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Effect of Sampling Period on Some Physical and Chemical Characteristics of Fleece from Menz Sheep

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Research Article

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ABSTRACT

This study was undertaken on pedigreed Menz sheep of both sexes which are being reared at Debre-Birhan Agricultural Research Center. The study was aimed to characterize the fleece quality of the breed and to determine the effect of sampling periods on various physical and chemical properties of fleece. The fleece samples were collected from the two sides and breeches of the sheep. Samples were collected thrice during the study period with six months interval. The fleece quality parameters viz. staple length (SL), scouring yield (SY), vegetable matter(VM) and wool wax(WW) were significantly different ($p<0.05$) across the sampling periods for all ewes and rams categorized in different age groups. In addition to this, the hetro fiber diameter (HTFD) and hairy fiber diameter (HRFD) of fleece from all rams were significantly different ($p<0.05$) across the sampling periods, while only hetro fiber diameter (HTFD) was varied across sampling periods for ewes aged 2 to 3 years. The differences observed June be attributed to the non-genetic factors particularly the nutrition of the sheep and the sampling period. Generally, this finding revealed, staple length, souring yield, vegetable matter and wool wax are consistently affected by sampling period and the high coefficient of variation indicates that there is a scope of selecting Menz rams and ewes for wool quality traits.

INTRODUCTION

Livestock products and by-products (in the form of meat, milk, honey, eggs, cheese, and butter) provide the much needed animal protein that contributes to the improvement of the nutritional status of the people. Livestock provide financial and social security to the owners in times of crop failure, as they are a “near-cash” capital stock. It also plays important roles in providing export commodities, such as live animals, hides, and skins to earn foreign exchanges to the country. According to CSA the sheep population of Ethiopia was estimated to be around 30.70 million heads, of the total population less than one percent is reared for wool production[1]. According to Solomon, sheep populations in the country are categorized in to nine distinct breeds. The breeds identified are Simien, Short-fat-tailed, Weshera, Gumz, Horro, Arsi, Bonga, Afar, Blackhead Somali sheep [2]. All these breeds are reared under different agro ecological zones and can be distinguished phenotypically; this can be associated with both natural and artificial selection by the farmers [3]. Menz sheep is considered as the only coarse fleece producing sheep breed which is traditionally reared in the highlands of Menz region of the country. However, information on the fleece quality parameters of the breed is lacking. The quality of the fleece is influenced by several factors viz. breed of the sheep, system of management, feeding, sampling period, season and methods of shearing. All these factors determine the amount of clean fleece that can be obtained from the sheep breeds. The wool can be sold in different way; either as a processed or semi-processed to the factories or even for the development of handicrafts. In both ways it can lead to the generation of rural employment [4,5]. Traditionally the products made from the fleece of Menz sheep are blanket, carpets and local cloth such as bernos. Menz sheep in its native tract is reared for both mutton and fleece production. The natural habitat of the breed is North Shoa and parts of Wollo Zone of the Amhara Region. This breeding tract is situated within 10-11°N latitude and 39-40°E longitude. The altitude in most cases is above 2500 m.a.s.l. and the climate is cold and harsh occasionally encountered with frost, particularly between November and January. The average annual precipitation ranges between 900 and 1360 mm and the rainfall pattern is bimodal. The breed possesses good adaptive features viz. ability to thrive on poor quality feed and survive under harsh cold climate. However, reports byMukasashowed that slow growth rate (resulting in low market weight) is one of the limiting factors towards the profitability of the breed[6]. Results of a study by indicated that, an adult Menz sheep produces around 1 kg of greasy fleece annually. The body of the sheep is compact and mostly covered with coarse hair with a wooly undercoat. The coat color of Menz sheep is generally black or dark brown, sometimes with white spots on the head, neck and leg. Other colors of the fleece such as light brown, roan and white are occasionally

observed. However there is no any study have been carried out to explore the effect of sampling period on fleece quality parameters of fiber from Menz sheep. Thus, the present study was undertaken with the objective of exploring the effect of sampling periods on some physical and chemical trait of fleece from Menz sheep.

MATERIALS AND METHODS

Description of the study area

This study was conducted in sheep farm of DebreBirhan Agricultural Research Center which is located, 120 km North of Addis Ababa in Amhara Regional State. The center is situated between 09035'45" to 09036'45" N (Latitude) and from 390 29'40" to 39031'30" E (Longitude) at an altitude of 2828 m.a.s.l. The mean annual temperature and Rainfall is 19.9°C and 897.8 mm, respectively. DebreBirhan Agricultural Research Center is spread across 260.81 ha[7].

Animals and their management

The fleece samples for this study were collected from 83 pedigreed Menz sheep during a period between Dec 02, 2013 and Nov 27, 2014. All the animals were individually identified by their ear tags. The sheep were managed according to the management guidelines of DebreBirhan Agriculture Research Center sheep farm. To control the ecto-parasites they were regularly sprayed at six to twelve month interval with acaricides (Diazinole), the dosage was fixed according to the manufacturer's recommendation. In order to control the incidences of anthelmintic such as Albendazole, Tetracozash (Oxyclozanide, 450 mg. TetramisoleHCl, 450 mg) and Fascinex (triclabendazole) were administered according to the manufacturer's recommendation and depending on the exposure of sheep to the internal parasite. The sheep were regularly vaccinated against different diseases, prevailing in the area. The age of sheep were assessed from their pedigree records as are being maintained by the institute and the animals were divided according to their age and sex based on the information obtained from the farm. Regarding to feeding, the ewes, weaned lambs and rams were allowed to graze separately; they were also provided hay prepared from Andropogen (Andropogenabi sinicus) grass by combining with succulent forage from Clover (Trifolium sp L) and Vetch (Vicia dasycarpa L). Concentrate was also provided as supplementary feed in the pens which was additional to the grass. Drinking water and supplementary forages were provided twice a day i.e. mid-day and early in the evenings and the concentrate was provided once in a day i.e during the mid-day. The breeding practice was controlled among the studied flock and it has been done to minimize the effect of inbreeding. The sheep are sheared once a year in the month of June and the month of shearing however depends on the availability of the professionals for this specific work.

Sampling and analysis procedures

Fleece samples were collected thrice during the study period and at six-month intervals on December 2, 2013; June 31, 2014; and November 27, 2014, consecutively as suggested byDagur. The samples were labeled and stored in plastic bags, prior to assessment of the physical and chemical parameters. The physical parameters (of the fleece) analyzed were, staple length (cm), crimp (numbers/inch), fiber diameter (μm) (wool, hetro and hairy), of types of fibers (numbers) (wool, hetero and hairy). While, the respective chemical parameters were scouring yield (%), wool wax (%), burr/vegetable matter (%). The above mentioned parameters were assessed according to the methods suggested by Dagur [8-10].

The scouring yield (%) was calculated as follows in "Equation (1)".

$$SY(\%)=(W2/W1) \times 100$$

SY (%)=Scouring yield in percent, W1=Conditioned weight of the original sample,

W2=Conditioned weight of the scoured sample

The Wool Wax (%) was calculated as indicated in "Equation (2)".

$$WW(\%)=(W2/W1) \times 100$$

WW (%)=wool wax in percent, W1=oven dry weight of the original sample,

W2=oven dry weight of the extracted sample

The Burr/Vegetable matter (%) was computed as described in "Equation (3)".

$$VM(\%)=(W2/W1) \times 100 \times c.f$$

W2=oven dry weight of the vegetable matter, W1=weight of the original sample, c.f=correction factor of tropical area.

Data analysis

The mean and standard error of wool quality parameters were analyzed using the descriptive statistics. The data was analyzed statistically using SPSS V.20 for Windows, the means of the observations were compared using Duncan's multiple Range Test and one way analysis of variance.

RESULTS

Effect of sampling period on fleece trait from rams

The results pertaining to the effect of sampling periods on physical and chemical parameters of the fleece of Menz rams aged 2-3 years are presented in Table 1. The result indicated that the average SL was lower in the third sampling period. The sequel pertaining to the average values for the HTFD also differed across the sampling periods with lower values ($p<0.05$) being observed during the first and third samplings. The average value of HRFD too was lower in the first sampling period. The average value of WW was also lower during the third sampling period. The result also indicated that the SY was similar during the first two sampling periods which however differed ($p<0.05$) in the third period, while the percentage of VM was similar in the first and third sampling, which was however lower ($p<0.05$) than that of during the second sampling. The result pertaining to the physical and chemical parameters of fleece from Menz rams aged ≥ 3 years are presented in Table 2. The result indicate that the values for SL varied ($p<0.05$) across the sampling periods with lower values observed during the third sampling period. The values pertaining to the fiber diameter of hetero and hairy fibers were lower ($p<0.05$) among the rams during the first sampling period. The WW was lower ($p<0.05$) during the third period of sampling while SY during the first and second sampling period was ($p<0.05$) lower when compared to that of the third sampling. The result of the VM were similar during the first and third periods of sampling which was however lower ($p<0.05$) than those of the second period.

Effect of sampling period on fleece traits from ewes

The result pertaining to the physical and chemical traits of fleece from Menz ewes aged between 2-3 years are presented in Table 3. The results indicate that the SL and WW was lower ($p<0.05$) during the third period of sampling, while the average HTFD was lower ($p<0.05$) during the first sampling. The SY too indicated variation across the samplings with lower yield ($p<0.05$) during the first and second period. The VM was observed to be lower during the first and the third period of sampling. The result pertaining to the least square means of wool quality parameter for the Menz ewes aged ≥ 3-5 years are presented in Table 4. The findings indicate that the values for the SL and VM were low ($p<0.05$) during the first and third sampling, while the values for WW and SY was ($p<0.05$) lower in the third and second shearing, respectively. The result for the physical and chemical properties of ewes aged>5 years is presented in Table 5. It transpires from the result that the SL and WW values was lower ($p<0.05$) among the third sampling. The differences among the values of the SY and VM too were observed with lower ($p<0.05$) values during the second sampling period, while the VM in the fleece was observed to be lower ($p<0.05$) during the first and the third samplings.

DISCUSSION

Effect of sampling period on fleece traits from rams

Rams aged 2-3 years: The results as presented in Table 1 indicate that SL values were lower during the third sampling period among the rams aged 2 – 3 years. This is in collaborative to the study of who indicated significant effect of the time of shearing on wool quality traits including the staple length (as the shearing calendar of the farm indicates that the third sampling took place six months after the annual sharing)[11,12].

The observation regarding the influence of season on growth of the staples is in concurrence with the reports of Poppi [13-15]. The influence of nutrients on the diameters of wool follicle too has also been reported by Russel [16]. The development of coarser fibers (hairy and hetero) can be correlated with the growth of similar fiber types, the findings are in accordance with those of Sahoo [17]. The results also indicates that there was a variation ($p<0.05$) in the diameter of the HTFD and HRFD, which were higher during the second sampling. The observations are also in accordance with the results of Khan [18]. The high coefficient of variation (CV) of the hetero fibers (as observed among the rams) during the second sampling period is also in accordance with the observations of Sahoo [17]. The higher CV in the percentage of fibers especially wooly and hetero type indicates that uniformity was lacking in these two fiber types, which is desirable for carpet type wools, the observations was in close accordance with that of Chapman[19].

The high CV values lso indicate that there is a possibility of within breed selection for the traits. The result also indicated that there were variation ($p<0.05$) in WW and SY. The former was lower during the third period of sampling, while the SY was higher during third sampling period; however the WW was higher in second period. These June be due to the nutritional effect and the exposure of greasy fleece to attract dust particles which leads to the lower scouring yield. The results are in accordance with the findings of Daly and Robert [20,21]. The finding of the SY was in agreement with Qureshi[22]as shearing and sampling period had influence on the trait. The result in this study indicate that there was variation ($p<0.05$) for VM among the rams with a higher value during the second sampling. However there were no variation ($P>0.05$) between first and third samplings. This June be due to the effect of time of shearing and sampling. The finding was in accordance with study by.

Table 1: Least Square Mean (LSM ± SE) of fleece quality parameters at 3 consecutive sampling periods of Menz rams aged 2 - 3 years.

Wool quality	1st Sampling Period		2nd Sampling Period		3rd Sampling Period	
	LSM ± SE	CV	LSM ± SE	CV	LSM ± SE	CV

SL (cm)	6.89 ± 0.18[b]	9.53	7.78 ± 0.23[c]	7.18	5.48 ± 0.29[a]	12.91
NC (Per inch)	3.80 ± 0.11	10.68	3.89 ± 0.14	8.57	3.60 ± 0.11	7.67
WFT (%	38.62 ± 5.73	53.46	39.67 ± 9.34	57.7	41.17 ± 9.46	56.31
HTFT (%)	35.38 ± 4.81	49.05	33.67 ± 6.56	47.73	30.67 ± 7.87	62.88
HRFT (%)	26.00 ± 2.31	32.06	26.67 ± 3.07	28.23	28.17 ± 2.02	17.6
WFD (µm)	26.58 ± 1.08	14.71	28.38 ± 1.57	13.57	28.46 ± 0.99	8.55
HTFD (µm)	29.62 ± 1.22[a]	14.85	47.95 ± 5.06[b]	25.84	35.95 ± 2.06[a]	14.02
HRFD (µm)	73.04 ± 4.41[a]	21.76	94.26 ± 7.68[b]	19.97	88.46 ± 5.69[ab]	15.75
WW (%)	9.57 ± 0.31[b]	11.82	9.65 ± 0.15[b]	3.91	7.88 ± 0.30[a]	9.3
SY (%)	68.05 ± 1.41[a]	7.48	67.59 ± 1.64[a]	5.95	85.29 ± 1.27[b]	3.65
VM (%)	0.67 ± 0.10[a]	52.47	1.21 ± 0.25[b]	51.56	0.34 ± 0.07[a]	48

Note: Value with the same row with different superscript are significantly different each other (P<0.05). SL: Staple Length; NC: Number of Crimp; WFT: Wooly Fiber Type; HTFT: Hetero Fiber Type; HRFT: Hairy Fiber Type; WFD: Wooly Fiber Diameter; HTFD: Hetero Fiber Diameter; HRFD: Hairy Fiber Diameter; WW: Wool Wax; SY: Scouring Yield; VM: Vegetable Matter.

Rams aged ≥ 3 years

The results pertaining to the physical and chemical properties of fleece of rams aged ≥ 3 years presented in Table 2 indicates that there was a variation among the SL where the values were lowest at third sampling period. This June be collaborative to the study by Sumner [11,12] who indicated significant effect of time of shearing on SL. The results also indicate that there was a variation (p<0.05) in the HTFD and HRFD and the values were higher among those in the third sampling period. The values of WW too varied (p<0.05) among the rams, with the lowest value in third sampling which was in line with study by Qureshi [22]. The findings also indicate that there was a variation (p<0.05) in the SY where the values were highest among those in the third sampling period indicating that the fleece was the cleanest during that phase. The observations are in close accordance with those of Qureshi [22]. The VM was highest during the second sampling period and while the difference as observed June be because the second sampling coincided with the early rainy season when there are chances of the fibers getting entangled with mud and foreign matters thereby lowering the SY. The difference as observed during the second sampling periods is in accordance with study by Qureshi [22].

Table 2: Least Square Mean (LSM ± SE) of fleece quality parameters at 3 consecutive sampling periods of Menz rams aged ≥ 3 years.

Wool quality	1st Sampling Period		2nd Sampling Period		3rd Sampling Period	
	LSM ± SE	CV	LSM ± SE	CV	LSM ± SE	CV
SL (cm)	6.22 ± 0.39[ab]	15.17	7.26 ± 0.33[b]	10.32	5.26 ± 0.40[a]	15.28
NC (Per inch)	4.14 ± 0.29	17.19	4.32 ± 0.28	14.72	4.10 ± 0.33	16.33
WFT (%	37.00 ± 10.22	67.69	38.80 ± 11.88	68.47	37.75 ± 14.59	77.3
HTFT (%)	37.17 ± 10.53	69.42	35.00 ± 11.56	73.87	34.25 ± 14.53	84.87
HRFT (%)	25.83 ± 2.87	27.2	26.20 ± 1.62	13.87	28.00 ± 2.74	19.56
WFD (µm)	25.97 ± 1.22	11.54	30.19 ± 1.40	10.38	28.09 ± 1.52	10.81
HTFD (µm)	31.68 ± 5.00[a]	38.69	43.68 ± 4.28[ab]	21.91	50.41 ± 5.41[b]	21.47
HRFD (µm)	61.68 ± 5.10[a]	20.26	79.39 ± 7.49[ab]	21.11	87.92 ± 5.62[b]	12.8
WW (%)	10.58 ± 0.39[b]	9.1	10.87 ± 0.46[b]	9.49	9.00 ± 0.32[a]	7.21
SY (%)	62.56 ± 1.81[a]	7.09	58.48 ± 2.17[a]	8.3	83.71 ± 4.50[b]	10.74
VM (%)	0.68 ± 0.12[a]	43.11	1.14 ± 0.11[b]	21.95	0.48 ± 0.07[a]	29.95

Note: Value with the same row with different superscript are significantly different each other (P<0.05). SL: Staple Length; NC: Number of Crimp; WFT: Wooly Fiber Type; HTFT: Hetero Fiber Type; HRFT: Hairy Fiber Type; WFD: Wooly Fiber Diameter; HTFD: Hetero Fiber Diameter; HRFD: Hairy Fiber Diameter; WW: Wool Wax; SY: Scouring Yield; VM; Vegetable Matter.

Effect of sampling period on fleece traits from ewes

The results pertaining to the physical and chemical parameters of fleece from ewes aged 2-3 years are presented in Table 3. The results too are in consistent with those of the rams with higher values of SL, HTFD and WW, while the SY was lower and VM higher during the second sampling. The results from the Tables 3-5 too indicate that the physical and chemical parameters of the fleece sampled for ewes aged 2 - 3 years, ≥ 3-5 years and those ≥ 5 years, respectively had higher SL during the second sampling phase while the WW and VM was highest during the same period. High WW is expected to cement foreign matters and hence June also help in entanglement of vegetable matters; consequently the SY was depressed during second phase. The SY was however higher during the third phase of sampling. The reasons June be similar to those discussed ahead. The high CV for traits like WFT, HTFT for both the sexes indicates a possibility for selection for the two traits, which is encouraging for breeding Menz sheep as a carpet wool breed.

Table 3: Least Square Mean (LSM ± SE) of wool quality parameters at 3 consecutive sampling periods of Menz ewes aged 2 - 3 years.

Wool quality Parameters	1st Sampling Period		2nd Sampling Period		3rd Sampling Period	
	LSM ± SE	CV	LSM ± SE	CV	LSM ± SE	CV
SL (cm)	5.74 ± 0.20ab	9.71	6.47 ± 0.27b	9.36	5.08 ± 0.33a	14.35
NC (Per inch)	3.88 ± 0.12	8.93	4.07 ± 0.14	7.67	3.88 ± 0.11	6.06
WFT (%	38.50 ± 7.77	57.11	36.80 ± 5.85	35.56	36.40 ± 4.17	25.6
HTFT (%)	35.00 ± 6.22	50.26	36.20 ± 5.26	32.47	37.80 ± 2.96	17.49
HRFT (%)	26.50 ± 2.77	29.58	27.00 ± 3.91	32.39	25.80 ± 2.75	23.8
WFD (µm)	24.98 ± 0.39	4.46	28.63 ± 1.61	12.57	28.41 ± 1.84	14.46
HTFD (µm)	30.27 ± 1.42a	13.23	53.88 ± 8.99b	37.31	63.09 ± 9.92b	35.16
HRFD (µm)	76.21 ± 8.14	30.2	85.30 ± 8.16	21.4	97.03 ± 7.02	16.17
WW (%)	7.93 ± 0.38ab	13.58	9.34 ± 0.72b	17.32	7.28 ± 0.20a	6.06
SY (%)	64.29 ± 2.36a	10.4	62.04 ± 3.39a	12.24	74.82 ± 1.27b	3.81
VM (%)	0.65 ± 0.10a	45.19	1.62 ± 0.35b	48.97	0.34 ± 0.07a	43.07

Note: Value with the same row with different superscript are significantly different each other (P<0.05). SL: Staple Length; NC: Number of Crimp; WFT: Wooly Fiber Type; HTFT: Hetero Fiber Type; HRFT: Hairy Fiber Type; WFD: Wooly Fiber Diameter; HTFD: Hetero Fiber Diameter; HRFD: Hairy Fiber Diameter; WW: Wool Wax; SY: Scouring Yield; VM: Vegetable Matter.

Table 4: Least Square Mean (LSM ± SE) of wool quality parameters at 3 consecutive sampling periods of Menz ewes aged ≥ 3 -5 years.

Wool quality Parameters	1st Sampling Period		2nd Sampling Period		3rd Sampling Period	
	LSM ± SE	CV	LSM ± SE	CV	LSM ± SE	CV
SL (cm)	5.74 ± 0.31[a]	14.13	7.02 ± 0.29[b]	9.29	5.10 ± 0.51[a]	20.01
NC (Per inch)	4.13 ± 0.10	6.2	4.11 ± 0.11	6.02	3.86 ± 0.09	4.42
WFT (%	39.71 ± 3.58	23.83	38.40 ± 6.23	36.3	36.50 ± 8.49	46.52
HTFT (%)	33.14 ± 4.32	34.51	35.20 ± 6.65	42.25	36.25 ± 8.87	48.95
HRFT (%)	27.14 ± 1.91	18.6	26.40 ± 2.86	24.2	27.25 ± 1.93	14.17
WFD (µm)	26.48 ± 0.89	8.92	25.22 ± 0.22	1.96	28.37 ± 2.48	17.47
HTFD (µm)	38.45 ± 3.32	22.82	41.21 ± 4.16	22.6	50.79 ± 8.79	34.62
HRFD (µm)	85.19 ± 6.88	21.37	85.22 ± 8.03	21.06	107.24 ± 4.73	8.83
WW (%)	8.86 ± 0.69[ab]	20.59	10.74 ± 0.55[b]	11.46	7.80 ± 0.37[a]	9.41
SY (%)	65.30 ± 1.60[ab]	6.5	57.53 ± 2.91[a]	11.31	70.65 ± 3.99[b]	11.28
VM (%)	0.50 ± 0.03[a]	15.53	1.31 ± 0.17[b]	29.14	0.50 ± 0.07[a]	28.86

Note: Value with the same row with different superscript are significantly different each other (P<0.05). SL: Staple Length; NC: Number of Crimp; WFT: Wooly Fiber Type; HTFT: Hetero Fiber Type; HRFT: Hairy Fiber Type; WFD: Wooly Fiber Diameter; HTFD: Hetero Fiber Diameter; HRFD: Hairy Fiber Diameter; WW: Wool Wax; SY: Scouring Yield; VM: Vegetable Matter.

Table 5: Least Square Mean (LSM ± SE) of wool quality parameters at 3 consecutive sampling periods of Menz ewes aged ≥ 5 years.

Wool quality Parameters	1st Sampling Period		2nd Sampling Period		3rd Sampling Period	
	LSM ± SE	CV	LSM ± SE	CV	LSM ± SE	CV
SL (cm)	5.07 ± 0.19b	15.77	5.43 ± 0.22b	9.96	4.24 ± 0.27a	15.49
NC (Per inch)	3.78 ± 0.12	13.53	3.82 ± 0.15	9.36	3.66 ± 0.15	9.74
WFT (%)	40.71 ± 5.46	55.29	37.67 ± 9.73	63.29	37.67 ± 9.74	63.31
HTFT (%)	31.00 ± 4.63	61.56	34.00 ± 7.83	56.42	35.00 ± 8.71	60.96
HRFT (%)	28.29 ± 1.92	27.91	28.33 ± 2.59	22.4	27.33 ± 1.61	14.39
WFD (µm)	26.54 ± 0.70	10.84	29.72 ± 2.19	18.07	27.48 ± 1.16	10.31
HTFD (µm)	40.74 ± 4.87	49.32	64.14 ± 12.61	48.14	61.44 ± 11.55	46.06
HRFD (µm)	89.38 ± 4.55	20.99	100.04 ± 8.08	19.78	107.33 ± 7.03	16.04
WW (%)	9.72 ± 0.27b	11.48	10.56 ± 0.77b	17.81	8.22 ± 0.45a	13.34
SY (%)	64.99 ± 1.40b	8.89	53.34 ± 2.98a	13.68	72.37 ± 1.42c	4.81
VM (%)	0.51 ± 0.05a	40.35	1.39 ± 0.19b	33.35	0.32 ± 0.05a	38.51

Note: Value with the same row with different superscript are significantly different each other (P<0.05). SL: Staple Length; NC: Number of Crimp; WFT: Wooly Fiber Type; HTFT: Hetero Fiber Type; HRFT: Hairy Fiber Type; WFD: Wooly Fiber Diameter; HTFD: Hetero Fiber Diameter; HRFD: Hairy Fiber Diameter; WW: Wool Wax; SY: Scouring Yield; VM: Vegetable Matter.

CONCLUSION

Menz sheep is the only coarse wool producing breed in Ethiopia. The sheep are dominantly rearing in the Menz areas of the Central Highlands of Ethiopia. Fleece of this breed is used to prepare handicrafts thereby providing employment to many people in the Menz areas and surrounding Debre-Birhan. The fleece quality parameters viz. staple length, scouring yield, vegetable matter and wool wax were significantly different across the sampling periods for all ewes and rams categorized in different age groups. The hetro fiber diameter (HTFD) and hairy fiber diameter (HRFD) of fleece from all rams were vary across the sampling periods, while only hetro fiber diameter (HTFD) was observed as different across sampling periods for ewes aged 2-3 years. Generally this finding revealed, staple length, souring yield, vegetable matter and wool wax are consistently affected by sampling period and the high coefficient of variation indicates that there is a scope of selecting Menz sheep for wool quality traits.

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