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Pre-weaning growth performance of Black Bengal goat kids in an organized farm in Tripura

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Abstract

ICAR Research Complex for NEH Region, Tripura centre is maintaining a Black Bengal goat farm to cater the need of farmers and institute research. The data collected for 5 years regarding pre-weaning growth performance of kids and analysed. The birth rate of Black Bengal kids were recorded in institute goat farm, averaging 1.61 kids per doe and the prolificacy rate was 146.54%. The percentage of single birth was recorded as 27.87%, multiple births as 72.13.7% out of which 57.54% was twin, 13.43% was triplet and 1.16% was quadruplet. The overall birth and weaning weights of Black Bengal kids were 1.11 ± 0.06 kg and 4.82 ± 0.20 kg, respectively and pre-weaning average daily gain was 41.22 ± 3.15 gm. In the study it was found that the birth weight of male and female kids was 1.12 ± 0.07 kg and 1.07 ± 0.04 kg, respectively. Even though male kids recorded 4.46% higher body weight than female kids but, no significant difference was observed. Birth weight, weaning weight and pre-weaning daily gain of single, twin, triplet and quadruplets born kids were 1.14 ± 0.10 kg, 5.69 ± 0.44 kg and 50.56 ± 4.51 gm, 1.11 ± 0.05 kg, 5.38 ± 0.24 kg and 47.44 ± 3.53 gm, 1.09 ± 0.12 kg, 5.19 ± 0.37 kg and 45.55 ± 4.02 gm, 1.05 ± 0.11 kg, 4.87 ± 0.37 kg and 42.44 ± 5.02 gm, respectively. The birth weight, weaning weight and average daily gain of single birth were higher than that of twin, triplet and quadruplets born kids without significant difference among the births.

Keywords: Black Bengal, body weight, birth rate, goat, growth, pre-weaning

Introduction

The Tripura state with an area of 10,491.69 sq km and population 4.06 million is located in agro-climatic zone of humid Eastern Himalayan Region and situated between $22^{\circ}56'$ and $24^{\circ}32'$ N latitudes and between $90^{\circ}09'$ E and $92^{\circ}20'$ E longitudes with an average annual rainfall of 2100 mm. Animal husbandry and agriculture is backbone of the state economy that provides 51% of total workforce in the state. Livestock sector is an indispensable and integral part of agricultural system of the state because of only about 27% of total geographical area available for cultivation and rest 60% is high land (Chakrabarti *et al.*, 2022) ^[4]. According to 20th Livestock Census the goat population of India is 1488.85 lakh and in Tripura state it is 3.60 lakh comprising male 51,768 and female 3,08,436. Goat farming in Tripura is a very promising business as the market price of goat meat is Rs.1000 to Rs.1200 per kg. Nowadays goats rearing become a very profitable enterprise than other livestock farming. Goat meat is preferred by all sections of the society in the state and there is no religious taboo for consumption of goat meat. Goat converts the poor quality feed into valuable human food. Aboul-Naga *et al.*, (2012) ^[1] opined that high kid production is essential to meet the huge demand of goat meat in India as well as in other Asian countries. Geoclimatic condition of the state is different than the other Black Bengal goat rearing location of the country. In Tripura mostly Black Bengal goat is choice breed for best quality chevon production. ICAR Research Complex for NEH Region, Tripura Centre is maintaining a 50 plus Black Bengal goat herd under institute project. The goats are early maturing, dwarf, meat type and non-seasonal, prolific animals. But, there is very scanty information available from Tripura state regarding pre-weaning growth performance of Black Bengal goat kids. Considering the fact the present study was undertaken to find out the growth performance and mortality pattern of Black Bengal goat kids in an organized farm.

Materials and Methods

For the present study of growth performance of 190 Black Bengal goat kids from 0 to 90 days from birth to 3 month of age from January 2017 to December 2021 was considered. The standard weighing balance with 50 gm sensitivity was taken for measuring the weight of kids.

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The newly borne kids were reared with dams in kidding pens for 5 days after kidding. Dams were not allowed for grazing with herd. All kids suckled milk from their dams *ad libitum*. After attaining one month the kids started browsing green grass *ad libitum* and feeding concentrate mixture @10 gm per day and gradually increased up to 100 gm at 3 months of age. Every fortnightly weight of the individual kid was recorded and weaned them at 3 months of age. The recorded data analyzed as per the method of Snedecor and Cochran (1994) [13].

Results & Discussion

The birth of Black Bengal kids were recorded in institute goat farm, averaging 1.61 kids per doe and the prolificacy rate was 146.54%. The percentage of single birth was recorded as 27.87%, multiple births as 72.13.7% out of which 57.54% was twin, 13.43% was triplet and 1.16% was quadruplet (Table 1). Similar findings were reported by previous workers. Hassan *et al.* (2007) [5] in Bangladesh observed 56.3% and Pan *et al.* (2015) [9] observed 57.9% twins in Black Bengal goats. Aboul- Naga *et al.* (2012) [1] observed that twinning was more frequent (46.2%) in Egyptian Nubian goats which gave 82.9% multiple births. Usha and Kumaravelu (2020) [15] observed in Karunkannai kids 30.29% single birth, 58.29% was twins and 11.43% was triplets in Tamilnadu.

The overall birth and weaning weights of Black Bengal kids were 1.11 ± 0.06 kg and 4.82 ± 0.20 kg, respectively and pre-weaning average daily gain was 41.22 ± 3.15 gm. In the study it was found that the birth weight of male and female kids was 1.12 ± 0.07 kg and 1.07 ± 0.04 kg, respectively. Even though male kids recorded 4.46% higher body weight than female kids but, no significant difference was observed. Birth weight, weaning weight and pre-weaning daily gain of single, twin, triplet and quadruplets born kids were 1.14 ± 0.10 kg, 5.69 ± 0.44 kg and 50.56 ± 4.51 gm, 1.11 ± 0.05 kg, 5.38 ± 0.24 kg and 47.44 ± 3.53 gm, 1.09 ± 0.12 kg, 5.19 ± 0.37 kg and 45.55 ± 4.02 gm, 1.05 ± 0.11 kg, 4.87 ± 0.37 kg and $42.44 \pm$

5.02 gm, respectively (Table 1). The birth weight, weaning weight and average daily gain of single birth were higher than that of twin, triplet and quadruplets born kids but no significant difference was observed.

Higher birth weight of males and significant effect of sex on the body weight has been reported by Sheikh *et al.* (1996) [12] in Changithangi kids, Koratkar *et al.* (1998) [7] in Osmanabadi kids, Karna *et al.*, (2001) [6] in Cheghu kids, Bharathidhasan *et al.* (2009) [3] in Barbari and Jamunabari kids, Soundararajan and Sivakumar (2011) in Kanni Kids. Usha and Kumaravelu (2020) observed the birth and weaning weights of Karunkanni kids were 1.60 ± 0.03 kg, 8.32 ± 0.20 kg, respectively and pre-weaning average daily gain was 74.73 ± 2.17 gm. The birth weight of male and female kids was 1.62 ± 0.05 gm and 1.55 ± 0.06 gm, respectively. They also noticed that male kid recorded 4.4% higher body weight than female kids but no significant difference was found. They also found that the weaning weight of male kids (9.23 ± 0.21 kg) was significantly ($P < 0.01$) higher than that of female kids (6.84 ± 0.24 kg). Similar findings in kids of Kutchi (Yadav *et al.*, 2003), Sirohi goats (Sharma & Pathodiya, 2006) and Tellicherry (Murali *et al.*, 2014) were reported. Bell *et al.*, 1970 opined that the superiority of males might be attributed to hormonal differences between sexes.

Patel and Pandey (2013) in Mehsana kids, Usha and Kumaravelu (2020) in Karunkanni kids found the pre-weaning average daily gain significantly ($P < 0.01$) higher than the female goat kids. Bharathidhasan *et al.* (2009) [3] observed that the body weight between single and twin born kids were non-significant as far as twinning percentage is concerned whereas, Bharathidhasan *et al.*, (2009) [3] in Barbari goats and Usha and Kumaravelu (2020) [15] in Karunkanni kids reported that birth weight, weaning weight and average daily gain of single birth were higher than that of twin and triplet born kids but, no significant difference was observed. Birth and weaning weights of third parity were higher than the first and second parities. However there is no significant difference observed among parity.

Table 1: Effect of sex, type of birth and parity on pre-weaning growth performance of Black Bengal goat kids.

Sl. No.	Particulars	Birth weight (kg)	Weaning weight at 3 months (kg)	Pre-weaning Average daily gain (gm)
1	Overall mean	1.11 ± 0.06	4.82 ± 0.20	41.22 ± 3.15
2	Sex			
	Male	1.12 ± 0.07	$5.25 \pm 0.21^*$	$45.89 \pm 3.21^*$
	Female	1.07 ± 0.04	$4.63 \pm 0.24^*$	$39.56 \pm 2.38^*$
3	Type of Birth			
	Single	1.14 ± 0.10	5.69 ± 0.44	50.56 ± 4.51
	Twin	1.11 ± 0.05	5.38 ± 0.24	47.44 ± 3.53
	Triplets	1.09 ± 0.12	5.19 ± 0.37	45.55 ± 4.02
	Quadruplets	1.05 ± 0.11	4.87 ± 0.37	42.44 ± 5.02
4	Parity			
	First	1.17 ± 0.11	5.63 ± 0.53	49.56 ± 4.56
	Second	1.14 ± 0.04	5.35 ± 0.27	46.67 ± 3.82
	Third	1.17 ± 0.07	5.45 ± 0.48	47.79 ± 4.12

* Significant at ($P < 0.05$)

Conclusion

The present study was conducted with 190 Black Bengal goats in a organized farm in Tripura state. The performance of Black Bengal was found quite satisfactory in regards to prolificacy and twinning percentage. It was observed that well management practices in a organized farm will enhance gains in terms of weaning weight and average daily gain compared to other Indian small goat breeds. It may be recommended that Black Bengal goat is most suitable for agro-climatic

condition of Tripura state.

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