BEHAVIOUR AND PHYSIOLOGICAL RESPONSE OF OSMANABADI KIDS UNDER DIFFERENT HOUSING SYSTEMS

ANURADHA KUMARI[1], A. H. KODAPE[2], S. H. PATWARDHAN[3] AND P. P. GHORPADE[4]
Department of Livestock Production and Management
Bombay Veterinary College, Parel
Mumbai – 400 012

ABSTRACT

The effect of different types of housing system in hot humid climate of Mumbai on physiological and behavioral responses of Osmanabadi goat kids were studied in the present investigation. Significantly higher standing time and lower sitting time were recorded in kids of loose housed than conventional housed kids. The time spent on rumination was significantly higher in loose housed kids compared to conventional house kids. The mean heart rate, respiration rate per min, and rectal temperature in conventional housed kids were significantly higher as compared to kids in loose house. Thus present study indicates that loose house in hot months with kaccha floor and plastic shed net roof provide more comfort to kids than conventional house with slatted floor and asbestos roof.

Key words : Osmanabadi kids, Housing, Behaviour, Physiological traits.

The Osmanabadi goat is a native of Marathwada region of Maharashtra, but the breed is reared, bred and well adapted throughout the Country[7].The performance of the animals is said to be impaired on exposing them to extremes of climate conditions[10]. The physiological responses of animals are influenced by microclimate within the animal sheds as well as by type of housing. Environmental conditions especially housing management also affect the behavior (resting, standing, rumination etc.) of goat in a varying range, which could be used to study the effectiveness of housing system. Keeping in view these facts the present trail was carried out to study the effect of various housing system on behavior and physiological response of kids.

The present study was carried out at Department of Livestock Production and Management, Mumbai -400065. Mumbai has a tropical climate. During the period of the study the average maximum temperature recorded 31.2℃, while average minimum temperature was 23 ℃. The research was carried out during the month of March, 2012.

Twelve kids were randomly divided into two equal groups and housed as. Group A –under conventional house having asbestos roof and slatted floor. Group B- under loose house having plastic shed net as roofing material and kaccha floor. The behavioural activity like standing time,

---
[1] MVSc Scholar, Email: anujsrkumari@gmail.com
[2] Associate Professor
[3] & [4] Assistant Professor

sitting time and total duration of rumination were recorded for 24 h for a period of 6 days in both housing systems. Stress if any due to housing was measured in term of physiological traits like heart rate (HR/min), respiration rate (RR/min) and rectal temperature (^{o}F) in afternoon hours in both housing systems for a period of continuous fifteen days.

The influence of housing on various responses was determined by using t-test.

Behavioural response:

The mean values of standing and sitting time are presented in table1.The result suggest that mean standing time is more in both the housing system compared to the mean sitting time. The standing time was significantly higher (P<0.01) in loose house while mean sitting time was significantly higher (P<0.01) in conventional house. In present finding animals housed in loose house showed increased standing activity, where in the animals housed in conventional house more lying activity was observed. Similar type of findings were observed by others [4,5].The higher standing and moving time under loose house may be due to free movement and kids were not restricted to one place. In conventional house time spent in resting was more than loose housed group which may be due to less free space[1]. Other study reported that higher idling time in kaccha floor and more roaming time in slatted floor[3].

Rumination is an important physiological behavior which indicates the sound health, and comfort of animal. There was highly significant (P<0.01) difference between the two groups of kids regarding total duration of rumination (Table-1). It was observed that the average rumination time was higher in kids under loose housing system than kids of conventional house. This may be due to

the kids were free to move and also time spent by the kids for moving and walking was more in loose house. These results concur with finding of other workers, who found that rumination time by goats of tethering groups was significantly longer than that of stall-fed does[8].

Physiological response:

In the present study the effect of housing (floor and roof) on kids on physiological response were investigated. It was observed that heart rate, respiration rate and rectal temperature were significantly higher in conventional housed kids as compared to loose housed kids (Table-2).The result indicates that loose house was the most suitable in respect to the kids comfort as compared to conventional house as all the physiological parameters for loose housed kids were lower compared to kids of conventional house. As the conventional house with asbestos roof shows a higher micro ambient temperature hence to reduce the heat load the animals showed an increased physiological response hence the values may be higher in conventional house. The finding of the study may be supported by with the observation of other workers[2,8,9] They reported that the asbestos sheet was always warmer compared to open corral.

From above finding it may be concluded that kids in loose house spent more time in standing and rumination and comparatively less time in lying as compared to conventional housed kids. The loose house provides a more suitable physiological environment for kids as compared to conventional house. The comfort of kids was reflected by an increased in the rumination time. Thus present study indicates that loose house with kaccha floor and shed net roof provides more comfort to kids than conventional house with slatted floor and asbestos roof in hot months.

Table1. Average (mean± S.D) behaviour pattern of kids (min/day) for both housing systems

Standing time	Days	1	2	3	4	5	6	Average	t value
Standing time	Conventional house	748.83 ±5.67	753.16 ±4.70	757.00 ±6.80	761.00 ±6.95	762.16 ±5.60	759.16 ±6.61	756.88 ±5.07	3.45**
	Loose house	759.33 ±4.50	773.83 ±4.95	768.66 ±5.88	770.33 ±5.35	773.50 ±3.93	762.16 ±5.60	767.96 ±5.98	
Sitting time	Conventional house	686.33 ±4.70	692.50 ±6.50	683.00 ±6.87	669.66 ±5.35	677.83 ±5.60	680.33 ±6.61	683.55 ±5.21	3.22**
	Loose house	680.66 ±4.50	666.16 ±4.95	670.68 ±6.59	681.33 ±7.58	676.16 ±9.74	677.83 ±5.60	673.52 ±5.54	
Rumination time	Conventional house	260.50 ±5.08	265.33 ±5.21	275.66 ±4.58	267.00 ±4.33	267.83 ±2.78	264.50 ±2.42	266.80 ±5.03	3.81**
	Loose house	273.00 ±3.52	277.33 ±5.12	278.33 ±3.82	275.66 ±4.58	273.66 ±4.58	274.00 ±4.56	275.33 ±2.14	

** Highly significant (P<0.01)

Table 2.Average (mean± S.D) of physiological traits in both housing systems for continuous fifteen days

Traits	Heart rate (breath/min)		Respiration rate (RR/min)		Rectal temperature (°F)	
Days	conventional	loose	conventional	loose	conventional	loose
1	125.83±4.75	116.83±8.63	36.00±5.05	32.33±4.63	103.01±0.68	102.70±0.25
2	122.00±8.29	108.33±6.74	35.33±5.16	33.66±8.45	103.11±1.14	102.58±0.78
3	125.33±6.77	115.33±5.16	38.33±4.45	34.83±6.33	102.93±0.55	102.83±0.56
4	129.33±6.65	118.66±6.53	42.00±2.52	38.33±4.45	103.35±0.26	103.25±0.45
5	126.00±7.58	114.66±6.40	44.00±5.65	34.83±6.33	103.31±0.34	103.21±0.93
6	123.66±6.34	113.00±6.03	40.33±4.63	36.00±5.05	102.86±0.36	102.53±0.47
7	127.66±4.27	118.00±7.61	37.00±4.33	35.33±5.16	102.81±0.553	102.71±0.24
8	126.66±7.33	115.66±6.12	36.00±5.05	34.83±6.33	103.13±1.45	102.00±0.89
9	116.66±7.33	105.66±6.12	40.33±4.63	36.00±5.05	103.50±1.22	102.88±0.61
10	111.16±7.33	102.66±4.08	35.33±5.16	31.00±4.14	104.35±0.67	103.53±0.64
11	121.66±7.33	112.66±4.08	53.00±6.54	48.00±4.73	103.03±0.58	102.76±0.53
12	121.16±4.75	110.33±2.94	42.00±2.52	33.66±8.45	102.95±0.45	102.58±0.36
13	113.16±6.40	104.66±3.01	39.00±5.76	30.00±5.54	103.51±0.67	103.36±0.42
14	116.66±7.33	105.66±6.12	46.00±4.73	42.00±2.52	103.50±1.45	102.00±0.89
15	111.16±7.33	102.66±4.08	44.00±5.65	40.33±4.63	104.35±0.67	103.53±0.64
Ave	121.20±6.05	110.98±5.64	40.57±4.84	36.07±4.58	103.31±0.48	102.83±0.47
t value	4.78**		2.61*		2.75*	

** Highly significant (P<0.01), *significant(P<0.05)

REFERENCES

1. Andersen, I. L. and Boe. K. B. (2007) Resting pattern and social interactions in goats. The impact of size and organization of lying space. J. Applied. Behav. Sci. 108 (1-2):89-103.

2. Bhatta, R., Swain. N., Verma.D. L. and Singh.N. P (2005) Effect of housing on physiological responses and energy expenditure of sheep in semi-arid region of India. Asian-Aust. J. Anim. Sci. 18(8):1188-1193.

3. Bhakat, C and Nagpaul.P.K. I (2011) Growth of female kids under different housing systems. Indian Vet. J. 88 (7): 59-61.

4. Casamassima, D., Sevi.A., Palazzo. M., Ramacciato. R., Colella. G. E. and Bellitti. A. (2001) Effect of two different housing systems on behavior, physiology and milk yield of Comisana ewes. Small. Rum. Res. 41(2):151-161.

5. Grigoli,D.A., Bonanno. A., Alabiso. M., Brecchia. G., Russo. G. and Leto. G (2003) Effect of housing system on welfare and milk yield and quality of Girgentana goats.Ital.J.Anim.Sci.2(1):542-544.

6. Moniruzzaman, M ., Hashem. M. A., Akhter. S and Hossain. M. M (2002) Effect of feeding systems on feed intake, eating behavior, growth, reproductive performance and parasitic infestation of Black Bengal goat. Asian-Aust. J. Anim. Sci. 15 (10): 1453-1457.

7. Motghare, A. B., Ali,S.Z. and Kuralkar. S.V (2004): Indian J Ani. Prod. Mgmt. 20(1-4):44-46.

8. Patel, A.K., Rohilla. P.P and Mathur. A.C (2007) Performance of Marwari kids and goats under improved and traditional animal shelter. Indian Vet. J. 84: 1069-1071

9. Patil, R. A., Karanjkar. L. M., Jadhav. V. S and Narwade. S. G (2008) Response in growth of Osmanabadi weaned kids to various housing patterns. Indian Journal of Ani.Res. 42 (1):29-33.

10. Thomas C K and Sastry N S R (1991). Dairy bovine production. Kalyani Publication, New Delhi.

★   ★   ★