COMPARATIVE ASSESSMENT OF HATCHING PERFORMANCE OF TURKEY (Meleagris gallopavo) VARIETIES

A. Clement Ebenezer Henry*, P. N. Richard Jagatheesan, A. Paramasivam and C. Mehala

TANUVAS – Regional Research Centre, Industrial Estate Post
Pudukkottai - 622 004

ABSTRACT

The study was carried out to assess the hatching performance of five turkey varieties maintained under standard mangemental practices at TANUVAS – Regional Research Centre, Pudukkottai. The hatching eggs from different breeder turkey varieties, viz. Nandanam – I, Nandanam – II, Beltsiville Small White, Broad Breasted Bronze and Desi – Turkey were collected and incubated as per standard procedure. Hatchability and fertility showed significant difference ($P < 0.01$) between the five turkey varieties studied. The highest total hatchability (66.92 %) and fertile hatchability (77.98 %) was observed in Nandanam – II turkey. Fertility was highest in Beltsville Small White (87.74%). There was no significant ($P > 0.05$) difference in late embryonic mortality between different varieties, but early embryonic mortality was found to be more in Broad Breasted Bronze and differed significantly ($P < 0.01$) with other turkey varieties. The present study reveals that the hatching performance of Nandanam – II and fertility of Beltsville Small white was better in Pudukkottai district.

Key words: Hatchability, embryonic mortality, fertility, Nandanam - II

Turkey farming in India has now shifted from backyard farming to scientific intensive farming due to change in market priorities and consumer preference. Egg production in turkey is lower when compared to that of other poultry species. In addition to low egg yield, low fertility and hatchability is a major constrain in turkey breeding enterprise (Ozcelik et al., 2009). An effective reproductive management has to be followed to improve hatchability per cent in turkey and thereby increase the number of poults to meet the rising market demand for turkey. Fertility and hatchability are major factors to influence the reproductive performance which are most sensitive to environmental and genetic influences (Stromberg, 1975). The present study was conducted to compare the hatching performance of five turkey varieties reared under intensive system of rearing.

The study was conducted at TANUVAS – Regional Research Centre, Pudukkottai, mostly a semi – arid area during the period from April 2012 to March 2013. Five different turkey varieties namely Nandanam – I, Nandanam – II, Beltsville Small White, Broad Breasted Bronze and Desi – Turkey were used in this study. The birds were maintained under standard feeding (ad lib) and mangemental practices throughout the study period. Eggs were

*Corresponding author Email I.D.: clemyvet@yahoo.com

collected in the morning and evening, graded and stored at standard storage temperature and relative humidity for a week. On the 7th day the eggs were brought to room temperature for an hour and fumigated before setting in the incubator provided with optimum temperature and humidity in setter and hatcher. The eggs were turned periodically in the setter compartment and on the 25th day the eggs were transferred to hatcher. Turkey poults usually start to hatch on 27th day and hatching is completed by 28th day. The numbers of hatched poults were recorded according to the five turkey varieties. In the present study, candling of eggs was not done during the incubation period in order to provide good egg hygiene and to maintain viable embryos for better hatchability. Instead, the unhatched eggs were subjected to egg break open study on 29th day and data regarding infertile eggs, early and late embryonic mortality were recorded according to the varieties. The total hatchability, fertile hatchability, fertility, early and late embryonic mortality were calculated from a total of 5938 eggs incubated in 26 hatches. The data on hatchability, embryonic mortality and fertility were analyzed by a chi – squared contingency test (Laughlin and Lundy, 1976). The data generated on hatching parameters from five turkey varieties were analyzed statistically by following standard procedures (Snedecor and Cochran, 1994).

Per cent total hatchability, fertile hatchability, fertility, early embryonic mortality and late embryonic mortality of five turkey varieties, viz. Nandanam – I, Nandanam – II, Beltsville Small White, Broad Breasted Bronze and Desi – Turkey are presented in Table – 1. Per cent total hatchability, fertile hatchability and fertility of different turkey varieties were found to be highly significant ($P < 0.01$) between all the five varieties. The Nandanam – II and Beltsville Small White turkey variety gave the highest total hatchability and fertile hatchability among the five turkey varieties studied. Beltsville Small White recorded significantly higher fertility (87.74 %) when compared to other varieties of turkey. No significant difference ($P > 0.05$) was noticed in late embryonic mortality among different turkey varieties, but early embryonic mortality shown significant difference especially in Broad Breasted Bronze (9.74%) which was significantly ($P < 0.01$) higher than other turkey varieties. It was found that the early embryonic mortality (EEM) in Desi – turkey and late embryonic mortality (LEM) in Beltsville Small White was lower when compared to other varieties.

The total hatchability, fertile hatchability and fertility of Beltsville Small White in the present study was observed to be higher than the values (53.68 %), (65.33 %) and (81.64 %) respectively reported by Premavalli et al. (2013). The fertility of Nandanam–I (80.96 %), Nandanam – II (85.82%), Beltsville Small White (87.74 %) and Broad Breasted Bronze (83.33 %) is similar to the findings of Khan et al. (2013) and Premavalli et al. (2013).

The early embryonic mortality (dead in germ) 7.92 per cent and late embryonic mortality (dead in shell) 12.92 per cent of Beltsville Small White variety in this study was relatively lower than the observations documented by Premavalli et al. (2013) 15.57 per cent and 19.09 per cent respectively. However, the dead in germ and dead in shell of the present study is slightly higher than the value 3.76 per cent and 10.98 per cent as reported by Anna Anandh et al. (2012) in intensive system of rearing. The study reveals hatching performance of Nandanam – II turkey and fertility rate of Beltsville Small White are superior under intensive system of rearing and may be a good choice for rearing in semi- arid region of Tamilnadu.

REFERENCE

Anna Anandh, M., Richard Jagatheesan, P.N., Senthil kumar, P., Paramasivam, A., and Rajarajan, G. (2012) Effect of rearing system on reproductive performance of turkey. Vet. World, 5(4): 226- 229.

Khan, A.A., Banday,M.T., Hamadani, H., and Subhan, M. (2013) Hatching performance and embryonic mortality pattern of turkey eggs under artificial incubation. International Journal of Modern Plant & Animal Sciences, 1(1): 35-38.

Laughlin, K. F., and Lundy, H. (1976) The influence of sample size on the choice of method and interpretation of incubation experiments Br. Poult. Sci. 17:53–57.

Ozcelik, M., Ekmen, F. and Elmaz, O. (2009) Effect of egg of location of eggs in the incubator on hatchability of eggs from Bronze turkey breeders of different ages. South African J Ani. Sci.. 39: 214- 222.

Premavalli, K., Babu, M., Rajendran, R., Omprakash, A.V., and LurthuReetha, T. (2013) Effect of egg size on the hatching performance of Beltsville Small White Turkey.Indian Vet. J. 90(9):37-39.

Snedecor, .G.W. and Cochran, W.G. (1994) Statistical methods, 8th ed. The Iowa State University Press. Ames, Iowa.

Stromberg, J. (1975) A Guide to Better Hatching. Stromberg Publ. Co. Iowa, USA, Pp: 8-25.

Table – 1

Per cent total and fertile hatchability, fertility, early and late embryonic mortality of five turkey varieties

Hatching Parameters	Nandanam - I	Nandanam - II	Beltsville Small White	Broad Breasted Bronze	Desi - Turkey (Non-Descriptive)
Number of eggs set	767	783	2399	1674	315
Total Hatchability (%) **	59.71 a	66.92^{b}	66.90^{b}	58.00^{a}	56.83^{a}
Fertile Hatchability (%) **	73.75^{ab}	77.98^{a}	76.25^{a}	69.61^{b}	73.66^{ab}
Fertility (%) **	80.96^{a}	85.82^{bc}	87.74^{c}	83.33^{ab}	77.14^{a}
Early Embryonic Mortality (%)**	6.91^{a}	5.87^{a}	7.92^{a}	9.74^{b}	5.71^{a}
Late Embryonic Mortality (%)NS	14.34	13.03	12.92	15.59	14.60

**Means bearing different superscripts within the row differ significantly ($P < 0.01$)
NS = Non - Significant