PERFORMANCE OF DECCANI AND BANNUR SHEEP WITH RESPECT TO WOOL TRAITS IN THEIR NATIVE TRACT

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ABSTRACT

Wool samples were collected from Deccani sheep(97) and were collected from Bannur sheep (137) reared in their native tract in two seasons. Wool parameters such as Total Greasy Fleece yield, Staple length, Number of crimps per inch, Clean Fleece Weight, Shrinkage Percentage, Mean Fiber Diameter and Medullation Percentage were recorded from the wool samples collected from Deccani sheep and the mean values are 225 ± 9.65 g, 4.72 ± 0.20 c.m, 2.25 ± 0.06 , 158.20 ± 7.12 g, 29.69 ± 0.49 , 52.14 ± 0.21 µ and 69.23 ± 0.55 respectively and the same were also recorded from wool samples collected from Bannur sheep and the mean values are 228 ± 11.19 g, 3.17 ± 0.06 c.m, 2.12 ± 0.14 , 165.46 ± 4.17 g, 27.43 ± 0.43 , 57.13 ± 0.30 µ and 44.25 ± 0.21 respectively. Effect of non-genetic factors like age, sex, period of birth and season of shearing were analysed for each parameter. Age significantly affected Total Greasy Fleece yield, Staple length, Number of crimps per inch and Fiber Diameter. Period of birth significantly affected Staple length, Clean Fleece Weight and Fiber Diameter. Season of shearing affected significantly the Staple length, Number of crimps, Clean Fleece Weight and Fiber Diameter. Sex significantly affected Total Greasy Fleece yield, Staple length, Number of crimps per inch and Fiber Diameter. Sex significantly affected Total Greasy Fleece yield, Staple length, Number of crimps per inch and Fiber Diameter. Sex significantly affected Total Greasy Fleece yield, Staple length, Number of crimps per inch and Fiber Diameter. Sex significantly affected Total Greasy Fleece Weight, Number of crimps per inch, Clean Fleece Weight, Mean Fiber Diameter and Medullation Percentage.

Key Words: Deccani, Bannur, Wool Traits, Non-Genetic Factors

INTRODUCTION

Breeding and development of superior breeds of sheep for wool and mutton would play a significant role in enhancing the rural economy of developing countries like India. Wool production in India is inadequate. To meet the increasing demand of apparel type, the country is importing 18 to 20 million kg of wool every year. This warrants an increase in the production of fine wool as well as carpet wool from the indigenous sheep.

The wool quality determines the use of wool for various purposes by the industry, as the properties of the yarn or fabric depend on a complex interrelation between the fibre arrangements and fibre properties

Wool parameters such as Total Greasy Fleece yield, Staple length, Number of crimps per inch, Clean Fleece Weight, Shrinkage Percentage, Mean Fiber Diameter and Medullation Percentage are the important traits determining wool quality in sheep. Hence, the present study was undertaken to determine the performance of wool traits of Deccani and Bannur sheep in its native tract.

MATERIALS AND METHODS

Wool samples were collected from Deccani sheep (97) and were collected from Bannur sheep (137) reared in their native tract in two seasons. Samples were collected from one square inch area in left mid side region using curved scissors. The samples collected were packed in labelled plastic bags.

Greasy fleece weight of each animal was recorded immediately after shearing, to the nearest gram. The staple length of un-scoured wool samples was measured by placing staple un-stretched on a black velvet board using forceps. The measurement was taken from the base of the staple of the fibres to the tip, where the majority of fibres end. An average of 10 random staples represented the mean staple length and expressed to the nearest fraction of 0.1 cm. A suitable sub-sample was taken from the un-scoured samples for measuring the number of crimps per inch. One hundred fibres from each sample were measured for

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estimating the mean number of crimps per inch. The mean figures of 100 fibres represented the mean number of crimps in a sample. Clean fleece weight was estimated by weighing the samples after scouring as per the technique of Johnston (1934) as described here under.

Four scouring units with scouring solutions of the following concentration and temperature were used.

Tub 1: One per cent soap solution and 0.5 per cent washing soda at 48 to 50°C.

Tub 2: 0.5 per cent soap solution at 45 to 47°C

Tub 3: Clean tap water at 42 to 43°C

Tub 4: Clean tap water at 40°C

The samples were kept in each scouring unit. The samples when transferred from one tub to the next were squeezed manually. The samples were passed sequentially from first to fourth tub. After removal from the last tub the samples were squeezed completely and dried by placing it in an incubator for 24 hours at 37°C. After ensuring complete drying of the samples, other extraneous materials like burr were removed from the sample manually. The samples were then weighed and clean fleece weight of the samples recorded. The difference between greasy fleece weight and clean fleece weight of the sample was expressed in terms of percentage i.e. shrinkage percentage. The scoured samples were hand-corded for proper blending. The fibres were placed lengthwise, twisted to form a cord and held tightly in the left hand. The cord was cut with the help of two razor blades, kept tightly between thumb and the index finger of the right hand. The fibre bits were obtained in the form of wool dust between the edges of the blades. These fibre bits were then transferred on to a micro slide, thoroughly mixed with cedor-wood oil with the help of needle and rectangular cover slip was placed over it. The diameter was measured directly on the scale of the microscope. The diameter of 300 fibres was taken in microns for each sample and their mean fibre diameter was estimated. The fibres were counted in different fields by successive movements of the slide. The same apparatus and technique described for determination of fibre diameter were employed for the estimation of medullation percentage. A total number of 300 fibre units were examined in each sample and percentage of medullated fibres worked out for each sample.

The Least squares analysis of variance technique was adapted to detect the significant sources of genetic and non-genetic variation if any (Harvey, 1987) in all the genetic groups.

The following mathematical model was adapted.

 $Y_{iiklmn} = \mu + G_i + A_j + Y_k + S_l + X_m + e_{ijklmn}$

Where, Y_{ijklmn} is the record of the nth individual belonging to ith genetic group, jth age group, kth period of birth, shorn at lth season belonging to mth sex.

 μ is the population mean

 G_i is the fixed effect of ith genetic group (i=1,2,3...6)

 A_j is the fixed effect of j^{th} age group (j=1,2,3 ... 7) Y_k is the fixed effect of k^{th} period of birth (k=1,2) S_1 is the fixed effect of l^{th} season of shearing (l=1,2)

 X_m is the fixed effect of mth sex group (m=1,2)

eijklmn is the random error associated with Yijklmn and assumed to be identically, independently and normally distributed with mean zero and unit variance and interaction between various effects was assumed to be zero.

The Least Square means of different groups within each of the factors were compared by computing the Least Significant Difference (LSD) (Snedecor and Cochran, 1968).

RESULTS

Wool parameters such as Total Greasy Fleece yield, Staple length, Number of crimps per inch, Clean Fleece Weight, Shrinkage Percentage, Mean Fiber Diameter and Medullation Percentage were recorded from the wool samples collected from Deccani sheep and the mean values are 225 ± 9.65 g, 4.72 ± 0.20 c.m, 2.25 ± 0.06 , 158.20 ± 7.12 g, 29.69 ± 0.49 , 52.14 ± 0.21 µ and 69.23 ± 0.55 respectively and the same were also recorded from wool samples collected from Bannur sheep and the mean values are 228 International Journal of Food, Agriculture and Veterinary Sciences ISSN: 2277-209X (Online) An Online International Journal Available at http://www.cibtech.org/jfav.htm 2013 Vol. 3 (1) January-April, pp. 133-135/Thiagarajan

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 \pm 11.19 g, 3.17 \pm 0.06c.m, 2.12 \pm 0.14, 165.46 \pm 4.17 g, 27.43 \pm 0.43, 57.13 \pm 0.30 μ and 44.25 \pm 0.21 respectively.

Significant difference due to genetic group was noticed with respect to staple length, number of crimps, clean fleece weight, shrinkage percentage, fibre diameter and medullation percentage.

DISCUSSION

Differences in staple length due to genetic groups have been reported by Umrikar *et al.*,(1992); Malik and Singh (2006) and Singh *et al.*, (2008) in different native and crossbred sheep. Both indigenous breeds, Bannur and Deccani had significantly lower values as compared to other indigenous breeds like Nali, Bikaneri, Chokla and their crosses with Merino, Corriedale and Rambouillet (Krishnamurthy *et al.*, 1975; Gupta *et al.*, 1976; Krishnappa, 1979 and Singh *et al.*,2008).

Differences in clean fleece weight among these genetic groups were significant. Such genetic groups differences in clean fleece weight were also reported by Chougule *et al.*,(1988) but, Singh *et al.*(2008) reported no significant effect of breed on clean fleece weight in Corriedale and South Down breed. Differences in shrinkage percentage due to genetic groups were found to be significant ($P \le 0.01$). In case of indigenous purebreds, Bannur had significantly lower shrinkage percentage (27.43 ± 0.43), as compared to Deccani (29.69 ± 0.49). Similarly differences due to genetic groups with respect to fibre diameter were also reported by Umrikar *et al.*,(1992) and Singh *et al.*,(2008). Differences due to genetic groups were found to be significant ($P \le 0.01$) with respect to medullation percentage.

Effect of non-genetic factors like age, sex, period of birth and season of shearing were analysed for each parameter. Age significantly affected Total Greasy Fleece yield, Staple length, Number of crimps per inch and Fiber Diameter. Period of birth significantly affected Staple length, Clean Fleece Weight and Fiber Diameter. Season of shearing affected significantly the Staple length, Number of crimps, Clean Fleece Weight and Fiber Diameter. Sex significantly affected Total Greasy Fleece yield, Staple length, Number of crimps, Clean Fleece Weight and Fiber Diameter. Sex significantly affected Total Greasy Fleece yield, Staple length, Number of crimps, Clean Fleece Weight, Mean Fiber Diameter and Medullation Percentage.

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