

HATCHABILITY PERFORMANCE OF DIFFERENT COLOUR BROILER BREEDER STRAIN

C. Pandian, A.V. Omprakash, S.T Selvan and A. Sundaresan

Poultry Research Station

Tamil Nadu Veterinary and Animal Sciences University

Madhavaram Milk Colony, Chennai- 51

Received 20-11-2014 Accepted 28-12-2014

Corresponding Author : chinnaduraipandian75@gmail.com

ABSTRACT

A study was conducted to compare the fertility and hatchability of Nandanam broiler I, Nandanam broiler II and Nandanam broiler III at the age of 28-58 weeks maintained at Poultry Research Station, Tamil Nadu Veterinary and Animal Sciences University, Chennai-51. The per cent fertility, hatchability on eggs set, on fertile eggs and embryonic mortality were worked out. The mean per cent fertility of different colour broiler breeder strain were differed significantly ($P \leq 0.01$). The Nandanam broiler II recorded significantly higher fertility and hatchability to total eggs set. The overall mean per cent hatchability to total and fertile eggs set of different colour broiler breeder strains were 72.51 ± 1.0 and 85.37 ± 0.75 . Significant difference ($P \leq 0.05$) were observed for mean per cent embryonic mortality, mean per cent dead in germ and dead in shell in different colour broiler breeder strain. The study concluded that reproductive performances were better in Nandanam broiler II and Nandanam broiler I than Nandanam broiler III.

INTRODUCTION

Fertility and hatchability are the major determinant of profitability in the hatchery enterprise. These parameters appear to be very important as far as parent stocks are kept to produce chicks. There are several factors that influence hatchability of eggs like pre-incubation storage time, fertility and incubation condition such as temperature, humidity, ventilation, position, egg turning and candling. Apart from these, other factors that can have considerable influence on hatchability include nutrition of the breeding hen, genetic constitution of the embryo, disease, egg size, age and shell quality (King'ori 2011). Similarly, the fertility of an egg is affected by factors directly related to the laying hen such as her ability to mate successfully, store sperm, ovulate an egg cell and finally produce a suitable environment for the formation and development of the embryo (Brillard 2003). Hence, this study was conducted to compare the fertility, hatchability and associated reproductive traits among colour broiler breeders of Nandanam broiler I, Nandanam broiler II and Nandanam broiler III.

MATERIALS AND METHODS

The above study was conducted for a period of 30 weeks to analyze the hatchability performance of different strain of colour broiler breeder at the age of 28-58 weeks viz Nandanam broiler I, Nandanam broiler II and Nandanam broiler III maintained at Poultry Research Station, Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Chennai-51. Nandanam broiler I, Nandanam broiler II and Nandanam broiler III were evolved by TANUVAS in the year 1994. Nandanam broiler I is a white plumage broiler breeder strain and Nandanam broiler 2 and Nandanam broiler 3 is a meat type heavy bird developed by synthetic crossing, having speckled colour plumage and high livability. The standard feeding (*ad libitum*) and managemental practices were followed thorough out the experimental period. The eggs were collected every morning, graded, fumigated and stored at 18°C with 80 per cent relative humidity for 7 days; they were brought to room temperature for one hour and incubated on 8th day and provided optimum temperature and humidity in setter and hatcher. The eggs were turned once in an hour. The eggs were transferred on 18th day to hatcher

and chicks were taken on 21st day. Unhatched eggs were breakout to get infertile and embryonic mortality data. The per cent fertility, hatchability on eggs set, on fertile eggs and embryonic mortality were worked out from a total of 90 hatches and 22557 of eggs set. The data were analysed as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The Mean per cent fertility, hatchability on egg set and fertile eggs, embryonic mortality of different colour broiler breeder strain are presented in Table.

Table: Mean percent fertility, hatchability to fertile and total eggs set, total embryonic mortality of different colour broiler breeder strain (Mean±SE)

S.No	Parameters (Per cent)	Nandanam broiler I	Nandanam broiler II	Nandanam broiler III	Overall Mean
1	Fertility**	89.37 ^a ± 0.87	89.60 ^a ±0.67	75.94 ^b ±1.31	84.98±0.88
2	Infertility**	10.62 ^a ±0.87	10.39 ^a ±0.69	24.05 ^b ±1.31	15.02±0.88
2	Hatchability to total eggs set**	74.60 ^a ± 1.83	77.65 ^a ±1.30	65.28 ^b ±1.41	72.51± 1.03
3	Hatchability to fertile eggs set ^{NS}	83.30± 1.66	86.61± 1.17	85.90±0.91	85.27±0.75
4	Total embryonic mortality*	14.76 ^a ± 1.41	11.94 ^b ± 1.03	10.74 ^b ±0.71	12.49±0.64
5	Dead germ*	7.88 ^a ±1.19	3.37 ^b ± 0.38	5.98 ^b ±0.63	5.91 ± 0.49
6	Dead in shell*	6.88 ^a ±0.86	8.07 ^a ± 0.85	4.76 ^b ±0.67	6.57±0.48

**Means bearing different superscripts within the row differ significantly ($P < 0.01$)

Fertility (%)

The mean per cent fertility of different colour broiler breeder strain were differed significantly ($P \leq 0.01$). The Nandanam broiler II recorded significantly higher fertility as compared with others. The mean per cent fertility to Nandanam broiler I, Nandanam broiler II and Nandanam broiler III were 89.37±0.87, 89.60±0.67 and 75.94±1.31 respectively. Genetic makeup of the strain might be the reason for the above differences. Present finding is similar with earlier workers. Gonzalez Redondo (2006) and Paci *et al* (1992) observed on average 81 per cent and 73.5 per cent fertility in Red-legged Partridges kept in colonies. Sundaresan *et al* (2011) observed an average fertility of 87.61 per cent in Nandanam broiler II.

Hatchability (%)

The Nandanam broiler II recorded significantly higher ($P \leq 0.01$) hatchability to total eggs set. Highly significant difference was observed between different colour broiler breeder strain on mean per cent hatchability to total egg set and no significant difference was observed for mean per cent hatchability to fertile egg set. The mean per cent hatchability to total and fertile eggs set of different colour broiler breeder strain viz. Nandanam broiler I, Nandanam broiler II and Nandanam broiler

III were 74.60 ± 1.83 , 77.65 ± 1.30 and 65.28 ± 1.41 ; and 83.30 ± 1.66 , 86.61 ± 1.17 and 85.90 ± 0.91 respectively. Mean per cent hatchability on total egg set and fertile egg set observed in our study was similar with Sundaresan *et al* (2011) who reported average 76.04 and 86.65 per cent respectively in Nandanam broiler II. Mean per cent hatchability on total egg set observed in our study was higher than the reports of Farook *et al* (2003), who reported 64.3 per cent in desi chicken, 63.0 per cent in RIR and 55 per cent in Fayumi desi chicken.

Embryonic mortality (%)

Significant difference ($P \leq 0.05$) were observed for mean per cent embryonic mortality, mean per cent dead in germ and dead in shell in different colour broiler breeder strain. The mean per cent total embryonic mortality, dead germ and dead in shell for Nandanam broiler I, Nandanam broiler II and Nandanam broiler III were 14.76 ± 1.41 , 11.94 ± 1.03 and 10.74 ± 0.71 ; 7.88 ± 1.19 , 3.37 ± 0.38 and 5.98 ± 0.63 ; and 6.88 ± 0.86 , 8.07 ± 0.85 and 4.76 ± 0.67 respectively. The overall mean per cent embryonic mortality, per cent dead germ and per cent dead in shell for the above colour broiler breeders were 12.49, 5.91 and 6.57 respectively. These findings are similar with Sundaresan *et al* (2011) who observed a maximum of 5.82 per cent dead in germ and 8.85 per cent dead in shell in Nandanam broiler II.

CONCLUSION

The above study concluded that significant difference were observed in mean per cent hatchability to total egg set, fertility and embryonic mortality in different colour broiler breeder strain and no significant difference were observed in hatchability to fertile egg set. This study clearly showed that the reproductive performances are better in Nandanam broiler II than others.

REFERENCES :

- Brillard, J.P. (2003). *World Poult.Sci*, **59**:441-446.
- Farook, M., Javed, K., Durrani, F.R., Irfanullah, K. and Chand, N. (2003). *Livestock Research for Rural Development* 15 (9).
- Gonzalez Redondo, P. (2006). *J. Applied Poultry Res.*, 15:379-383.
- King'ori, A.M. (2011). *Int.J.Poult.Sci*, **10**:483-492.
- Paci, G., Marzoni, M., Benvenuti. and Bagliacca, M. (1992). 19th World's Poult.Congr.Amsterdam, Netherlands.pp:351.
- Sundaresan,A., Pandian,C., Rajendran,R., Santhi,D. and Babu, M.(2011). *Indian Veterinary Journal*, **11**:47-49.
- Snedecor, G.W.and Cochran, W.G. (1994). *Statistical methods*.8th edition. Iowa State University Press, Ames, Iowa. U.S.A.pp. 217.

□