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Studies on body measurements of Madgyal sheep at different age groups at organised farm

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Abstract

The present study entitled to "Effect of Non-genetic Factors on Performance in Madgyal sheep at Organized Farm". The data on Madgyal sheep generated at the "Punyashlok Ahilyadevi Sheep and Goat Development Project, Mahud." Tq. Sangola, Dist. Solapur (M.H.) was considered for the study. The "Punyashlok Ahilyadevi Sheep and Goat Development Project", Mahud use to maintain Madgyal sheep. The data accumulated on body measurement, reproduction and production for 0-3 months, 4-6 months, 7-12 months, 13-36 months and above 36 months were taken from individual's records, maintained at the "Punyashlok Ahilyadevi Sheep and Goat Development Project" Mahud. In records 439 Madgyal sheep for period of 2 years (2021 & 2022) were included in the study. The data collected and subjected to the least squares analysis of body measurement. The body measurement consist various parameters such as body length, chest girth, height at wither and height at hip. The overall least squares means for body length 45.78 ± 1.31 , 69.76 ± 0.99 , 76.04 ± 1.20 , 85.19 ± 1.32 and 86.39 ± 2.69 , chest girth 49.00 ± 1.63 , 73.90 ± 0.99 , 82.55 ± 1.24 , 95.54 ± 1.57 and 95.13 ± 2.33 , height at wither 48.07 ± 1.30 , 73.52 ± 0.92 , 78.39 ± 1.11 , 84.76 ± 7.58 and 84.97 ± 2.52 and height at hip 48.35 ± 1.32 , 74.07 ± 0.89 , 78.48 ± 1.08 , 84.88 ± 1.23 and 85.45 ± 2.28 for 0-3 months, 4-6 months, 7-12 months, 13-36 months and above 36 months.

Keywords: Madgyal sheep, non-genetic factors, body length, chest girth, height at wither, height at hip

Introduction

Morphometric characterization' refers to the quantitative analysis of form, a concept that encompasses size and shape. The first phase of characterization involves the identification of population based on morphological descriptors. In areas where tree population on common lands is dense, sheep keepers bring lopped branches for supplementary feeding. Shepherds or small holders also need to continue their income generation through sheep farming. Hence, farmers are opting for the semi intensive method or stall feeding method of rearing in most of the livestock (Gizaw *et al.* 2007) [4]. Maharashtra.

Madgyal breed distributed in the districts of Sangali, Satara, and Solapur. Madgyal are unique sheep of Maharashtra popular for mutton. They are large sized animals, predominantly white with brown patches or spots. Few white as well as brown animals are also seen. The coat colour varies from white with brown patches to light brown with white patches. Head, face, belly and legs are devoid of wool. These sheep have prominent brown ring around the eyes. Backline is straight both sexes are polled and have typical roman nose. The ears are long, leaflike and drooping, the tail is medium and thin, and fleece is extremely coarse, hairy and open. Wattles are observed in a number of animals. Legs are long, strong and thin with grey hooves, udder is round with cylindrical teats and pointed tip.

Materials and Methods

Location: "The Punyashlok Ahilyadevi Sheep and Goat Development Project, Mahud". Tq. Sangola, Dist. Solapur. pin 413107 (MS).

Compilation of data: The data accumulated on selected parameter namely body measurement, 0-3 month, 4-6 month, 7-12 month and 13-36 month and above 36 month of age body measurement characteristics in respect of Madgyal sheep during the period from 2021

and 2022 data was compiled from individual records of lambing and breeding records maintained at the "Punyashlok Ahilyadevi Sheep and Goat Development Project, Mahud". Ta. Sangola, Dist. Solapur (MS).

Classification of data: The raw data was collected on the characters under study were classified in suitable sub-class frequency and were subjected for correction. The data was classified in to,

Effects: Following non-genetic factors effects were considered as source of variation.

Season: As per the climatological condition of farm the data of each year were divided into four seasons as: S1-Winter Season (December to February), Sz-Summer Season (March to May), S3- Pre-Monsoon Season (June to September) and S4- Post-Monsoon Season (October to November)

Period: The data of 2 years period of body measurements were grouped into following 2 period viz., PI- January to December

2021 and P2- January to December 2022 Sex OI- Male and – Female.

Results and Discussion

Table 1. Presented that the LSMs for body length of Madgyal sheep were 45.78 ± 1.31 em at 0–3 months of age. Lower values of body length in different breeds of sheep were outlined by Arora *et al.* (2007) ^[1] as 41.42 ± 0.46 em in Jaislmeri Sheep, Dass *et al.* (2008) ^[3] 38.04 ± 0.27 in Pugal sheep. Period effect on body length at 0-3 months of age in Madgyal sheep. The LSMs for body length in the Madgyal sheep was recorded as 45.37 ± 1.90 and 46.20 ± 1.48 em, respectively in the PI and P2 Period. Season effect on body length at 0-3 months of age in Madgyal sheep. The Madgyal sheep LSMs for body length in the S1, S2, S3, and S4 seasons were 45.34 ± 1.85 , 48.47 ± 2.72 , 46.71 ± 2.68 , and 46.71 ± 2.68 em, in that sequence. Sex effect on body length in 0-3 months of age in Madgyal sheep. The LSMs for body length in the OI and O2 sex groups of the Madgyal sheep were 46.03 ± 1.26 em and 45.53 ± 2.18 em, respectively.

Table 1: LSMS and SE for body measurements of Madgyal sheep at 0-3 months

source	code	N	LSM±SE			
			Bodyweight	Chest girth	Height at wither	Height at hip
Mean	IJ	78	45.78 ± 1.31	49.00 ± 1.63	48.07 ± 1.30	48.35 ± 1.3
Period	PI	29	$45.37 \pm 1.90a$	$48.33 \pm 2.36a$	$48.26 \pm 1.89b$	$48.35 \pm 1.92a$
	P2	49	$46.20 \pm 1.48b$	$49.66 \pm 1.84b$	$47.87 \pm 1.48a$	$48.35 \pm 1.50a$
Season	si	29	$45.34 \pm 1.85b$	$50.29 \pm 2.29C$	$48.28 \pm 1.84b$	$48.74 \pm 1.87b$
	s2	12	$48.47 \pm 2.72d$	$51.37 \pm 3.38d$	$48.91 \pm 2.71c$	$49.33 \pm 2.75C$
	s3	13	$46.71 \pm 2.68C$	$49.14 \pm 3.33b$	$48.99 \pm 2.67C$	$49.61 \pm 2.71c$
	s4	24	$42.61 \pm 1.96a$	$45.18 \pm 2.44a$	$46.08 \pm 1.95a$	$45.71 \pm 1.98a$
Sex	OI	58	$46.03 \pm 1.26b$	$49.36 \pm 1.57b$	$48.52 \pm 1.26b$	$48.48 \pm 1.28b$
	O2	20	$45.53 \pm 2.18a$	$48.63 \pm 2.71a$	$47.61 \pm 2.17a$	$48.22 \pm 2.20a$

Table 1. Manifested that the LSMs for chest girth of Madgyal sheep were 49.00 ± 1.63 em at 0–3 months of age. Lower values of chest girth in different breeds of sheep were outlined by Arora *et al.* (2007) ^[1] as 48.86 ± 0.57 em in Jaislmeri sheep, Das *et al.* (2008) ^[3] 36.84 ± 0.90 em in Pugal sheep. Period effect on chest girth at 0-3 months of age in Madgyal sheep. In the PI and Pz Period, the Madgyal sheep LSMs for chest girth were 48.33 ± 2.36 and 49.66 ± 1.84 em, respectively. Season effect on chest girth at 0-3 months of age in Madgyal sheep. The Madgyal sheep LSMs for chest girth in the S1, S2, SJ, and S4 seasons were 50.29 ± 2.29 , 51.37 ± 3.38 , 49.14 ± 3.33 , and 45.18 ± 2.44 em. Sex effect on chest girth in 0-3 months of age in Madgyal sheep. In the GI and Gz sex groups of the Madgyal sheep, the LSMs for chest girth were 49.36 ± 1.57 em and 48.63 ± 2.71 em, respectively. Table 1. Recorded the LSMs for height at wither of Madgyal sheep which were 48.07 ± 1.30 em at 0–3 months of age. Lower values of height at wither in different breeds of sheep were outlined by Arora *et al.* (2007) ^[1] as 45.23 ± 0.38 em in Jaislmeri Sheep, Das *et al.* (2008) ^[3] 40.56 ± 0.90 em in Pugal sheep. Period effect on height at wither at 0-3 months of age in Madgyal sheep. In the PI and Pz Periods, the Madgyal sheep length at maturity (LSMs) were 48.26 ± 1.89 and 47.87 ± 1.48 em, respectively. Season effect on height at wither at 0-3 months of age in Madgyal sheep. The LSMs for height at wither in the S1, S2, S3 and S4 season of the Madgyal sheep were in order as 48.28 ± 1.84 , 48.91 ± 2.71 , 48.99 ± 2.67 and 46.08 ± 1.95 em. Sex effect on height at wither in 0-3 months of age in Madgyal sheep. In the GI and G2 sex groups of the Madgyal sheep, the LSMs for height at wither were 48.52 ± 1.26 em and 47.61 ± 2.17 em. Table 1 shows that the LSMs for height at hip

of Madgyal sheep of were 48.35 ± 1.32 em at 0–3 months of age. Higher values of height at hip in different breeds of sheep were outlined by Yilmaz *et al.* (2012) ^[8] as 68.37 ± 0.44 em in Karya sheep. Period effect on height at hip at 0-3 months of age in Madgyal sheep. The LSMs for height at hip in the Madgyal sheep were 48.35 ± 1.92 and 48.35 ± 1.50 em, respectively in the PI and P2 Period. Season effect on height at hip at 0-3 months of age in Madgyal sheep. The LSMs for height at hip in the S1, S2, S3 and S4 season of the Madgyal sheep were, in order, 48.74 ± 1.87 , 49.33 ± 2.75 , 49.61 ± 2.71 and 45.71 ± 1.98 em. Sex effect on height at hip in 0-3 months of age in Madgyal sheep In the GI and Gz sex groups of the Madgyal sheep, the LSMs for height at hip were 48.48 ± 1.28 em and 48.22 ± 2.20 em, respectively.

Body length of Madgyal sheep at 4-6 months of age

Table 2. shows that the LSMs for body length of Madgyal sheep of were 69.76 ± 0.99 em at 4- 6 months of age. Lower values of body length in different breeds of sheep were outlined by Arora *et al.* (2007) ^[1] as 49.11 ± 0.20 em in Jaislmeri sheep, Das *et al.* (2008) ^[3] 50.57 ± 0.21 em in Pugal sheep. The LSMs for body length in the Madgyal sheep were 69.24 ± 1.35 and 70.28 ± 1.16 em, respectively in the Pt and P2 period. In the Gt and sex groups of the Madgyal sheep, the LSMs for body length were 69.36 ± 1.01 em and 70.16 ± 1.62 em, respectively. Table 2. Shows that the LSMs for chest girth of Madgyal sheep of were 73.90 ± 0.99 em at 4-6 months of age. Lower values of chest girth in different breeds of sheep were outlined by Arora *et al.* (2007) ^[7] as 56.09 ± 0.20 em in Jaislmeri sheep.

Table 2: LSMS and SE for body measurements of Madgyal sheep at 4-6 months

source		code	N			
			Bodylength	Chest girth	Height at wither	Height at hip
Mean IJ		104	69.76±0.99	73.90±0.99	73.52±0.9	74.07±0.89
Period	Pt	47	69.24±L35a	72.81±L34a	72.35±L25a	72.91±L21a
	P2	57	70.28±L16b	74.99±L15b	74.69±L07b	75.24±L03b
Season	St	42	69.57±L34b	7L60±L33a	72.44±1.24b	73.32±1.19b
	s2	17	69.15±1.91a	74.73±1.89b	71.86±1.77a	72.22±1.70a
	S3	10	70.56±2.49d	74.50±2.47b	76.12±2.31d	76.23±2.22d
	s4	35	69.77±1.39C	74.75±L38b	73.66±1.29C	74.52±1.24c
Sex	Gt	79	69.36±L01a	73.19±L01a	72.47±0.94a	72.85±0.9a
	02	25	70.16±L62b	74.61±L60b	74.57±L50b	75.29±L44b

The LSMs for chest girth in the Madgyal sheep were 72.81±1.34 and 74.99±1.15 em, respectively in the Pt and P2 Period. The LSMs for chest girth in the St, S2, S3 and S4 season of the Madgyal sheep were, in order, 7L6±L33, 74.73±1.89, 74.50±2.47 and 74.75±L38 em. In the G1 and sex groups of the Madgyal sheep, the LSMs for chest girth were 85.12±L52 em and 79.97±L83 em, respectively. Table 2. shows that the LSMs for height at wither of Madgyal sheep of were 73.52±0.90 em at 4-6 months of age. The L8Ms for height at wither in the Madgyal sheep were 72.35±1.25 and 74.69±1.07 em, respectively in the P1 and P2 Period. The L8Ms for height at wither in the 81, 82, 83 and 84 season of the Madgyal sheep were, in order, 72.44±1.24, 71.86±1.77, 76.12±2.31 and 73.66±1.29 em. In the G1 and 02 sex groups of the Madgyal sheep, the LSMs for height at wither were 72.47±0.94 and 74.57±1.50 em, respectively. The L8Ms for height at hip of Madgyal sheep of were 74.07±0.89 em at 4-6 months of age. Lower values of height at hip in different

breeds of sheep were outlined by Baffour *et al.* (2000) ^[2] 71.01±0.61. The L8Ms for height at hip in the Madgyal sheep were 72.91±1.21 and 75.24±1.03 em, respectively in the Pt and P2 Period. The LSMs of height at hip in the St, 82, 83 and S4 season of the Madgyal sheep were, in order, 73.32±1.19, 72.22±1.70, 76.23±2.22 and 74.52±1.24 em. In the Gt and G2 sex groups of the Madgyal sheep, the LSMs for height at hip were 72.85±0.90 em and 75.29±1.44 em, respectively. Table 3. Shows that the LSMs for body length of Madgyal sheep of were 76.04±1.20 em at 4-6 months of age. The L8Ms for body length in the Madgyal sheep were 78.08±1.50 and 74.00±1.69 em, respectively in the Pt and P2 Period. The LSMs for body length in the St, 82, S3 and S4 season of the Madgyal sheep were, in order, 76.96±1.75, 76.08±2.40, 74.42±3.14 and 76.70±1.99 em. In the G1 and G2 sex groups of the Madgyal sheep, the L8Ms for body length were 78.11±1.48 em and 73.97±1.78 em, respectively.

Table 3: LSMS and SE for body measurements of Madgyal sheep at 7-12 months

source		code	N			
			Bodylength	Chest girth	Height at wither	Height at hip
Mean IJ		50	76.04±1.20	82.55±1.24	78.39±1.11	78.48±1.08
Period	Pt	27	78.08±1.50b	84.39±1.59ab	81.34±1.43b	81.06±1.38b
	p2	23	74.00±1.69a	80.70±1.748	75.43±1.578	75.90±1.518
Season	St	19	76.96±1.75d	82.94±1.80C	77.70±1.628	77.91±1.57b
	82	10	76.08±2.40 b	81.70±2.47b	79.62±2.22c	79.66±2.15d
	83	06	74.42±3.148	80.59±3.248	77.72±2.91a	77.38±2.818

LSMs for chest girth of Madgyal sheep of were 82.55±1.24 em at 7-12 months of age. The L8Ms for chest girth in the Madgyal sheep were 84.39±1.59 and 80.70±1.74 em, respectively in the P1 and Pz Period. The LSMs for chest girth in the S1, 82, 83 and 84 season of the Madgyal sheep were, in order, 82.94±1.80, 81.70±2.47, 80.59±3.24 and 84.96±2.05 em. In the G1 and Gz sex groups of the Madgyal sheep, the L8Ms for chest girth were 85.12±1.52 em and 79.97±1.83 em, respectively. The LSMs for height at wither of Madgyal sheep of were 78.39±1.11 em at 7-12 months of age. Lower values of height at wither in different breeds of sheep were outlined by Buffaur Awuah *et al.* (2000) ^[2] 67.7 em. The L8Ms for height at wither in the Madgyal sheep were 81.34±1.43 and 75.43±1.57 em, respectively in the P1 and Pz Period. The L8Ms for height at wither in the 81, 82, 83 and 84 season of the Madgyal sheep were, in order, 77.70±1.62, 79.62±2.22, 77.72±2.91 and 78.52±1.85 em. In the G1 and Gz sex groups of the Madgyal sheep, the LSMs for height at wither were 80.47±1.37 em and 76.31±1.65 em, respectively. The L8Ms for height at hip of Madgyal sheep of were 78.48±1.08 em at 7-12 months of age. Lower values of Height at hip in different breeds of sheep were outlined by Baffour *et al.* (2000) ^[2] 70.07±1.41 em. The L8Ms for height at hip in the Madgyal sheep were 81.06±1.38 and 75.90±1.51 em,

respectively in the P1 and Pz Period. The LSMs for height at hip in the 81, 82, 83 and S4 season of the Madgyal sheep were, in order, 77.91±1.57, 79.66±2.15, 77.38±2.81 and 78.97±1.79 em. In the G1 and Gz sex groups of the Madgyal sheep, the LSMs for height at hip were 80.23±1.32 em and 76.73±1.59 em, respectively.

LSMS and SE for body measurements of Madgyal sheep at 13-36 months

Table 4. shows that the L8Ms for body length of Madgyal sheep of were 85.19±1.32 em at 13-36 months of age. The LSMs for body length in the Madgyal sheep were 85.86±1.68 and 84.51±1.48 em, respectively in the Pt and P2 Period. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for body length were 84.80±2.19 em and 85.58±1.19 em, respectively. The LSMs for chest girth of Madgyal sheep of were 95.54±1.57 em at 13-36 months of age. Lower values of chest girth in different breeds of sheep were outlined by Yadav *et al.* (2011) ^[9] 91.76 em in Munjal sheep. The LSMs for chest girth in the Madgyal sheep were 96.17±2.00 and 94.91±1.76 em, respectively in the P1 and Pz Period. The LSMs for chest girth in the S1, S2, S3 and S4 season of the Madgyal sheep were, in order, 95.90±1.85, 96.60±3.36, 93.01±3.47 and 96.64 ±.

Table 4: LSMs for body length of Madgyal sheep of were 85.19±1.32 em at 13-36 months of age

source	code	N	LSM±SE			
			Bodylength	Chest girth	Height at wither	Height at hip
Mean	IJ	149	85.19±1.32	95.54±1.57	84.76±7.58	84.88±1.23
Period	P1	68	85.86±1.68b	96.17±2.00b	80.71±9.65a	85.81±1.57b
	P2	81	84.51±1.48a	94.91±1.76a	88.80±8.53b	83.94±1.39a
Season	si	60	85.76±1.55C	95.90±1.85b	94.73±8.94d	85.16±1.45a
	s2	15	84.89±2.82b	96.60±3.36C	80.36±16.208	85.56±2.64 b
	s3	14	82.84±2.91a	93.01±3.47a	81.64±16.72b	83.16±2.72a
	S4	60	87.26±1.63d	96.64±1.95C	82.30±9.40C	85.63±1.53C
Sex	G1	25	84.80±2.198	94.04±2.61a	81.47±12.588	85.10±2.05b
	G2	124	85.58±1.19b	97.04±1.42b	88.04±6.86 b	84.65±1.11a

1.95 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for chest girth were 94.04±2.61 em and 97.04±1.42 em, respectively. The LSMs for height at wither of Madgyal sheep of were 84.76±7.58 em at 13-36 months of age. Lower values of height at hip in different breeds of sheep were outlined by Yadav *et al.* (2016) [7] 81.20±0.28 em in Madgyal sheep and 67.70±3.30 em in Hazaragie sheep. The LSMs for height at wither in the Madgyal sheep were 80.71±9.65 and 88.80±8.53 em, respectively in the P1 and P2 Period. The LSMs for height at wither in the S1, S2, S3 and S4 season of the Madgyal sheep were, in order, 94.73±8.94, 80.36±16.20, 81.64±16.72 and 82.30±9.40 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for height at wither were 81.47±12.58 em and 88.04±6.86 em, respectively. The LSMs for height at hip of Madgyal sheep of were 84.88±1.23 em at 13-36 months of age. Lower values of height at hip in different breeds of sheep were outlined by Markos *et al.* (2023) [6] 64.18±1.10 em in indigenous sheep. The LSMs for height at hip in the Madgyal sheep were 85.81±1.57 and 83.94±1.39 em, respectively in the P1 and P2 Period. The

LSMs for height at hip in the S1, S2, S3 and S4 season of the Madgyal sheep were, in order, 85.16±1.45, 85.56±2.64, 83.16±2.72 and 85.63±1.53 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for height at hip were 85.10±2.05 em and 84.65±1.11 em, respectively.

LSMS and SE for body measurements of Madgyal sheep at Above 36 months: Table 5. Shows that the LSMs for body length of Madgyal sheep of were 86.39±2.69 em at above 36 months of age. Lower values of body length in different breeds of sheep were outlined by Yadav *et al.* (2012) [10] 83.64±0.84 em in Munjial sheep and 80.32 em in Muzaffarnagri, Dass *et al.* (2012) 79-86 em in Mirzzalunagi sheep. The LSMs for body length in the Madgyal sheep were 87.00±2.81 and 85.79±3.52 em, respectively in the Pt and P2 Period. The LSMs for body length in the S1, S2, S3 and S4 season of the Madgyal sheep were, in order, 84.26±3.09, 89.08±5.77, 82.97±4.86 and 89.27±3.31 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for body length were 88.61±4.63 em and 84.18±2.15 em, respectively.

Table 5: LSMs for body length of Madgyal sheep of were 86.39±2.69 em at above 36 months of age

source	code	N	LSM±SE			
			Bodylength	Chest girth	Height at wither	Height at hip
Mean IJ		58	86.39±2.69	95.13±2.33	84.97±2.52	85.45±2.28
Period	Pt	36	87.00±2.81b	95.75±2.43b	85.26±2.63b	84.62±2.388
	P2	22	85.79±3.528	94.52±3.048	84.67±3.298	86.28±2.98b
Season	St	22	84.26±3.09b	91.94±2.678	83.26±2.89b	85.30±2.62b
	s2	5	89.08±5.77c	96.02±4.99C	86.42±5.39C	86.68±4.89C
	s3	8	82.97±4.88	93.37±4.21b	81.28±4.558	81.43±4.128
	S4	23	89.27±3.31c	99.22±2.86d	88.91±3.1Qd	88.39±2.81d
Sex	G1	8	88.61±4.63b	96.37±4.0Qb	88.05±4.33b	87.97±3.92b
	G2	50	84.18±2.158	93.89±1.868	81.89±2.028	82.92±1.838

The LSMs for chest girth of Madgyal sheep of were 95.13±2.33 em at above 36 months of age. Lower values of chest girth in different breeds of sheep were outlined by Yadav *et al.* (2012) [10] 91.76±0.73 em in Munjial sheep. The LSMs for chest girth in the Madgyal sheep were 95.75±2.43 and 94.52±3.04 em, respectively in the Pt and P2 Period. The LSMs for chest girth in the St, S2, S3 and S4 season of the Madgyal sheep were, in order, 91.94±2.67, 96.02±4.99, 93.37±4.21 and 99.22±2.86 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for chest girth were 96.37±4.00 em and 93.89±1.86 em, respectively. The LSMs for height at wither of Madgyal sheep of were 84.97±2.52 em at above 36 months of age. Lower values of height at wither in different breeds of sheep were outlined by Yadav *et al.* (2012) [10] 80.38±0.6 em in Munjial sheep. The LSMs for height at wither in the Madgyal sheep were 85.26±2.63 and 84.67±3.29 em, respectively in the Pt and P2 Period. The

LSMs for height at wither in the St, S2, S3 and S4 season of the Madgyal sheep were, in order, 83.26±2.89, 86.42±5.39, 81.28±4.55 and 88.91±3.10 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for height at wither were 88.05±4.33 em and 81.89±2.02 em, respectively. The LSMs for height at hip of Madgyal sheep of were 85.45±2.28 em at above 36 months of age. Lower values of height at hip in different breeds of sheep were outlined by Markos *et al.* (2023) [6] 66.1±0.04 em in indigenous sheep, Ethiopia and Kefale *et al.* (2017) [7]. 66.32±1.10 in Holla sheep. The LSMs for height at hip in the Madgyal sheep were 84.62±2.38 and 86.28±2.98 em, respectively in the P1 and P2 Period. The LSMs for height at hip in the St, S2, S3 and S4 season of the Madgyal sheep were, in order, 85.30±2.62, 86.68±4.89, 81.43±4.12 and 88.39±2.81 em. In the G1 and G2 sex groups of the Madgyal sheep, the LSMs for height at hip were 87.97±3.92 em and 82.92±1.83 em, respectively.

Conclusion

Madgyal sheep are fairly well built with drooping ears, convex forehead with Roman nose, short and curved tail with round shape udder and cylindrical teat and pointed tip. Body measurements and reproduction, production of Madgyal sheep were found superior than other sheep breeds viz. Gurez, Hazaragie, Malpura, Sonadi etc. Madgyal sheep shows rapid growth rate, better body weight gain and good body measurements. This reveals that Madgyal sheep has the potential for increased mutton production and can be characterized as mutton purpose breed.

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