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Comparison of Recommended Performance of Marshal R Commercial Broilers and Field Performance Results

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Abstract

One hundred and twenty (120) broiler chicks were used in a field experiment to compare farm performance with the recommended performance results of Marshal R commercial broilers. Sixty (60) of chicks were sourced from local hatchery in Owerri on the morning of their hatch (Group 1), while another 60 chicks also were sourced from Ibadan, about 600 Km from Owerri (Group 2). Each group was divided into 4 sub-groups of 15 chicks each and replicated thrice, with 5 chicks per replicate, in a Complete Randomized Design (CRD). Feed and water were given to the control A₁ (Group 1) on the day of hatch, while the control A₂ (Group 2) were fed 36 hours post hatch on arrival. Other sub groups B, C and D of the two groups were started on feed and water at 48, 72 and 96 hours post-hatch respectively. The recommended performances of Marshal R broiler chicks were compared with the experimentally observed ones. Feed consumption and weight gain were measured across the controls of the groups and comparisons were made and percentage differences calculated. The performance of Marshal R broiler chicks was compromised at an average level of 34.5% less feed intake and 20.8% less than the recommended weight gain in the first six weeks of life. Thus, feed intake and weight gain values of Marshal R broiler chicks under normal feeding and management conditions in a typical small-scale poultry farm in southeast Nigeria were far less than the recommended values.

Keywords: Day old chicks, Marshal R broilers, transported chicks, stressors

Introduction

In Nigeria, majority of small-scale commercial intensive poultry farmers have no control over many factors such as quality of chicks, commercial feeds, drugs and weather conditions among others affecting their production. The economic losses arising from these production factors become serious constraints to poultry production in the country (Okoli *et al.*, 2005; Okoli *et al.*, 2007). Other peculiarities of such small-scale farms such as inadequate farm housing that leads to poor environmental conditions, especially ambient temperature, relative humidity and aerial concentrations of noxious gasses may often times contribute to the observed low performance (Nwagwu *et al.*, 2011). Okeudo (2004) in a review of animal production issues in the tropics stated that the tropical climate imposes a lot of stress on the high producing imported breeds of livestock including poultry. The high temperature decreases feed intake and growth rate, influencing the release of ammonia from dung in many poultry farms which adversely affect the health of birds (Ezuoke, 1995; Okoli *et al.*, 2004).

Specifically, delays occasioned by hatchery management practices, transportation and delivery of day old chicks (DOCs) may result in chicks arriving at the farm many hours post hatch, with the result that they are denied access to feed and water for several hours after hatch in hot humid tropical environment. The effects of this starvation stress on the chicks will usually be proportional to the hours wasted before feed and water are served.

This study compared the recommended performance of Marshal R commercial broilers and field study results obtained from southeast Nigeria

Materials and Methods

One hundred and twenty day old broiler chicks of the Marshal strain were used in this study. Two groups of chicks made of 60 chicks each were used. Group 1 was sourced locally on the morning of their hatch from a hatchery located in Owerri (the study area), while Group 2 was sourced from a hatchery located in Ibadan, Oyo state, western Nigeria (600 Km from study location). Each group was divided into 4 sub-groups of 15 chicks each and replicated thrice, with 5 chicks per replicate, in a Completely Randomized Design (CRD). The experimental design is represented in the table 1. Water and feed were offered *ad libitum*, and routine management procedures of the Federal University of Technology Owerri Teaching and Research Farm were adopted. The experiment lasted for six weeks (42 days). Readings were taken on the feed intake, weight gain, feed conversion ratio and mortality.

Data generated from the experiment were subjected to simple descriptive statistics such as means, percentages and graphs (Steel and Torrie, 1980).

Table 1: Experimental designs

Groups	Periods of feed and water Startment			
	A(control)	B	C	D
Group I	Started on day	Started 48	Started 72	Started 96 hours
Chicks from	of hatch	hours post	hours post	post hatch
Owerri	hatch	hatch		
Group II	Started on	Started 48	Started 72	Started 96
Transported	arrival (36 hours	hours post	hours post	hours post
Chicks from	post hatch)	hatch	hatchhatch	
Ibadan.				

Results and Discussion

Table 2 and 3 showed the comparison of the recommended and the experimentally observed six weeks feed intake and weight gains in the freshly hatched and transported chicks. Figure I and II showed comparisons of percentage differences from the recommended feed intake and weight gains across the two treatment groups. There were wide differences between the recommended and the experimentally generated values in the control birds. Specifically, at the end of the first week of life, these birds consumed 1.6% (transported) and 3.3% (freshly hatched) less feeds than the recommended. However during the same period, both groups respectively gained 32.6 and 31.0% less than the recommended weights. In these control birds started within 24 and 36 hours of hatch, it would seem that poor performance was driven mostly by poor nutrient availability in the feed or inability of the birds to utilize thenutrients in the feed as evidenced by first week feed intake and weight gain values.

Table 2: Comparison of recommended and experimentally observed feed intake and weight gain (g) in freshly hatched chicks (Control)

Weeks	Feed Intake			Weight gain		
	Recommended	Experiment	% Difference	Recommended	Experiment	% Difference
1	120	124	3.3	150	103	31.0
2	430	349	18.8	350	287	18.0
3	990	505	48.9	680	553	18.6
4	1640	848	48.2	960	783	18.4
5	2590	1432	44.7	1370	1080	21.1
6	3600	2042	43.2	1790	1469	17.9
Mean			34.5			20.8

Source of recommended values:Obasanjo Farms Nigeria Limited

Table 3: Comparison of recommended and experimentally observed feed intake and weight gain (g) in transported chicks (Control)

Weeks	Feed intake			Weight gain		
	Recommended	Experiment	%Difference	Recommended	Experiment	% Difference
1	120	122	1.6	150	101	32.6
2	430	293	31.0	350	247	29.4
3	990	505	48.9	680	419	38.3
4	1640	1125	31.0	960	579	39.6
5	2590	1619	37.4	1370	913	33.3
6	3600	1924	46.5	1790	1126	37.0
Mean			32.0			35.0

Source of recommended values:Obasanjo Farms Nigeria Limited

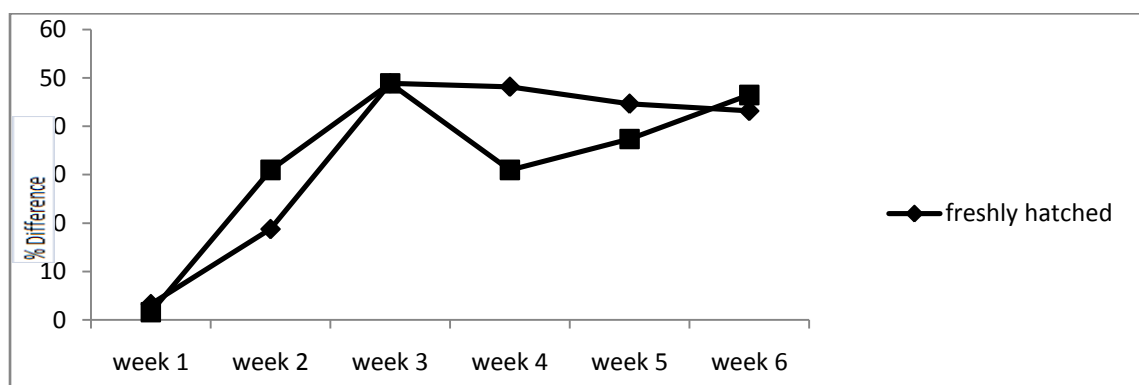


Fig. I: Comparison of recommended and experimentally observed percentage difference in feed intake between the control groups of freshly hatched and transported chicks

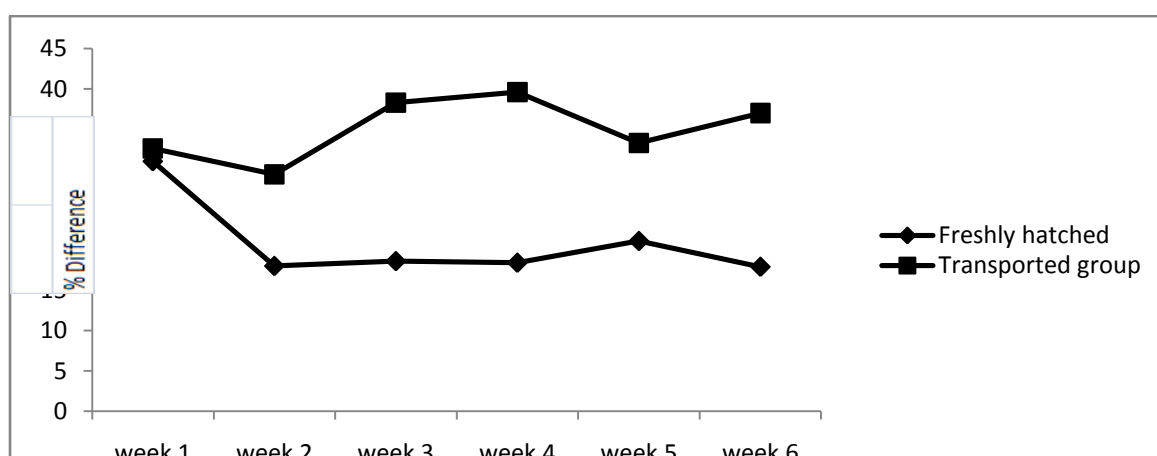


Fig. II: Comparison of recommended and experimentally observed percentage difference in weight gain between the control groups of freshly hatched and transported chicks.

By the 3rd week of feeding, the control birds were consuming 48.9% less feeds than recommended and have gained 18.6 and 38.3% less than the recommended weight respectively. Several reports from our research station have highlighted the inferior quality of commercially produced feeds in Nigeria (Okoli *et al.*, 2007). Other peculiarities of the tropical farms such as inadequate farm housing that leads to poor environmental conditions, especially ambient temperature, relative humidity and aerial concentrations of noxious gasses may contribute to the observed poor performance (Nwagwu *et al.*, 2011).

These control bird results showed that without the added stress of transportation and delayed startment of feed and water, the performance of Marshal R broiler chicks was compromised at an average level of 34.5% less feed intake and 20.8% less than the recommended weight gain in the first six weeks of life. Okeudo (2004) in a review of animal production issues in the tropics stated that the tropical climate imposes a lot of stress on the high producing imported breeds of livestock including poultry. The high temperature decreases feed intake and growth rate, influencing the release of ammonia from dung in many poultry farms which adversely affect the health of birds (Ezuoke, 1995; Okoli *et al.*, 2004).

Conclusion

Feed intake and weight gain values of Marshal R broiler chicks under normal feeding and management conditions in a typical small-scale poultry farm in southeast Nigeria were far less than the recommended values.

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