EFFECT OF HOUSING SYSTEM ON MILK YIELD, CLEANLINESS AND LAMENESS IN MURRAH BUFFALOES

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ABSTRACT
Buffaloes maintained at the Buffalo Research Station, Venkataramanna Gudem in Andhra Pradesh state of India during the period from August, 2007 to January, 2008 were utilized for the study. Significant differences were observed in the milk yield, cleanliness score and the lameness score between the housing systems. The milk yield was higher in loose housing (8.12±0.02 kg) when compared to conventional housing (7.77±0.02 kg). The cleanliness score was higher in the loose housing system (2.80±0.05) compared to that in conventional housing (2.41±0.05). The mean lameness score in the case of the conventional barn (0.10±0.02) was greater compared to that in loose housing (0.01±0.01). A greater number of animals showed lameness in the conventional system of housing.

Keywords: Murrah buffaloes, housing system, welfare, lameness, cleanliness, milk yield

INTRODUCTION

Buffaloes are well adapted to the hot and humid climate of India and play a distinct role in improving the rural economy which is primarily based on agricultural production systems. Buffaloes are considered a financial asset since they serve as an insurance against the risk of crop failure due to natural calamities (Dhanda, 2004).

Over time buffalo rearing has shifted from the backyard to commercial farms and large business enterprises. The housing system has changed from the loose housing system to the conventional tie stall system with intensive systems of management. But, very little attention is paid to the welfare of animal and very little is known about the effect of stress on productive performance and the well-being of buffaloes (De Rosa et al., 2005). Better animal welfare will be reflected in normal behavioural activities and milk production.

Livestock housing conditions and all animal husbandry practices exert a considerable influence on animal behaviour, health and production. Integrating various aspects such as improved housing, nutrition, breeding and milking together are known to produce remarkable improvements in productive performance of buffaloes.

However, not many studies are conducted on buffaloes, and so cattle rearing techniques are often used for buffaloes, and these techniques may not always be appropriate for buffaloes. In view of the lack of literature on such aspects of buffalo production, an attempt was made to study the effect of housing on the milk yield, cleanliness and lameness in Murrah buffaloes.

MATERIALS AND METHODS

The material for the study comprised 24 lactating Murrah buffaloes in different lactations present on the farm. They were divided into two
groups of twelve animals each and kept in two
housing systems viz., loose housing and conventional
tie stall housing. An adaptation period of 14 days
was given for the animals which were kept in the
conventional tie stall, as they were accustomed to
the loose housing prior to the experiment.

**Loose housing**

The loose housing had a covered area with
simple asbestos sheet roofing and a sand filled open
area surrounded by metal railings up to a height of
1.5 meters on the three sides and had the provision
of water throughout the day. Sufficient free area
was also available for free movement of the animals.

**Conventional tie stall (Conventional housing)**

The conventional tie stall was a completely
enclosed structure having asbestos cement roofing
with concrete flooring. All the animals were kept in
individual partitions in tethered positions. The
buffaloes were untied only at the time of milking,
when they were sent to a milking parlor for milking
with a milking machine. Water was made available
to these animals three times during the day.

**Management of the animals**

The management of the buffaloes, including
feeding, was uniform in both the groups except for
the housing. Water was provided three times in a
day to the animals in the tie-stall whereas the animals
in the loose housing had water available throughout
the day. All the buffaloes were washed with an
automatic udder washing sprinkler before the start
of milking.

**Period and site of study**

The experiment was conducted at the
Buffalo Research Station, Venkataramannagudem
in Andhra Pradesh state in India. The data was
collected during the period from August, 2007 to

**Milk yield:** The milk yield was recorded every day
during the morning and evening milking and the two
yields were added to get the daily milk yield.

**Cleanliness:** Cleanliness of the animals was also
observed in the two different housing types. A
scoring system devised by Faye and Barnouin (1985)
for cattle, dividing the pelvis into five parts viz., ano-
genital, udder rear view, legs and thighs, under belly
and udder lateral view was utilized. These parts were
taken for scoring as these were important for the
clean milk production. The score given was from 1
to 5, basing on the number of parts that were clean.
The scoring was done before the evening milking,
just before washing prior to milking.

**Condition of lameness:** Condition of lameness
was also observed and lameness was taken as
limping or dragging the feet. The lameness score
was recorded after the afternoon milking while the
buffaloes were passing out of the milking parlor. A
score of ‘0 to 1’ was used, where 0 was assigned
when the animal was not lame, and 1 was given
when the animal was lame.

**Statistical analysis**

The data obtained were analyzed using
SPSS statistical package utilizing suitable statistical
procedures to arrive at the conclusions.

**RESULTS**

The mean and standard error of milk yield,
(cleanliness score and the lameness score in the two
housing systems are presented in Table 1. There
was a significant differences in the milk yield,
cleanliness score and the lameness score between
the housing systems. The milk yield in the present
study was higher in loose housing (8.12±0.02 kg)
when compared to conventional housing (7.77±0.02
kg). The cleanliness score was higher in loose housing system (2.80±0.05) compared to that of conventional housing (2.41±0.05). The mean lameness score in the case of conventional tie stall (0.10±0.02) was higher compared to that in the loose housing (0.01±0.01). A greater number of animals showed lameness in the conventional system of housing.

**DISCUSSION**

The milk yield in the present study was higher in loose housing (8.12±0.02) when compared to the conventional housing (7.77±0.02) system. This finding was similar to that of Thomas *et al.* (1978), Yadav and Gupta (1985) and Singh *et al.* (1993) who reported that the loose housing system was more effective for getting higher milk yield. On the contrary, Egil Simensen (2007) reported that loose housed animals produced less milk compared to the tie stalled animals.

The present results suggest that the lack of space might have induced stress in the animals in the conventional tie stalls, which could be the reason for lower milk yields in the case of the conventional housing system. The animals in the loose housing system were provided adequate area to move to satisfy the expression of species specific behavioural urges.

The cleanliness score obtained in the present study was higher in loose housing system (2.80±0.05) compared to that in conventional type of housing (2.41±0.05). This finding was similar to that of Thomas *et al.* (1978). The results revealed that in loose housing, the animals had the freedom of choosing an area of their convenience for resting or lying down, whereas in the case of conventional system, there was no such choice. In the conventional system, the animal had to lie down in the area where it defecates or urinates. The dung and the urine can cause dirt patches on the body parts. Fregonesi and Leaver (2002) also observed that the animals in the loose housing where more space was available were cleaner than those in conventional stalls where less space was available.

The evaluation of body cleanliness may give some information on animal comfort as well as farm hygiene. It can also give some indication about farm people’s attitudes and care for animals. It may also be important for the purpose of clean milk production, but if the udder and other parts which come into contact with the milker or milking machine can be kept clean, this cleanliness score would not cause much problem. However, the cleanliness score indicates the attitude of the farm keepers and the quality of the farm management.

The results in the present study showed that the overall lameness score (Table 1) in the case of loose housing was lower compared to that of the conventional barn system. A greater number of animals exhibited lameness in the conventional system of housing. Lameness is a major welfare problem for dairy animals and indicates pain and discomfort. This may be caused by several factors, such as unbalanced nutrition, flooring and the time spent standing. The floor is an important part of the shed, and has a direct relation with lameness. Hard flooring in the conventional housing system may be a predisposing factor for this condition.

Livestock housing conditions may be important for animal welfare and may influence an animal’s production. A higher number of buffaloes were found in the standing position in conventional housing compared to that in loose housing, and this could be because there is less comfortable space for lying in conventional housing. This might have made animals spend much time in a standing position predisposing them to foot lesions as is indicated in the literature (Galindo and Broom, 1993; Singh *et al.*, 1993; Leonard *et al.*, 1994). This was also substantiated by the significantly higher average
lameness score observed in conventional housing in the present study.

The present study thus revealed that buffaloes appear to be more comfortable in loose housing system as indicated by the higher average daily milk yield, better cleanliness and less lameness when compared to the conventional tie stall system.

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REFERENCES


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