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The effect of space allowance on lamb agonistic behavior in a traditional housing system in Rajasthan's arid zone

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Abstract

According to BIS (Bureau of Indian Standards, 1985), the floor space necessary for weaned lambs (3-4 months old) is 0.8m². The average area supplied per animal is commonly used to describe space. A suitable location may play an important function in the sheep formation mechanism. As a result, the current study was conducted to evaluate the impact of floor space allowance on agonistic behavior of weaned lambs. For this aim, eighteen weaned Magra lambs were chosen and randomly separated into three groups: T1, T2, and T3 based on floor space allowances of 0.8m², 0.6m², and 1.0m² area per lamb. The findings revealed that frontal clashes, butting, and threatening were more common in lower floor space allowance groups but did not differ substantially. The conclusion is that the floor space had no effect on the agonistic behavior of Magra weaning lambs.

Keywords: Magra lambs, behaviour, performance, floor space allowance, sheep farming system

1. Introduction

Housing is necessary for sheep herding; its importance grows when the system transitions from extensive to intensive. Intensive production is known for raising multiple animals in a small amount of space; this has an effect on the animals' behavior and productivity (Castillo Trujillo *et al.*, 2020) [3]. It is widely established that group feeding promotes social contact, which leads to increased feed intake, more even growth, and enhanced social behavior as compared to individually fed animals (Titto *et al.*, 2010) [13]. Feed and water consumption, as well as aggressive behavior, increase as the number of animals in the enclosure increases. The amount of floor space available to animals influences their feeding, lying, and standing behavior (Centoducati *et al.*, 2015) [4]. It has also been noticed that insufficient space availability frequently leads to the development of deviant behavior, which can be harmful not only to oneself but also to other animals in groups (Mason *et al.*, 2007) [8]. Behaviour is the major measure of an individual's well-being and adaptation to its surroundings. It also indicates an animal's instantaneous reaction to its interacting environment (Metz *et al.*, 1997) [9]. Behavioural observation can provide insight into an animal's preferences, needs, and internal states (Engeldal *et al.*, 2013) [5]. Animals cannot avoid a breach of their individual space in settings of high population density, which can result in greater agonistic interactions. Loretz *et al.* (2004) [7] discovered that reducing floor space resulted in a reduction in resting time. Agonistic behavior rose linearly with group size, which can be interpreted as the result of decreasing individual distance, encouraging individuals to interact with the limited option of escaping the attacker. As a result, the current experiment was carried out to determine the effect of varying floor space allowances on the behavior of Magra lambs.

2. Material and Methods

This was carried out in the Livestock Research Station (LRS) sheep yard unit in Kodemdesar, Bikaner. Eighteen Magra lambs (3-6 months old) of either sex were split into three groups with floor space allowances of 0.8 (standard), 0.6, and 0.1m², respectively. The research was carried out over a 90-day period. The house was built using kutcha earth floors. The pens were built in the shade and were naturally ventilated. In the morning and evening, the lambs were fed chaffed green fodder (350 g/day/lamb) and concentrate (150 g/day/lamb). The amount was gradually raised based on age and body weight. Every morning, the pens were cleaned and a layer of sawdust was added to maintain a dry surface in the solid resting area. Every week during the whole 90-day period, social behavior was observed in all groups.

The behavioral observations lasted two hours, twice a day at 9:00 a.m. and 4:00 p.m. The first behavioral investigation was carried out one week after the lambs were separated into their individual groups to verify that the rank order and coping status with the new confinement were fully established. Direct observation was used to calculate the timing and frequency of behaviors for 4 hours each group every week. The statistical analysis was done by completely randomized design.

3. Results and Discussion

Table 1 summarizes the findings. According to the findings, greater lamb stocking density leads to an increase in the number of offensive interactions. The frequency of frontal clashes dropped as pen size grew, butting, shoving, and

threatening were not significantly affected by floor area. Similarly, Loretz *et al.* (2004) [7] found that space allowances had during the whole 90-day period, social behavior was observed in all groups. The behavioral no effect on agonistic behavior, which is consistent with the current findings on butting and chasing agonistic behaviors. The current experiment's outcome of frontal conflicts corresponds with the findings of Anderson *et al.* (2007) [1], who found a higher frequency of frontal clashes in high resting areas. Similarly, Szabo (2008) [12], Kjoren (2012) [6], and Sharma *et al.* (2022) [10] discovered a nonsignificant influence of animal on frontal collision, Butting, pushing, and threatening, which is consistent with the current study's findings.

Table 1: Lambs' agonistic behavioral actions in various floor space treatments (frequency /4hr/wk.)

Social behaviour (Frequency /4h/week)	G-I (0.8m ²)	G-II (0.6 m ²)	G-III (1.0m ²)
Frontal clash	1.52 ±0.162	1.86 ±0.167	1.25±0.163
Butting	1.5±0.081	1.59±0.095	1.34±0.14
Pushing	1.45±0.14	1.75±0.146	1.29±0.155
Threatening	1.25±0.092	1.5±0.181	1.17±0.131

Note: Not significant

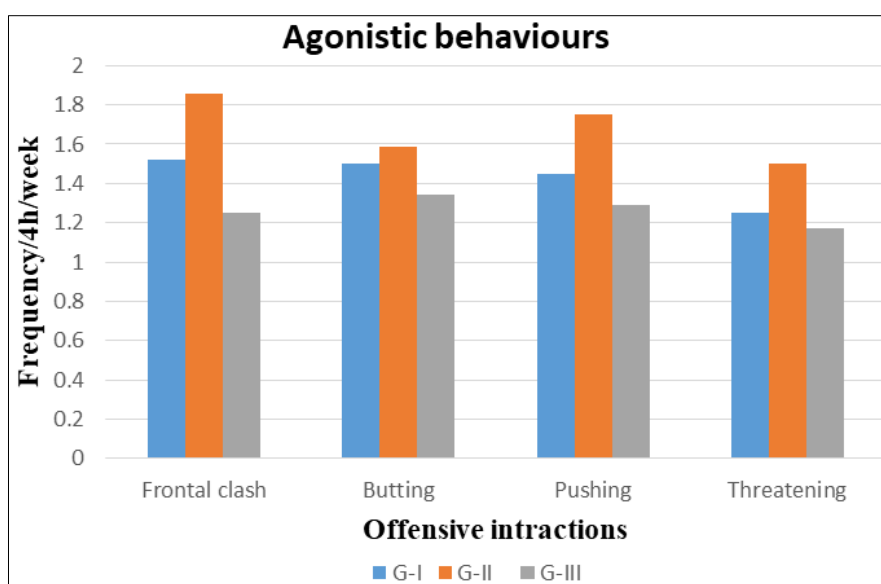


Fig 1: Agonistic behavioural activities of lambs in different floor space treatments (Frequency /4hr/wk.)

Summary

According to BIS (Bureau of Indian Standards, 1985), the floor space necessary for weaned lambs (3-4 months old) is 0.8m². The average area supplied per animal is commonly used to describe space. A suitable space may play an important part in the sheep farming system. As a result, the current study was conducted to evaluate the influence of floor space allowance on weaning lamb behavior. For this aim, eighteen weaned Magra lambs were chosen and randomly separated into three groups: T1, T2, and T3 based on floor space allowances of 0.8m², 0.6m², and 1.0m² area per lamb. Frontal conflict, butting, and threatening results were greater in smaller floor space allowance groups but did not differ significantly. The researchers concluded that increasing the floor area permitted had a favourable influence on the good behavior of Magra weaning lambs.

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