Vol. X (1-4) 1973

HETEROTYPIC AND MEDULLATED FIBRES IN LOHI WOOL AS AFFECTED BY AUTUMN AND SPRING SHEARING & AGE

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Studies in percentage of true, heterotypic and medullated fibres in Lohi wool as affected by autumn and spring shearing and age were conducted on five age groups. It was observed that there were non-significant differences among various ages in both the shearing for true, heterotypic and medullated fibres. The mean values for true fibres were 42.4 and 52.1 per cent. heterotypic fibres 35.45 and 25.25 and medullated fibres 17.20 and 22.65 per cent in spring and autumn shearing, respectively.

INTRODUCTION

The quality characters, durability and market demand for various types of woolen yarns and fabrics are governed to an appreciabe extent by the percentage of true, heterotypical and medullated fibres and therefore, these studies of the Pakistan wools, particularly the Lohi, which is rather extensively raised assume great significance, in view of the shearing periods and age variations, which are so commonly found. Regular studies were undertaken at Lyallpur during the year 1971 and interesting findings of researches are presented in this paper for the guidance of scientific workers, trade and industry.

Researches on different aspects of wool fibre in different breeds of sheep have been done by various workers in different countries, but no regular researches have been so far done in Pakistan regarding the effect of different periods of shearing and age on true, heterotypical and medullated fibre in Lohi wool. The relevant literature is however, briefly reviewed here :—

Burn *et al* (1940) formulated a tentative guide for carpet wool producers. According to him carpet wool should not contain true fibres more than 85 per cent and should have at least 15 per cent heterotypical fibres. Maqsood 1963) recorded true, heterotypic and medullated fibres in Hashtnagri sheep wool as 54. 1, 25.1 and 21.0 per cent, respectively. Ishaq (1964-65) recorded the true wool percentage in male and female of Bhagdale as 99.54 and 98.95 per cent respectively. The values of medullation percentage

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in Lohi was 28.46 and 21.25 per cent in males and females, respectively. Ahmad & Nabi (1965) found that values for true, heterotypic and medullated wool fibres in case of Lohi wool were 50.9, 10.0 and 37.3 per cent respectively, Khan (1967), Khan *et al* (1971 a & b) reported 44.8, 35.5 and 19.8 per cent true, heterotypic and medullated fibres, respectively in Lohi wool.

Cheema (1966) showed that 2 to 3 years and 4 to 5 years old sheep had 68.84 and 53.23 per cent true wool, and 15.78 and 27.17 per cent medullated fibres, respectively in the above mentioned ages, and observed that differences existed among age groups and non-significant differences were recorded between two shearings. Khan *et al* (1971) reported highly significant differences in values of true wool, medullated and heterotypical fibres in six breeds at Lyallpur and the range of values for true wool fibres was 34.6 in Damani to 44.8 per cent for Lohi; for medullated fibres it was 9.1 for Awaissi to 36.3 per cent for Balkhi; for heterotypical fibres 26.3 per cent for Balkhi to 51.6 per cent for Awaissi. Lohi recorded values of 44.8, 17.8 and 35.5 per cent true, medullated and heterotypic fibres, respectively. Whereas Kajli the finest type recorded 35.8 per cent true wool fibres, 28.1 medullated fibres and 34.6 per cent heterotypic fibres in these studies.

MATERIALS AND METHODS

The research work was done at University of Agriculture, Lyallpur, during the year 1972. Lohi wool from two seasons viz spring and autumn from sheep of the following 5 age groups was taken to determine the percentage of different wool types and to relate those percentages to differences in shearing seasons and in the age of the animals :—

Group	*Spring*	*Autumn*
A	3 years	3½ years.
B	4 ,,	4½ ,,
C	5 ,,	5½ ,,
D	6 ,,	6½ ,,
E	7 ,,	7½ ,,

The types of fibres considered are as follows :—

(i) True fibres have cortex enclosed in cuticle and are the finest fibres suitable for best quality clothing.

(ii) Heterotypic fibres are those which have both medulla as well as cortex intermittently along the cuticle, and are most suitable for carpet making and rugs.

(iii) Medullated fibres are those which consist of medulla throughout the length of the fibre.

RESULTS AND DISCUSSIONS

The results are given in Tables 1, 2 and 3 and will be discussed characterwise :—

TRUE WOOL FIBRES

The relevant data regarding true wool fibres are given in Table 1.

A. Spring Shearing

It will be observed from the data that the differences due to age groups were non-significant but there was more or less a general trend for true wool fibres to increase with advanced age from 3 to 7 years; although there was not much uniformity in this behaviour in the age group E.

B. Autumn Shearing

It will be noticed that the differences in values for various age groups were non-significant. There was decrease in true wool fibres due to advanced age from 3½ years to 7½ years, but here again, there was not much uniformity in values in the case of 5½ year's age.

Considering the two shearing seasons together, it is seen that the differences due to various age groups were non-significant, range of value for different age groups was 46.75 to 48.50 for spring shearing and 45.25 to 55.75 for autumn shearing; the values decreasing with advanced age from 3-3½ to 7-7½ years in both the cases. It will be further seen that the values of true wool fibres and the range was higher in case of autumn shearing as compared to spring shearing.

TABLE 1. Percentage of True Wool

	Spring shearing					Autumn shearing				
Age Groups	1	2	3	4	Average	1	2	3	4	Average
A	49	49	48	48	48.50	54	57	55	57	55.75
B	48	47	47	48	47.50	54	57	56	55	55.50
C	48	45	46	48	46.75	41	30	52	58	45.25
D	46	47	47	47	46.75	53	55	50	56	53.50
E	47	48	46	49	47.50	46	49	52	56	50.75

Analysis of Variance				Analysis of Variance			
Due to	*D.F.*	*M.S.*	*F.R.*	*Due to*	*D.F.*	*M.S.*	*F.R.*
Groups	4	2.07	21.15 NS	Groups	4	75.57	2.07 NS
Errors	15	0.96		Errors	15	36.41	

HETEROTYPIC WOOL FIBRES

A. Spring Shearing

It will be observed from the data (Table 2) that the difference due to age groups were non-significant. Nor was there any trend of variation with advanced age from 3 to 7 years.

B. Autumn Shearing

The differences in values for various age groups were non-significant but there was increase in heterotypic fibres due to advanced age except for D and E, where the trend changed.

Considering the two shearing seasons together, it is seen that the differences due to various age groups were non-significant and the range of values for different age groups was 34.00 to 35.25 per cent for spring shearing and 23.25 to 26.00 per cent for autumn shearing, the values increased with advanced age from 3½ to 5½ years in autumn shearing. It will be further seen that values of heterotypic wool and the range were lower in the case of autumn as compared to spring shearing.

TABLE 2. Percentage of Heterotypic Wool.

	Spring shearing					Autumn shearing				
Age Groups	1	2	3	4	Average	1	2	3	4	Average
A	33	33	36	34	34.00	24	22	23	24	23.25
B	37	37	36	35	36.25	24	23	27	23	24.25
C	35	36	35	36	35.30	32	38	26	21	29 25
D	37	36	34	37	36.00	26	24	27	22	24.75
E	36	34	37	35	35.50	28	27	27	22	26 00

Analysis of Variance				Analysis of Variance			
Due to	*D.F.*	*M.S.*	*F.R.*	*Due to*	*D.F.*	*M.S.*	*F.R.*
Groups	4	3.05	2.21 N.S.	Groups	4	21.50	1.51 N.S.
Errors	15	1.38		Errors	15	14.20	

MEDULLATED WOOL FIBRES

The relevant data of medullated wool fibres are given in Table 3.

A. Spring Shearing

The differences due to age groups were non-significant and there was no clear trend of variation of increase or decrease with advanced age.

B. Autumn Shearing

It will be observed that the differences in values for various age groups were non-significant and there was no clear trend of increase or decrease in medullated fibres due to advanced age.

Considering the two shearing seasons together, it is seen that the differences due to various age groups were non-significant and the range of values for different age groups was 16.25 to 17.75 per cent for spring shearing and 21.00 to 25.50 per cent for autumn shearing; the values increasing or decreasing with advanced age in both the cases. It will be further observed that the values of medullated fibres and the range were higher in autumn shearing as compared to spring shearing.

TABLE 3. Percentage of Medullated Wool Fibres

	Spring shearing					Autumn shearing				
Age Group	1	2	3	4	Average	1	2	3	4	Average
A	18	18	16	18	17.50	22	21	22	19	21.00
B	15	16	17	17	16.25	22	20	23	27	21.75
C	17	19	19	16	17.75	27	32	22	21	25.50
D	17	17	19	16	17.25	21	21	23	22	21.75
E	17	19	17	16	17.25	26	24	21	22	23.25

Analysis of Variance

Due to	*D.F.*	*M.S.*	*F.R.*
Groups	4	1.30 N.S.	0.89 N.S.
Errors	15	1.46	

Analysis of Variance

Due to	*D.F.*	*M.S.*	*F.R.*
Groups	4	12.82	1.82 N.S.
Errors	15	7.01	

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