The Pharma Innovation Journal 2022; SP-11(1): 1283-1286

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(1): 1283-1286

www.thepharmajournal.com
Received: 19-11-2021
Accepted: 22-12-2021

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Performance of Sirohi goats under field condition in Banswara district of Rajasthan

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Abstract
A study was conducted on growth performance of Sirohi goats in field condition under Attracting and Retaining Youth in Agriculture (ARYA) project, KVK, Banswara. Three blocks of Banswara district i.e. Anandpuri, Bagidora and Garhi were selected for the study purpose. Thus present study was undertaken to assess the growth performance of Sirohi goats based on their body measurements viz., body length, heart girth and height at withers at birth, three, six, nine and twelve months of age. Analysis of growth data of Sirohi goats reared under field conditions for a period of 3 years revealed that the least square means of body weights at birth, three, six, nine and twelve months of age were 2.26±0.30, 12.05±0.15, 18.41±0.14, 24.95±0.32 and 34.54±0.51 kg, respectively. The present results revealed that effect of sex and cluster significantly (p<0.01) affected body weight and body measurements viz, body length, heart girth, and height at withers at birth, three, six, nine and twelve months of age. Significant (p<0.01) effect of Garhi cluster on body weight and body measurements was observed at birth, 3, 6,9 and 12 months of age.

Keywords: body weight, body measurements, Banswara and Sirohi goats

Introduction
Goat plays a significant role in providing supplementary income and livelihood to millions of resource poor farmers and landless laborers of rural India. Goat is a small ruminant's species. The goat population in the country is 148.88 (Anonymous, 2019) [1]. The goat population is increase 10.1 per cent over the previous census. The goat contributes about 27.80 per cent in total Livestock population. Goat is a household animal of Rajasthan. It plays an important role in livelihood of small and marginal farmers of Rajasthan as a source of cash, meat and milk because it can affectively survive on available shrubs and trees in harsh environmental conditions all over the world (Khan *et al*., 2006) [10]. it can affectively survive on available shrubs and trees in harsh environmental conditions all over the world Khan *et al*., (2006) [10]. It is commonly found in arid and semi-arid region along the most parts of Aravalli hills of Rajasthan. The breed has predominantly brown coat, with light or dark brown patches and occasionally white in colour. Most Sirohi goats are wattled and have medium size flat leaf like dropping ears. The breed is also known by other names such as Parbatsari, Devgarhi and Ajmeri, reared mainly for meat and milk production. The breed weighs about 1.5-3kg at birth and reaches about 12kg when weaned at 3months. Average body weight of adult bucks and does are 50kg and 23kg respectively. Body weight is an indicator of its physique and economic viability for marginal as well as landless farmers (Alemayehu *et al*., 2010) [2]. However, this fundamental knowledge is often unavailable to those working with goats in the small scale farming sector, due to non availability of scales. The chief method of weighing animals without scales is to regress body weight on a certain number of body characteristics, which can be measured readily. Morphological measurements are used to assess several characteristics of animals. These measurements provide important evidences for the growth of the breed and the properties that change with environmental effects and feeding factors (Mule *et al*., 2014) [13].

Material and Methods
The present study was carried out by the Krishi Vigyan Kendra, Banswara district of Rajasthan. The study on growth performance at Birth, 3, 6, 9 and 12 months of age of Sirohi kids born during 2018 to 2020. Data were collected from the farmer's field maintained under ARYA project, KVK, Banswara, Rajasthan. The study area is located in southern part of Rajasthan at 23°55' N and 74°45' E and situated at 302 m height above mean sea level.

For Study purpose Anandpuri, Banswara and Garhi blocks of Banswara were selected. Distributed of Sirohi goats to farmer after trained in Commercial Goat Farming under ARYA Project. Flock was allowed to graze freely during the day time in free range grazing areas on pastures under the supervision of herdsman. On return at home goats were fed green grasses or green fodder according to the season. The formulated concentration ration was given and drinking water was provided ad libitum. Goats were vaccinated against PPR, Enterotoxaemia and Peste des petites ruminants. The data were recorded on the same day for body weight and body measurements viz. heart girth (HG), height at withers (HAW) and body length (BL). The records were taken from birth up to 12 months at the interval of three months of age. The collected data were classified according to sex and clusters were also considered as source of variation. Data so collected, tabulated and analyzed as per standard statistical procedures of Snedecor and Cochran (1994).

Result and Discussion

At Birth

Comparative data on birth weight and body measurements viz. body length (BL), heart girth (HG) and height at withers (HAW) at birth were presented in Table 1. The overall means for the birth weight and body measurements viz. body length (BL), heart girth (HG) and height at withers (HAW) were 2.26±0.30, 27.85±0.12, 28.48±0.38 and 28.98±0.24, respectively (Table 1). Birth weight and body measurements viz. body length (BL), heart girth (HG) and height at withers (HAW) of Male kids were 2.38±0.82, 28.90±0.69, 29.54±0.23 and 29.90±0.38, respectively (Table 1). Birth weight and body measurements viz. body length (BL), heart girth (HG) and height at withers (HAW) of Female kids were 2.25±0.68, 27.12±0.45, 28.45±0.19 and 28.55±0.41, respectively (Table 1).

The present means were comparable with the similar values for birth weight were reported by Meel *et al.*, (2010) [12] in Sirohi goats, Mandal *et al.*, (2010) [11] and Bhusan *et al.*, (2012) [4] in Jakhrana goats. Pundlikaro (2015) reported the increase in weight gain with increased level of concentrate. Similar values for heart girth and height at withers were reported by Patil *et al.* (2008) in Osmanabadi goats and Fahim *et al.* 2013 [6] in Rohilkhand local goats. For body length similar values were reported by Kharkar *et al.* (2014) [9] in Berari goats. Comparatively higher values for birth weight and body measurements were reported by Patil *et al.* (2013) [16] in Sangamneri goats.

Table 1: Least square means for body weight and body measurements of Sirohi goats at birth

Effects	No. of Animals	Body Weight	Body Measurements (cm)		
			Body Length	Heart girth (HG)	Height at withers
Overall	400	2.26±0.30	27.85±0.12	28.48±0.38	28.98±0.24
Sex					
Male	165	2.38±0.82	28.90±0.69	29.54±0.23	29.90±0.38
Female	235	2.25±0.68	27.12±0.45	28.45±0.19	28.55±0.41
Cluster					
Anandpuri	100	2.23±0.25	26.85±0.54	27.54±1.24	28.05±1.59
Bagidora	100	2.26±0.28	27.75±0.48	28.15±0.45	28.85±1.85
Garhi	100	2.31±0.24	28.95±0.61	29.75±1.35	30.04±1.15

At 3 months of Age

The overall least-squares mean for body weight at 3 months of age was 12.05±0.15 kg and for body measurements viz., body length (BL), heart girth (HG) and height at withers (HAW) were 44.17±0.89, 49.03±0.58 and 49.62±1.02 cm, respectively (Table 2). Body weight of Male and Female kids at 3 months of age were 13.85±0.33 kg and 11.25±0.67, respectively and body measurements viz., body length (BL), heart girth (HG) and height at withers (HAW) of male or female kids at 3 months of age were 46.25±1.09, 50.80±0.31 and 51.30±0.79 cm or 43.85±0.98, 48.10±0.22 and 47.95±0.85, respectively (Table 2).

Similar values for body weight were reported by Tyagi *et al.* (2013) [23] in Surti goats and Panda *et al.*, (2016) [14] in Osmanabadi goats. Higher body weight was reported by Dudhe *et al.* (2015) [5] in Sirohi goats. However, comparatively lower body weight was observed by Bhusan *et al.* (2012) [4] in Jakhrana kids. Similar values for heart girth and height at withers were reported in Sangamneri by Jagdale *et al.* (2012) [7]. However, values for HG and HAW were also reported by Dudhe *et al.* (2015) [5] in Sirohi goat. For body length, similar values were reported by Pathodiya *et al.* (2004) in Sirohi goat. However, higher values were also reported by Dudhe *et al.* (2015) [5] in Sirohi goats.

Table 2: Least square means for body weight and body measurements of Sirohi goats at 3 months of age.

Effects	No. of Animals	Body Weight	Body Measurements (cm)		
			Body Length	Heart girth (HG)	Height at withers
Overall	385	12.05±0.15	44.17±0.89	49.03±0.58	49.62±1.02
Sex					
Male	195	13.85±0.33	46.25±1.09	50.80±0.31	51.30±0.79
Female	190	11.25±0.67	43.85±0.98	48.10±0.22	47.95±0.85
Cluster					
Anandpuri	125	11.15±0.45	42.52±0.94	48.15±0.88	48.55±1.12
Bagidora	127	11.95±0.37	44.85±1.03	48.85±0.41	49.25±0.84
Gadhi	133	13.06±0.49	45.15±0.84	50.10±0.93	51.05±0.69

At 6 months of Age

The overall least-squares means for body weight and body measurements viz. body length (BL), heart girth (HG), height at withers (HAW) were 18.41±0.14 kg and 50.45±1.31,

57.96±0.46 cm, 58.04±0.89, respectively (Table 3).
Jalill *et al.,* (2018) [8] reported that The results revealed that body length was higher in males than that of females for all generations and age group. Male goats had higher heart girth than that of female goats irrespective of age and generations. Similar values for body weight were reported by Swami *et al.,* (2006) [22], Jagdale *et al.,* (2012) [12]. Similarly, same results were reported by Alex *et al.,* (2010) [3] for heart girth and height at withers in Malabari goats, while Sharma *et al.,* (2008) [21] and Reotheia *et al.,* (2013) [19] in all the three morphometric traits in Sirohi and Bakerwali goats. However, Dudhe *et al.,* (2015) [5] reported higher values in Sirohi goats for body weight and all three morphometric traits.

Table 3: Least square means for body weight and body measurements of Sirohi goats at 6 months of age

Effects	No. of Animals	Body Weight	Body Measurements (cm)		
			Body Length	Heart girth (HG)	Height at withers
Overall	350	18.41±0.14	50.45±1.31	57.96±0.46	58.04±0.89
Sex					
Male	180	19.85±0.70	51.84±1.12	58.90±0.41	59.03±1.29
Female	170	17.56±1.05	50.15±0.74	57.65±0.39	57.40±1.21
Cluster					
Anandpuri	115	17.50±1.25	49.35±1.50	57.20±0.94	57.35±0.78
Bagidora	110	18.54±0.98	50.45±1.34	57.93±0.87	57.98±0.49
Gadhi	125	19.20±1.27	51.56±0.85	58.75±1.02	58.80±1.31

At 9 months of Age

The overall least-squares means for body weight and body measurements viz. body length (BL), heart girth(HG), height at withers(HAW) were 24.95±0.32 kg and 56.01±0.85, 61.55±0.25, 61.59±0.38 cm, respectively (Table 4).
Rathod *et al.,* (2011) [18] investigated body weight and body measurement of Osmanabadi goats. The least-squares means recorded for body weight at 9 month was 12.93±0.10 kg. The least-squares means for body length, height at withers and chest girth at nine months age was 58.39 ± 3.05, 59.60± 3.31, 57.43 ± 0.50 cm. Similar values for body weight were reported by Roy *et al.,* (1997) [20] in Jamunapari goats and Jagdale *et al.* (2012) [7] in Sangamneri goats. Jagdale *et al.* (2012) [7] observed similar values for heart girth in Sangamneri goats and height at withers in Osmanabadi goats by Panda *et al.* (2016) [14]. However, comparatively higher values for all three body measurements were observed in Malabari and Sirohi goats (Alex *et al.,* 2010; Dudhe *et al.,* 2015) [3, 5].

Table 4: Least square means for body weight and body measurements of Sirohi goats at 9 months of age

Effects	No. of Animals	Body Weight	Body Measurements (cm)		
			Body Length	Heart girth (HG)	Height at withers
Overall	350	24.95±0.32	56.01±0.85	61.55±0.25	61.59±0.38
Sex					
Male	170	26.25±0.56	57.10±0.42	62.30±0.15	62.54±0.71
Female	180	24.57±0.52	56.58±0.85	61.25±0.28	60.95±0.54
Cluster					
Anandpuri	118	24.05±0.15	55.15±0.56	61.10±0.61	60.95±0.48
Bagidora	115	24.95±0.54	56.05±0.24	61.25±0.34	61.57±0.15
Gadhi	117	25.85±0.26	56.85±0.45	62.29±0.38	62.25±0.91

At 12 months of Age

The overall least-squares means for body weight and body measurements viz. body length (BL), heart girth(HG), height at withers(HAW) were 34.54± 0.51 kg and 59.85±1.04, 65.90±1.15, 66.42±0.98 cm, respectively (Table 5).
Kharkar *et al*. (2014) [9] conducted that growth performance of Berari goats under field conditions. The overall body weights at 12 month of age was 21.32±0.36 kg. Similar values for body weight were reported by Bhusan *et al.,* (2012) [4] in Jakhrana kids and Patil *et al.,* (2013) [16] in Sangamneri goats. However, comparatively higher values for body weight were reported in Malabari goats and Surti kids (Alex *et al.,* 2010) [3] and Bhakar *et al.,* (2015) in Sirohi goats. Comparatively higher values for all three body measurements were observed in Sirohi goats by Dudhe *et al.,* (2015) [5].

Table 5: Least square means for body weight and body measurements of Sirohi goats at 12 months of age

Effects	No. of Animals	Body Weight	Body Measurements (cm)		
			Body Length	Heart girth (HG)	Height at withers
Overall	300	34.54± 0.51	59.85±1.04	65.90±1.15	66.42±0.98
Sex					
Male	128	36.45±0.42	60.85±1.051	67.05±0.98	67.25±0.45
Female	172	34.10±0.45	59.70±0.985	66.40±0.85	66.12±0.26
Cluster					
Anandpuri	100	33.58±0.65	59.45±0.780	65.10±1.05	65.91±0.58
Bagidora	100	34.55±0.25	59.85±0.851	65.75±0.99	66.24±0.64
Garhi	100	35.50±0.56	60.25±0.286	66.85±0.45	67.10±1.02

Effect of Cluster

Cluster had significant ($P \leq 0.01$) effect on body weight and all three morphometric traits at all ages. The present findings were in agreement with Dudhe *et al.* (2015) [5] in Sirohi goat. However, Sharma *et al.* (2010) [12] observed highly significant ($P \leq 0.01$) effect of cluster on HAW and BL at birth and 3 months of age in Sirohi goats, HG at 3 month of age.

Kids were heavier and larger in Garhi cluster as compared to other cluster kids at all growth phases. These differences in performances of kids between clusters might be due to variation in grasses and herbage availability. Moreover availability of grazing area and time under field conditions as the farmers pay more attention to small size flock. Therefore, improvisation of performance of born kids would be possible by cluster.

Conclusion

The trends of these significant results revealed that the effect of sex and cluster significantly affected body weight and body measurements viz. body length, heart girth and height at withers at birth, 3, 6, 9 and12 months of ages. The highest body weight and body measurements were recorded in Garhi cluster at all ages indicating that favorable environment and improvement in management practices leads to higher body weight and body measurement.

References

1. Anonymous. Department of animal husbandry, dairing and fisheries, Ministry of agriculture and Farmers Welfare, Govt. of India, 2018-19.
2. Alemayehu T, Gebremariam T. Application of linear body measurements for live body weight estimation of highland sheep in Tigray region, North-Ethiopia. Journal of the drylands. 2010;3(2):203-207.
3. Alex R, Raghavan KC, Mercey KA. Prediction of body weight of Malabari goats from body measurements under field conditions. Journal of Veterinary and Animal Science. 2010;41:21-27.
4. Bhusan B. Effect of non-genetic factors on body weight of Jakhrana Kids. Indian Journal of Small Ruminants. 2012;18(2):253-255.
5. Dudhe SD, Yadav SBS, Nagda RK, Pannu U. Non-genetic factors affecting growth traits of Sirohi goats under field conditions. The Indian Journal of Small Ruminants. 2015;21(2):226-229.
6. Fahim A, Patel BHM, Rijasnaz VV. Relationship of body weight with linear body measurements. Indian Journal of Animal Research. 2013;47(6):521-526.
7. Jagdale VV, Deokar DK, Berari DR, Mandakmale SD, Kaledonkar DP. Body weight and measurements of Sangamneri goats during post-weaning stage under field conditions. Indian Journal of Small Ruminants. 2012;18(2):184-187.
8. Jalill MA, Choudhury MP, Kabir MM, Habib MA. Morphometric characterization of Black Bengal Goat under farming condition in Bangladesh. Asian Journal of Medical and Biological Research. 2018;4(1):95-104.
9. Kharkar K, Kuralkar SV, Kuralkar P. Growth production and reproduction performance of Berari goats in their native tract. Indian Journal of Small Ruminants. 2014;20:12-15.
10. Khan H, Muhammad F, Ahmad R, Nawaz G, Rahimullah A, Zubair M. Relationship of body weight with linear body measurements in goats. Journal of Agriculture and Biological Science. 2006;1:51-54.
11. Mandal AR, Roy R, Bhusan B, Sanket, Rout PK, Sharma MC. Enviornment effect on production of Jakhrana goats. Indian Journal of Animal Sciences. 2010;80(11):1141-1144.
12. Meel UK, Nagda RK, Sharma SK, Rajawat BS. Growth performance of Sirohi goats under field conditions. Indian Journal of Small Ruminants. 2010;16(1):246-248.
13. Mule MR, Barbind RP, Korake RL. Relationship of body weight with linear body measurement in Osmanabadi goats. Indian Journal of Animal Research. 2014;48(2):155-158.
14. Panda R, Ghorpade PP. Relationships between Bodyweight with linear body measurement in post weaning stall fed osmanabadi kids under Katcha housing system. Indian Journal of Animal Health. 2016;55(2):157-160.
15. Patodiya OP, Gurjar ML, Sharma MC, Khadda B. Studies on birth weight and morphometry of sirohi kids in farmer's field. Indian Journal of Small Ruminants. 2004;10(1):74-76.
16. Patil BS, Pachpute ST, Dhage BS. Growth performance of Sangamneri goats under field conditions. Indian Journal of Small Ruminants. 2013;19(2):151-155.
17. Pundlikarao RS. Effect of supplementation of different level of concentrate on growth performance of sangamneri kids. Thesis, Bombay Veterinary College Parel, Mumbai Maharashtra Animal and Fishery Sciences University Nagpur, 2015.
18. Rathod SP, Deokar DK, Deshmukh AR, Lokhande AT, Birari DR, Jadhav SS. Studies on post weaning body weight and body measurement in Osmanabadi goats. Indian Journal of Fundamental and applied Life Sciences. 2011;1(4):281-285.
19. Reotheia A, Khan A, Suri S. Morphometric traits of the bakerwali goat under migratory production system.Indian Veterinary Journal. 2013;90(12):22-25.
20. Roy R, Sabena, Singh VK, Singh SK, Khan BU. Genetic analysis of body weight at different ages in Jamunapari goats. Indian Journal of Animal Science. 1997;627:337-339.
21. Sharma MC, Pathodiya OP, Sharma SK, Gurjar ML, Tailor SP. Genetic analysis of morphometric traits of Sirohi goats, Indian Journal of Animal Sciences. 2008;78(9):1028-1031.
22. Swami PD, Barhat NK, Murdia CK, Joshi RK, Chaudhari VK. Factors affecting body weights in Sirohi goats and its crosses with Beetal.Indian Journal of Animal Science. 2006;76:419-421.
23. Tyagi KK, Patel MD, Sorathiya LM, Fulsunder AB. Body weight variability in Surti kids under field conditions. Indian journal of small ruminants. 2013;19(2):211-214.