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Study on Factors Influencing the Birth Weight of Deccani Sheep

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Abstract The birth weight is potential indicator of the survival and future growth in sheep farming. The purpose present study was to evaluate the factors influencing birth weight of Deccani lambs reared . The least squares mean for birth weight of 350 lambs (During 2015) was 3.04 ± 0.07 kg. The general linear modelling showed that sex of lamb, type of birth and ewes weight at lambing were found to be significantly influencing the birth weight in Deccani Sheep. The season of birth had no significant influence on birth weight in the study. It was found that the male lambs (3.11 ± 0.07 kg) and single births (3.32 ± 0.03 kg) had higher birth weight than the female lambs (2.96 ± 0.08 kg) and twin lambs (2.75 ± 0.13 kg), respectively. The ewe's weight of lambing was found to significant indicators for birth weight in positive direction. It was concluded that the significance of these factors on birth weight may be helpful to set the strategic decisions for sheep farming in order to increase the survival of lambs.

Keywords Sheep, Deccani, Birth weight, Sex, Ewe's weight.

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Introduction

The birth weight of lamb is an important component of sheep farming as it indicates the health status in newly born lambs [1]. It is also potential indicator of survival of lambs to the greatest extent [2—4] and the lambs with low birth weight have higher risk of mortality [5].

Birth weight, itself, have influence of many genetic and environmental factors such as sex of lamb, type of birth, parity, ewe's factors and environmental conditions [6—10]. Gardner et al. [1] reported that multiple births had highest influence on birth weight of lambs. Babar et al. [7] stated that male lambs had higher birth weight than female lamb in Lohi sheep. The health of pregnant ewes in advanced pregnancy also influences the birth weight of lambs [11]. The understanding the factors influencing the birth weight in lambs is utmost essential in order to setting the strategic management and improving the

farm practices to increase the survival of lambs and profits to sheep farming.

Therefore, the aim of the present study was to study various factors influencing birth weight of Deccani breed of sheep.

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Materials and Methods

The present study was carried out at Network Project on Sheep Improvement (Deccani Farm Based Unit), Mahatma Phule Krishi Vidyapeeth, Rahuri (India). Deccani breed is one of the indigenous breed of sheep in India. There are several strains of Deccani breed, out of which Sangamneri strain was maintained at the project.

The present study used the data of 350 lambs borne during January 2015 to December 2015. The necessary information such as birth weights, sex of lamb, type of birth, season of birth and ewes weight at lambing was collected from lamb register and inventory registers. All lambs were categorized according to sex into male and female. The season of birth was considered as main season (October to March) and off season (April to September). The type of birth was considered as single birth or twins. The ewe's weight at lambing were classified into three categories (<31 kg, 31-33 kg and >33 kg).

Statistical analysis

The data collected information was entered in Microsoft excel and the coding was done for necessary statistical analysis. The descriptive statistics was calculated for lambs born in the study period. The general linear model was used to determine if there was significant effect of various factors such as sex of lamb, season, type of birth and ewe's weight at lambing on birth weight of lambs. The statistical analysis was carried out using PROC GLM in SAS software (9.3 Version). The significant difference for the factors was determined (p<0.05).

Table 1. Least squares means of birth weights (kg) due to various factors in Deccani Sheep. The means bearing different superscript (a, b) for same class differ significantly (p<0.01). SE : Standard Error.

Factor		Number	Proportion (%)	Mean ±SE
Grand mean		350	100	3.04 ± 0.07
Sex	Male	206	58.86	3.11 ± 0.07[a]
	Female	144	41.14	2.96 ± 0.08[b]
Type of birth	Single	334	95.43	3.32 ± 0.03[a]
	Twin	16	4.57	2.75 ± 0.13[b]
Season	Main	228	65.14	3.00 ± 0.07[a]
	Off	122	34.86	3.07 ± 0.08[a]
EWE_WT	<31	99	28.29	2.88 ± 0.08[a]
	31-33	134	38.29	3.05 ± 0.08[ab]
	>33	117	33.43	3.18 ± 0.07[b]

Results and Discussion

The lambs born (350) during the study period was distributed according to various factors and the details are given in Table 1. There were 58.86% male and 41.14% female lambs born in the study period. There were 65.14% and 34.86% lambing in main and off season respectively. There were total 342 lambing out of which 8 were twinning (which had given 16 lambs). Therefore total twinning percentage for year 2015 was 2.34%.

The results of general linear model showed that the sex of lamb, type of birth and ewes weight at lambing were found to be significantly (p<0.01) influencing birth weight of lamb. However season of birth had no significant influence on birth weight during study period. The least squares means of birth weights due to various factors in Deccani sheep are presented in Table 1. The least squares mean of birth weight was found to be 3.04 ± 0.07 kg. Chikurdekar et al. [9] reported that the least square for birth weight of Sangamneri strain of Deccani sheep was 2.87 ± 0.01.

The male lambs (3.11 ± 0.07 kg) were heavier at birth than female lambs (2.96 ± 0.08 kg). The results are in agreement in findings reported in previous studies [9,10, 12, 13]. Gardner et al. [1] concluded that male lambs had 0.36 kg higher birth

weight than the female lambs. The higher birth weights in male lambs than in female lambs might be due to physiology of development of fetus during pregnancy which leads to higher development of male lambs [14].

The single lambs (3.32 ± 0.03 kg) had more weight at birth than the twins (2.75 ± 0.13 kg). The significant effect of type of birth on birth weight was reported by Eyduran et al. [15]. Simeonov et al. [10] and Shaker et al. [16] reported that single birth were 10.50% and 9.60% heavier than twins respectively. This difference may be due to the single lambs get more nutrition and favorable environment in uterus than the twins [7, 8].

It was found that the ewe's weight at lambing was significantly (p<0.001) affecting the birth weight of lamb [6]. The weights at births were found to be increasing with weight of ewe at lambing. The ewes with higher gain in body weight during advanced stage of pregnancy enhance the growth of fetus.

Š It was concluded from the results that ewe's weight at lambing had positive influence on birth weight of lambs. The male and single birth lambs were heavier than female and twin lambs respectively. The birth weights for the lambs born were higher in main season than the lambs born in off season. The better nutritional practices of advanced pregnant ewes and managemental practices for new born lams may be increase the birth weight of lambs and therefore the survival of lambs.

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