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Hatching and Brooding of Guinea Fowl (*Numida meleagris galeata pellas*) Egg using Local Hen.

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ABSTRACT

A total of 164 candled fertile guinea fowl eggs were selected from the College farm and were randomly assigned to two treatment group consisting seven local hens and six guinea fowl hens. Effects of those replacement on hatchability, embryonic mortality, mean incubation time and weaned / keet mortality were investigated. The result shows that there were significantly ($P<0.05$) higher hachability and survivability of keet (86.30% and 84.1%) in local hen and lower in guinea fowl hen (65% and 14%) respectively. Keet mortality for local and guinea fowl hen were 16% and 45%. The mean incubation time for local and guinea fowl hens were 24 ± 2 and 27 ± 4 days respectively. Raising of guinea fowl by foster mother particularly local hens is therefore recommended because it does not require large initial capital outlay, it is cheap and promotes high hatchability and survivability of keets. Also, the broodiness of local hen is greater than guinea fowl and must be preserved, at least until African farmers can afford incubator.

KEYWORDS: hatching, brooding, mortality, weaning, hen

INTRODUCTION

Guinea fowl are important viable source of eggs and meat as they are socially accepted and are regarded as highly palatable and without any taboos against its consumption (Ayeni and Ayanda, 1982). However, the supply of these protein source is inadequate as productivity is usually affected by seasonal breeding habit, dead in shell eggs, poor brooding, low hatchability and survivability of keets due to predators (snakes and hawks) (Ayeni, 1981and Uke, 2002). It is however more productive than the local chicken.

It has great potential as commercial poultry due to its breeding /broiler qualities, hardiness, high egg laying capacity of 120 –170 eggs per hen per season in captivity and feed conversion rate if management strategies are improved (Robinson, 1961; Ayanda, 1983and Okaeme,1986). Guinea fowl can be produced "en masse' by foster mother particularly local hen to hatch and brood when replaced with guinea fowl eggs when observed on incubation.

Artificial incubation has been the choice of breeders, particularly in commercial poultry industry. However, high cost of incubator / hatchery, labour and epileptic power supply in the country is making it unattractive in recent days thus causing short supply of eggs and meat. Management, especially hatching and brooding of these birds must be improved locally by foster mother to reduce the current high prices of eggs and meat and make it affordable for more people.

This paper examines and compares hatchability, brooding and weaning of guinea fowl keets using local hen as foster mother.

MATERIALS AND METHODS

A total of 164 candled fertile guinea fowl eggs were selected from the parent stock in the college farm and were randomly assigned to two treatment group of seven local hens and six guinea fowl hen. 80 eggs were replaced with local hen eggs in seven replicate with average of 11.4 eggs and 84 eggs were set for guinea fowl hen in six replicate with an average of 14 eggs to incubate and hatch. Eggs were collected daily after lay by guinea fowl hen and stored in a cool room (refrigerator) for 11 (eleven) days at a temperature of 13.3 degrees centigrade to avoid development of embryo before the incubation started. Eggs storage and treatment conditions were same for both hens.

Incubation time of the local hens were observed to have started from 1-2 days before replacement with the guinea fowl eggs equal to number of eggs laid by each of the hens housed separately. Eggs of guinea fowl on incubation were also reduced to have a minimum number of eggs set and to avoid eggs wastage as shown in table 1. Both hens were observed until they hatched. The following parameters were measured; Hatchability, embryonic mortality, incubation time and weaning potentials / keet mortality.

Hatchability was measured as the percentage of the fertile eggs that hatched into Keet. Embryonic mortality was measured at the end of the hatching. This was done by breaking eggs that failed to hatch after the 30^{th} day of incubation to check whether the eggs were fertile or not. Incubating time was measured as the period from setting of the eggs to the time of hatching of each egg. Mortality rate of keet was measured as the number of keet that died from day – old to weaning date. Semi-intensive system of deep litter was adopted. Water was provided *ad libitum* while drinkers were washed daily and supplied with fresh water. Chick mash in combination with whole grains was fed until 7 – 9 weeks when natural weaning took place, respectively. Statistical procedure adopted was student t-test for the analysis of difference of two means according to method of Steel and Torrie (1980).

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Table 1: Number of eggs set per brood

Nests	1	2	3	4	5	6	7
Hen	10	12	12	9	13	11	13
Guinea Fowl Hen	15	15	14	14	13	13	*

* There was no brooding guinea fowl hen.

Table 2: Performance records of guinea fowl and local hens

Treatment	No. of eggs set	No. of eggs hatched	%	Embryonic mortality	%	Keet mortaplity	%	Mean incubation time (day)	No. of keet weaned	%
Local hen	80	69^a	86.3	11^b	13.8	11	16	24 ± 2	58^a	84.1
Guinea fowl hen	84	29^b	34.5	55^a	65.5	13	45	27 ± 4	16^b	55.2
Total	**164**	**98**	**60**	**66**	**40.2**	**24**	**24 .5**		**74**	**75.5**

a – b Values in same column with different superscript are significantly different (P< 0.05).

RESULTS AND DISSCUSSION

Results in table II show that there were significantly (p<0.05) higher hatchability and survivability of keet (86.3 and 84.1%) in local hen eggs / keet and a lower number (34.5 and 55.2%) in guinea fowl hen eggs. There was a significant (p< 0.05) increase in embryonic mortality in eggs set for guinea fowl hen (65.5%) and decrease (14%) in local hen eggs. Keet mortality was higher in guinea fowl hen keets (45%) and lower in local hen (61%) keets.

The higher hatchability and survivability of keet under local hen portrays the ability of local hen to incubate and brood her chicks. Hatchability was highly observed in local hen due to constant incubation with shorter feeding / outing period which maintained the egg viability temperature (37.5-39^0 C). These agreed with the reports of Chahil and Johnson (1974) that holding temperature and incubation temperature affect the hatchability, embryonic development, embryonic mortality and the duration of hatching of the chicks. Brooding local hen protect keets from chilling, predators and aid in their feeding efficiency.

High embryonic and keet mortality in guinea fowl hen eggs / keet is probably attributed to poor brooding, long outing / feeding period during incubation time which is a factor that tend to lose viability and decline in egg glucose, such that the egg embryo were affected as incubation and brooding temperature fall below 37 °C for egg / keets. Hence, a significant decline in hatchability and increased embryonic mortality and keet mortality (table II). This findings is in conformity with earlier findings of Matcher and Laughlin, 1977; Okaeme, 1986; and Uke, (2002) that guinea fowl hen are poor brooders. The mean incubation time for local chicken was 24 ± 2 days in contrast to 21 days from chicken egg. The variation in incubation time might be due to the thickness of guinea fowl egg-shell than local hen egg shell (0.62mm and 0.43mm) (Carew *et al* 1983) while 27 ± 2 days was the mean incubation time for guinea fowl hen. This observation agrees with results of Matcher and Laughlin (1976) and Ayeni *et al* 1983c.

There is a significant difference (P< 0.05) in their weaning potentials. This may be due to good mothering ability portray by local hen than guinea fowl hen.

CONCLUSION

Guinea fowl can be produced "en-masse" for more meat and egg using foster mother, particularly local hen. High hatchability and survivability of keet were encouraging and significant (p<0.05) improvement in foster mother. This system of foster mother can be used to break most problems associated with guinea fowl production. It is therefore recommended because it does not require large capital outlay, cheap, not labourious as in incubators / hatcheries, high hatchability and weaning rate of keets. This system can be substituted for artificial incubator/hatchery until African farmers can afford incubator and improved power supply in the country.

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