Effect of Housing Patterns on Microclimate and water intake in Osmanabadi weaned kids

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Abstract

Observations were recorded on 24 Osmanabadi weaned kids to see the effect of housing either in floor *murum* with no ventilation + thatch roof (T0), floor *murum* with no ventilation + tin roof (T1), floor *murum* with one ventilator + thatch roof (T2), floor *murum* with one ventilator + tin roof (T3), floor *murum* with two ventilators + thatch roof (T4) and floor *murum* with two ventilators + tin roof (T5). All the kids were maintained on the common feeding regime of available roughages and home-made concentrate mixture. The lowest micro temperature was recorded in thatch roof with two ventilators house whereas highest in tin roof with no ventilation house. The monthly mean water intake showed significant (P< 0.01) differences. Significant differences were recorded for the mean values of water intake for providing no ventilation over providing ventilation. Providing tin roof condition significantly (P<0.01) increased water intake in comparison with thatch roofing condition. Based on these results thatched roof shed with one or two floor ventilation has to be preferred for growing kids.

Keywords: Housing pattern, Microclimate, Water intake, Osmanabadi kids, floor

Introduction

Suitable housing helps in promoting heat losses from the animal body by providing desired microenvironment and optimize their production by protecting them from extreme climate. The study was undertaken to find out the effect of different housing patterns on the micro-climate and water intake in Osmanabadi weaned kids. Considering the housing situation in rural areas, an attempt was made to see the feasibility of suitable housing pattern with special reference to the type of roofing materials and ventilation at the floor. The investigation was carried out at the University Department of Animal Husbandry and Dairy Science, Parbhani from March to October 2004. The temperature during this study ranged from 13.4 to 41.6oCwith the relative humidity from 13.0 to 91.0 per cent.

Material and Methods

Osmanabadi kids (24) were randomly dividing into 6 groups each comprising 4 kids of similar age (approx. 3 months) and body weights. Each group was randomly allotted to one of the six treatments.

T0 Murum floor, no ventilation + thatch roof (Control)
T1 Murum floor with no ventilation + tin roof
T2 Murum floor with one ventilator + thatch roof
T3 Murum floor with one ventilator + tin roof
T4 Murum floor with two ventilators + thatch roof
T5 Murum floor with two ventilators + tin roof

All the kids were maintained on balanced raion of homemade concentrate mixture, available greens and chaffed sorghum straw (ICAR, 1997). The daily temperature within six houses were measured by Digital thermo hygrometer instrument at 9.00 am and at 3.00 pm each day. Kids were watered twice daily during July, August, September, October and thrice daily during March, April, May, June. Intake of water was measured with measuring cylinder. Water intake under various types of floor ventilation and roof types were subjected to factorial RBD (Snedecor and Cochran, 1982) for the interpretation of theresults.

Results and Discussion

Micro temperature : The monthy data on weekly morning and afternoon temperature within each of the sheds were compiled and presented in Table 1. The results of Table 1 revealed that the values of CV under each of the treatments are comparable and are numerically higher under one treatment than the other. There was little difference in the morning temperature recorded under each house but accountable difference was recorded for afternoon

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temperature within each of the sheds. Lower micro - temperature were recorded under thatch roof as compared to tin roof throughout the experimental period.

The zone of thermo neutrality of goats varies from 20 to 28°C (Maynard *et al* 1979), however it changes with the age, production level , insulation of the house and level of nutrition. Kumar *et al* (1989) recorded mean daily temperature in all the three sheds above the zone of thermo neutrality for six months period. They recorded superiority of shed B which was open from all sides, facing east and provided with two gates over shed A (Open from two sides, facing east) and C (closed with three sides and facing south). In the present study though all the six sheds kept the animals above the zone of thermo neutrality, thatch roof and two ventilated shed (T4) provided comfortable temperature (25.55 and 37.04°C) followed by T2 (25.77 and 37.26°C); T0 (26 and 38.14°C); T5 (26.30 and 38.06°C); T3 (26.47 and 38.66°C); T1 (26.75 and 39.84°C).

The Table 1 clearly indicates that type of the house does not influence much for the micro temperature recorded during morning hours but influence much during afternoon. Singh *et al* (1989) recorded significant ($P< 0.01$) differences among the different sheds constructed of either thatch roof, lite roof or asbestos roof in hot semi-arid zone conditions of Makhdoom (U.P.). In the present study higher micro temperature were recorded in the house where roof was constructed of tin indicating that tin roof was unable to cut down the heat load falling on it. Obviously, tin roof was heated up and the heat passed to micro-environment in the shed. On the contrary, thatch roofed shed was able to keep the temperature slightly below the surrounding temperature indicating the superior protective capacity of the thatch in comparison to tin roof. In the present study the thatch roof shed had on an average 1°C to 1.5°C lower micro temperature in compassion to tin roof shed. Consistently higher micro temperature in the tin sheds than in the thatch sheds were recorded in the present study. Similar observations were recorded by Singh *et al* (1985) while working on micro temperature of loose house shed and open paddock. Yazdani and Gupta (2000) recorded maximum temperature in loose and thatched house as 42.2°C and 38.5°C, respectively. Kumar *et al* (1989) recorded significant difference for the mean values of maximum and minimum temperature recorded in various sheds.

Water intake

When the data on mean monthly water intake (Table 2) were subjected to statistical significance, the monthly mean water intake showed highly significant ($P<0.01$) differences. During the month of April and May significantly ($P<0.01$) higher water intake was recorded followed by March and June. The water intake during July, September and October was comparable so also during August, September and October it did not differ significantly.Significant differences were arrived for the mean values of water intake for providing no ventilation over providing ventilation. However number of ventilators, either one or two, has not affected the water intake. Providing tin roof condition significantly ($P<0.01$) increased water intake in comparison with thatch roofing condition. Dahlanuddin *et al.* (1996) reported that increase in ambient temperature significantly increased water intake. The results of the present study coincid with these findings. The afternoon temperature during the month of April and May was highest (38.23°C and 37.20°C) and so also the water intake (10.125 lit/100 kg of B.W. and 9.844 lit/100 kg of Body weight). Likewise as the temperature was less during March (37.98°C), the water intake was also proportionally reduced (9.194 lit/100 kg of B.W.). As the ambient temperature reduced from June to October, the water intake was also reduced proportionately. The lowest ambient temperature recorded during August 2004 (28.56°C) resulted lowest water intake by the animal (7.03 lit /100 kg of Body weight). Gall (1981) reported that water intake increases when temperature rise above 35°C.

Providing ventilation, either one or two ventilators per house, reduced the micro temperature and therefore was responsible for less water intake in comparison with those house which had no ventilation. Proper housing ameliorates the heat load by modifying the micro-environment and thereby saving the additional water requirement. In our study we could record water requirement to the tune of 7.039 (minimum) to 10.125 (maximum) per cent of the body weight. Patel *et al.* (1995) working on effect of different housing temperature in Mehasana heifers, reported water intake of 10.04 per cent of body weight. They further reported lowest water intake of the animals housed under thatched roof than the house where roof was simple and provided with earth floor. Though differences between two ventilation types look small yet they have good practical and economic significance.

Table-2. Mean values of water intake (lit/100 kg of body weight) as affected by ventilation and roof type

Parameter	Mean values
Floor ventilation	
V0	8.840a
V1	8.456b
V2	8.257b
S.E. ±	0.100
CD	0.278
Roof type	
R1	8.270a
R2	8.766b
S.E. ±	0.082
CD at 1 %	0.227

Significantly ($P<0.05$) lower water intake by the kids housed in a thatch roofed pen than tin roofed house was recorded. These findings agree with the findings of Yazdani and Gupta (2000) in crossbred cows housed in loose and thatch house and Patel *et al.* (1995) in buffalo heifers kept under thatch roof.

Based on these results thatched roof shed with one or two floor ventilation has to be preferred for growing kids.

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Don’t blame wild birds for H5N1 spread

There is no solid evidence that wild birds are to blame for the apparent spread of the H5N1 virus from Asia to parts of Europe, Africa and the Middle East, according to FAO’s international wildlife coordinator. Speaking at the International Conference on Avian Influenza 2008: Integration from Knowledge to Control held in Bangkok from 23 to 25 January 2008, Scott Newman said there was also no proof that wild birds were a reservoir for the H5N1 virus.

After H5N1 was found in 2005 in a huge lake in central China where it killed over 10,000 wild birds, it turned up in parts of Europe, Africa and the Middle East, leading some experts to believe migratory birds may be to blame. But Newman said there was no good reason for thinking so. “We know that some wild birds have probably moved short distances carrying viruses and then they died, but we have not been able to identify carriage of H5N1 across large scale spatial distances and then resulting in spread to other birds and mortality in poultry flocks,” Newman told Reuters. He said faecal tests on some 350,000 healthy birds worldwide had to date only yielded “a few” positive H5N1 results. Furthermore, in instances and places where wild birds were found with the disease, there were no concurrent outbreaks of the virus in poultry. “So we don’t have at this point in time a wildlife reservoir for H5N1 ... so they can’t be a main spreader of the disease.” Newman stressed the need to focus attention on the poultry trade, and particularly smuggling, adding that these factors may instead be spreading and sustaining the deadly disease. “We recognise that poultry production, trade, both legal and illegal, and other biosecurity issues are probably more important as far as being a mechanism that promotes the sustaining and spread of H5N1.”

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