

EFFECT OF DIFFERENT HOUSING SYSTEM ON BEHAVIOR OF OSMANABADI KIDS

Sandeep Bansode¹, Sandip Shahapure², Jagdish Swami³ and Amol Salankar⁴

^{1,2,4}Teaching Faculty at C.V.Sc Korutla dist. Jagtial Telangana State

³Assistant Professor at C.V.Sc Korutla dist. Jagtial Telangana State

E-mail: banssandeep@rediffmail.com (*Corresponding Author*)

Abstract: The experiment was undertaken at the Red Kandhari Research and Instructional Farm, College of Veterinary and Animal Sciences, MAFSU, Parbhani. In this experiment twelve healthy of Osmanabadi goat kids of 3–4 months of age, body weight and body measurement were selected. The behavioral observations were recorded weekly for 24 hour where animal were under surveillance during which various activities pertaining to sitting or resting, feeding and rumination. The behavioral parameters *viz* Rumination, Feeding and Idling/Resting behavior exhibited non significant differences among the two housing system. However the rumination behavior increased with the advancement of age of animal and also it was more pronounced during night hours then the day hours. The feeding behavior was more pronounced when the feed was offered and it was reduced with lapse of time in both system of housing. The idling/resting behaviour was more observed in conventional housing system than loose housing system.

Keywords: Housing system, behavior, rumination, resting, feeding.

INTRODUCTION

Goats constitute an important species of livestock in Asia and contribute greatly to food, rural employment and Gross Domestic Product. Goat raising is one of the important agricultural enterprise particularly in rural parts of this country and have proved very useful to man throughout the ages, largely because of their adaptability to varying environmental conditions under which the breeds and strain types have evolved and in which they are maintained. They have tremendous ability to survive, and often thrive on sparse vegetation unsuitable for feeding of other livestock. Goats can be profitably raised with low investment under intensive and most extensive forms of nomadic grazing. The vast majority of this poorer section of rural population depends on goat rearing for income and certain amount of meat and milk for home consumption. Goat rearing requires low cost and hence suited to landless labourers, marginal farmers and industrial workers.

The experiment was undertaken at the Red Kandhari Research and Instructional Farm, College of Veterinary and Animal Sciences, MAFSU, Parbhani. In this experiment twelve

healthy of Osmanabadi goat kids of 3 – 4 months of age, body weight and body measurement were selected from Red Kandhari Research and Instructional Farm, College of Veterinary and Animal Sciences, MAFSU, Parbhani. The kids were provided with standard managerial practices in terms of space and the feed was provided *ad libitum*. Twelve Osmanabadi goat kids were separated in the two equal treatment groups of 6 each with 2 males and 4 females kids in each group of 3-4 months of age. One treatment group was assigned for loose housing and other for conventional housing system. The space allowed for each kid was 5.38 and 10.76 sq.ft. in convention and loose housing system, respectively.

Table a. Treatment details of the selected kids for conventional and loose housing system

Conventional housing system				Loose housing system			
Sr. No	Tag No.	Initial weight(kg)	Initial age(month)	Sr. No	Tag No.	Initial weight(kg)	Initial age(month)
1	91	6	3	1	82	5	3
2	75	7	3	2	125	6	3
3	88	6.5	3	3	81	5	3
4	76	5	4	4	85	7	3.5
5	86	5.5	3.5	5	90	6.5	3
6	2	6	3	6	131	5	4

The behavioral observations were recorded weekly for 24 hour where animal were under surveillance during which various activities pertaining to sitting or resting, feeding and rumination. Behaviour of each kid from conventional and loose housing system were observed and recorded one day i.e. 24 hour and next day the observation for another groups were recorded.

The following activities were recorded in terms of time spent by individual kid.

Table b. Descriptive list of behavior and categories observed

Sr.No.	Description of observed behaviour	Time of observations
1	Resting	Total time in 24 hours
2	Rumination	Total time in 24 hours
3	Feeding	Total time in 24 hours

Statistical analysis- The data generated were statistically analysed by using various parameters as per Statistical Analysis recommended by Panse and Sukhatme (1967). The results of the Statistical analysis so obtained were spread over Results and Discussion for interpretation.

Behavioural observation

1. Rumination

The average weekly rumination time (min/day) of Osmanabadi kids under conventional housing system for 1-16 weeks were 233.50±0.36, 252.66±0.12, 350.50±0.84, 346.16±0.11, 361.16±0.93, 348.33±0.11, 342.83±0.77, 326.00±0.21, 376.16±0.19, 355.00±0.12, 348.33±0.13, 356.00±0.15, 358.50±0.12, 347.66±0.12, 339.16±0.95 and 330.50±0.71 respectively. The overall weekly average rumination of Osmanabadi goat kids under conventional housing system was 360.00±3.73 min/day.

The average weekly rumination time (min/day) of Osmanabadi kids under loose housing system for 1-16 weeks were 345.00±0.67, 348.00±0.16, 359.33±0.18, 355.00±0.82, 347.33±0.12, 357.50±0.13, 353.00±0.13, 346.00±0.12, 355.00±0.13, 350.50±0.14, 388.83±0.21, 365.00±0.22, 342.83±0.10, 374.33±0.15, 359.83±0.76 and 343.16±0.10 respectively. The overall weekly average rumination of Osmanabadi kids under loose housing system was 355.00±0.2.89 min/day.

There was no significant difference between the two groups for rumination ($P < 0.05$) These findings were in agreement with Bhakat and Nagpaul (2005), behaviour difference between the two groups for rumination. The average rumination time for Osmanabadi kids ranged from 233.50 to 361min/day under conventional housing system and 343 to 365 min/day under loose housing system. The average rumination time was higher in kids under loose housing system. Rumination is an important physiological behavior which indicates the sound health, perfect digestion and comfort of animal.

The rumination was gradually increased with advancement of age of the kids, this may be because that with the advancement of age, rumen became well developed, the body weight of kids gradually increased and with that the feed requirement was also increased. To fulfil the more feed requirement, kids consume more DM which lead to increment of rumination time. The rumination time was considerably higher in lying condition as compared to standing condition during day as well as night under the different housing system the rumination behaviour was more at night time as compared to day time in both the groups.

Radostits *et.al* (2007) found that rumination time in kids usually commences 30 to 90 minutes after feed consumption. The time devoted to rumination was determined by the coarseness of the ruminal content and nature of diet. The appetite of animal can be assessed by observing its reaction to the offering of feed or by the amount of feed available which has not been eaten. It was important to determine the total amount of feed which animal eating per day.

De Rosa *et al.* (2009) reported that combined feeding and rumination occupy 60 to 65 % of animal time.

2. Feeding behaviour

The weekly rumination time (min) of Osmanabadi kids under conventional housing system for 1-16 weeks were 349.66 ± 0.10 , 368.10 ± 0.18 , 307.08 ± 0.62 , 321.07 ± 0.66 , 394.66 ± 0.26 , 359.50 ± 0.19 , 362.66 ± 0.17 , 367.50 ± 0.19 , 346.33 ± 0.97 , 335.66 ± 0.80 , 353.50 ± 0.11 , 364.50 ± 0.62 , 344.00 ± 0.84 , 362.16 ± 0.10 , 359.50 ± 0.11 and 355.83 ± 0.27 respectively. The overall average feeding time of Osmanabadi goat kids under conventional housing system was 360.38 ± 3.27 min/day.

The feeding time (min) of Osmanabadi kids under loose housing system for 1-16 weeks were 353.33 ± 0.34 , 361.66 ± 0.21 , 353.34 ± 0.25 , 342.17 ± 0.31 , 388.17 ± 0.24 , 368.34 ± 0.23 , 362.84 ± 0.22 , 351.50 ± 0.18 , 361.00 ± 0.15 , 390.67 ± 0.21 , 367.34 ± 0.17 , 365.67 ± 0.89 , 402.34 ± 0.13 , 421.00 ± 0.85 , 370.00 ± 0.15 and 382.17 ± 0.15 respectively. The overall feeding time of Osmanabadi goat kids under loose housing system was 371.34 ± 2.29 min/day

There was no significant difference ($P > 0.05$) between conventional and loose housing for feeding behaviour of goat kids. These findings are in agreement with Bhakat and Nagpaul (2005)

It could be observed that maximum fodder was consumed from 10 AM to 1 PM then it decreased gradually upto 2PM thereafter from 2PM to 5PM, fodder consumption increased once again this is because the fodder was provided between 9-10 AM and again between 2-4 PM in the afternoon. Immediately after offering of the fodder, the intake was vigorous, Although the fodder supply was ad libitum, yet the intake was reduced with lapse of time, for both system of housing, these findings are in agreement with Rosi *et al.*, (1998), It was also revealed that goats have the habit of taking fodder frequently but for a short period of time.

3. Resting / Sitting duration

The resting or sitting (in minute) of Osmanabadi kids under conventional housing system for 1-16 weeks were 617.00 ± 0.10 , 598.16 ± 0.14 , 580.50 ± 0.33 , 610.33 ± 0.25 , 618.00 ± 0.20 , 612.33 ± 0.19 , 620.83 ± 0.17 , 630.66 ± 0.19 , 610.16 ± 0.99 , 628.33 ± 0.11 , 619.33 ± 0.20 , 647.66 ± 0.19 , 589.00 ± 0.32 , 630.83 ± 0.27 , 573.50 ± 0.26 and 578.33 ± 0.24 respectively. The overall average resting/sitting time of Osmanabadi goat kids under conventional housing system was 610.00 ± 2.64 .

The resting or sitting (in minute) of Osmanabadi kids under loose housing system for 1-16 weeks were 574.16 ± 0.32 , 548.50 ± 0.13 , 575.00 ± 0.39 , 583.16 ± 0.24 , 557.83 ± 0.21 , 576.16 ± 0.21 , 593.83 ± 0.11 , 602.00 ± 0.24 , 587.50 ± 0.57 , 565.83 ± 0.25 , 520.00 ± 0.27 , 589.67 ± 0.24 , 529.83 ± 0.39 , 609.50 ± 0.31 , 580.67 ± 0.23 and 557.16 ± 0.17 respectively. The overall resting or sitting time of Osmanabadi goat kids under loose housing system was 571.93 ± 3.36 .

No significant differences ($P < 0.05$) were observed in kids between two housing for duration of sitting or resting. The animals spent more time in sitting or resting in both the housing system. The animal spent more time in resting or sitting in conventional housing system than the loose housing group, as they were totally confine in conventional housing system. The animals mostly stood as idle during 2 AM to 3 AM and 6 PM to 9 PM. these findings are in agreement with those reported by Champak and Nagpaul (2007) reported by

The maximum resting time was observed during the whole period of experiment. This is due to extreme summer, as the mercury started to fall simultaneously rest/idle time was also reduced and also with the advancement of age of kids, they devoted more time to other activities.

Out of 1440 minutes of the day the kids in loose houses spent 828.64 minutes on standing, walking, moving and rest of time sitting and resting. Under the conventional system the duration of standing was 812.69 minute which was significantly lower than that of loose housing system. In conventional system the idling time was significantly more as the animals were confine in the house for 24 hrs.

Conclusion

The behavioural parameters *viz* Rumination, Feeding and Idling/Resting behaviour exhibited non significant differences among the two housing system. However the rumination behaviour increased with the advancement of age of animal and also it was more pronounced during night hours then the day hours. The feeding behaviour was more pronounced when the

feed was offered and it was reduced with lapse of time in both system of housing. The idling/resting behaviour was more observed in conventional housing system than loose housing system

References

- [1] Ailian Geng., Zang Qiang, Chen Gang, Shi Zhengxiang and Li Baoming. (2008) Behavioural response of pregnant ewe to high ambient temperature in loose housing system. *Int. J. Agric & Biol Eng* .1(1): 31-36
- [2] Andersion, Inger Lise and Knut EgilBoe. (2007) Resting pattern and social interactions in goats. The impact of size and organisation of lying space. *J. Applied. Behaviour. Sci.* 108(1-2):89-103
- [3] Casamassima D., A. Sevi, M. Palazzo, R. Ramacciato, G.E. Colella and A. Bellitti (2001) Effect of two different housing system on behavior, physiology and milk yield of Comisanaewes. *Small Ruminants Research*, 41(2):151-161
- [4] Desnoyers M. and G. Bechet (2009). Comparison of video recording and a portable electronic device for measuring the feeding behaviour of individually housed dairy goats. *Small Ruminant Research*, 83: 58–63
- [5] Grigoli, Di, A., A. Bonanno, M. Alabiso, G. Brecchia, G. Russo and G. Leto (2003) effect of housing system on welfare and milk yield and quality of Girgentana goats. *Ital. J. Anim. Sci.* 2(1)542-544
- [6] Janine Aschwanden, Lorenz Gygax Beat Wechsler, Nina M. Keli (2009). Structural modification at the feeding place: Effects of partition and platforms and social behavior of goats. *Applied Animal Behavior Science* 119 (2009) 180-192
- [7] Jian bin., S, R. Dunbar, Li. Di- qiang, and Wen fa (2006). Influence of climate and day length on the activity budgets of feral goats on the Isle of ram Scotland. *Zoological Res.*, 27(6): 561-568
- [8] Keskin, Mahmut, S. Ahmet. Bicer Osman, Sabri. GUL, Kaya Serafettin, Sari .Ayhan and DuruMetin (2005) Feeding Behaviour of Awas.si Sheep and Shami Goats. *Turk J. Vet. Anim. Sci.*, 29: 435-439.
- [9] Khound, S., S. Saikia and J.R. Bora (1996) Effect of management system on growth performance and behavior of crossbred goat of Assam. *Indian J. Anim. Sci.* 66(3): 307-308
- [10] Moniruzzaman, M., M.A. Hashem, S. Akhter and M.M. Hossain (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

- [11] Njiru. E.N. Njaka., J.M. Ojango, M.K. Ambulla and C.M. Ndirangu (2001). Grazing behavior of sannen and toggenburg goats in sub-humid tropical condition of Kenya. *Asian-Aust. J. Anim. Sci.*, 14(7):951-955
- [12] Ogebe, P.O., B.K. Ogunmodede and L.R. McDowell (1996). Behavioral and physiological responses of Nigerian dwarf goats to seasonal changes of the humid tropics. *Small Rumi. Res.*, 22(3): 213–217.
- [13] Panagakis, P., S. Deligeorgis, G. Zervas, and G. Laliotis (2004). Effects of three different floor types on the posture behavior of semi-intensivelyreared dairy ewes of the boutsiko breed. *Small Rumi. Res.*, 53:111–115
- [14] Patra, A.K., R. Puchala, G. Detweiler, L.J. Dawson¹, G. Animut, T. Sahlu and A.L. Goetsch (2008). Tethering Meat Goats Grazing Forage of High Nutritive Value and Low to Moderate Mass. *Asian-Aust. J. Anim. Sci.*, 21(9) : 1252 – 1261
- [15] Radostits, O.M., D.C. Blood and C.C. Gay. (1994). *Veterinary Medicine*, 8th edition, Bailliere Tindall, London, pp 86-180.
- [16] Rossi R and E. Del Prete, (1999). Circadian drinking during ad libitum and restricted feeding in pygmy goats, *Applied Animal Behaviour Science.*, 61(3) : 253–261
- [17] Rossi R and E. Del Prete, (1999). Circadian drinking during ad libitum and restricted feeding in pygmy goats, *Applied Animal Behaviour Science.*, 61(3) : 253–261