A study was carried out to investigate the fertility and hatchability characteristics of two varieties of guinea fowl fed top layer mash containing 18% CP and 2700 kcal/kg. At about 43-weeks of age (WOA), Forty-eight adult guinea fowls from two varieties of guinea, comprising 24 from each of pearl and lavender, were selected and used for this experiment at the ratio of 1:5 for male and females respectively. Each variety was replicated 4 times in a Completely Randomized Design (CRD) and each replicate contained 6 birds. Data were collected for Number of eggs set, number of infertile eggs, number of eggs hatched, number of dead embryo, number of peeped keets, number of watery eggs, fertility, hatchability and percent hatch. All data collected were analyzed using t-test statistic in SPSS 2015, v. 20. The results showed that the pearl variety revealed superior performance as it recorded lower number of dead embryo (1.19), lower number of watery eggs, higher number of eggs hatched (1.75), higher hatchability (50.00%) and percent hatch (27.82%) compared to the values 1.29, 0.79, 1.21, 34.66% and 19.24% obtained respectively for these parameters in the lavender variety. The lavender variety recorded lower (P<0.05) number of infertile egg compared to the pearl variety. This lower number of infertile egg did not however translate to significantly higher fertility percent when compared to the pearl variety. In conclusion commercial layers mash of 18% CP and 2700 kcal/kg can be used more on the pearl variety for better hatchability result.

Key words: Fertility, Hatchability, Guinea Fowl, Layers Mash, Completely Randomized Design

INTRODUCTION

Guinea fowl (*Numidameleagrid*) has wide distribution in Africa where it has distinct population among small holder farmers (Nwagu and Alawa, 1995). Its attractive plumage and value as a table bird with game type flavour and high meat to bone ratio has led to its worldwide acceptance (Embury, 2001). The birds are semi domesticated; thrive under semi-captive conditions in hot and cool climates. They are relatively disease-free and need little special care. Guinea fowl can be kept for meat and egg productions (Smith, 2001). There are hardly any cultural barriers against consumption of guinea fowl products (Saina et al., 2005). The meat of guinea fowl is served extensively in hotels and restaurants because of its wild game flavor (Feltwell, 1992). Guinea fowl can be raised under both intensive and extensive management systems (Nsoso et al., 2006).

The pearl is by far the most common variety and has purplish-gray feathers regularly dotted or “pearled” with white (Ayorinde, 1987). The pearl has percentage fertility (53%) and hatchability at (87%); Lavender has percentage fertility 50% and hatchability of 81% as reported by Ayorinde (1987).

According to Singh (1990), guinea fowl hens produce about 100-120 eggs annually. Laying is distinctly seasonal; it starts when day length and ambient temperature – starts increasing (March/April) and continues till environmental temperature and day
length are reduced considerably (September/October). More than 75% of eggs laid are suitable for hatching and 40 to 60 viable keets are realized from each female. Guinea fowl hens may be used as breeders for two to three years (Singh, 1990). Also that mean fertility and hatchability of fertile eggs ranged from 65 to 75% and 70 to 80% respectively on natural mating.

Fayeye et al. (2005) reported in their research on Fulani – ecotype chickens that some embryo dies few days before hatching and that such embryonic mortality is met uncommon and may be due to non-genetic factors. Moreover, Weirs (1991) observed from his study on guinea fowls that the highest embryonic mortality occurred before hatching. A number of factors including egg age (Tarongoy et al., 1990), storage condition (Brah and Sandhu, 1989), age of flock (Rogue and Soars, 1994, Buhr, 1995), system of husbandry and rearing technology (Weirs, 1991), mating system, incubation relative humidity and egg turning angle (Permsak, 1996) has been shown to influence the hatchability of poultry eggs.

Animal production in Nigeria has not been able to satisfy the animal protein requirement of the populace. Animal protein consumption for normal physical and mental development is low in Nigeria. FMRD (2004) estimated animal protein intake in Nigeria in year 2000 at 18g/caput/day, which is below the recommended minimum level of 35g/caput/day. Concerted efforts have been made by previous researchers to improve guinea fowl production. This study aimed at assessing the fertility and hatchability traits of guinea fowl in humid tropical condition with an attempt to establish data for possible improvement.

MATERIALS AND METHODS

The research was carried out at the poultry unit of the teaching and research farm of Michael Okpara University of Agriculture Umudike, located on latitude 050291N and longitude 070331east. The area is approximately 122m above sea level. Umudike has maximum and minimum daily temperature of 27-36˚C respectively and relative humidity of 57-91% (Nwachukwu et al., 2006)

At about 43- weeks of age, forty-eight adult guinea fowl (24 from each variety of pearl and lavender) were selected and transferred to open-sided deep litter laying pens at the ratio of 1:5 for male and females respectively, and replicated 4 times. Feed and water were given ad libitum. Top layer mash containing 2700kcal/kg and 18% CP was introduced to the birds. All birds received a 12-hrs constant light regimen throughout the experimental periods. Feed intake of the birds was obtained on weekly basis.

Eggs were collected and set on a cabinet type of incubator to observe fertility and hatchability. The eggs were candled at 9th and 18th day of incubation to observe fertility and viability. Eggs with living embryo were transferred to the hatching section; keet were hatched, collected and weighed. The parameters measured include keet body weight, number of keet hatched, and number of fertile eggs, percent fertility and percent hatchability of fertile eggs. Body weights of the keet were measured using a top loading Hana scale. Hatchability was determined using the formula:

\[
\text{Hatchability} = \frac{\text{No. of keets hatched}}{\text{No. of fertile eggs set}} \times 100
\]

Fertility was computed thus:

\[
\text{Fertility} = \frac{\text{Number of fertile eggs}}{\text{Number of eggs set}} \times 100
\]

Percent hatch was computed as follows:

\[
\text{Percent hatch} = \frac{\text{Number of chicks hatched}}{\text{Number of eggs set}} \times 100
\]

Data collected were analyzed using the student t-test statistics to determine if significant differences exist between the two varieties of guinea hens studied.

RESULTS AND DISCUSSION

The fertility and hatchability characteristics values of two varieties of guinea fowl fed top layer mash is presented in Table 1. Significant differences (P<0.05) were observed in number of eggs hatched, number of dead embryo, number of peeped keet, number of watery eggs, fertility percent, hatchability and percent hatch between the lavender and pearl guinea fowl varieties. No significant differences (P>0.05) were observed in number of eggs set and fertility percent. The pearl variety recorded superior performance in virtually all the parameters evaluated than the lavender variety especially in terms of lower number of dead embryos, lower number of watery eggs, higher hatchability and percent hatch values. The lavender variety though recorded lower number of infertile eggs, its percent fertility (57.23%) did not vary significantly from that of the pearl variety (55.64%). Most of the values established in this study conform to the report of Ayorinde (1987). More so, the variation in the result of the two varieties is in accordance with the opinion of Bell (1984) who stated that hatchability tends to vary with the strain of rooster used.
Table 1: Fertility and hatchability characteristics of two varieties of guinea fowl fed top layer mash

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Birds</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of eggs set</td>
<td>6.29</td>
<td>6.29</td>
</tr>
<tr>
<td>Number of infertile eggs</td>
<td>2.69a</td>
<td>2.79a</td>
</tr>
<tr>
<td>Number of eggs hatched</td>
<td>1.21a</td>
<td>1.75a</td>
</tr>
<tr>
<td>Number of dead embryo</td>
<td>1.29a</td>
<td>1.19a</td>
</tr>
<tr>
<td>Number of peeped keets</td>
<td>0.43a</td>
<td>7.14a</td>
</tr>
<tr>
<td>Number of watery eggs</td>
<td>0.79a</td>
<td>0.50b</td>
</tr>
<tr>
<td>Fertility (%)</td>
<td>57.23</td>
<td>55.64</td>
</tr>
<tr>
<td>Hatchability (%)</td>
<td>33.61b</td>
<td>50.00a</td>
</tr>
<tr>
<td>Percent hatch (%)</td>
<td>19.24b</td>
<td>27.82a</td>
</tr>
</tbody>
</table>

a, b Means with different superscripts across the rows are significantly different at P<0.05; SEM= Standard error of the mean

CONCLUSION

The Pearl guinea fowl variety has shown to be commendable for higher hatchability than the lavender variety. The pearl guinea fowl which has higher hatchability should therefore be used mostly for breeding purpose.

References


