

# Reproduction Traits of the Native Chicken Variety Maintained at College of Poultry Production and Management, Hosur

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**Abstract** The reproduction parameters of the Native chicken variety were maintained at College of Poultry Production and Management (CPPM), Hosur and were studied at Poultry Farm Complex (PFC), Veterinary College and Research Institute, Namakkal during the period between April 2020 and April 2021. The reproduction parameters like Hen day egg production (HDEP), Hen housed egg production (HHEP), Hen housed hatching egg production (HHHEP), Fertility and Hatchability were studied. The Native chicken variety attained sexual maturity (149 days) much earlier than other native chicken in India. The results of hen housed egg production (No.) were  $40.0 \pm 0.45$  and  $66.6 \pm 0.60$  up to 40<sup>th</sup> and 52<sup>nd</sup> week, respectively. Fertility (per cent) of the Native chicken variety ranged between  $93.1 \pm 0.21$  and  $95.9 \pm 0.32$  with an average of 94.68 per cent. The recorded hatchability (TES) up to 52 weeks had ranged between  $82.8 \pm 0.55$  and  $88.1 \pm 0.07$  with an average hatchability of 85.70 per cent. The reproduction traits were higher than many other indigenous chicken with mean hatchability of 85.0 per cent, fertility of 94.8 per cent and production of 45.6 chicks per hen during the production period of 52 weeks.

**Keywords** Native Chicken, Hen Day Egg Production, Hen Housed Egg Production, Fertility and Hatchability

## 1. Introduction

Poultry farming is one of the fast-growing industries in India in which the organized sector of poultry industry is contributing nearly 67 per cent of the total output and the rest 33 per cent by the unorganized sector. The total egg production in India from commercial poultry is 95.17 billion and backyard poultry is 19.21 billion contributing 83.20 per cent and 16.80 per cent of the total production of eggs, respectively [1]. Native chickens are reared in a free-range extensive system with very little input in the form of grain or farm by-products and contribute to the unorganized sector in India. The average productive output of native chicken is very low, with 60 - 70 eggs per bird per annum.

Faruque et al. [2] stated that the indigenous chicken populations have the privilege of superiority over exotic chicken breeds due to several desired characteristics like broodiness, self-defense from predators, adaptability to adverse environments, disease resistance, lesser health care requirements, characteristic taste and flavour of the meat, brown shelled eggs, rich in threonine and valine and a better price for the indigenous poultry products. Assefa and Melesse [3] found that the indigenous chicken contributes high quality animal protein in the form of eggs and meat for home consumption as well as for sacrifices and are also easily managed by all even the poorest of the poor including women and children. The demand for indigenous

chicken is very high since their products are more preferred in comparison to commercial poultry due to better flavour, lower cholesterol content and higher amino acids (Threonine and Valine) in the eggs and lean as well as pigmented meat rich in amino acids (Arginine and Lysine). Indigenous chicken breeds are pushed to extinction because of commercialization of poultry production systems and the lack of breeding programmes to improve the production potential. In view of the importance of indigenous poultry breeds under backyard production systems, breeding strategies to improve the productivity of native chicken should be considered without compromising their native characteristics such as hardiness, better immune status, flight, broodiness, *etc.* However, consumer preferences at market are dictated by brown shell colour and small size egg, *etc.* The native chicken variety is distributed to the farming community of the area and is well received by the community for backyard rearing. The Native chicken variety attained sexual maturity (149 days) much earlier than other native chicken in India. The results of hen housed egg production (No.) were  $40.0 \pm 0.45$  and  $66.6 \pm 0.60$  up to 40<sup>th</sup> and 52<sup>nd</sup> week, respectively. The reproduction traits were higher than many other indigenous chicken with mean hatchability of 85.0 per cent, fertility of 94.8 per cent and production of 45.6 chicks per hen during the production period of 52 week.

## 2. Research and Methodology

A Sum of 60 male birds and 460 female birds (out of 540 growers of each sex) were selected and reared in four replicates of 15 male and 115 female birds with a mating ratio of 1:8 in each replicate under a deep litter system at Poultry Farm Complex, Veterinary College and Research Institute, Namakkal and the parameters like Hen day egg production, Hen housed egg production, Fertility and Hatchability were studied from 21-52 weeks of age.

A sex separated feeding was followed during the breeding period (21-52 weeks of age) in which males were given with male breeder diet (ME 2604 kcal/kg and crude protein 16 per cent) in height adjusted feeder and females were given female breeder diet (ME 2635 kcal/kg and crude protein 17 per cent) based on nutrient specifications for layer breeder chicken. The experimental birds were protected and maintained under standard vaccination and bio-security protocols.

### 2.1. Production Traits

#### 2.1.1. Body weight and Body Weight Gain

Individual sex wise body weights (g) were recorded at weekly intervals up to 52 weeks of age by using an electronic weighing balance nearest to 1.0 g accuracy.

### 2.2. Reproduction Traits

#### 2.2.1. Feed Consumption and Feed Conversion Ratio

Feed consumption (g) was recorded at weekly interval up to 52 weeks of age and FCR for female pullets were calculated in terms of FCR per kg egg mass and dozen eggs during laying period. FCR was calculated as follows:

$$\text{i) FCR/ kg egg mass} = \frac{\text{Kg of feed consumed}}{\text{Kg of egg produced}}$$

$$\text{ii) FCR/ dozen eggs} = \frac{\text{Amount of feed consumed (g)}}{\text{No. of dozen Egg}}$$

#### 2.2.2. Age at Sexual Maturity/Age at First Egg

Age at sexual maturity of a bird was recorded in days when the first egg was laid. The average period in days from the date of hatch to the date of the first egg laid was calculated as age at sexual maturity and was expressed in days.

#### 2.2.3. Body Weight at Sexual Maturity

The body weight (g) of the bird was recorded soon after the first egg was laid. The birds were weighed on a single pan balance to the accuracy of one gram.

#### 2.2.4. Egg Production

During the experimental period, the egg production was recorded daily. Based on the data, egg production was calculated in terms of weekly hen day (per cent) and cumulative hen housed (number) egg production. Sample egg weight was recorded at weekly intervals.

##### 2.2.4.1. Rate of Lay

The continuous laying of eggs without pause on a particular day of production and Hen day egg production is calculated as follows:

$$\text{Hen day egg production (\%)} = \frac{\text{Rate of lay (\%)}}{\text{Number of hens present in particular day}} \times 100$$

##### 2.2.4.2. Peak Production

The highest per cent of egg production was achieved at particular week, followed by a decrease in subsequent week.

##### 2.2.4.3. Age at 50 % Production

The age at which the flock reaches 50 % of their egg production from its total egg produced.

##### 2.2.5. Fertility and Hatchability

The reproductive performance of native chicken under an intensive system of rearing was studied from 21 to 52 weeks of age. All settable eggs obtained in a week were incubated at weekly intervals. All the settings were analysed to record the average fertility and hatchability of the total egg set (TES) and fertile egg set (FES) and were calculated as follows:

$$\text{i) Fertility (\%)} = \frac{\text{Total number of fertile eggs}}{\text{Total number of eggs set for incubation}} \times 100$$

$$\text{ii) Hatchability(TES)} = \frac{\text{Total number of chicks hatched}}{\text{Total number of eggs set for incubation}} \times 100$$

$$\text{iii) Hatchability(FES)} = \frac{\text{Total number of chicks hatched}}{\text{Total number of fertile eggs set for incubation}} \times 100$$

### 3. Statistical Analysis

The data on egg production, fertility and hatchability were analysed using the descriptive method of statistical analysis.

## 4. Results and Discussion

### 4.1. Body Weight at Breeder Phase

The mean ( $\pm$ S.E.) body weight (g) of the Native chicken variety maintained at CPPM, Hosur from 21 to 52 weeks of age is presented in Table 1. The body weight of male and female at 40<sup>th</sup> week was 2570.3 $\pm$ 15.34 and 1726.18 $\pm$ 15.01g, respectively. The body weight of male and female at 52<sup>nd</sup> week was 2709 $\pm$ 7.21 and 1883.43 $\pm$ 8.04 g, respectively. The average weekly body weight gain during the period ranges between 20 and 40 g with an average gain of 25 g in male, ranges between 15-20 g with an average gain of 17 g in females.

The Native chicken variety of CPPM has a higher body weight than native chicken of Jharkhand [4] and native chicken variety of Belgaum division of Karnataka [5] at the 32<sup>nd</sup> week of production, Aseel chicken at the 40<sup>th</sup> week of age [6] and the 48<sup>th</sup> week of age [7], native chicken variety of Belgaum division of Karnataka at 52<sup>nd</sup> week [5] and falls within the range of findings of Qureshi et al. [8] in Aseel chicken.

### 4.2. Feed Efficiency in Laying Phase

The mean ( $\pm$ S.E.) weekly and cumulative feed efficiency per dozen eggs and per kg egg mass of the Native chicken variety maintained at CPPM, Hosur from 21 to 52 weeks and is presented in Table 2 and Table 3, respectively. The feed efficiency per dozen eggs ranged between 6.5 $\pm$ 0.28 and 4.6 $\pm$ 0.14 from the 30<sup>th</sup> week to the 52<sup>nd</sup> week of age. Similarly, the feed efficiency per kg egg mass ranged between 12.1 $\pm$ 0.68 and 7.4 $\pm$ 0.20 from the 30<sup>th</sup> week to the 52<sup>nd</sup> week of age.

**Table 1.** Mean ( $\pm$ S.E.) body weight (g) of Native chicken variety

Age	Male (n)	Female (n)
21 <sup>st</sup> week	1881.0 $\pm$ 78.09 (47)	1346.02 $\pm$ 16.16 (126)
22 <sup>nd</sup> week	2097.0 $\pm$ 27.83 (39)	1415.06 $\pm$ 16.71 (102)
23 <sup>rd</sup> week	2179.2 $\pm$ 32.50 (37)	1475.08 $\pm$ 16.70 (114)
24 <sup>th</sup> week	2269.9 $\pm$ 25.79 (27)	1527.36 $\pm$ 13.88 (106)
25 <sup>th</sup> week	2319.7 $\pm$ 23.08 (32)	1571.55 $\pm$ 16.34 (118)
26 <sup>th</sup> week	2349.1 $\pm$ 24.78 (36)	1576.04 $\pm$ 13.59 (118)
27 <sup>th</sup> week	2417.8 $\pm$ 15.37 (31)	1604.22 $\pm$ 12.86 (97)
28 <sup>th</sup> week	2421.0 $\pm$ 24.91(38)	1606.26 $\pm$ 12.02 (110)
29 <sup>th</sup> week	2426.6 $\pm$ 96.36 (27)	1641.61 $\pm$ 14.81 (72)
30 <sup>th</sup> week	2434.0 $\pm$ 19.87 (30)	1662.11 $\pm$ 14.72 (99)
31 <sup>st</sup> week	2475.2 $\pm$ 16.98 (33)	1670.39 $\pm$ 11.44 (111)
32 <sup>nd</sup> week	2481.6 $\pm$ 73.82 (36)	1676.36 $\pm$ 12.23 (115)
33 <sup>rd</sup> week	2494.1 $\pm$ 16.61 (32)	1690.54 $\pm$ 12.37 (123)
34 <sup>th</sup> week	2516.2 $\pm$ 14.27 (33)	1697.85 $\pm$ 13.57 (114)
35 <sup>th</sup> week	2529.0 $\pm$ 16.76 (35)	1706.60 $\pm$ 15.94 (114)
36 <sup>th</sup> week	2539.7 $\pm$ 20.75 (37)	1707.34 $\pm$ 13.42 (123)
37 <sup>th</sup> week	2546.4 $\pm$ 16.81 (34)	1720.45 $\pm$ 11.32 (103)
38 <sup>th</sup> week	2551.9 $\pm$ 26.10(35)	1720.05 $\pm$ 11.63 (122)
39 <sup>th</sup> week	2557.2 $\pm$ 16.96 (33)	1721.78 $\pm$ 16.09 (103)
40 <sup>th</sup> week	2570.3 $\pm$ 15.34 (59)	1726.18 $\pm$ 15.01 (440)
41 <sup>st</sup> week	2572.4 $\pm$ 17.93 (35)	1738.49 $\pm$ 20.25 (121)
42 <sup>nd</sup> week	2577.4 $\pm$ 23.40 (37)	1753.28 $\pm$ 11.92 (112)
43 <sup>rd</sup> week	2581.1 $\pm$ 15.56 (33)	1757.69 $\pm$ 12.04 (118)
44 <sup>th</sup> week	2584.1 $\pm$ 20.65 (36)	1762.64 $\pm$ 13.93 (103)
45 <sup>th</sup> week	2589.7 $\pm$ 14.57 (31)	1776.88 $\pm$ 17.02 (122)
46 <sup>th</sup> week	2595.2 $\pm$ 19.69 (37)	1789.90 $\pm$ 12.20 (101)
47 <sup>th</sup> week	2601.5 $\pm$ 23.27 (33)	1796.54 $\pm$ 16.08 (107)
48 <sup>th</sup> week	2630.1 $\pm$ 20.10 (37)	1814.88 $\pm$ 10.22 (116)
49 <sup>th</sup> week	2646.0 $\pm$ 13.21 (34)	1850.96 $\pm$ 19.62 (114)
50 <sup>th</sup> week	2674.4 $\pm$ 19.37 (37)	1868.69 $\pm$ 11.29 (107)
51 <sup>st</sup> week	2686.2 $\pm$ 20.39 (34)	1881.05 $\pm$ 10.55 (118)
52 <sup>nd</sup> week	2709.1 $\pm$ 7.21(59)	1883.43 $\pm$ 8.04 (437)

(n)- Number in parentheses indicate the number of observations

**Table 2.** Mean ( $\pm$ S.E.) feed efficiency (per dozen of egg) of Native chicken variety

Age	Feed efficiency per dozen egg (n=4)	
	Weekly	Cumulative
24 <sup>th</sup> week	0.0 $\pm$ 0.00	0.0 $\pm$ 0.00
25 <sup>th</sup> week	9.2 $\pm$ 0.45	31.5 $\pm$ 3.87
26 <sup>th</sup> week	5.0 $\pm$ 0.19	16.2 $\pm$ 1.18
27 <sup>th</sup> week	3.9 $\pm$ 0.13	11.0 $\pm$ 0.50
28 <sup>th</sup> week	3.7 $\pm$ 0.19	8.7 $\pm$ 0.37
29 <sup>th</sup> week	3.4 $\pm$ 0.16	7.4 $\pm$ 0.30
30 <sup>th</sup> week	3.2 $\pm$ 0.17	6.5 $\pm$ 0.28
31 <sup>st</sup> week	3.3 $\pm$ 0.04	6.0 $\pm$ 0.21
32 <sup>nd</sup> week	3.7 $\pm$ 0.18	5.7 $\pm$ 0.20
33 <sup>rd</sup> week	3.7 $\pm$ 0.17	5.4 $\pm$ 0.20
34 <sup>th</sup> week	3.7 $\pm$ 0.14	5.3 $\pm$ 0.19
35 <sup>th</sup> week	3.8 $\pm$ 0.15	5.1 $\pm$ 0.19
36 <sup>th</sup> week	3.8 $\pm$ 0.16	5.0 $\pm$ 0.18
37 <sup>th</sup> week	3.8 $\pm$ 0.16	4.9 $\pm$ 0.18
38 <sup>th</sup> week	3.9 $\pm$ 0.15	4.9 $\pm$ 0.18
39 <sup>th</sup> week	4.0 $\pm$ 0.11	4.8 $\pm$ 0.17
40 <sup>th</sup> week	4.0 $\pm$ 0.10	4.7 $\pm$ 0.17
41 <sup>st</sup> week	4.0 $\pm$ 0.11	4.7 $\pm$ 0.16
42 <sup>nd</sup> week	4.1 $\pm$ 0.12	4.7 $\pm$ 0.16
43 <sup>rd</sup> week	4.1 $\pm$ 0.09	4.6 $\pm$ 0.16
44 <sup>th</sup> week	4.2 $\pm$ 0.08	4.6 $\pm$ 0.15
45 <sup>th</sup> week	4.2 $\pm$ 0.10	4.6 $\pm$ 0.15
46 <sup>th</sup> week	4.2 $\pm$ 0.12	4.6 $\pm$ 0.15
47 <sup>th</sup> week	4.3 $\pm$ 0.10	4.6 $\pm$ 0.15
48 <sup>th</sup> week	4.4 $\pm$ 0.13	4.6 $\pm$ 0.14
49 <sup>th</sup> week	4.5 $\pm$ 0.13	4.6 $\pm$ 0.14
50 <sup>th</sup> week	4.6 $\pm$ 0.11	4.6 $\pm$ 0.14
51 <sup>st</sup> week	4.7 $\pm$ 0.07	4.6 $\pm$ 0.14
52 <sup>nd</sup> week	5.2 $\pm$ 0.30	4.6 $\pm$ 0.14

n - Number of observations from four replicates

**Table 3.** Mean ( $\pm$ S.E.) feed efficiency (kg/kg) of native chicken variety

Age	Feed efficiency per kg egg mass (n=4)	
	Weekly	Cumulative
24 <sup>th</sup> week	0.0 $\pm$ 0.00	0.0 $\pm$ 0.00
25 <sup>th</sup> week	20.0 $\pm$ 1.84	66.7 $\pm$ 10.03
26 <sup>th</sup> week	10.2 $\pm$ 0.55	32.9 $\pm$ 2.95
27 <sup>th</sup> week	7.8 $\pm$ 0.27	22.0 $\pm$ 1.42
28 <sup>th</sup> week	7.1 $\pm$ 0.40	16.9 $\pm$ 0.98
29 <sup>th</sup> week	6.3 $\pm$ 0.35	13.8 $\pm$ 0.73
30 <sup>th</sup> week	6.0 $\pm$ 0.38	12.1 $\pm$ 0.68
31 <sup>st</sup> week	6.1 $\pm$ 0.11	11.0 $\pm$ 0.52
32 <sup>nd</sup> week	6.3 $\pm$ 0.32	9.8 $\pm$ 0.39
33 <sup>rd</sup> week	6.4 $\pm$ 0.31	9.4 $\pm$ 0.38
34 <sup>th</sup> week	6.4 $\pm$ 0.22	9.0 $\pm$ 0.34
35 <sup>th</sup> week	6.4 $\pm$ 0.25	8.8 $\pm$ 0.32
36 <sup>th</sup> week	6.4 $\pm$ 0.25	8.5 $\pm$ 0.31
37 <sup>th</sup> week	6.5 $\pm$ 0.26	8.4 $\pm$ 0.31
38 <sup>th</sup> week	6.6 $\pm$ 0.24	8.3 $\pm$ 0.30
39 <sup>th</sup> week	6.8 $\pm$ 0.17	8.2 $\pm$ 0.29
40 <sup>th</sup> week	6.8 $\pm$ 0.15	8.1 $\pm$ 0.28
41 <sup>st</sup> week	6.8 $\pm$ 0.16	8.0 $\pm$ 0.28
42 <sup>nd</sup> week	6.9 $\pm$ 0.19	7.9 $\pm$ 0.27
43 <sup>rd</sup> week	7.1 $\pm$ 0.13	7.9 $\pm$ 0.26
44 <sup>th</sup> week	7.1 $\pm$ 0.13	7.9 $\pm$ 0.26
45 <sup>th</sup> week	7.0 $\pm$ 0.16	7.7 $\pm$ 0.26
46 <sup>th</sup> week	7.0 $\pm$ 0.19	7.5 $\pm$ 0.26
47 <sup>th</sup> week	7.0 $\pm$ 0.16	7.4 $\pm$ 0.26
48 <sup>th</sup> week	7.1 $\pm$ 0.23	7.4 $\pm$ 0.25
49 <sup>th</sup> week	7.3 $\pm$ 0.21	7.4 $\pm$ 0.25
50 <sup>th</sup> week	7.4 $\pm$ 0.15	7.4 $\pm$ 0.24
51 <sup>st</sup> week	7.5 $\pm$ 0.10	7.4 $\pm$ 0.20
52 <sup>nd</sup> week	8.4 $\pm$ 0.45	7.4 $\pm$ 0.20

n - Number of observations from four replicates.

The feed efficiency per dozen eggs observed in the present study is better than native chicken variety of Mysore division of Karnataka [9], in native chicken variety of Bangalore division of Karnataka [10], native chicken of Tiruvannamalai [11] and native chicken variety of Belagaum division of Karnataka [5] and the feed per kg of egg mass is better than native chicken in Tiruvannamalai was observed by Balamurugan et al. [11].

### 4.3. Age at Sexual Maturity / Age at First Egg

The age at sexual maturity / age at first egg of the Native chicken variety maintained at CPPM, Hosur in the present study was recorded as 149 days of age. The population of the Native chicken variety attained 5 per cent hen day egg

production at 165 days of age.

The age at sexual maturity of the Native chicken variety observed in the study coincides with Miri chicken in Umiam [12], Aseel chicken in Bangladesh [13, 14] and TANUVAS Aseel chicken [15]. The age at sexual maturity is earlier than Aseel chicken [12], native chicken in Andhra Pradesh [16] and Aseel chicken in Haryana [17].

### 4.4. Body Weight at Sexual Maturity

The mean ( $\pm$ S.E.) body weight of the female sex of the Native chicken variety maintained at CPPM, Hosur in the present study at sexual maturity was observed as  $1438 \pm 14.06$  g.

**Table 4.** Mean ( $\pm$ S.E.) Reproductive performance of Native chicken

Age	Egg weight in gram (n)	HDEP in per cent	HHHEP in No.	HHHEP in No.
21 <sup>st</sup> week	0.00 $\pm$ 0.00	0.0 $\pm$ 0.00	0.0 $\pm$ 0.00	0.0 $\pm$ 0.00
22 <sup>nd</sup> week	33.6 $\pm$ 2.89 (7)	0.2 $\pm$ 0.07	0.0 $\pm$ 0.00	0.0 $\pm$ 0.00
23 <sup>rd</sup> week	38.3 $\pm$ 2.80 (34)	1.3 $\pm$ 0.28	0.1 $\pm$ 0.01	0.0 $\pm$ 0.00
24 <sup>th</sup> week	38.8 $\pm$ 1.42 (123)	5.1 $\pm$ 0.54	0.3 $\pm$ 0.04	0.0 $\pm$ 0.00
25 <sup>th</sup> week	39.7 $\pm$ 2.03 (94)	15.4 $\pm$ 0.89	1.0 $\pm$ 0.08	0.0 $\pm$ 0.00
26 <sup>th</sup> week	41.3 $\pm$ 1.01 (140)	28.7 $\pm$ 0.90	2.6 $\pm$ 0.13	0.0 $\pm$ 0.00
27 <sup>th</sup> week	42.0 $\pm$ 1.01 (140)	36.7 $\pm$ 0.58	5.0 $\pm$ 0.17	0.5 $\pm$ 0.05
28 <sup>th</sup> week	43.3 $\pm$ 2.64 (69)	39.7 $\pm$ 0.91	7.7 $\pm$ 0.18	1.5 $\pm$ 0.06
29 <sup>th</sup> week	44.4 $\pm$ 2.55 (78)	43.4 $\pm$ 0.92	10.6 $\pm$ 0.22	2.6 $\pm$ 0.08
30 <sup>th</sup> week	44.7 $\pm$ 2.73 (69)	45.3 $\pm$ 0.88	13.6 $\pm$ 0.25	4.1 $\pm$ 0.12
31 <sup>st</sup> week	45.1 $\pm$ 2.03 (107)	43.8 $\pm$ 0.70	16.6 $\pm$ 0.26	5.9 $\pm$ 0.16
32 <sup>nd</sup> week	46.0 $\pm$ 2.42 (90)	40.1 $\pm$ 0.63	19.5 $\pm$ 0.27	7.8 $\pm$ 0.17
33 <sup>rd</sup> week	46.6 $\pm$ 2.24 (100)	39.3 $\pm$ 0.61	22.2 $\pm$ 0.29	9.8 $\pm$ 0.21
34 <sup>th</sup> week	47.6 $\pm$ 2.73 (78)	39.0 $\pm$ 0.56	24.9 $\pm$ 0.31	12.1 $\pm$ 0.24
35 <sup>th</sup> week	47.8 $\pm$ 2.55 (88)	38.3 $\pm$ 0.43	27.5 $\pm$ 0.34	14.6 $\pm$ 0.26
36 <sup>th</sup> week	48.1 $\pm$ 2.57 (88)	37.7 $\pm$ 0.50	30.1 $\pm$ 0.36	17.0 $\pm$ 0.28
37 <sup>th</sup> week	48.5 $\pm$ 2.57 (89)	37.4 $\pm$ 0.52	32.6 $\pm$ 0.39	19.4 $\pm$ 0.30
38 <sup>th</sup> week	48.7 $\pm$ 2.40 (97)	37.0 $\pm$ 0.53	35.2 $\pm$ 0.42	21.9 $\pm$ 0.32
39 <sup>th</sup> week	49.0 $\pm$ 2.65 (86)	35.9 $\pm$ 0.32	37.6 $\pm$ 0.44	24.2 $\pm$ 0.34
40 <sup>th</sup> week	49.0 $\pm$ 1.79 (122)	35.8 $\pm$ 0.52	40.0 $\pm$ 0.45	26.6 $\pm$ 0.35
41 <sup>st</sup> week	49.1 $\pm$ 1.80 (122)	35.7 $\pm$ 0.39	42.4 $\pm$ 0.47	28.9 $\pm$ 0.37
42 <sup>nd</sup> week	49.2 $\pm$ 1.89 (119)	35.0 $\pm$ 0.37	44.8 $\pm$ 0.48	31.2 $\pm$ 0.38
43 <sup>rd</sup> week	49.3 $\pm$ 2.40 (99)	34.4 $\pm$ 0.44	47.1 $\pm$ 0.50	33.4 $\pm$ 0.39
44 <sup>th</sup> week	49.4 $\pm$ 2.87 (76)	34.1 $\pm$ 0.34	49.4 $\pm$ 0.51	35.7 $\pm$ 0.41
45 <sup>th</sup> week	50.2 $\pm$ 2.76 (84)	33.8 $\pm$ 0.53	51.7 $\pm$ 0.52	37.9 $\pm$ 0.42
46 <sup>th</sup> week	50.9 $\pm$ 2.41 (102)	33.6 $\pm$ 0.46	54.0 $\pm$ 0.54	40.2 $\pm$ 0.43
47 <sup>th</sup> week	51.1 $\pm$ 1.79 (125)	33.2 $\pm$ 0.52	56.2 $\pm$ 0.54	42.3 $\pm$ 0.44
48 <sup>th</sup> week	51.4 $\pm$ 2.28 (108)	32.4 $\pm$ 0.43	58.5 $\pm$ 0.56	44.5 $\pm$ 0.45
49 <sup>th</sup> week	51.4 $\pm$ 1.66 (129)	31.7 $\pm$ 0.51	60.6 $\pm$ 0.57	46.6 $\pm$ 0.47
50 <sup>th</sup> week	51.5 $\pm$ 1.39 (136)	31.0 $\pm$ 0.36	62.7 $\pm$ 0.58	48.7 $\pm$ 0.48
51 <sup>st</sup> week	51.6 $\pm$ 1.95 (120)	30.2 $\pm$ 0.47	64.8 $\pm$ 0.58	50.7 $\pm$ 0.48
52 <sup>nd</sup> week	51.7 $\pm$ 1.86 (123)	27.2 $\pm$ 0.66	66.6 $\pm$ 0.60	52.6 $\pm$ 0.49

(n) - Number in parentheses indicate the number of observations  
HDEP- Hen day egg production  
HHHEP- Hen housed egg production  
HHHEP- Hen housed hatching egg production

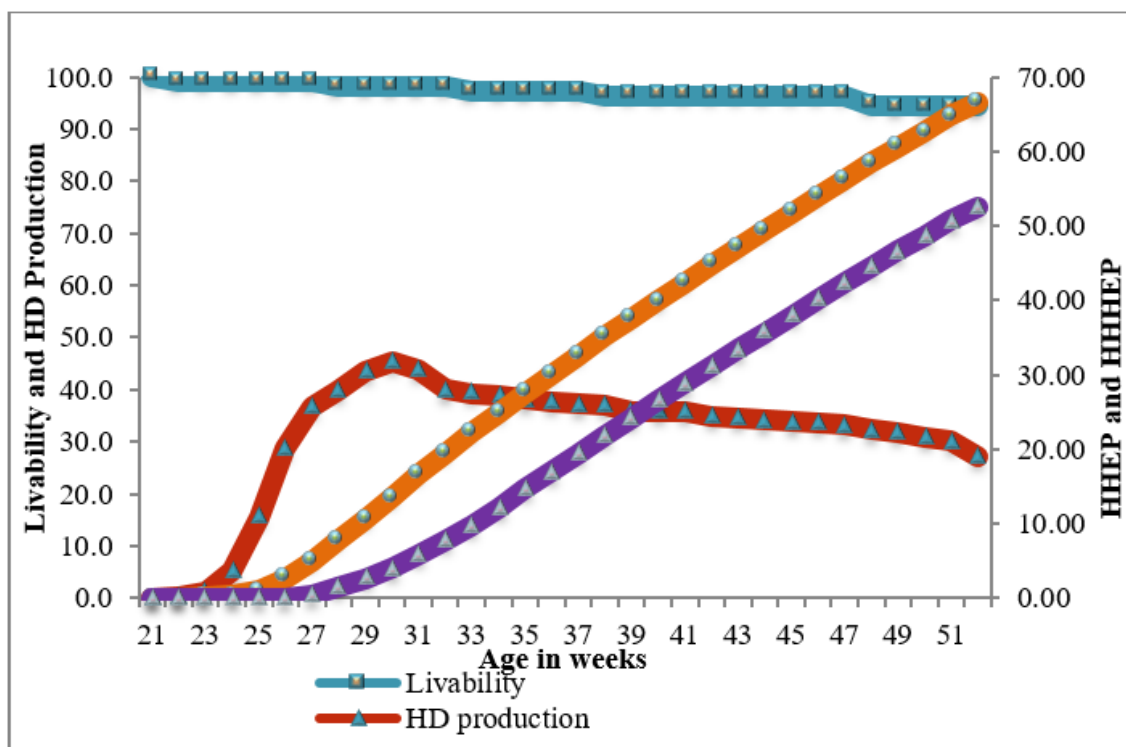


Figure 1. Reproduction performances of Native chicken

#### 4.5. Egg Production

The mean ( $\pm$ S.E.) hen day egg production (HDEP), hen housed egg production (HHEP) and hen housed hatching egg production (HHHEP) of the Native chicken variety maintained at CPPM, Hosur from 21 to 52 weeks is presented in Table 4. The graphical representation of HD, HHEP and HHHEP of the Native chicken variety from 21 to 52 weeks of age is depicted in Figure 1.

The result revealed that the HDEP reached peak production at 30<sup>th</sup> week of age with 45.3 per cent. The HDEP between 37 and 45 per cent was maintained between 27<sup>th</sup> and 38<sup>th</sup> week of age and HDEP between 30 and 37 per cent was maintained between 39<sup>th</sup> and 51<sup>st</sup> week of age. The HHEP (No.) of the Native chicken variety at 40<sup>th</sup> week and 52<sup>nd</sup> week of age was  $40.0 \pm 0.45$  and  $66.6 \pm 0.60$ , respectively. The result indicates that the variety showed good post peak sustainability of egg production. The HHHEP (No.) of the Native chicken variety at 40<sup>th</sup> week and 52<sup>nd</sup> week of age was  $26.6 \pm 0.35$  and  $52.6 \pm 0.49$ , respectively. The result on HHHEP indicates that the variety produced noticeable number of HHHEP suitable for hatching egg production and subsequent chick production.

The observed egg production in the present study is higher than the egg production observed in native chicken of Mysore division of Karnataka [9], in native chicken of Bangalore division of Karnataka [10], in Aseel chicken at 40<sup>th</sup> week in Hyderabad [18], in native chicken of Belgaum division of Karnataka [5], native chicken in Gulbarga

division of Karnataka [19]. The egg production however is comparable with egg production of Aseel chicken at Hyderabad [12], Aseel chicken at 40<sup>th</sup> week of age [14], Aseel chicken at 52<sup>nd</sup> week [18] and in TANUVAS Aseel chicken [20].

The observation of the study indicates that the variety is comparable with Aseel or other native chicken varieties of India in egg production and hence, the variety could be used under backyard rearing for production of premium price native chicken eggs.

#### 4.6. Fertility and Hatchability

The mean ( $\pm$ S.E.) fertility, hatchability (Total egg set, Hatching egg set) and Chicks per parent of the Native chicken variety maintained at CPPM, Hosur from 21 to 52 weeks is presented in Table 5. The graphical representation of fertility, hatchability and chick per parent of the Native chicken variety from 21 to 52 weeks of age is depicted in Figure 2.

The result revealed excellent fertility (per cent) in the Native chicken variety which had ranged between  $93.1 \pm 0.21$  on 52<sup>nd</sup> week and  $95.9 \pm 0.32$  at 34<sup>th</sup> and 35<sup>th</sup> week with an average of  $94.68 \pm 0.17$  per cent. Similarly, the recorded hatchability (TES) in the present study ranged between  $82.8 \pm 0.55$  on 28<sup>th</sup> week and  $88.1 \pm 0.07$  at 34<sup>th</sup> week with an average hatchability of  $85.70 \pm 0.39$  per cent on TES,  $89.87 \pm 0.37$  per cent on FES. The study recorded  $25.8 \pm 1.03$  and  $45.9 \pm 1.44$  chicks per dam at 40<sup>th</sup> and 52<sup>nd</sup> weeks of age, respectively.

**Table 5.** Mean ( $\pm$ S.E.) Hatchability performance of Native chicken

Age	Fertility (per cent)	Hatchability (per cent)		Chick per parent
		TES	FES	
26 <sup>th</sup> week	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00
27 <sup>th</sup> week	94.0 $\pm$ 0.38	79.9 $\pm$ 0.56	83.1 $\pm$ 0.76	0.7 $\pm$ 0.03
28 <sup>th</sup> week	94.1 $\pm$ 0.14	82.8 $\pm$ 0.55	86.3 $\pm$ 0.32	1.5 $\pm$ 0.02
29 <sup>th</sup> week	94.5 $\pm$ 0.18	83.8 $\pm$ 0.09	87.3 $\pm$ 0.18	2.6 $\pm$ 0.10
30 <sup>th</sup> week	94.7 $\pm$ 0.10	84.4 $\pm$ 0.47	88.5 $\pm$ 0.44	4.0 $\pm$ 0.29
31 <sup>st</sup> week	94.9 $\pm$ 0.09	86.0 $\pm$ 0.34	89.8 $\pm$ 0.23	5.6 $\pm$ 0.36
32 <sup>nd</sup> week	95.4 $\pm$ 0.10	86.6 $\pm$ 0.80	90.4 $\pm$ 0.56	7.2 $\pm$ 0.45
33 <sup>rd</sup> week	95.6 $\pm$ 0.26	87.6 $\pm$ 0.60	91.3 $\pm$ 0.27	9.1 $\pm$ 0.55
34 <sup>th</sup> week	95.9 $\pm$ 0.32	88.1 $\pm$ 0.07	91.6 $\pm$ 0.37	11.3 $\pm$ 0.61
35 <sup>th</sup> week	95.9 $\pm$ 0.32	87.9 $\pm$ 0.24	91.4 $\pm$ 0.30	13.4 $\pm$ 0.68
36 <sup>th</sup> week	95.8 $\pm$ 0.33	87.4 $\pm$ 0.27	90.8 $\pm$ 0.24	15.5 $\pm$ 0.74
37 <sup>th</sup> week	95.5 $\pm$ 0.33	87.4 $\pm$ 0.29	91.1 $\pm$ 0.23	17.6 $\pm$ 0.82
38 <sup>th</sup> week	95.6 $\pm$ 0.33	87.7 $\pm$ 0.25	91.0 $\pm$ 0.26	19.7 $\pm$ 0.89
39 <sup>th</sup> week	95.4 $\pm$ 0.46	87.0 $\pm$ 0.22	90.8 $\pm$ 0.61	21.8 $\pm$ 0.94
40 <sup>th</sup> week	95.2 $\pm$ 0.50	87.4 $\pm$ 0.05	91.1 $\pm$ 0.54	23.8 $\pm$ 0.99
41 <sup>st</sup> week	95.2 $\pm$ 0.73	87.0 $\pm$ 0.27	90.9 $\pm$ 0.64	25.8 $\pm$ 1.03
42 <sup>nd</sup> week	95.1 $\pm$ 0.71	86.7 $\pm$ 0.17	90.7 $\pm$ 0.68	27.8 $\pm$ 1.08
43 <sup>rd</sup> week	94.8 $\pm$ 0.63	86.4 $\pm$ 0.12	90.8 $\pm$ 0.69	29.8 $\pm$ 1.10
44 <sup>th</sup> week	94.7 $\pm$ 0.66	86.3 $\pm$ 0.13	90.7 $\pm$ 0.87	31.7 $\pm$ 1.13
45 <sup>th</sup> week	94.6 $\pm$ 0.67	86.3 $\pm$ 0.25	90.6 $\pm$ 0.70	33.6 $\pm$ 1.17
46 <sup>th</sup> week	94.3 $\pm$ 0.63	86.1 $\pm$ 0.17	90.5 $\pm$ 0.69	35.5 $\pm$ 1.22
47 <sup>th</sup> week	93.8 $\pm$ 0.56	85.2 $\pm$ 0.06	90.5 $\pm$ 0.61	37.4 $\pm$ 1.25
48 <sup>th</sup> week	93.6 $\pm$ 0.34	84.4 $\pm$ 0.12	89.9 $\pm$ 0.34	39.2 $\pm$ 1.29
49 <sup>th</sup> week	93.4 $\pm$ 0.43	84.7 $\pm$ 0.32	89.7 $\pm$ 0.41	41.0 $\pm$ 1.33
50 <sup>th</sup> week	93.3 $\pm$ 0.59	83.8 $\pm$ 0.38	89.5 $\pm$ 0.51	42.7 $\pm$ 1.35
51 <sup>st</sup> week	93.4 $\pm$ 0.45	83.8 $\pm$ 0.44	89.4 $\pm$ 0.52	44.4 $\pm$ 1.36
52 <sup>nd</sup> week	93.1 $\pm$ 0.21	83.3 $\pm$ 0.20	88.9 $\pm$ 0.16	45.9 $\pm$ 1.44
Average	94.68 $\pm$ 0.17	85.70 $\pm$ 0.39	89.87 $\pm$ 0.37	45.9 $\pm$ 1.44

n - Number of observations from four replicates

The observed fertility and hatchability were higher than the observed fertility and hatchability of Aseel chicken in Hyderabad [12], Aseel chicken in Bangladesh [13], Aseel chicken in Hyderabad [17], TANUVAS Aseel chicken [20, 21], Aseel chicken at Faizabad [22] and improved Aseel and Aseel at Hyderabad [23] and comparable with fertility

and hatchability of Non-descript chicken in Bangladesh [24] and Kaunayen chicken in Manipur [25].

The observation of the study indicates that the Native chicken variety could be utilized for production of germplasm by the farming community.

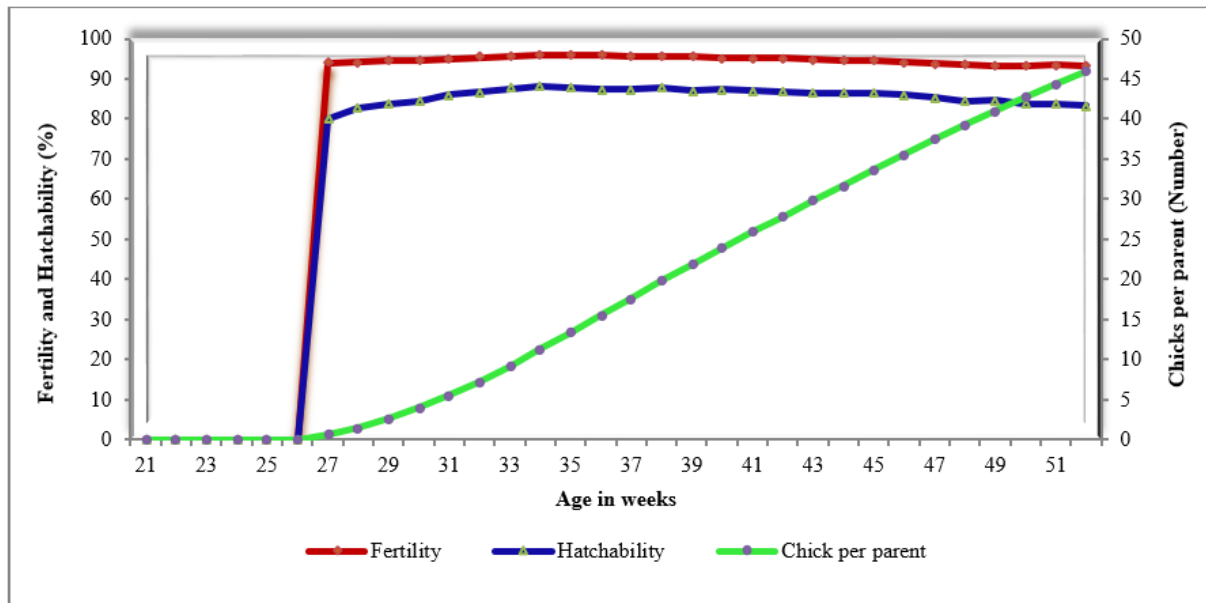


Figure 2. Hatchability performances of the Native chicken variety

## 5. Summary and Conclusions

The result of reproduction traits revealed that the age at sexual maturity was 149 days of age and the result on reproduction traits revealed hen housed egg production (No.) of  $40.0 \pm 0.45$  and  $66.6 \pm 0.60$  up to 40<sup>th</sup> and 52<sup>nd</sup> week, respectively. The result also revealed that the Native chicken variety had fertility per cent ranged between  $93.1 \pm 0.21$  and  $95.9 \pm 0.32$  with an average of 94.68 per cent. Similarly, the recorded hatchability (TES) in the present study ranged between  $82.8 \pm 0.55$  and  $88.1 \pm 0.07$  with an average hatchability of 85.70 percent.

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