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## Effect of Body Weight of Ewes on Birth Weight of Lambs In Rambouillet Breed of Sheep

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**Abstract:** Data on 1816 darn-lamb pairs of Rambouillet breed of sheep maintained at Livestock Experimental Station, Jaba, District Mansehra (NWFP) during the period 1957-86 were used to study the effect of body weight of ewes at service on birth weight of lambs. The weight of dam at service and birth weight of lamb averaged  $48.66 \pm 1.14$  and  $3.67 \pm 0.08$  kg, respectively. It has been observed that weight of the dam significantly effect the birth weight of lambs. The correlation and regression coefficients between the above mentioned two traits were 0.30 and  $0.042 \pm 3.157 \times 10^{-3}$ . Analysis of variance of weight of the dam at service and birth weight of lambs due to regression revealed that this regression is statistically significant ( $p < 0.01$ ). The results of the present study indicated that the dams weight had a positive relationship with birth weight of lambs which will be helpful in the selection of young lambs even before their birth.

**Key words:** Ewe body weight, lamb birth weight

### Introduction

Sheep is a major source of mutton and wool in Pakistan. The adult body weight of sheep is a factor which determines the quantity of meat and wool to be Produced and affects the market price of an animal. An ewe must be large enough to produce heavy lambs and provide adequate skin surface for wool growth. It has been reported that the lambs with heavy birth weight have faster growth rate (Shelton, 1964). Such lambs possess better growth potential and can permit early selection. The present project was therefore, planned to study the effect of weight of the ewes at service on birth weight of their lambs in Rambouillet breeds of sheep. It is envisaged that this analysis will be ultimately helpful in developing future breeding plans for the improvement of sheep in Pakistan.

### Materials and Methods

**Source of Data:** Performance data of the Rambouillet breed of sheep maintained at Livestock Experimental Station, Jaba, District Mansehra (NWFP) during the period 1957-86 were used in the present study. Data on 1816 ewe-lamb pairs were collected to study the effect of body weight of ewes on birth weight of lambs.

**Statistical procedure:** In order to study the effect of weight of the ewes at service on birth weight of lambs, the correlation between two traits were calculated. The regression coefficient between birth weight of lambs (dependent variable) on weight of the dam at service (independent variable) were also worked out according to the procedure described by Steel and Torrie (1980). Means and their standard error (SE) for each of the two, traits were also worked out by the following formula.

$$\text{Standard Error (S}_b\text{)} = \frac{\sum Y^2 - b \sum XY}{n - 2} \times \frac{1}{\sum X^2}$$

Where:

- S<sub>b</sub> = Standard error of regression coefficient
- b = Regression coefficient
- n = Number of observations
- $\sum Y^2$  = Corrected sum of squares for the dependent variable
- $\sum X^2$  = Corrected sum of squares for the independent variable
- $\sum XY$  = Corrected sum of cross products

### Results and Discussion

The birth weight of Rambouillet lambs were averaged  $3.67 \pm 0.08$  kg in the present study. The weight of the dam at service ranged from 27-65 kg with average value of  $48.66 \pm 1.14$  kg (Table 1).

Table 1: Means standard error of dam and birth weight of lambs (n = 1816)

Traits	Mean $\pm$ standard error (kg)
Weight of the dam at service	$48.66 \pm 1.14$
Birth weight of lambs	$3.67 \pm 0.08$

Table 2: Regression coefficient for birth weight of lambs due to the weight of dam at service (n = 1816)

Traits	Intercept (b <sup>o</sup> )	Mean $\pm$ Standard Error
Weight of the dam at service and birth weight of lambs	1.609	$0.042 \pm 3.15 \times 10^{-3}$

Barghout and Abdel-Aziz (1989) reported that birth weight averaged 3.64 kg and 3.59 kg in Turkish and Barki lambs, respectively, which is in lime with the findings of present study.

**Correlation between weight of the dam at service an birth weight of lambs:** The correlation coefficient between

weight of the dam at service and birth weight of lambs was 0.30 which was statistically significant ( $p < 0.01$ ). This is a positive and useful correlation. Such correlation will be helpful in a breed improvement programme. To improve the birth weight of lambs, it is better to select the lambs with heavier weight. Such selection will save a lot of time as well as a handsome amount of money. A positive and significant correlation between the above mentioned two traits has also been reported by Haider and Shah (1974) and Speedy *et al.* (1978). Haider and Shah (1974) reported that body weight was significantly correlated with lambs birth weight (0.26 in Harnai and 0.30 in the Bibrik breeds of sheep).

Table 3: Analysis of variance of weight of the dam at service and birth weight of lambs due to regression

Traits	D.F	Mean square	F. Ratio
Due to regression	1	189.61	179.68**
About regression	1814	1.05	
Total	1815		

\*\*Significant ( $p < 0.01$ )

**Regression of weight of the dam at service on birth weight of lambs:**

The regression coefficient for weight of the dam on birth weight of lambs was found to be  $0.042 \pm 3.15 \times 10^{-3}$  (Table 2). The regression analysis as shown in Table 3 was found to be significant ( $p < 0.01$ ). This indicated that for each Kg increase in dams weight, the increase in birth weight of lambs was 42 grams. These results are in line with the findings of Chopra and Acharya (1970) and Maroof *et al.* (1986).

Chopra and Acharya (1970) reported that an increase of 19 gram birth weight of lamb was observed for each kg increase in dam weight. Maroof *et al.* (1986) reported that in Hamdani sheep, body weight of dam significantly affected birth weight, the regression coefficient was reported to be 0.03.

The correlation and regression analysis revealed that weight of the dam at service significantly affected the birth weight of their lambs. The results of the present study indicated

that the dams weight had a positive relationship with the birth weight of its lambs similar findings were also obtained by Clarke *et al.* (1997) who reported that lamb birth weight was higher for heavy ewes and lower for light ewes. Such a positive relationship will be helpful in the selection of young lambs even before their birth.

**References**

Barghout, S.G. and S.A. Abdel-Aziz, 1989. A comparative study of body weight and growth rate of Turkish and Barki lambs during the suckling period. *Egypt. J. Anim. Prod.*, 26: 47-54.

Chopra, S.C. and R.M. Acharya, 1970. Relationship of ewe size with birth and weaning weights of lambs. *Indian J. Anim. Sci.*, 40: 508-510.

Clarke, L., D.P. Yakubu and M.E. Symonds, 1997. Influence of maternal bodyweight on size, conformation and survival of newborn lambs. *Reprod. Fertil. Dev.*, 9: 509-514.

Haider, U. and S.K. Shah, 1974. Relationship between body weight of Harnai and Bibrik ewes and birth and weaning weight of their lambs. *Agric. Pak.*, 25: 209-218.

Maroof, N.N., K.M. Juma, E.A. Arafat and A.M. Chakmakchy, 1986. Evaluation of factors affecting birth and weaning weight and milk production in Hamdani sheep. *World Rev. Anim. Prod.*, 22: 51-55.

Shelton, M., 1964. Relation of birth weight to death losses and to certain productive characters of fall-born lambs. *J. Anim. Sci.*, 23: 355-359.

Speedy, A.W., W.J.M. Black and J. Fitzsimons, 1978. The effects of autumn management and winter feeding of Border Leicester X Blackface ewes on the subsequent birthweights of lambs. *Anim. Prod.*, 26: 391-392.

Steel, R.G.D. and J.H. Torrie, 1980. *Principles and Procedures of Statistics: A Biometrical Approach*. 2nd Edn., McGraw Hill Book Co., New York, USA., ISBN-13: 9780070609266, Pages: 633.