

STUDY ON THE GROWTH PERFORMANCE OF THREE INDIGENOUS CHICKEN BREEDS IN RAMANATHAPURAM DISTRICT

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ABSTRACT

The study on the assessment of body weight gain in three indigenous chicken breeds viz., Aseel, Kadaknath and Siruvidai chicken were conducted in five poultry farms of Vendhoni village, Ramanathapuram district. The body weight gain both between the breeds and farms were statistically analysed for a period of 20 weeks. All the five selected farms were distributed with day old (0 Day) Aseel, Kadaknath and Siruvidai chicks (Each 10 Nos) and about 50 kg each of commercial chick mash (Nutrikraft®). The body weight gain was recorded and assessed every week until 20 weeks. Among the three breeds analysed, a highly significant difference ($P \leq 0.01$) existed with Aseel breed having higher body weight gain (1.441 kg) followed by Kadaknath (0.887 kg) and Siruvidai (0.737 kg) at 20 weeks of age. The weight gain recorded during fourth and eighth weeks of age showed a highly significant ($P \leq 0.01$) change among all the three breeds. The weight gain of Kadaknath and Siruvidai were highly significant ($P \leq 0.01$) during 12th and 16th week of age. Whereas the weight gain in Aseel was found to be non-significant ($P \geq 0.05$) in the same period of study. During 20th week, Siruvidai showed highly significant ($P \leq 0.01$) change in weight gain and Aseel and Kadaknath showed non-significant ($P \geq 0.05$) change. Overall, Aseel had higher body weight gain than Kadaknath and Siruvidai breeds. All the three breeds were found to be well adapted to the hot and humid climatic condition of this district.

Key words: Aseel, Kadaknath, Siruvidai, Body weight gain, Backyard system

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INTRODUCTION

Aseel, *Kadaknath* and *Siravidai* are the three important indigenous breeds of chicken in India. The *Aseel* breed is known for its strength, majestic gait and fighting qualities (Panda and Mahapatra, 1989). The pure breeds of *Aseel* are found in the state of Andhra Pradesh and in some areas of Rajasthan and Madhya Pradesh. *Aseel* is characterized by its hardiness and ability to thrive under adverse climatic conditions. Its meat is considered to have a desirable taste and flavour (Haunshi *et al.*, 2011). The other breed, *Kadaknath* also called as Karunkozhi in Tamil, is known for its black-colored meat. It is being reared in Jhabua and Dhar districts of Madhya Pradesh and in the adjoining areas of the states of Gujarat and Rajasthan. Although the meat of this breed has an unattractive appearance, it has a delicious flavour (Panda and Mahapatra, 1989). In spite of its unique characteristic features, the *Kadaknath* breed has been neglected due to 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 flavour of eggs and meat.

Siravidai chicken also known for their adaptive superiority in terms of their resistance to endemic diseases and other harsh environmental conditions (Nwakpu *et al.*, 1999). The non-descript ecotype of Tamil Nadu state of India is found to be conducive to this breed and a lot of interest arose among

the consumers and farmers towards this variety of chicken in the recent years and small-scale farmers involved in breeding of this germplasm (Jamima *et al.*, 2020).

A high level of demand exists for the products of these three native chickens. However, maintaining the genetic purity of these breeds in the backyard or rural farming system is found to be hard and many of a time leading to a dilution or a complete replacement of the native germplasm occurred and are causing a threat to their existence (Singh, 2009).

In order to generate a baseline value on the production parameters and to analyse the adaptive nature of these three breeds *viz.* *Aseel*, *Kadaknath* and *Siravidai* in Ramanathapuram district a hot and humid tropic region of Tamil Nadu State, this OFT was conducted in five farms in Vendhoni village near Paramakudi town of Ramanathapuram district.

MATERIALS AND METHODS

Five poultry farms (Farm 1 to 5) run by experienced and interested women farmers in Vendhoni village, Paramakudi Taluk, Ramanathapuram district were selected as the site to conduct this On-Farm Trial. Day old chicks (DOC) of *Aseel*, *Kadaknath* and *Siravidai* chicken formed the materials for this study. Each selected farmer was distributed with 10 DOC of each breed. Chicks of *Aseel* and *Kadaknath* were procured from Regional Research and Educational Centre (RREC), Pudukottai and 50 *Siravidai* chicks were

Table 1. Body weight gain among the breed *Aseel*, *Kadaknath* and *Siravidai* chicken during the study period

Weight gain (in weeks)	<i>Aseel</i> (n=50)	<i>Kadaknath</i> (n=50)	<i>Siravidai</i> (n=50)
0**	0.035 ± 0.000 ^c	0.031 ± 0.000 ^b	0.028 ± 0.000 ^a
4**	0.149 ± 0.002 ^c	0.119 ± 0.002 ^b	0.055 ± 0.000 ^a
8**	0.444 ± 0.008 ^c	0.331 ± 0.008 ^b	0.158 ± 0.002 ^a
12**	0.573 ± 0.006 ^c	0.410 ± 0.008 ^b	0.271 ± 0.003 ^a
16**	1.135 ± 0.004 ^c	0.682 ± 0.004 ^b	0.564 ± 0.003 ^a
20**	1.441 ± 0.009 ^c	0.887 ± 0.005 ^b	0.737 ± 0.006 ^a

NS = $P \geq 0.05$; * $P \leq 0.05$; ** $P \leq 0.01$

^{a,b,c} Means within same row bearing different superscripts are highly significantly different at $P \leq 0.01$

Table 2. Body weight gain in different farm among the individual breed during the study period

Weight gain (in weeks)		Farm 1 (n=10)	Farm 2 (n=10)	Farm 3 (n=10)	Farm 4 (n=10)	Farm 5 (n=10)
0	<i>Aseel</i> ^{NS}	0.034 ± 0.000 ^a	0.035 ± 0.001 ^a	0.035 ± 0.001 ^a	0.034 ± 0.001 ^a	0.036 ± 0.001 ^a
	<i>Kadaknath</i> **	0.030 ± 0.001 ^a	0.030 ± 0.001 ^a	0.031 ± 0.001 ^a	0.030 ± 0.001 ^a	0.032 ± 0.001 ^a
	<i>Siravidai</i> **	0.027 ± 0.001 ^a	0.029 ± 0.001 ^a	0.029 ± 0.001 ^a	0.027 ± 0.001 ^a	0.029 ± 0.001 ^a
4	<i>Aseel</i> **	0.143 ± 0.002 ^{ab}	0.150 ± 0.003 ^{abc}	0.152 ± 0.005 ^{bc}	0.141 ± 0.003 ^a	0.158 ± 0.004 ^c
	<i>Kadaknath</i> **	0.111 ± 0.002 ^a	0.114 ± 0.004 ^a	0.116 ± 0.004 ^a	0.120 ± 0.004 ^a	0.134 ± 0.005 ^b
	<i>Siravidai</i> **	0.052 ± 0.001 ^{ab}	0.061 ± 0.002 ^c	0.056 ± 0.001 ^b	0.052 ± 0.001 ^a	0.054 ± 0.002 ^{ab}
8	<i>Aseel</i> ^{NS}	0.417 ± 0.014 ^a	0.441 ± 0.014 ^a	0.511 ± 0.016 ^a	0.433 ± 0.011 ^a	0.418 ± 0.013 ^a
	<i>Kadaknath</i> **	0.309 ± 0.009 ^a	0.321 ± 0.014 ^{ab}	0.385 ± 0.024 ^a	0.318 ± 0.014 ^c	0.324 ± 0.011 ^c
	<i>Siravidai</i> **	0.151 ± 0.007 ^a	0.165 ± 0.005 ^b	0.160 ± 0.003 ^a	0.155 ± 0.006 ^a	0.157 ± 0.004 ^a
12	<i>Aseel</i> ^{NS}	0.564 ± 0.007 ^a	0.578 ± 0.020 ^a	0.582 ± 0.014 ^a	0.549 ± 0.008 ^a	0.595 ± 0.005 ^a
	<i>Kadaknath</i> **	0.360 ± 0.005 ^a	0.387 ± 0.015 ^{ab}	0.422 ± 0.028 ^{bc}	0.433 ± 0.005 ^c	0.448 ± 0.010 ^c
	<i>Siravidai</i> **	0.251 ± 0.007 ^a	0.289 ± 0.005 ^c	0.280 ± 0.005 ^{bc}	0.264 ± 0.006 ^{ab}	0.275 ± 0.005 ^{bc}
16	<i>Aseel</i> ^{NS}	1.127 ± 0.016 ^a	1.130 ± 0.009 ^a	1.148 ± 0.004 ^a	1.120 ± 0.005 ^a	1.153 ± 0.003 ^a
	<i>Kadaknath</i> **	0.656 ± 0.005 ^a	0.672 ± 0.007 ^{ab}	0.689 ± 0.005 ^a	0.694 ± 0.008 ^c	0.698 ± 0.007 ^c
	<i>Siravidai</i> **	0.550 ± 0.007 ^a	0.589 ± 0.002 ^b	0.564 ± 0.005 ^a	0.557 ± 0.008 ^a	0.560 ± 0.005 ^a
20	<i>Aseel</i> ^{NS}	1.436 ± 0.017 ^a	1.444 ± 0.029 ^a	1.450 ± 0.026 ^a	1.420 ± 0.009 ^a	1.454 ± 0.013 ^a
	<i>Kadaknath</i> ^{NS}	0.877 ± 0.006 ^a	0.880 ± 0.008 ^a	0.881 ± 0.010 ^a	0.896 ± 0.016 ^a	0.903 ± 0.014 ^a
	<i>Siravidai</i> **	0.682 ± 0.010 ^a	0.771 ± 0.009 ^c	0.753 ± 0.010 ^{bc}	0.736 ± 0.010 ^b	0.747 ± 0.010 ^{bc}

NS = $P \geq 0.05$; * $P \leq 0.05$; ** $P \leq 0.01$

^{a,b,c,ab,bc,abc} Means within same row bearing different superscripts are significantly different at $P \leq 0.05$

procured from a farmer of this centre located at Vendhoni village, Paramakudi. Along with the chicks the selected farmers were also distributed with 50 kg each of commercial chick mash (Nutrikraft®). The birds were maintained in deep litter with the area of 2 Sq.ft. per bird with ad libitum drinking water supply. No vaccinations, dewormer or supplements / feed additives were given to birds during the study period. Weight gain of birds was recorded on a weekly basis for 20 weeks. The data were statistically analysed and interpreted by standard statistical procedure (Snedecor and Cochran, 1994) using a computer programme (SPSS package).

RESULTS AND DISCUSSION

The body weight gain between the three breeds were compared and given in Table 1. The body weight gain of individual breeds (*Aseel*, *Kadakhnath* and *Siruvidai*) maintained in all the five farms were recorded and given in Table 2. Although little difference existed in the weight gain of birds maintained in different farms the overall significance between breeds were found to be the same. The findings showed a highly significant difference ($P \leq 0.01$) between the three breeds. During the study period of 20 weeks, the body weight gain was highest in *Aseel* breeds followed by *Kadakhnath* and *Siruvidai* breeds (Table 1).

In the present study, the weight gain recorded during fourth and eighth weeks of age showed a highly significant ($P \leq 0.01$) change among all the three breeds. The weight gain of *Kadakhnath* and *Siruvidai* were

highly significant ($P \leq 0.01$) during 12th and 16th week of age. Whereas the weight gain in *Aseel* was found to be non-significant ($P \geq 0.05$) in the same period of study. During 20th week, *Siruvidai* showed highly significant ($P \leq 0.01$) change in weight gain and *Aseel* and *Kadakhnath* showed non-significant ($P \geq 0.05$) change.

Aseel and *Kadakhnath* breed showed 1.441 ± 0.009 kg and 0.887 ± 0.005 kg respectively during 20th week of trial period. Dalal *et al.* (2019) conducted a similar study to assess the growth pattern in *Aseel* and *Kadakhnath* breeds in the agro-climatic conditions of northern India and reported a higher body weight gain in *Aseel* (1117.30 ± 22.68 g) than *Kadakhnath* (920.47 ± 11.20 g) breed. Haunshi *et al.* (2011) also reported a higher body weight gain of 1318.42 ± 22.24 in *Aseel* than that of 769.11 ± 12.41 g in *Kadakhnath* breed during 20th week age. Chatterjee *et al.* (2007) and Shanmathy *et al.* (2018) had also reported the same difference of weight gain among these two breeds.

Richard Churchil *et al.* (2018) reported a body weight of 1.4 kg and 1.05 kg in male and female respectively at the age of sexual maturity (24 weeks) in *Siruvidai* chicken. In the present study a body weight of 0.737 ± 0.006 kg was recorded during the 20th week of age.

CONCLUSION

Overall, the present study revealed that higher body weight gain could be achieved

in *Aseel* breed when compared to *Kadaknath* and *Siruvudai* breeds. All the three breeds showed a highly significant enhancement of body weight gain during 4th and 8th weeks of age. As age advances (12th to 20th week) the comparative weight gain in *Aseel* was found to be non-significant. The growth became non-significant in *Kadaknath* after 16 weeks of age. Whereas the gain in body weight in *Siruvudai* breed was found to be significant during the entire study period between 0 – 20th weeks of age. All the birds adapted well to the hot and humid conditions of Ramanathapuram district without any mortality.

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