

## COMPARATIVE STUDY OF NANDANAM CHICKEN IV (RHODO WHITE CHICKEN) AND DESI CHICKEN REARING UNDER BACKYARD SYSTEM IN RURAL AREAS OF SALEM DISTRICT OF TAMIL NADU

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**Abstract:** A study was conducted by Krishi Vigyan Kendra, Sandhiyur, Salem to evaluate the productive and reproductive performance of Nandanam chicken IV (Rhodo white chicken) and local desi chicken under backyard rearing in rural areas of Salem district in Tamil Nadu. A total of five hundred day old Nandanam chicken IV was procured and supplied to farm women's who possessed at least 20 numbers of local desi chicken rearing under backyard system. A field level study was undertaken to evaluate efficiency of productive and reproductive performance of Nandanam chicken IV and local desi chicken under backyard system with respect to age at sexual maturity, average live weight at 8th week and 20th week, age at first egg laying, average egg weight, and average egg production per annum, fertility and hatchability percentage. Body weight, egg production, average egg weight, fertility and hatchability percentage were significantly higher

Nandanam chicken IV under backyard system of rearing was found satisfactory and the birds are well adapted to local agro-climatic condition. The bird's exhibit better growth compared to desi chicks and can be fed with locally available materials. The backyard poultry farming with improved birds provide a solution to improve the socio economic status of rural people.

**Keywords:** Nandanam chicken IV, Body weight, Egg production, Fertility%, Hatchability%

### Introduction

The backyard poultry rearing is widely prevalent in the rural areas of Tamil Nadu. The demand for local chicken and eggs is very high as compared to the broilers and layer eggs due to their better taste, texture and flavor as perceived by the local population (Sapkota et al. 2002). Though the eggs and meats of desi chicken fetched high price in the market, the low productivity (low around 60-80 eggs per year) of the desi chicken rearing in backyard system could not meet the consumers demand. Therefore, for upgrading indigenous breeds in rural area, Nandanam Chicken IV colored dual-purpose strain resemble desi chicken developed by Tamil Nadu Veterinary and Animal Sciences University, Chennai. 2014.

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### **Nandanam Chicken IV or Rhodo white chicken**

Nandanam Chicken IV colored synthetic dual purpose chicken was developed through the cross between White Leghorn and Rhode Island Red by reciprocal crossing and pooling the population and improved upon through sustained selection and breeding for five generations. This bird having multi colored feather pattern and attractive plumage resemble desi chicken. They are producing brown shell egg like desi chicken. Highly suited for backyard system of rearing under different agro – climatic conditions of Tamil Nadu. Because of its sturdy and resistant nature, it can easily acclimatize itself to any region and weather. Being good scavengers, they feed on a variety of insects and green foliage. They can also be fed on farm and kitchen waste. The birds are resistant to many diseases, an exception being Ranikhet disease. Its faster growth habit and higher egg laying capacity than indigenous birds have made marked improvement in livelihood of the rural people.

### **Materials and Methods**

The present study was conducted by Krishi Vigyan Kendra, in the district of Salem in Tamil Nadu, A total 500 numbers of sexed Nandanam chicken IV were procured from Tamil Nadu Veterinary and Animal Sciences University farm and were distributed to 25 numbers of farm women each with 18 female and two male chicks. For this study, Farm women were selected randomly in different five villages of Salem district. The farmwomen were selected on the basis of their experience in keeping local desi chicken and there are having minimum 20 numbers of local desi chickens at backyard rearing for the purpose of the study. The desi chicken reared under backyard system not required brooding and supplemental feed during brooding period. Nandanam chicken IV chick required brooding up to 4 weeks. From Day old onwards chicks were maintained under brooder and were provided with sufficient clean drinking water and commercial layer starter feed *ad libitum* during the brooding period. After proper brooding, the chicks were moved into freely and reared in backyard system like local desi chicken. Birds were periodically vaccinated against Ranikhet disease.

The body weight of all the birds were recorded at day old age and also monthly intervals up to maturity at an average of six month age, average age at the point of lay, average egg weight, average egg production per annum. The mortality of birds were observed, fertility and hatchability percentage were also recorded for a period of one and half year. Data on above mentioned parameters were also recorded for the local desi chicken. Egg production was recorded daily and the eggs were weighed every day in the afternoon immediately after collection. For study of fertility and hatchability percentage, every week, each 200 numbers

of eggs from Nandanam chicken IV and local desi chicken were collected and set in a small scale incubator.

### Results and Discussion

Age at sexual maturity, average egg weight, average live weight at 20th week, average day old chick weight and hen day egg production of Nandanam Chicken IV and Desi birds are presented in the Table 1

	Parameter	Nandanam Chicken IV	Desi Chicken
1.	Body weight		
	Body weight Day old (g)	35.0 ± 0.32	35.0± 0.76
	Body weight 8 th Week (Kg)	360.0± 0.56	340± 0.96
	Weight at 20 weeks of age (Kg)	1.5± 0.69	1.4± 0.42
	Body weight at first egg laying	1.6± 0.86	1.5± 0.39
2.	Age at first egg lay (Days)	159.0± 0.74	172.0± 0.19
3.	Egg production per annum (Nos.)	176.0± 0.65	72.0± 0.15
4.	Average Egg weight (g)	52.0± 0.62	43.0± 0.49
5.	Livability %	95.0± 0.97	81.0± 0.52
6.	Fertility %	85.0± 0.36	80.0± 0.64
7.	Hatchability %	83.0 ± 0.36	78.0 ± 0.36

### Egg parameter

Nandanam Chicken - IV adopted in backyard condition, no pecking behaviour, more egg production, disease resistance but less flying nature.

The backyard poultry farming with improved birds provide a solution to increase family income and food security to the needy villagers paving a way for sustainable livestock in rural areas of Tamil Nadu.



Body weight is the direct reflection of growth and it influences the production and reproduction traits of birds. The average body weights at 20<sup>th</sup> weeks of age were recorded as 1.6 kg and 1.5 kg in case of Nandanam chicken IV and desi chicken respectively. The average age at first egg production in desi chicken was 172 days which was more when compared with Nandanam chicken birds 156 days. The differences in attaining sexual maturity might be due to the genetic differences. Cross-breeding results in early sexual maturity compared with pure-bred hens. Sexual maturity tends to be attained at later ages for heavier breeds. Age at first egg production is also influenced by many environmental factors, such as temperature, nutrition and day length.

Egg production determine the success of poultry enterprise. The comparative estimate of egg production revealed that egg production for Nandanam chicken (176) is comparatively higher than desi chicken egg production (72). This difference in egg production might be due to different genetic makeup of desi and improved varieties of chicken. Egg production and egg weight of Nandanam chicken IV were higher than for the desi chickens kept under backyard system. Which indicates that cross breeding has potential for improving economically important traits. The present findings are similar to findings of Devi and Reddy, (2005), Chatterjee et al, (2007) Kumaresan et al (2008), Haunshi et al. (2009), Chutia (2010).

### **Conclusion**

The economic return from the poultry largely depends on characters like body weight, age at sexual maturity, egg production and egg weight. Knowledge of these parameters is essential to decide selection programme for overall improvement. From the study, it can be concluded

that Nandanam chicken IV performs better than desi chicken in terms of age at first egg laying, annual egg production and body weight under backyard system of rearing. So, farmers from rural areas selecting Nandanam chicken IV over desi chicken

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