The Mortality Rate in the Two Breeds of Broiler on Brooding Stage

O.K. Awobajo, Y.M. Akintan, A.O. Igbosanu, A.A. Mako and O.T. Olatokunbo

Department of Agricultural Production and Management Science,
Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State, Nigeria

Abstract: The experimental work is to determine the mortality rate between the two breeds of broiler on brooding stage. In this regard, 120 birds were stocked for this research and they were separated into two different groups that is group A and B, each group containing 60 birds. Group A contains breeds of (Anak 2000) and in group B we have (Arbour Acre) breeds. The two groups were given the same treatment throughout the experiment. At the end of the brooding stage, the birds in group A were 59 in numbers while that of group B were 55 in numbers. This implies that Anak 2000 having lower percentages mortality (1.7%) compared to Arbour Acre, which is having (8.6%) mortality. This result was also suggested to chi-square analysis and this revealed that there is very high significant different (p<0.001) in the mortality rate of the two different breeds. The postmortem result also revealed that omphalitis was the cause of highly mortality in the breeds.

Key words:

INTRODUCTION

Poultry keeping in the past was a sideline occupation. In some communities, the fowl is still used as in the past, as a means of knowing the time. Today, poultry keeping has developed to the level of commercial enterprise involving thousands of birds. Large poultry units have replaced small one’s while more efficient strains and breeds of birds, balanced feeds, intensive housing and better poultry equipment have come into use. The poultry industry has become a diverse industry with a variety of business interests such as egg production, meat production, hatchery and poultry equipment business. However, the decision to start a poultry farm depend on whether or not the farmer is aware that poultry production is one of the most promising sources of additional income, protein intake and quick returns from investments. Poultry can be established with a minimum cost and as a side project. Moreover, they can fend for themselves on free range without much care. The products produced from poultry provide an acceptable form of animal protein to most people throughout the world [1].

Broilers as one of the poultry birds were purposely reared for meat, rather than for eggs. The broiler industry began in the late 1950’s when strains were selectively bred for meat production. Broiler chickens are birds that have been genetically modified and developed to grow very fast within a very short period of time when given the right kind of management [2]. Broiler rearing is being more popular in Nigeria to meet up the growing demands of animal protein in the country. It can contribute towards.

MATERIALS AND METHODS

Area of study: This research product that is the is rate of mortality an two different breeds broiler at brooding stage was carried out at agricultural science department farm in Tai-Solarin university of Education (TASUED) located at Ijagun campus, Ijebu-Ode in Ogun State Nigeria. This campus was situated on the outskirt of Ijagun town which was on latitude 5-45° North and longitude 3-57° East and about 4.5 km South of Ijebu-Ode Local Government Council.

Materials used: The materials that was used in this research project work are;

- Deep litter system e.g. wood shavings and sawdust.
- Broiler starter.
- Grower mash.
- Brooder Guide.
Experimental design: The research project was conducted in the departmental poultry farm at Ijagun Campus between the periods of four weeks.

A week before the arrival of the chicks, the whole pen were dusted, washed, swept both the floor and the corners, walls of the pen, while dried wood shaving and sawdust were spread on the floor to serve as deep litters. Moreover, the surrounding of the house was not left behind by cleaning the bushes and draining properly the drainage. These birds were given a week to adapt to the environment and data were collected in the course of the experiment. The birds were studied time to time in order to compare the mortality rate in brooding stage and health condition. The same treatment such as feed, water, drugs were given to all the birds throughout the experiment.

The birds were grouped into two equal numbers.

- Group A
- Group B

The feed that was used were obtained from the same source throughout in order to avoid effect of different feeds on production. Therefore, F.A. feed for broiler production along Ibadan Road, Ijebu-Ode was used throughout the experiment.

Management practices: The management practices that were carried out include:

Serving of feed and water: For good health as again mortality, the birds were thoroughly fed with their feed. Feed were given to the birds very early in the morning, afternoon and evening every day. Water was always served along with the feed. The researcher makes sure that the water is free from contamination to prevent convulsion or mortality that may surface in the research project work as a result of poor management practices. Also in order to maintain adequate hygiene, water trough were washed every morning before serving water during this period of research work. Practically, the wet litters were removed and replaced, while the medication such as antibiotics and vitamins were administered as at when due.

Mortality rate: This was easily discovered by counting the dead birds on the litter. Also, if there is any sick one, such would be isolated and catered for separately in order not to transfer the illness or sickness to other which may make the mortality rate increase. The maturity rates were measured and scored by physical observation, scaling of the bird was also put in place.

Record keeping: The researcher kept on accurate records of all the necessary and essential records from the first day till the last day of rearing. Such records are population of birds in the two groups, the breeds of the birds, date of arrival, age of the birds, feed consumption rate, mortality rate, medication used and all other records that could aid in determine the effect mortality rate on the two different breeds of broilers on brooding stage that is between the period of four weeks. The feed that were given to the birds did not change in quality and quality throughout the duration of experiment except that of broiler’s starter and growers mash. Strict sanitation was upheld in the experiment throughout.

Cleaning of poultry pen: The poultry dropping were packed on a regular basis in order to prevent disease outbreak, this was usually done successfully with the help of shovel by using it to scrape the floor and packed out the litter and replaced with fresh and well dried litter.

Analysis of data: All the data obtained from this experiment was critically and statistically analyzed using chi-square to compare the mortality rate of Group A and Group B.

RESULTS AND DISCUSSION

To determine the percentage mortality and to compare the mortality rate of the two breeds of broilers, the following formular were used. These are percentage method and chi-square method. The data collected were tabulated below, it showed period of rearing, total number of birds stocked, mortality rate and percentage mortality. The data were collected for a period between April 10 to May 10, 2006 which completed 4 weeks of the brooding stage. Mortality rate of the two breeds i.e Arbour Acre and Anak 2000 were recorded and percentage method and chi-square value were computed using these formular.

\[
\% \text{ Mortality} = \frac{\text{Total dead of birds}}{\text{Total no of birds at time of housing}} \times 100
\]
In the Tables 1 & 2 it showed that group B (Arbour Acre) is having high percentage mortality (8.6%) than those in group A (Anak 200) (1.7%). The table also revealed that the only mortality in group A occurred in the first week whereas percentage mortality in group B continued to increase as the birds matured. The bird in group A (Anak 200) will be recommended for the farmers because it is of high quality breed, in the sense that it has lowered percentage mortality.

Chi-square was used to compare the mortality rate of the two groups of birds. The null hypothesis is that, the effect of breeds is not significant on mortality rate of the two breeds of broilers.

The chi-square ($X^2$) technique is appropriate for examine if observed frequencies are significantly different from the expected frequencies using the equations.

$$X^2 = \frac{\sum (O - E - 0.5)^2}{E}$$

Where,

- $O$ = Observed frequency
- $E$ = Expected frequency
- df = Degree of freedom

The 0.5 is Rate correction for continuity known as Rate corrections for continuity.

The calculated chi-square value $X^2$, is compare with the table chi-square value $X^2_{i}$ at a given level of significance and degree of freedom. When calculated value is less than tabulated value you reject $H_0$ and if calculated value is greater than tabulated value you accept $H_1$

$$X^2 < X^2_{0.05}, \text{ we reject } H_0$$
$$X^2 > X^2_{0.05}, \text{ we accept } H_1$$

120 birds were used to carry out this research work which was grouped into two groups (A and B) respectively and the differences in the mortality rate in the two groups are in Table 3.

The frequencies for A and B mortality are different. We then prepare a contingency table and compute $X^2$ (Table 4).

### Table 3: Differences in the mortality rate in the two groups

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>59</td>
<td>55</td>
<td>114</td>
</tr>
</tbody>
</table>

### Table 4: Contingency table to compute $X^2$

<table>
<thead>
<tr>
<th>Group</th>
<th>O</th>
<th>E</th>
<th>$O-E$</th>
<th>$(O-E)/0.5$</th>
<th>$(O-E)/0.5)^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>59</td>
<td>57</td>
<td>2</td>
<td>1.5</td>
<td>2.25</td>
</tr>
<tr>
<td>B</td>
<td>55</td>
<td>57</td>
<td>2</td>
<td>1.5</td>
<td>2.25</td>
</tr>
</tbody>
</table>

$X^2_{c} = 0.08$

The frequencies for A and B mortality are different. We then prepare a contingency table and compute $X^2$ (Table 4).

Expected value $= \frac{59 + 55}{2} = 57$

$$X^2 = \frac{\sum (O - E - 0.5)^2}{E}$$

$$= \frac{(59-57-0.5)^2}{57} + \frac{(56-57-0.5)^2}{57}$$

$$= \frac{(2-0.5)^2}{57} + \frac{(2-0.5)^2}{57}$$

$$= \frac{(1.5)^2}{57} + \frac{(1.5)^2}{57}$$

$$= 0.04 + 0.04$$

$$= X^2_{c} = 0.08$$

The table value at 0.05, $X^2_{0.05} = 3.84$

The table value at 0.01, $X^2_{0.01} = 6.64$

The table value at 0.001, $X^2_{0.001} = 10.83$

It shows that $X^2 < X^2_{0.05}$ at 0.05

$X^2 < X^2_{0.01}$ at 0.01

$X^2 < X^2_{0.001}$ at 0.001
Therefore, the researcher reject the null hypothesis and accept the alternative hypothesis which says that, there is significant difference between the mortality rate of the breed and the differences is very highly significant (p<0.001). So far, it was discovered based on the outcome of the above result in the mortality rate of the two breeds that, there is significant different between the two breeds of broilers. This is conformity to poultry international [3] who observed that, some breeds of fowl are prone to high death rate due to their breeds. Moreover, I observed that, there is an increase in mortality rate among the birds in group B as they mature. The pastmotein test carried out revealed that omphalitis was the cause of early chicks mortality. This is inconformity to Fontana et al. [4] who observed that, Omphalitis is the major cause of early chicks mortality.

SUMMARY

The main focuses of this project is to compare the mortality rate between the two breeds of broiler bird on brooding stage. The projects examine the effect of each breeds of broiler on the mortality rate in brooding stage. Although poultry production is one of the most promising sources of additional income, protein intake and quick returns from investment, broiler production is one of the aspects in poultry production. Broiler birds were purposely reared for meat rather than for eggs examples of major breeds are Sussex, Cornish etc. The supply abundant meets within a short period of time which range between 8-12 weeks. Meat is very important in the diet of man as it supply high quality protein and vitamins which help in building strong muscles, bones and other body tissue in young children and adults and increases the capacity of the population to perform productive work, thereby helping to improve standard of living.

There are many problems affecting the production of broiler in Nigeria, some of which include, abnormal heart failure, breast blister, mortality and leg problem. Various suggestions are made to the solving of the problems and they are: (i) if immunization of both the parent stock and the hatched bird, (ii) Sanitation, (iii) Strategic, medication and (iv) removal of the sick hicks from the brooder mortality in broiler production can be cause by the following factors: Genetic factors, calcium, phosphorus and vitamin D deficiency and poor management culture. The presence of certain anti nutritional and high environmental temperature Maximum mortality usually occurred between 6-10 days of brooding stage. It can be caused by omphalitis.

Brooding can be described as the care of the chicks from day-old to four weeks of age. It consists primarily of the provision of heat, air, water and feed. It is the efficient combination of these factors that determine the health condition and mortality of the chicks. During the brooding period, good management should be practice to avoid disease attack. Such management include, clearing, fumigation, spreading of litter materials and installation. Some of the requirements for broiler house in brooding period are, the house must be sited on well drained soil, it should be well ventilated to prevent high humidity that can lead to wet litter and disease outbreak. The normal temperature for broiler in brooding period is 33°C which gradually reduced by 0.5°C per day as dictated by the weather. Quality feed and water were supplied for the broiler on brooding stage, this prepared them for healthy growth.

Based on the result carried out, the researcher deems it necessary to make the following recommendations for the farmers who are engaged in broiler enterprises so as to maximize their profit and reduce the mortality rate among their birds.

- The farmer should be sure of the hatchery and the breed to raise/rear for production.
- Farmer should consult veterinarian for best and improve breed.
- Farmer should always attend poultry seminars to know the new innovation on broiler production.
- Framers should maintain proper hygiene and vaccination as at when due.

CONCLUSIONS

After critical and scientifical study of the different between the mortality rate of two breeds of broiler on brooding stage, it becomes very cleared that the effect of breed is very significant (p<0.001) in broiler production. Because, the birds in group A (Anak 2000) are having lowered mortality rate (1.7%) compared with those in group B (Arbour Acre) which have 8.6% mortality. Effect should be intensify in controlling omphalitis which was identified as the cause of early chicks mortality. Under adequate management practices, the rate of mortality of broiler will reduced and growth rate will increased. But since there are breeds which are prone to high mortality, such breeds will not be profitable for the farmer.
REFERENCES