



Impact of an outdoor run on the behaviour of dairy goats kept in loose housing systems

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Key words

Goat, housing conditions, outdoor run, activity, enrichment

Aim of the study

For dairy goats in loose housing, access to an outdoor run has potential welfare benefits, as it can provide additional space, spatial separation and may offer items representing behavioural enrichment for the goats. The aim of this study was to examine the use of the outdoor run and the activity behaviour of goats in loose housing systems in relation to 1) different weather parameters under temperate weather conditions and to 2) both the quality of the outdoor run and the quality of indoor housing. Further, the study investigated 3) whether access to the outdoor run has an impact on the social behaviour and activity of goats indoors.

Material and methods

To investigate the influence of temperature, humidity, solar radiation, wind speed and rain on outdoor run use, data was collected on 14 dairy goat farms for 10 days each during the winter-feeding period. Outdoor run use was assessed by video data.

To examine the influence of the quality of the outdoor run on its use, the quality of the outdoor run and indoor housing of 13 dairy goat farms was investigated by means of an index. A high index indicated high quality in terms of number of resources provided (outdoor index: e.g. space allowance, accessibility of the outdoor run, wind-shelter, brushes, hayracks; indoor index: e.g. space allowance, lying niches, separate feeding place, brush). During the winter-feeding period, days with comparable weather conditions were selected for analysis. Activity behaviour of focal goats was measured using 3-D acceleration loggers and outdoor run use was assessed by video data.

To determine the effect of outdoor run access on the activity and social behaviour indoors, ten groups of dairy goats (group size: 20-100) were observed on 7 dairy goat farms on two days each for two hours after the morning feeding by direct observation. On one of these days, outdoor access was provided but not on the other.

Results and significance

In the measured temperature (-0.8 to +16.5 °C), humidity (34.8 to 99.2%), solar radiation (25.9 to 519.7 W/m²) and wind speed (0 to 4 m/s) ranges warmer conditions increased the outdoor run use, whereas the goats clearly avoided even light wind and rain. All outdoor runs were used to a certain extent but use increased with increasing number and types of resources provided in the outdoor run, regardless of the quality of indoor housing. Though, indoor housing of high quality was beneficial for lying behaviour, as seen in the reduced number of lying bouts. On days with access to the outdoor run, on average 38% of the herd was outside and a smaller proportion of the goats being inside were lying than on days with the outdoor run closed. Access to an outdoor run had no demonstrable effect on the goats' social behaviour within the timeframe chosen.

We conclude that outdoor runs are attractive for goats housed in closed buildings. In relation to temperate weather conditions, outdoor runs should provide protection against rain and wind and should be exposed to the sun. Outdoor run use can be promoted by increasing its quality. An outdoor run for goats should therefore provide various resources (e.g. enough space and structural elements to prevent agonistic interactions, items

to occupy the goats, and protection against adverse weather conditions). Further, structural elements to prevent agonistic interactions and increased space allowance indoors benefited lying behavior of goats. It is therefore suggested that these factors should be considered when designing goat pens.

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