



Relevance of horn status in dairy cows

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Key words

horned cows, dehorned cows, social behaviour, space allowances, manipulated horn status

Aim of the study

Little is known about the implications of horn status for the cow itself and the consequences for social behaviour in particular. Therefore, this project investigated whether and how horned and dehorned dairy cows differ in terms of social behaviour and stress levels with different of available space allowances in the outdoor area. A second aim was to examine how different aspects of social behaviour are influenced by the presence or absence of horns.

Material and methods

In the first part we compared horned and dehorned dairy cows in four different space allowances of the outside area (5, 8, 12, 15 m²/cow). The experiments were conducted on 12 farms in Switzerland, six with horned cows and six with cows dehorned as calves. On each farm, 20 cows were assigned to the experiments. Out of these, six (two of high, medium and low rank each) were selected as focal animals. We assessed the effects of the four different space allowances by analysing social interactions, locomotion activity and heart rate variability on four different days for one hour each.

In the second part, we observed interactions of horned (n = 15) and dehorned cows (n = 17) with dehorned cows (n = 32) whose horn status was manipulated. The experiment was conducted on four farms in Switzerland and South Germany. All herds were kept in loose housing systems and composed of horned and dehorned cows. During experimental sessions, pairs of randomly selected cows were separated from the herd. On three days, each pair was tested in one of three conditions. The dehorned cow was wearing either a “halter with horns”, a “halter” without manipulation (control) or a “halter with rabbit ears” (a nonsense alternative), whereas the other animal (a horned or dehorned cow) remained unmanipulated. During testing, the frequency of agonistic and affiliative behaviour was recorded by direct observation. In addition, the position of the cows' heads (low, medium, high) and the distance between the cows were registered every two minutes.

Results and significance

The number of total agonistic interactions was highest in the smallest space allowance and lowest in the largest space allowance for both horned and dehorned cows. High-ranking cows showed the most and low ranking cows the fewest agonistic behaviours irrespective of their horn status but dehorned cows of medium rank displayed more agonistic behaviours than horned medium-ranking cows. The proportion of agonistic behaviours without body contact was in general higher in horned cows and increased in both groups with increasing in space allowance. Horned cows showed the most head butts in the smallest space allowance. In addition, they were more successful in head butts than dehorned cows. Locomotion activity was highest at the beginning of the experiment irrespective of horn status and rank category but in general on a higher level in low-ranking cows. Heart rate variability (RMSSD) was slightly higher in high-ranking cows and lowest in low-ranking cows and in general increased with an increase in locomotion activity.

The horn status of the unmanipulated cows but not the halter type of the manipulated cows had an influence on social behaviour. Compared to dehorned cows, horned cows were more often involved in agonistic interactions

with the manipulated cows. Further, the probability of carrying the head in a higher position was larger in non-manipulated horned than dehorned cows.

Publications, posters and presentations

- Lutz, J., Würbel, H., Burla, J.-B., Gygax L., Wechsler B., Friedli K. Verhaltensreaktionen behornter und un-behornter Milchkühe auf Herdenmitglieder, deren Hornstatus manipuliert wurde. 48. Internationale Tagung Angewandte Ethologie, Freiburg im Breisgau, Germany.
- Lutz, J., Gygax L., Wechsler B., Friedli K. Untersuchungen zur Bedeutung des Hornstatus. Kolloquium zum Hornstatus Rind, Agroscope, Posieux, Switzerland.
- Lutz, J., Würbel, H., Burla, J.-B., Gygax L., Wechsler B., Friedli K. Behavioural reactions of horned and de-horned dairy cows to herd mates whose horn status was manipulated. 50. ISAE Congress, Edinburgh, United Kingdom.
- Lutz, J., Gygax L., Wechsler B., Friedli K. Einfluss des Hornstatus und des Flächenangebotes im Laufhof auf das Sozialverhalten, die Herzaktivität und die Bewegungsaktivität bei Milchkühen. 47. Internationale Tagung Angewandte Ethologie, Freiburg im Breisgau, Germany.
- Lutz, J., Gygax L., Friedli K., Wechsler B. Einfluss des Platzangebots auf das Verhalten von behornten und un-behornten Milchkühen. 5. Tänniker Melktechniktagung, S. 45, Agroscope Tänikon, Switzerland.
- Lutz, J., Gygax L., Wechsler B., Friedli K. Einfluss des Platzangebots auf das Verhalten von behornten und un-behornten Milchkühen. Kommission für Stalleinrichtungen 2015, Tänikon, Switzerland.
- Lutz, J., Kutzer T., Wechsler, B. The relevance of horns for dairy cows. 9. Annual Symposium of the PhD Program in Sustainable Agriculture. Agroscope Tänikon, Switzerland.
- Lutz, J., Gygax L., Wechsler B., Friedli K. Influence of Available Space on the Behaviour of Horned and De-horned Dairy Cows. Walks and talks 2015, Ranflüh, Switzerland.
- Lutz, J., Gygax L., Wechsler B., Friedli K. (2014) Relevance of horns in dairy cows. Walks and talks 2014, Ocourt, Switzerland.
- Lutz, J., Kutzer T., Wechsler, B. (2013) Untersuchungen zur Bedeutung des Hornstatus. Projektforum 2013, Tänikon, Switzerland.
- Lutz, J., Kutzer T. (2013) Vermissst die Kuh ihre Hörner? Hörnerfest 2013, Dällikon, Switzerland.

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