



## Research Article

# PERFORMANCE STUDY OF THE BOER AND KHARI GOAT CROSSES AT AGRICULTURE RESEARCH STATION, PAKHRIBAS, DHANKUTA

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**Abstract:** A study was conducted in Agriculture Research Station, Pakhribas, Dhankuta to evaluate the performance of Boer x Khari cross kids. A total of 88 kids born on during 2018/19 were used for the analysis of mean of birth weight, weaning weight, eight-month weight and twelve-month-old weight. Out of all born F1 kids, 47 were male and 41 kids were female and the kid mortality rate was 6.81%. The birth weight for Boer x Khari cross kids were  $2.4 \pm 0.38$  kg for male and  $2.17 \pm 0.43$  for female kids. The mean body weight at weaning, eight month and twelve-month weight were  $7.62 \pm 1.37$  kg,  $17.28 \pm 1.37$  kg and  $27.38 \pm 1.24$  kg respectively. The body weight gained from birth to weaning, weaning to twelve month and birth to twelve months were 45.75, 82.33 and 69.18 gm/day respectively. From the study, it can be concluded that the Boer x Khari kids may have better growth performance with improved hereditary selection, feeding system and management method.

**Keywords:** Boer, Growth performance, Weaning, Twelve Month, Weight

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## Introduction

Livestock is an important and connected component of agriculture in Nepal as it provides the animal protein for emergent human population. Goats have great role in economy of the farming community, especially the small-holder's farmers in Nepal. Goats are known very important livestock for sustaining food security and supply because of their high productive ability and low initial expenses suiting them for resource poor farmers [1]. According to Food and Agriculture Organization of the United Nations, the world average meat consumption stands 42.5 kg per person per year. In developing countries, the rate is 32.4 kg. In industrialized countries, average meat consumption amounted to 79.2 kg whereas in Nepal only 11.15 kg meat consume per year. Nepal is far behind in compare to other developing country while consumption of meat Khari, one of the principle breeds of goat in the country which is available across the hills and represents 56 % of the total goat population and known for their high prolificacy and wider range of adaptability [2,3] and are reared on poor nutritional regime without supplementation. Goat meat is very popular all over the country in Nepal due its acceptance by all religion. On the other hand, Boer is known to be one of the most like goat breed for meat production and has gained universal recognition for heavy body confirmation, super-fast growth rate and excellent carcass quality [4]. Kandel, *et.al.* (2018) [5] studied that Boer goats have power over strong disease resistance capacity and very adaptable to adverse environments and does are superior mothering skills in Nepalese conditions. Boer goats are less susceptible to infected by internal parasite due to their natural grazing habit [6]. Therefore, Boer goat and its crossbred is a promising breed to meet the country demand of goat meat because of its High productivity potential as compared to native goats. The main aim of this experiment is to identify the productive performance of boer male and khari female goat in farm conditions.

## Materials and Methods

This study was conducted at Agriculture Research Station, Pakhribas of Dhankuta district at ward number 3 of Pakhribas Municipality which is located 17 kilometers

north-west of district headquarter Dhankuta. The station is connected through Hile-Bhojpur road and is located four kilometer west of Hile Bazar. The nearest airport Biratnagar is 110 kilometres. The farm is facing south and elevation ranges from 1,315 meter to 2,025 meter above sea level. Pakhribas lies  $27^{\circ} 02.98'$  North latitude and  $87^{\circ} 17.61'$  East longitude. The average minimum temperature ranges between  $4.5^{\circ}\text{C}$  (January) to  $18.5^{\circ}\text{C}$  (July) with lowest  $1.5^{\circ}\text{C}$  in January and average maximum temperature ranges between  $15.3^{\circ}\text{C}$  (January) to  $24.6^{\circ}\text{C}$  (August) with maximum of  $29.5^{\circ}\text{C}$  in June. Average annual rainfall at the station occurred 1492.3 mm with 126 rainy days and highest 386.9 mm rainfall occurred in July with 28 rainy days. Relative humidity at the station was recorded between 57.8% (January)-91.1% (September). The climate of Pakhribas is sub-tropical to temperate.

## Animal Management

Animals were kept in farm managed condition of ARS with seasonal mix fodder mainly provided in groups during evening and grazing of Khari goats and Boer cross goats for atleast 5 hours. They were also provided with concentrate mixture @ 1% of b. wt. on an average during morning and after grazing and free access to drinking water. All flocks were dewormed and dipped for internal and external parasites and vaccinated against PPR.

## Study animals

This study was performed in FY 2018-19 of ARS, Pakhribas. A total number of 88 kids were produced from the breeding Khari does served with boer bucks among which 47 were male and 41 kids were female respectively. Kids were allowed with their dams in nursing pen for 4 months before weaning.

## Measurements and Observations

Birth weight (BW), weaning weight (WW), eight-month weight (EMW) and twelve-month-old weight (Y) were recorded in morning before feeding and watering.

Table-1 Birth weight, weaning weight and body weight gain of Boer x Khari Cross kids in ARS, Pakhribas (Mean ± SE)

Sex	Birth weight (kg)	Weaning weight (kg)	Body weight gain/day (g/day)
Male	2.4±0.38	12.34 ± 1.16	83.14 ± 3.18
Female	2.17±0.43	9.02 ± 0.51	57.60 ± 1.74
Total	2.29 ± 0.41	10.68 ± 0.84	70.37 ± 2.46

Table-2 Body weights and gain of Boer x Khari Cross at different ages at ARS, Pakhribas

Sex	Eight-month weight (kg)	Twelve-month weight (kg)	Overall body weight gain/day from birth to a year age (g/day)
Male	19.52 ± 0.90	26.11 ± 1.34	66.29
Female	16.53 ± 0.88	20.46 ± 1.55	50.83
Total	18.03 ± 0.89	23.29 ± 1.45	58.56

All weight measurement except BW were taken at weekly interval by Honda electronic weighing balance capacity 200 kg and 200 gm precision.

### Statistical Analysis

All data collected was analyzed by using Statistical Package for Social Science (SPSS) version 16.0 for windows. For qualitative factors, descriptive statistics were used. Standard error of mean (SE) was used while describing mean.

### Results and Discussion

#### Pre-weaning kid mortality of Boer x Khari cross

The experiment kids were considered of FY 2018-19 of ARS, Pakhribas of which total 88 kids were born from 49 does at kidding rate of 1.79 kids/doe and out of all born F1 kids, 47 were male and 41 kids were female respectively. Until weaning, 6 kids died at mortality rate of 6.81 % (4.25% male and 9.75% female kids) which is lower than the mortality rate of Khari (25.9%) reported by Rasali and Khanal (2002) [7] and Khanal *et. al.*, (2005) [8] and Boer cross (26.38%) reported by Kandel *et.al.*, (2018) [5].

#### Birth weight, weaning weight and pre-weaning growth rate

The birth weight of Boer x Khari cross kids were 2.4 kg for male and 2.17 kg for female respectively which is lower than the birth weight of Boer kids ranging from 3 to 4 kg with male kids weighing about 0.5 kg heavier than female [9] but resembles the birth weight of Khari kids (2.013 kg for male and 2.158 kg for female) reported by Rasali and Khanal, (2002) [7] and resembles the birth weight of Boer cross kids (2.24 kg for male and 2.03 kg for female) reported by Kandel *et.al.*, (2018) [5]. Heavier birth weight of male is supported by findings of Neupane and Sainju (1995) [3] and Upreti and Mahato (1995) [10].

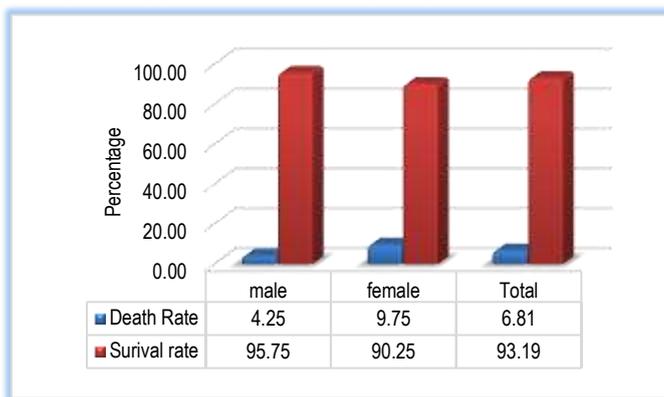


Fig-1 Pre-weaning kid mortality rate of Boer x Khari cross

The overall mean of weaning weight of Boer x Khari cross kids varies by sex which is 12.34 kg for male and 9.02 kg for female kids respectively [Table-1] which is similar with Boer x Central highland cross kids (9.02 ± 0.18 kg) reported by Deribe and Taye (2013) [11] however significantly lower than pure Boer weaning kids which is 25 kg Lu and Patcoiba, (1988) [9]. The kids have lower birth weight and weaning weight which might be a result of humid rainy cold climate and high endoparasites problem to does and kids.

The overall mean of pre weaning kids daily weight gain is also presented in [Table-1]. Pre weaning weight gain observed 70.37 gm/day is same as Khari goats kept under traditional management system, but little lower than Boer x Arsi

Bale cross kids (173.83± 6 gm/day) studied by Debele *et. al.* (2015) [12]. Negi *et. al.*, 1987 [13] found that the difference in pre weaning weight gain are narrowly linked with distinction in point of milk intake during milk feeding phase and the dietetic status of the doe. The pre weaning growth rate of Boer x Khari cross kids were exaggerated by sex, male kids weight gain is better than female (83.14 gm/day vs 57.60 gm/day), which is in agreement with report of other scholars, but argue with report of Rasali and Khanal (2002) [6].

#### Twelve-month weight and post weaning growth rate

The overall mean of eight-month weight and twelve-month weight of Boer x Khari cross goats were 18.03 ± 0.89 kg and 23.29 ± 1.45 kg respectively, which is higher than nine-month weight and twelve-month weight of Khari (14.19±0.87 kg and 18.84±1.09 kg) reported by Khanal *et. al.* (2002) [6]. The mean of overall body weight gain per day from birth to one year old was found 58.56 gm/day which is comparatively higher than findings of Deribe *et. al.*, 2015 [1] (33.01±0.77) gm/day at one year of Boer x Central highland cross).

### Conclusion

From this study, it can be concluded Boer x Khari cross kids have better growth performance at mid hills of Nepal. The significant effect of sex at different ages indicates potential of the breed for better productivity under improved management system. Moreover, continuous improvement in genetic selection, feeding method and management system may contribute to even faster growing rate in Boer crosses in future.

**Application of research:** This Study was design to investigate production of suitable crossbred goat for the Nepalese farmers.

**Research Category:** Goat Production Management

**Abbreviations:** SE: Standard error of mean, BW: Birth weight, WW: weaning weight, EMW: eight-month weight, SSPSS: statistical Package for Social Science

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**Study area / Sample Collection:** Agricultural Research Station, Pakhribas Dhankuta

**Cultivar / Variety / Breed name:** Khari goat, Boer Goat

**Conflict of Interest:** None declared

**Ethical approval:** Ethical approval taken from Agricultural Research Station, Pakhribas Dhankuta, Nepal Agricultural Research Council, Kathmandu, Nepal  
Ethical Committee Approval Number: Nil

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