

Access to an outdoor run in dairy goats: effects on activity and social behaviour

Nina M Keil¹, Joanna Stachowicz^{1,2}, Lorenz Gygax¹, Beat Wechsler¹ and Edna Hillmann²

¹Centre for proper housing of ruminants and pigs, Swiss Federal Food Safety and Veterinary Office FSVO, Switzerland, ²Ethology and Animal Welfare Unit, ETH Zürich Department of Environmental Systems Science, Switzerland; nina.keil@agroscope.admin.ch

An outdoor run provides additional space and enrichment for dairy goats in loose housing and could be beneficial for goats' welfare. The aim of this study was to determine the effect of an outdoor run on activity and social behaviour of dairy goats. The study was conducted on six dairy farms with 10 groups of adult females in total. Groups differed in size (30 to 100 animals), breed and horn status. Within groups, the age structure was heterogeneous. We observed each group indoors in the lying and activity area on two days for 2 h in the morning after the feeding/milking, i.e. peak hours of outdoor run use. The outdoor run was open on one day and closed on the other day in randomized order. Weather conditions were comparable between days and farms (moderate temperatures, cloudy, no rain). Every 10 minutes the number of goats indoors and the number of goats lying and standing in the lying and activity area were noted. Agonistic interactions with physical contact (head butts, displacements of lying or staying goats, chasing, fights) occurring in the lying and activity area were recorded continuously. Linear mixed-effects models were used to test the effect of outdoor run accessibility on goats' behaviour. As expected, fewer goats were indoors when the out-door run was open (median difference=-8; $F_{1,17}=33.01$, $P<0.0001$) but also a smaller % of goats were lying indoors (median difference=-18%; $F_{1,17}=41.56$, $P<0.0001$). No consistent effect of the outdoor run was found on social behaviour. With access to the outdoor run, there was a strong increase in the number of agonistic interactions in three groups. In seven groups, however, goats showed less agonistic behaviour. Possibly, goats going outdoors and coming back indoors also pose a risk for social conflicts due to more overall activity and potential confrontations between individuals.