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Production and reproduction performance of Aseel under intensive system in tropical climate condition

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Abstract
The present study was conducted to evaluate the production and reproduction performance of Aseel under tropical conditions of Tamil Nadu, India. The mean body weight of male and female Aseel at 8th and 12th week were 422.12±15.45; 382.35±10.20 and 1084.21±27.22; 928.15±38.18 g respectively. The body measurements revealed that Shank length (cm) was about 10.42±0.17 at 12th week of age. The part time egg production 21-40 wk age studies revealed that HDEP (%) and HHEP (%) were 40.85±1.50 and 37.98±2.10 respectively. It was concluded that Aseel birds have the ability for higher production performance with high adaptability to local climatic conditions.

Keywords: aseel-body weight-feed conversion ratio-livability-fertility

Introduction
In India, Aseel is one of the most important indigenous chicken breeds, which is commonly known for its stamina, pugnacity, dogged fighting qualities, majestic gait, hardiness, ability to survive in adverse conditions and disease tolerance (Pandey *et al*., 2005) [1]. The pure Aseel breeds are still in their breeding tract namely Andhra Pradesh, Orissa, Madhya Pradesh and some parts of Rajasthan. Out of eight Aseel variants in India, Yellow and Black Aseel are more commonly noticed (Panda and Mohapatra, 1989) [2]. A considerable demand exists for the dual purpose / improved germplasm of Aseel chicken among the farmers of Tamil Nadu mainly due to its unique characters such as hardiness, thermal tolerance, disease tolerance and ability to thrive under adverse climatic conditions (Prabakaran, 2014) [3]. The eggs and meat of indigenous chicken reared under backyard system are preferred over that of commercial birds due to their characteristic flavour (Sing *et al*., 2000; Vij *et al*., 2006; Ramdas, 2009) [4] [5] [6]. The commercial rearing of Aseel is gaining popularity in different parts of state of Tamil Nadu, India. Hence, the present study was designed to evaluate the production and reproduction performances of Aseel under intensive system of management in tropical climate condition.

Materials and Methods
The study was conducted at Erode, Tirupur and Coimbatore districts of Tamil Nadu, India, situated between latitude 10° 36” and 11° 58” and between longitude at 76° 49” and 77° 58”. The western agro-climatic zone of Tamil Nadu was purposefully selected for this study because the commercial production of native chicken under intensive rearing has made remarkable progress within a short span of time in this zone. Entrepreneurial behaviour of the farmers, consumer demand for native chicken meat in the retail market, a premium price for native chicken and establishment of commercial hatcheries have contributed to the popularity of native chicken farming under intensive system in this zone.
A total of 2000 day old chicks of the Aseel breed were utilized for the present study. The standard management practices were followed under deep litter system of management with *ad libitum* feeding and water. Body weight was recorded at monthly intervals upto market age. Morphometric parameters like the neck, body length, thigh and shank length were measured on 90th day. Age at first egg, egg weight, part-time egg production and hatchability performance were recorded. The data collected were subjected to mean performance analysis.

Results and Discussion

The production and reproduction performance of Aseel is presented in table 1. It was found that the mean body weight of male and female at 8th and 12th week were 422.12±15.45; 382.35±10.20 and 1084.21±27.22; 928.15±38.18 respectively. It was found that sex had a significant effect on body weight. Comparatively, Haunshi *et al.* (2011) [7] recorded higher body weight in Aseel birds. However, Mohan *et al.* (2008a) [8] and Rajkumar *et al.* (2017) [9] recorded lower body weight in Aseel birds. The higher body weight in the present study may be due to the selection of the birds with high body weight. The lower body weight may result as a result of lack of selection, inbreeding, environmental condition and management practices.

Table 1: Production and reproduction performance of Aseel under intensive system

Aseel	Body weight (g)		
	4th week	8th week	12th week
Male	204.82±21.74	422.12±15.45	1084.21±27.22
Female	171.64±17.20	382.35±10.20	928.15±38.18
12th week body measurements (Pooled) (Mean±SE)			
Neck length (cm)		22.51±0.22	
Thigh length (cm)		10.42±0.13	
Drumstick (cm)		15.61±0.75	
Shank length (cm)		10.42±0.17	
FCR		3.4	
Part-time egg production (21- 40 wk) (Mean±SE)			
HDEP (%)		40.85±1.50	
HHEP (%)		37.98±2.10	
Livability (%)		98.02	
Age at sexual maturity (days)		151	
Egg weight (g)		46.14±0.25	
Total hatchability (%)		70.48±1.20	
Fertile hatchability (%)		80.17±1.12	

The body measurements revealed that Shank length (cm) was about 10.42±0.17 at 12th week of age. A similar higher shank length (9.45 cm) was reported by Rajkumar *et al.* (2017) [9]. This might be due to farmers select Aseel birds for their fighting abilities with long and strong shank and leg which leads to long shanks in Aseel birds. In the present study, it was found that age at sexual maturity was about 151 days. However, Rajkumar *et al.* (2017) [9] reported that age at sexual maturity 214 days, whereas Mohan *et al*. (2008a, b) [8] [10] reported that age at first egg production was 154 days in Aseel birds.

The part time egg production studies revealed that HDEP (%) and HHEP (%) was 40.85±1.50 and 37.98±2.10 respectively. Rajkumar *et al.* (2017) [9] recorded lower egg production in Aseel birds. However, Haunshi *et al.* (2011) [7] reported higher egg production at 40th week (36 eggs) in Aseel birds. Mohan *et al.* (2008b) [10] and Ezhilvalavan *et al.* (2016) [11] reported that the annual egg production in Aseel birds was about 160 and 154 eggs respectively. The lower egg production may be due to the broodiness character of native chickens, whereas the higher egg production may be recorded as a result of selective breeding which leads to the loss of natural characteristics of native chicken, especially broodiness.

From the present study, it was found that mean egg weight was about 46.14±0.25 g at 40th week of age. Rajkumar *et al.* (2017) [9] recorded egg weight of 47.5±0.7 g at 40th week in Aseel birds. Ezhilvalavan *et al.* (2016) [11] reported that Aseel egg weight was 48.27±0.52 g at 40 weeks of age. At 40th wk of age, the egg was weight was about 49.28 g as recorded by Haunshi *et al.* (2011) [7]. The higher egg weight might be due to prolonged selection for increased body weight in the flock. A positive correlation exists between egg weights and the age of the birds. The egg weight gradually increases as age advances. Livability (%) between 20-40 wk of age was 98.02 indicating hardy nature of adult Aseel birds.

Fertility and hatchability are influenced by many factors of which, nutrition and management are most important. The mean total hatchability and fertile hatchability (%) rate were 70.48±1.20 and 80.17±1.12 in Aseel respectively. However, Haunshi *et al.* (2012) [12] recorded high hatchability (81.21%) and fertile hatchability (70.74%) in Aseel birds which was under selection for improved reproductive performance. The higher hatchability in former studies may be due to the environmental condition which influences the reproductive performance.

From, the present study it is concluded that Aseel birds have the ability for higher production and reproduction performance with high adaptability to survive under intensive rearing in tropical climate conditions of Tamil Nadu, India.

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