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COMPARATIVE PERFORMANCE OF GUINEA KEETS MANAGED UNDER 2 BROODING SYSTEMS IN THE TOLON DISTRICT OF NORTHERN REGION OF GHANA

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Abstract

A study was conducted to assess the effects of improved brooding and management on survivability and performance of guinea keets in the Tolon District of the Northern Region of Ghana. Ten farmers (7 men and 3 women) were purposively sampled for the study. One thousand, six hundred (1600) mixed sex day-old guinea keets (i.e. local strain) were randomly allotted into 20 groups of 80 keets per group and assigned to 2 treatments using a Randomized Complete Block Design with a farmer serving as a block. Treatment 1 (Control) was the traditional brooding (i.e. using mother hen) and birds managed under the semi-intensive system and Treatment 2 was the improved brooding (i.e. confined in raised wire floor cages covered with black polythene sheet) and birds managed under the intensive system. Growth and mortality data collected were subjected to a two-sample test using Studentized T-test. Treatment 2 keets were 68.78% heavier ($P<0.001$) than their treatment 1 counterparts at 8 weeks of age. Mortality records in treatment 2 was 81.68% lower ($P<0.001$) than the treatment 1 group. The results show that it was beneficial to brood keets using the improved cage system than the traditional system of brooding.

Keywords: Brooding, Growth performance, Guinea keets, Management, Survivability

Introduction

Rural poultry production especially guinea fowl has been recognized as an important contributor to food security and alleviation of poverty through income generation. Thus, in northern Ghana, every rural house-hold tends to keep a few birds at the backyard. In recent times, farmers are being encouraged to increase their flock sizes in order to increase their earnings from poultry production (Osei & Dei, 1998). However, improper production systems hinder improvement in rural poultry productivity including the guinea fowl (Osei & Dei, 1998). Traditional methods of production are associated with poor hatchability of eggs, male infertility, high keet mortality, difficulty in sexing keets and slow growth rate (Oke *et al.,* 2004). High keet mortality has been recognized as a major hindrance to improved productivity in the guinea fowl industry in northern Ghana. Although guinea keets may be raised in the same manner as chicks and baby poults, they are subject to chilling during the first few weeks of age and keets need to be brooded for about 6-8 weeks to avoid mortality due to chilling (Rehman & Khan, 2015). Therefore, this study was undertaken to assess the effects of improved brooding and management on survivability and growth performance of guinea keets.

Materials and methods

Study site

The study was carried out on farm in 5 selected communities in the Tolon District of northern region. A total of 10 farmers (Two farmers from each community) were purposively sampled for the study. The communities were Nyankpala, Kpachi, Cheyohi, Nafareng and Kpalsugu.

Experimental birds and design

One thousand six hundred guinea keets at day-old were procured for the study. A Randomized Complete Block design with a community serving as a block was used. There were two treatments: treatment 1 or control was the traditional brooding (i.e. mother-hen care) with keets managed under semi intensive system and treatment 2 was the improved cage brooding with keets managed under intensive system.

Raised wire mesh floor cages fitted with electric bulbs and covered with black polythene sheet were used in treatment 2. Each treatment was replicated 10 times (i.e. 10 farmers). Each replicate comprised of 80 guinea keets with a mean initial live-weight of 28.1g per keet per treatment. Thus each farmer had 160 keets.

All husbandry practices were the same except feeding and watering. Treatment 1 keets were fostered mother-hens and given water and feed as practiced under the traditional system of poultry keeping; whereas treatment 2 keets were given feed and water *ad libitum.*

The feed for treatment 2 keets was a commercial preparation and contained 19.45% CP, 3.95% fat, 3.50% fibre, 1% calcium, 0.6% phosphorus, 1% lysine, 0.44% methionine, 0.21% cystine and 2800 kcal/kg Metabolisable energy.

Parameters measured were feed intake (treatment 2 only), live-weight gain, mortality and feed cost (treatment 2 only). All birds were weighed at the beginning and at weekly interval till the end of the experiment.

Data collected were subjected to a two-sample design using GenStat, 8th version (Lawes Agri cultural Trust, 2005) and treatment effects compared by Studentized T-test.

Results and discussion

Table 1 shows the results of improved brooding of guinea keets. Keets brooded using the improved cage system were 68.78% heavier ($P<0.001$) than their counterparts brooded using the traditional system at 8 weeks of age. Mortality of keets brooded using the improved cage system was 81.68% lower ($P<0.001$) than the traditionally brooded group (Table 1).

The superior growth performance of keets brooded using the cage system was expected. This is because the confined keets had access to a balanced diet *ad libitum* unlike their traditionally brooded counterparts. The latter group had to scavenge with foster mothers for feed available on the range in addition to the occasional handful of whole grains supplied by the farmers. On- farm studies involving rural poultry have demonstrated beneficial effects of confining birds on growth performance (Castellini *et al.,* 2002; Dei *et al.,* 2006).

The high rate of survivability of the confined keets could be attributed to good nutrition and the provision of adequate warmth during the brooding period that prevented guinea keets from chilling, hence low mortality due to chilling.

Guinea keet survival is essential for successful guinea fowl production in northern Ghana. Saina *et al.* (2003a) reported 64% mortality in guinea keets managed under the traditional management system in the Zambezi Valley, Zambia. This information is buttressed by a report from Nwagu & Alawa (1995) and Bessin *et al.* (1998) that more than 50% mortality has been recorded in guinea fowl from day old to eight weeks. The mortality had been attributed to the susceptibility of guinea fowl keets to adverse weather conditions, diseases and parasites, and poor management (Embury, 2001; Saina *et al.,* 2003b). Proper brooding of guinea fowl keets for at least three weeks improves their survival rates (Embury, 2001).

The cage system used in this experiment was designed to provide protection against adverse weather conditions and was no doubt expected to improve the survival and growth rates of guinea keets.

Table 1: The effect of cage brooding on growth and survivability of guinea keets (1-56 days of age)

Parameter	(T1) Traditional (s.d)	(T2) Cage system (s.d)	P. value

Initial live weight (g/bird)	28.1	28.1	-
Feed intake (kg/bird)	ND	2.92	-
Weight gain (g/bird/day)	2.43 (0.472)	7.79 (0.366)	<0.001
Weight @8 weeks of age (g/bird)	119.2 (23.18)	381.6 (42.48)	<0.001
Mortality (%)	81.89 (16.21)	15 (7.41)	<0.001
Feed cost (Gh¢/bird)	ND	2.92.00	-

s.d=Standard deviation, P-value= Probability

Conclusion

Improved brooding of guinea keets using the cage system at the village level improved their survivability and growth performance.

It is recommended that farmers are supported financially to adopt improved brooding practices to ensure sustainable guinea fowl production in northern Ghana.

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