.11
		11.6			12.2	

The Frequencies were now enter into the contingency table in paretis as follows

Source Field Survey:

To estimate the χ^2 we apply the formula

$$\chi^2 = \frac{E(0 - e)^2}{e}$$

$$\chi^2 = \frac{(0.04 - 0.10)^2 + (0.15 - 0.09)^2 + (0.25 - 0.19)^2 + (0.09 - 0.15)^2}{0.10 \quad 0.09 \quad 0.19 \quad 0.15}$$

$$\chi^2 = 0.036 + 0.04 + 0.02 + 0.024$$

$$\chi^2 = 0.12$$

Calculated $\chi^2 = 0.12$

Chri - square table at degree of freedom = n - 1 = 2 - 1 = 1

- Table value at 0.05 is 3. 84
- Table value at 0.01 is 6. 64
- Table value at 0.001 is 10. 83

TABLE 4: Observation Result for Feed Conversion Ratio (F C R)

BREED	ANAK 2000	ABOR – ACRA	TOTAL
0.04	0.25	0.29	
0.15	0.09	0.24	
Total	0.19	0.34	0.53

Using the table above the x^2 expected frequencies were calculated using the formula

$$e = \frac{R T X C T}{G T}$$

TABLE 5: X^2 Contingency Table for (FCR)

BREED	ANAK 2000	ABOR – ACRA	TOTAL
(0.04)0.10	(0.25)0.19	0.29	
(0.15)0.09	(0.09)0.15	0.24	
Total	0.19	0.34	0.53

TABLE 6: Observation Result for Feed Efficiency (F E)

BREED	ANAK 2000	ABOR – ACRA	TOTAL
21.43	4.0	25.43	
6.88	11.11	17.99	
Total	28.31	15.11	43.42

Using the table above the x^2 expected frequencies were calculated using the formula

$$e = \frac{R T X C T}{G T}$$

Tables 7: X^2 Contingency Table for (F E)

BREED	ANAK 2000	ABOR – ACRA	TOTAL
(21.43)16.58	(4.0)8.84	25.43	
(6.88)11.72	(11.11)6.26	17.99	
Total	28.31	15.11	43.42

Source Field Survey

To estimate the x^2 we apply the formula

$$X^2 = \frac{E (O - e)^2}{e}$$

Tables 8: Observation Result for Weight Gain

BREED	ANAK 2000	ABOR – ACRA	TOTAL
0.390	0.360	0.75	
1.64	1.29	2.93	
Total	2.03	1.65	3.68

Using the table above the X^2 expected frequencies were calculated using the formula

$$e = \frac{R T X C T}{G T}$$

Table X2: Contingency Table for Weight Gain

BREED	ANAK 2000	ABOR – ACRA	TOTAL
(0.390) 0.41	(0.60) 0.34	0.75	
(1.64) 1.62	(1.29) 1.14	2.93	
Total	2.03	1.65	3.68

The result of the chi – square test reveals that the null hypothesis is not valid. Since the calculated chi – square value is less than tabulated value at 0.001% we therefore accept H_1 and reject H_0 which implies that there is very high significant differences ($P < 0.001$) in the feed conversion ratio of the two breeds of broiler.

Where:

- e = expected Frequency
- R T = Rows Total
- G T = Grand Total

The frequencies were calculated below

$$e_1 = \frac{28.31 \times 2.43 = 16.58}{43.42}$$

$$e_2 = \frac{28.31 \times 17.99 = 11.72}{43.42}$$

$$e_3 = \frac{15.11 \times 25.43 = 8.84}{43.42}$$

$$e_4 = \frac{15.11 \times 17.99 = 6.26}{43.42}$$

The Frequencies were enter into the contingency table in paretis as follows

$$X^2 = \frac{E (O - e)^2}{e}$$

$$X^2 = \frac{(21.43 - 16.58)^2 + (6.88 - 11.72)^2 + (4.0 - 8.84)^2 + (11.11 - 6.26)^2}{16.58 \quad 11.72 \quad 8.84 \quad 6.26}$$

$$x^2 = 1.419 + 1.999 + 2.650 + 3.758 = 9.826 = 9.83$$

Calculated $X^2 = 9.83$

Chi – square table at the degree of freedom

$$= n - 1 = 2 - 1 = 1$$

- Table value at 0.05 is 3.84
- Table value at 0.01 is 6.64
- Table value at 0.001 is 10.83

Since the calculated chi – square of 9.83 is less than the table value of 10.84 at 1.001. the null hypothesis (H_0)

- Is rejected the alternate hypothesis (H_1)
- Is accepted. This we say there is significant deference ($P < 0.001$) in the feed efficiency of Anak 2000 and Abor – Arca.

Where:

- e = expected frequency
- R T = Rows Total
- C T = Colum Total
- G T = Grand Total

The Frequencies were calculated below

$$e_1 = \frac{2.03 \times 0.75 = 0.41}{3.68}$$

$$e_2 = \frac{2.03 \times 2.93 = 1.62}{3.68}$$

$$e_3 = \frac{1.65 \times 0.75 = 0.34}{3.68}$$

$$e_4 = \frac{1.65 \times 2.93 = 1.14}{3.68}$$

The Frequencies were now enter into the contingency table in parenthesis as follows.

Source Field Survey:

To estimate the X^2 we apply the formula

$$X^2 = \frac{E (O - e)^2}{e}$$

$$X^2 = \frac{(0.39 - 0.41)^2 + (1.64 - 1.62)^2 + (0.36 - 0.34)^2 + (1.29 - 1.14)^2}{0.41 \quad 1.62 \quad 0.34 \quad 1.14}$$

$$X^2 = 0.001 + 0.0003 + 0.001 + 0.02$$

$$X^2 = 0.02$$

Calculated $X^2 = 0.02$

Chi – square table at degree of freedom

$$= n - 1 = 2 - 1 = 1$$

- Table value at 0.05 is 3.84
- Table value at 0.01 is 6.64
- Table value at 0.001 is 10.83

Since the calculated chi – square of 0.02 less than the table value of 10.84 at 1.001. the null hypothesis (H0)

- is rejected the alternate hypothesis (H1)
- is accepted. Thus we say there is significant deference in the weight gain of Anak 2000 and Abor – arca.

The performance of broiler chicks is been affected by difference in maintenance requirement; age, genetic etc chambers (1988). Pym and Quill (1990).

Summary:

This research work started at 5th week old of the chick to 9th week I e after brooding stage with two breeds of broiler i.e Anak 2000 and Abor – arca. The total birds are 120 i.e. 60 breeds of Anak 2000 and Abar – arca breed, they were kept under the same rearing condition, management, they were fed with the same fed, and medication. The parameter examined in this study are feed conversion ratio, feed efficiency and weight gain. The

bird were weight and feed take were recorded, the record of weight gain of the two breeds of broiler reveals that the weight gain of Anak 2000 is higher (120) than that of (1.25) Abor arca (1.11kg. interms of their feed conversion ratio Abor - arca breed performed lower than (0.082) then that Anak 2000 (0.082kg) also on feed efficiency Abor – arca is higher (12.2) then compared to that of Anak 2000 (11.6kg). the result was place on chi – square analysis, using this chi square to test for significant difference between the two breeds, the result shows that there is significant difference ($P < 0.001$) between Anak 2000 and Abar arca breeds in there weight gain, feed conversion ratio and feed efficiency, of management has equally affect the performances of Anak 2000 and Abor – arca

Recommendation:

The farmer should used breeds of broiler that attain high weight gain with in show period of time. Ability to convert feed to flesh is very important in broiler production, Anak 2000 breeds have better feed conversion ratio then Abor – arca. Anak 2000 breed presses this charter that is mention above.

Conclusion:

It is then concluded that Anak 2000 breeds performed better them Abar – arca in terms of feed conversion ratio and weight gain. It can be concluded that adequate, feeding, management and vaccination has effect on the performance of broiler breeds.

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