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Regrouping of Dairy Goats in Loose Housing

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Summary

In goat husbandry, several management procedures are associated with the regrouping of the animals. One of these is the introduction of unfamiliar goats into established groups, usually performed in order to restock the herd or increase its size. Another procedure consists of temporarily separating individual goats, e.g. during kidding or because of injury, and subsequently reintegrating them into their original groups. It has been noted that regrouping can be associated with negative welfare effects in goats, exhibited in intense agonistic interactions and reduced feeding times. Despite this, there is a lack of systematic research into the consequences of regrouping, especially under intensive housing conditions and distinguishing between the newly introduced/reintegrated goats and the pre-existing group members. Furthermore, because of differences in social behaviour between horned and hornless goats, horn status needs to be taken into account when assessing the effects of these management procedures. The aim of the present thesis was to assess effects associated with the regrouping of horned and hornless goats in loose housing under various conditions, and to make recommendations for the improvement of these management procedures in terms of the goats' welfare.

The first study aimed to quantify the effect of introducing an unfamiliar animal into an established herd. To assess this situation, eight horned and eight hornless goats were introduced one at a time into established groups of six goats (experimental groups) over a five-day period. Two of the four experimental groups consisted of horned goats, the other two of hornless goats. Individual goats were always introduced into groups with the same (i.e. their own) horn status (four introductions per experimental group). Before and during the introduction period, data on social interactions, lying and feeding behaviour and concentrations of faecal cortisol metabolites were measured in both the introduced goat and the focal group members. Data concerning the location of the introduced goat within the pen were also recorded. During the entire introduction period, substantially longer lying times, shorter feeding times and elevated concentrations of faecal cortisol metabolites were recorded for the introduced goats, which were also on the receiving end of a considerable number of agonistic interactions on the first day of the introduction period. These changes were more pronounced in horned than in hornless goats, and long lying times in niches were recorded for newly introduced horned goats in particular. Thus, the results showed that the welfare of goats introduced individually into small established groups was adversely affected for at least five days after introduction. By contrast, levels of welfare indicators for resident goats remained largely the same, indicating that they were not negatively affected by the introduction of an individual goat.

Because effects were more pronounced in horned than in hornless goats in the first study, the following studies specifically investigated regrouping in horned goats. The main objective of the second study was to test whether the presence of familiar conspecifics reduced negative effects during social confrontations with unfamiliar conspecifics. Twelve goats (called confrontees) were confronted both alone and in the company of two familiar conspecifics with four unfamiliar established groups each consisting of six goats (24 confrontations in total). Confrontations were conducted in a neutral environment and each confrontation lasted one hour. Social interactions, level of activity and faecal cortisol metabolites concentrations were quantified in the confrontees and unfamiliar focal goats

throughout the confrontations. The number of agonistic interactions experienced by confrontees was significantly lower when familiar conspecifics were present than when they were on their own. Further, the proportion of agonistic interactions involving physical contact in relation to all agonistic interactions that were directed by unfamiliar goats towards confrontees was slightly lower where confrontees were with familiar conspecifics rather than alone. It may therefore be concluded that the presence of familiar conspecifics can mitigate the adverse effects associated with a social confrontation with unfamiliar goats. Looking at the agonistic interactions initiated by confrontees, it is apparent that the proportion of unfamiliar goats receiving agonistic interactions was much higher when confrontees were accompanied by familiar conspecifics as opposed to being confronted on their own. Furthermore, fewer agonistic interactions were directed against low-ranking unfamiliar goats by other unfamiliar goats and activity values of unfamiliar goats were somewhat higher when the confrontee was accompanied by familiar conspecifics. Consequently, also the unfamiliar goats' reactions varied depending on whether or not confrontees were accompanied by familiar conspecifics.

The third study investigated the effects associated with the separation and reintegration of individual goats with the objective to determine whether an increased level of contact with the original group could reduce the negative effects of both separation and reintegration for the goat that was separated as well as for the remaining group members. The effects of separation and reintegration were tested by individually separating twelve goats from four experimental groups that consisted of seven goats. Each goat experienced two different treatments (24 separations in total). One treatment only allowed for acoustic contact with the group, whilst the other treatment also permitted visual and tactile contact. After the two-day separation period the goats were reintegrated into their groups and data were collected for a further three days (reintegration period). Social interactions, length of lying and feeding times and faecal cortisol metabolites concentrations were recorded before and throughout the separation and reintegration period in both the separated goats and focal group members. The results showed that both separation and reintegration adversely affected the welfare of the separated goat, which expressed shorter feeding times throughout the separation period as well as higher faecal cortisol metabolites concentrations during both periods, separation and reintegration. Increased contact mitigated these adverse effects, however: where both visual and tactile contact were possible, lying times were not lower during the separation period and faecal cortisol metabolite levels were generally lower than when only acoustic contact was allowed. Since effects were more pronounced and lasted longer during the separation than the reintegration period, it was concluded that the separation was more aversive than the subsequent reintegration. Behaviour and the level of faecal cortisol metabolites hardly changed in the remaining goats of the experimental groups, indicating that they were only slightly affected by the temporary separation and subsequent reintegration of an individual herd member.

Taken together, the results of this thesis show that both the introduction of unfamiliar individuals into established groups and the temporary separation of individuals from the rest of the group should be avoided whenever possible in goat husbandry. If an introduction is unavoidable, it is advisable to introduce several familiar goats simultaneously. During separation, acoustic, visual and tactile contact with the remaining group members should be permitted in order to mitigate adverse effects on the welfare of the separated individual.