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Comparative study of production and reproduction performance of TANUVAS Aseel and Kadaknath chicken under intensive system of rearing

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Abstract

The present study was conducted to compare the Production performance of TANUVAS Aseel, and Kadaknath breeds at Desi chicken unit, TANUVAS- Regional research and Educational centre, Pudukkottai. One hundred numbers of day-old chicks were selected from these two varieties and reared under intensive system with standard management practices. In this study, Birds were fed with brooder mash from 0 to 8 weeks and 9 to 16 weeks grower mash and 18 weeks to 72 weeks with layer mash. Parameters assessed in this study was hatch weight, body weight at 12th weeks and 16th week, feed conversion ratio, hen day egg production and hen housed egg production, hatchability, fertility and livability percentage were recorded. hatch weight of Kadaknath was 29.43 and TANUVAS aseel was 38.27 g. the average body weight TANUVAS Aseel at 12th and 16th week was 1.23kg respectively and 1.62 kg and kadaknath body weight was 0.97 and 1.32 kg respectively. The better production performance of TANUVAS Aseel may favour the farmers of Tamil Nadu to improve their livelihood and nutritional security.

Keywords: TANUVAS Aseel, kadaknath, production performance

Introduction

Native chicken rearing is one of the traditional animal husbandry activities in the rural areas of various districts of Tamil Nadu. Native chicken are well known for their adaptability to local agro-climatic conditions, hardiness, ability to utilize locally available feed, requiring minimum care and management besides having a unique flavor and taste. The eggs and meat of birds reared in the family poultry production fetches premium price due to high consumer preference even in the urban sector where plenty of eggs and poultry meat from commercial units are available. The egg and meat produced by native bird is well accepted by the overall consumers as organic. There is also a huge gap in the nutrient availability between the urban and rural population. In rural areas, native chicken is reared under low profile nutrition. However, native chicken rearing for egg and meat production needs scientific approach from day one to marketing /consumption

Backyard poultry production is one of the important aspects in dryland farming system, this enterprise plays a major role in livelihood of poor farm families. Even though, agriculture is the major activity, the income derived from agriculture is not so desirable due to climate change and high input cost. So, the farmers turned to allied activities like Dairy farming, Sheep & Goat farming and Backyard poultry farming etc. The consumption of Desi bird meat & eggs among people is increasing trend, hence great scope for landless & small farmers to start backyard poultry farming in rural and semi-urban areas. The production performance of native breeds is low and high incidence of diseases. The backyard poultry production can be enhanced with improved strains such as Gramapriya, Srinidhi, and TANUVAS Aseel etc.

TANUVAS Aseel

TANUVAS Aseel is a superior variety of native chicken developed by Poultry Research Station, TANUVAS using strains of Aseel from Central Poultry Development Organization (CPDO), Bhubaneswar (Base population), Directorate of Poultry Research (DPR), Hyderabad and from a private entrepreneur and champion breeders. All the birds were brought into the genetic pool and random breeding was carried out. Later on, individual selection was carried out in the male for higher body weight and family selection was done in female for more egg

number (part time egg production). Accordingly, a dual-purpose native variety of Aseel with all the characteristic features of the breed was evolved for table purpose with continuous selection and breeding for six generations, which is maintained at Poultry Research Station, Tamil Nadu Veterinary and Animal Sciences University, Chennai. This dual-purpose bird is well received by farming community because of its better growth rate and egg production capability. However, very scanty information is available regarding production and reproduction performance of TANUVAS Aseel chicken in Cauvery delta region of Tamil Nadu. Hence, the present study was carried out to evaluate the production and reproduction performance of TANUVAS Aseel chicken in Cauvery delta region of Tamil Nadu.

Special feature of the strain

The face is long and slender. The eyes are compact, well set and present bold looks. Wattles and ear lobes are bright red and the beak is hard. The neck is long, uniformly thick but not fleshy. The general feathering is close. Predominantly reddish brown plumage. Predominantly pea comb, occasionally rose comb seen. Elongated body length measuring 58.5 cm from head to tail and 60.25 cm head to toe. The tail is small and drooping. The legs are strong, straight and set well apart. Dark brown shelled eggs with thick shell measuring 0.33 mm. Reduced broodiness with resultant more egg number (160) and more chicks (112) per dam.

Kadaknath

The Kadaknath is important native chicken breed in India. Kadaknath breed, also known as Kalamashi in Hindi, is known for its black-colored meat. It is being reared by tribal communities in its breeding tract of the Jhabua and Dhar districts in the western region of the state of Madhya Pradesh and in adjoining areas of the states of Gujarat and Rajasthan. Although the meat of this breed has an unattractive appearance, it has a delicious flavor (Panda and Mahapatra, 1989). The meat and eggs are considered rich sources of

protein and iron. Mohan *et al.* (2008) reported that the meat of the Kadaknath breed contains a high percentage (25.47%) of protein and is believed to have aphrodisiac properties. Although the Kadaknath breed has many unique characteristics, it has been neglected because of its poor production potential. Of late, there is renewed interest among consumers and farmers in native germplasm because of the unique hardiness of the breeds, their ability to thrive under adverse climatic conditions, and the desirable taste and flavor of eggs and meat. Hence, a significant demand exists for the Kadaknath native chicken. As Mohan *et al.* (2008) recently pointed out, more investigations are required to establish baseline values for production parameters of the Kadaknath breed and characterize their general performance.

Materials and Methods

The present study was conducted to evaluate Production performance of TANUVAS Aseel, Kadaknath and Nandanam chicken broiler II at the TANUVAS- Regional research and Educational centre, Pudukkottai. One hundred numbers of day old chicks were selected from these three varieties and reared under intensive system with standard management practices. In this study, Birds were fed with brooder mash from 0 to 8 weeks and 9 to 16 weeks grower mash and 18 weeks to 72 weeks with layer mash. Parameters assessed in this study were hatch weight, body weight at 12th weeks and 16th week, feed conversion ratio, hen day egg production and hen housed egg production, hatchability, fertility and livability traits were recorded. Hatch weight of Kadaknath was 29.43 and TANUVAS aseel was 38.27 g. The average body weight TANUVAS Aseel at 12th and 16th week was 1.23kg respectively and 1.62 kg and kadaknath bodyweight was Percentage of Hen day egg production for Kadaknath was 0.97 kg and 1.37 kg at 12th and 16th week of age. Average feed consumption, FCR, AGE AT first day, hen day and hen housed egg production mortality, hatchability and fertility percentage were analyzed during the study period.

Table 1: Growth performance of chicken belonging to three varieties Mean values on body weights (g) of chicken belonging to three varieties

Breeds	Hatch weight (gm)	12 th week (kg)	16 th week(kg)	Feed conversion ratio	Age at first egg (days)	Average feed consumption(gm)
TANUVAS Aseel	38.27±0.32	1.23±0.17	1.62±0.28	3.31±0.23	165	101.26±2.56
kadaknath	29.43±0.58	0.97±0.24	1.37±0.16	3.68±0.37	169	91.83±6.89

Table 2: Reproduction performance of chicken belonging to three varieties

Breeds	Egg weight (gm)	Hen day egg production	Hen housed egg production	Hatchability (%)	Fertility (%)	Livability(%)
TANUVAS Aseel	51.74±0.13	36.18±4.20	128.52±4.6	82.95±7.01	92.07±6.92	99.12±0.78
kadaknath	41.78±0.30	29.01±4.23	92.05±3.75	77.07±13.43	90.34±6.27	99.45±0.26

Results and Discussion

The average day old weight (hatch wt) 38.27±0.32 was highest in TANUVAS-Aseel in comparison to kadaknath of hatch weight 41.78±0.30. The TANUVAS-Aseel breed consumed more feed of 101.26±2.56 gms per day and gained maximum weight than those of kadaknath which consumed 91.83±6.89 gm per day at all ages of growing phase. The average 12th week body weight of 1.23±0.17 kg and 16th week body weight of 1.62±0.28 kg which showed highest in TANUVAS-Aseel in comparison to kadaknath of 0.97±0.24 kg and 1.37±0.16 kg respectively. The average body weight at 12 weeks of age reported in this present study is comparable with the results reported by vinothraj *et al.*, (2020) [7] which shows 0.94kg.

In our present study, age at first egg was 165 days. In contrary to present finding, age at first egg was slightly lower in the study of Haunshi *et al.*, (2011) [3] and Thangadurai and Shanmugam (2019) [5]. However, Ezhil Valavan *et al.*, (2016) [2] reported age at first egg production was 159 days. This might be due to the genetic potentiality of birds, growing stage of the birds, managerial differences and study location. Egg production determining the success of Poultry enterprises and gaining better income to farmers (Vinothraj *et al.*, 2019) [6]. The average hen day and hen housed egg production were highest in TANUVAS-Aseel in comparison to kadaknath. The results showed that TANUVAS-Aseel and kadaknath chicks had lowest mortality. Mortality is an important indicator of poor welfare (LayWel 2006) [4]. In this

study, the mortality during the rearing period was lower in two breeds; thus the fact that no particular infectious disease was reported during the experimental period.

The hatchability percentage and fertility percentage of TANUVAS Aseel showed 82.95 ± 7.01 and 92.07 ± 6.92 respectively which was highest in TANUVAS-Aseel in comparison to kadaknath of hatchability 77.07 ± 13.43 and fertility percentage of 90.34 ± 6.27 . Percentage of Livability was recorded in our study was 99.25. However, Ezhil Valavan *et al.*, (2016) [2] observed that Livability of Aseel was 94.29. Slight differences in Livability due to environmental variation of study location from the results, it could be observed that production performance of TANUVAS Aseel were comparable with the kadaknath and the results shows that all production traits were higher than kadaknath. The breed kadaknath had minimal variations in production traits with that TANUVAS Aseel but constraints of lesser market opportunity.

Hence, it can be concluded that TANUVAS Aseel had better market opportunity and farmers adoption due its external appearance and genetic potentiality. So, farmers from rural areas of Tamilnadu can rear TANUVAS Aseel for their livelihood and nutritional security.

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