Morphology and Morphometry of Indigenous Ducks of Tamil Nadu

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Abstract

Duck production in Tamil Nadu is characterised by the traditional enterprise with indigenous ducks, distributed widely. The indigenous duck varieties of Tamil Nadu have evolved over the years with better adaptability and production potentiality. These indigenous ducks are capable of laying 180-200 eggs per annum with an average egg weight ranging from 60-64 g with no additional or special feeding management. The common Indian breeds/genetic groups of ducks are Indian Runner, Nageswari, Sythetmete, Kuttanad, Arni etc. Besides non-descript ducks are also available in large numbers in many states of the country, contributing significantly to the total duck population. The unique nature of this native germplasm has not been properly documented. Hence, the work was proposed to study morphology and morphometric analysis of distinct indigenous ducks of Tamil Nadu.The duck farmers in the northern districts of Tamil Nadu are rearing two predominant varieties of ducks i.e. Sanyasi and Keeri. Among these, Sanyasi female is the popular duck variety reared by the farmers. The Sanyasi female ducks are having saffron coloured plumage and males are with dark brown plumage mixed with black.

Index terms— morphology, morphometric traits, indigenous ducks, tamil nadu.

1 Introduction

uck production in India is largely a traditional enterprise and has not yet been industrialized as that of chicken. Even though, duck contributes next to chicken, it is still a neglected species. Being the neglected species for many decades, this native poultry species is threatened for existence due to lack of scientific breeding and management practices. The distribution and demographic dynamics of duck population in India revealed that they are mainly concentrated in eastern, north eastern and southern states of the country. The leading states in duck population are West Bengal, Assam, Kerala, Andhra Pradesh, Tamil Nadu, Bihar and Orissa. The common Indian breeds/genetic groups of ducks are Indian Runner, Nageswari, Sythetmete, Kuttanad, Arni etc. In Tamil Nadu, 70 per cent of the duck population is concentrated in six districts namely, Kancheepuram, Thiruvallur, Villupuram, Cuddalore, Vellore and Thiruvannamalai, falling under northern agro-climatic zone of Tamil Nadu (Sivakumar et al., 2009 So far, there is no guided breeding and scientific management practices followed in the country, which would lead to loss of the rich native duck germplasm. There is lack of sufficient scientific information on ducks, either phenotypic or genotypic to differentiate various duck breeds or distinct varieties. The duck germplasm is not properly utilized due to various difficulties in duck rearing in the rural environment. Hence, the work was proposed to study phenotypic character and morphometric analysis of this distinct indigenous ducks of Tamil Nadu.

2 II.

3 Materials and Methods

The morphology of indigenous ducks was studied as per the breed descriptors of the Food and Agriculture Organization (FAO, 1986) and the guidelines given by the National Bureau of Animal Genetic Resources, Karnal, Haryana, India. The morphological characters studied were plumage pattern, carriage, bill colour and shank colour.

4 III.

5 Morphometry

Body measurements were taken for ducks of Sanyasi and Keeri variety with a standard measuring tape to the nearest 0.1 centimetre (cm) for bill length, shank length, neck length and body length. The data collected were scrutinized, edited and analysed as per standard statistical procedures (Snedecor and Cochran., 1989).

6 Results and Discussion

The duck farmers in the northern districts of Tamil Nadu are rearing two predominant duck varieties i.e. Sanyasi and Keeri. Among these, Sanyasi female is the popular duck variety being reared by the farmers. Each variety is having different phenotypic character.

V.

7 Morphology

The Sanyasi female ducks are having saffron coloured plumage with or without white ring like feathers around the neck and males are with dark brown plumage mixed with black. The head and neck covered with lustrous brown plumage. Males have brown coloured drake feather. The bill colour of females is orange and for males it is yellowish orange. The shank colour is orange for both males and females.

The Keeri female ducks are having mixture of black and brown plumage characteristically in striations with or without white ring like feathers around the neck and males are with mixture of dark black and white plumage. The head and neck covered with lustrous black plumage. The bill colour and shank colour of females is grey / orange. Keeri male duck has dark yellow bill colour and oranged coloured shank. The drake feather is black in colour. Similar plumage pattern, bill colour and shank colour was observed by Murugan et al., (2009).

8 VI.

9 Morphometric Traits

The morphometric traits such as, body length, neck length, bill length and shank length were recorded for 909 adult ducks comprising of 488 Sanyasi and 421 Keeri varieties of ducks. The least square means with S.E. is presented in Table -1

10 Body Length

The overall body length for both the varieties recorded was 23.74±0.06 cm. Body length for Sanyasi and Keeri varieties was 23.85±0.09 and 23.64±0.08 cm respectively. The numerical difference in body length between varieties was not statistically significant. The value for male and female ducks was 24.53±0.11 and 22.95±0.06 cm respectively and the difference between the sexes was highly significant ($P<0.01$). On the contrary, Yakubu (2009) recorded mean values of body length (cm) for male and female African Muscovy ducks as 47.86 and 38.35. The lower valued obtained in this study might be due to the variation in the size and conformation of the distinct variety / breed of ducks.

VIII.

11 Neck Length

The neck length recorded for Sanyasi and Keeri varieties was 13.47±0.25 and 12.90±0.22 respectively with overall neck length of 13.19±0.17 cm. Among the sexes the difference in neck length was highly significant ($P<0.01$). The value for male and female adult ducks was 13.94±0.29 and 12.43±0.15 respectively. The interaction between variety and sex had no significant effect on neck length. whereas, Yakubu (2009) recorded the mean neck length for male and female African Muscovy ducks as 18.10 and 14.33 cm respectively, while Murugan et al. (2009) recorded the neck length (cm) of 21.10 ± 0.12and 18.70 ± 0.24for male and female Sanyasi ducks respectively. The neck length of Volume XIV Issue III Version I Year ( ) 2014 G 6.87±0.01 cm respectively, while the value for female ducks was 5.75±0.02 and 5.77±0.01 cm respectively. Within the sex the variety had no significant effect on bill length. The bill length for male and female ducks recorded was 6.84±0.02 and 5.76±0.01 cm respectively. This revealed a highly significant variation among the sexes. The overall bill length for two varieties of ducks was 6.30±0.01 cm. Similarly, Ajith et al. (**??**009) recorded significantly higher bill length in males in comparison

with respective females with regard to Chara and Chemballi ducks of Kerala. Whereas, shorter bill length of 4.98 and 3.75 cm was recorded for African Muscovy male and female ducks by Yakubu (2009). The bill length for Sanyasi and Keeri ducks of Tamil Nadu was recorded by Murugan et al. (2009), which is in comparison with the values of this present study. The higher value of bill length in males than female ducks might be attributed to their heavier size and adaptability.

X.

12 Shank Length

Significantly higher shank length for males than female ducks was recorded in both the varieties (5.61±0.02 cm for males and 5.56±0.01 cm for females), on the other hand, variety had no significant role on shank length (5.58±0.02 cm for Sanyasi and 5.59±0.02 cm for Keeri variety). The overall shank length was 5.58±0.01 cm. The interaction between sex and variety also had no significant effect on shank length. While, Renchi et al. (1979) recorded the mean shank length in male and female Desi ducks of Kerala at 12 weeks of age as 6.44±0.04 and 6.15±0.02 cm and reported that males had significantly higher shank length than female ducks and similar values were recorded by Ajith et al. (2009) for Chara and Chemballi ducks of Kerala. Whereas, in Nageswari ducks of Assam, Zaman et al. (2007) recorded the mean shank length of male and female as 6.67±0.71 and 6.12±0.68 cm respectively. The difference in the shank length of different varieties of indigenous ducks might be attributed to the variation among indigenous germplasm and adaptability to the rearing environment.

13 XI.

14 Conclusion

The existence of two distinct indigenous duck varieties namely Sanyasi and Keeri was fully evidenced through this study. These varieties were having different morphology and morphometry with other indigenous duck varieties of the country. Since, the concept of rearing breeder flock and proper selection among the duck varieties are the biggest lacunas in the study area, necessary steps to address these constraints will throw more light on these unique germplasm. Moreover, these duck germplasm are known for its prolificacy under nilinput system of management, further studies focusing on large scale survey, characterisation of these ducks at molecular level will be the best approach for proper selection and conservation of these unique germplasm for future use and exploitation. [1]

Figure 1: D

). Existence
of different indigenous duck varieties namely Arni,
Sanyasi and Keeri
(Gajendran and Karthickeyan, 2009; Murugan et al.,
2009;

Figure 2:

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ducks of Tamil Nadu

Particulars	Number of observations	Body length (cm)	Neck length (cm)	Bill length (cm)	Shank length (cm)
Overall mean	909	23.74±0.06	13.19±0.17	6.30±0.01	5.58±0.01
Variety		NS	NS	NS	NS
Sanyasi	488	23.85±0.09	13.47±0.25	6.29±0.01	5.58±0.02
Keeri	421	23.64±0.08	12.90±0.22	6.31±0.01	5.59±0.02
Sex		**	**	**	**
Male	201	24.53±0.11	13.94±0.29	6.84±0.02	5.61±0.02
Female	708	22.95±0.06	12.43±0.15	5.76±0.01	5.56±0.01
Sex X Variety		NS	NS	NS	NS
Male					
Sanyasi	81	24.74±0.17	13.50±0.46	6.82±0.02	5.59±0.03
Keeri	120	24.33±0.13	13.38±0.37	6.87±0.01	5.65±0.04
Female					
Sanyasi	407	22.96±0.07	12.45±0.20	5.75±0.02	5.57±0.02
Keeri	301	22.94±0.09	12.42±0.23	5.77±0.01	5.56±0.02

NS-Non-significant (P<0.05); * -Significant (P< 0.05); ** -Significant (P<0.01)
VII.

Figure 3: Table 1 :

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