STUDIES ON CORRELATION BETWEEN SUINT AND DEGREE OF YELLOWNESS OF WOOL

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Perceiving the importance of yellow colouration of wool and its correlation with suint-water soluble secretion of sweat glands, degree of yellowness and suint percentage in Damani, Hashtnagri and Waziri Breeds Sheep wool were determined. It is concluded that suint percentage was directly proportional to yellowness.

The highest value of suint per cent was observed in case of Waziri as 9.068 with a range of 5.200 to 10.500, followed by Damani 8.340 with a range of 3.00 to 11.00 and for Hashtnagri 7.367 with a range of 4.500 to 10.700. The degree of yellowness was maximum as 2.902 in Waziri followed by 2.669 and 2.421 for Damani and Hashtnagri breed respectively.

INTRODUCTION

With greater demand for greater exports and foreign exchange earnings to meet the increasing expenses on national development, programmes, particularly after December, 1971 great emphasis has been placed by the Government on increasing production and export of cotton and wool in the raw form and manufactured goods. Wool is one of the most important textile material in the world. About one quarter of the total Pakistani wool comprises of comparatively fine wool, capable of giving yarn of 46 to 58 counts suitable for preparing woolen cloth, i.e., tweeds, broad cloth and medium quality worsted. Although it is termed as carpet wool.

Degree of yellowness plays an important part in wool industry, yellow degradation of wool is the major problem of the country and uptill now it is very difficult to find a solution. Some chemical methods have been used to remove the yellowness of wool but at the same time the strength is considerably decreased. Yellow colouration of wool is due to the pigments present in suint which enters the fibre when the green contents are low.

Hill (1922) observed 5.00 percent suint in Hampshire, 12.0 per cent in Leicester and 13.00 per cent in Rambouillet. He concluded that as the

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amount of wax increased the amount of suint also increased. Ahmad and Nabi (1965) observed 2.50 per cent suint in Lohi and Qureshi et al., (1974) reported 6.10 per cent suint with a range of 6.07 to 6.15 in Lohi. Serra and Dematos (1951) concluded that staining may be due to the yellow degradation products obtained from cystine by the action of alkali present in suint on wool and these yellow degradation products had the same spectral composition as that of canary wools.

Gupta and Bhan (1968) and Chipalkatti et al., (1965) observed that the pigments present in the suint were responsible for canary colouration and these pigments entered the fibre when the grease contents were low. They further added that the grease contents of the fibre and the pigment contents of the suint had undergone a periodic change and hence the canary colouration recurred periodically is certain. Qureshi et. al., (1974) concluded that the degree of yellowness was higher in Autumn season as compared to that of Spring and degree of yellowness ranged from 0.74 to 3.56. They further concluded that the type of housing had a direct effect on the colouration of wool, whereas the type of nutrition has a very little role in discolouration of the fibre. They also found that sulphur and cystine contents when acted upon by high temperature and intense sun light reacted to form a chemical compound. This reaction consequently caused the yellowing of wool fibre.

MATERIALS AND METHODS

Representative wool samples of three breeds i.e. Damani, Hashtnagri and Waziri were obtained to study the correlation between suint and degree of yellowness.

Damani wool samples of autumn clip were collected from three different flocks of Bannu, Daman (D. I. Khan) and potah (D. I. Khan) respectively, from each flock, five sheep were selected at random and were shorn by hand clipper from three different regions of the body of sheep i. e. back, shoulder and breech. The sub samples thus obtained from individual animal were thoroughly mixed to obtain a homogeneous sample and in this way fifteen samples were prepared. The wool samples of Hashtnagri were collected from Peshawar, Pubbi and Mardan, and that of Waziri breed from three different flocks of North Waziristan i. e. Tal Khel, Ased Khel and Datta Khel and homogenised in the same way as it was practised for Damani breed.

Suint percentage

It was determined by the method suggested by Truter (1956). Fat free samples were dried to a constant weight. Then washed with water for at

least five times and again dried to a constant weight. The difference between the two constant weights give the amount of suint in the sample as calculated below :—

Suint percentage $\quad = \dfrac{E - d}{0} \times 100$

E = weight of dried sample before washing (fat free)
d = weight of dried sample after washing
0 = weight of original sample

Degree of Yellowness :

Degree of yellowness was determined by the method advocated by Alvi and Nagra (1975). 0.1 gram of wool samples was dissolved in 20 ml of N/10 NaoH solution. The solution was cooled and filtered. The value of the filterate was read at 620 milli micron. The absorption of wool colour indicated the per cent colour present in the sample. The lighter colour gives less absorption and denser more.

The entire data was statistically analysed by the analysis of variance method as given by Fisher (1958).

RESULTS AND DISCUSSION

The results of the studies on correlation between suint percentage and degree of yellowness of wool of Damani, Hashtnagri and Waziri breeds of sheep are given in Tables 1 and 2. The data was analysed which revealed a non-significant difference among various breeds as the suint percentage is concerned (Table I). The range of values was 3.00 to 11.10 for Damani, 5.200 to 10.500 in Waziri and 4.500 to 10.700 in case of Hashtnagri. The highest mean value of 9.068 per cent was recorded in case of Waziri and the lowest mean value of 7.567 per cent was given by Hashtnagri, whereas, the mean value in case of Damani was 8.340 (Table Ia).

Table 1. *Analysis of variance of suint percentage*

Source of Variance :	D. F.	S. S.	M. S.	F. Ratio	Remarks
Breed	2	16.910	8.455	1.911 N.S.	Non-Significant.
Error	42	185.860	4.425		
Total :	44				

Table 1a. *Average values of suint percentage of three breeds*

Breed	Wazari	Damani	Hushtnagri
Mean value	9.068	8.340	7.567
Range	5.200–10.500	3.00–11.100	4.500–10.700

Degree of Yellowness :

     The results obtained regarding the degree of yellowness are given in Table 2a. The range of values was 0.960 to 3.552 in case of Damani, 1.440 to 3.424 for Hashtnagri and 1.664 to 3.360 was given by Waziri. The highest mean value of 2.902 was recorded in case of Waziri and the lowest value of 2.421 was observed in case of Hashtnagri, whereas the mean value in case of Damani was 2.669 (Table 2a). It was clear from the data given in table 2 that the differences in mean values of degree of yellowness due to breeds were non-significant.

Table 2. *Analysis of variance of degree of yellowness*

Source of Variation	D. F.	S. S.	M. S.	F. Ratio	Remarks
Breed	2	1.731	0.866	2.187 N.S.	Non-Significant.
Error	42	16.611	0.396		
Total :	44				

Table 2a. *Average values of degree of yellowness of three breeds.*

Breed	Waziri	Damani	Hashtnagri
Mean value	2.902	2.669	2.421
Range	1.664-3.360	0.960.-3.552	1.440-3.424

     From comparision of tables 1a, 2 and 2a, it was observed that there was a positive Correlation in suint percentage and degree of yellowness which concluded that if the suint percentage is increased, there is an increase in the degree of yellowness also.

LITERATURE CITED

Ahmad, M., and G. Nabi. 1965. Studies of physical and chemical properties of Lohi wool fibres. Pak. Jour. Sci. Ind. Res. 8 (1): 272-277.

Chipal Katti, H.R., A.D. Sule, K.K. Juneja, and M.C. Agfarwal. 1965. Some observations on canary colourations in Indian raw wools. J. Text. Inst. Vol. 56, No: 12. T-649.

Fisher, R.A. 1958. Statistical Methods for research workers. Oliver and Boyd, Edinburg, 248-298.

Gupta, K., and M. M. Bhan. 1968. Colouring matters in canary stained raw wool, wool Woollens India.

Hill, J.A. 1922. University of Wyoming. Agri. Expt. Station Bulletion 132.

Qureshi M. J., 1974. Annual Report to investigate causes of yellow colouration of wool and measures to overcome this problem. University of Agriculture, Faisalabad.

Serra, J. A., and N. A. Dematos. 1951. Nature of the canary colouration of wool. 7. Text. Inst. 42T 329-91. Wool and Wollens of India, Feb. 1968).

Truter, E. V. 1956. Wool Wax chemistry and Technology Interscience. N. Y. P. 61-67.