

## Stockpeople's attitudes and calf welfare on dairy farms with cow-calf contact or early separation

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Cow-calf contact (CCC) rearing in contrast to early separation (ES) becomes increasingly important in dairy farming. Stockpeople's attitudes are important predictors for their behaviour and subsequently animal behaviour and welfare. We hypothesized that on farms with CCC, stockpeople would show more positive attitudes and calf welfare would be higher. Further, we expected attitudes to be correlated with calf welfare across systems.

Calf welfare was measured using the Welfare Quality® Protocol for dairy calves on 25 CCC and 25 ES farms in Austria. Stockpeople (n=115) filled in a questionnaire on beliefs about cows and on attitudes towards handling them with 7-point Likert scales (1=lowest to 7=highest agreement).

Principal component analysis revealed 14 attitude factors. Stockpeople on CCC farms showed higher consideration for 'needs of cows' (Mann-Whitney U Test,  $p < 0.001$ , CCC: median (range): 6.4 (4.8-7), ES: 5.8 (3.6-7)) and enjoyed positive interactions with cows more ( $p = 0.05$ , CCC: 6 (4-7), ES: 6 (2.7-7)). CCC farms less often had calves with lesions ( $p = 0.049$ ), and CCC calves scored higher in Qualitative Behaviour Assessment (QBA,  $p < 0.001$ ), showed less non-nutritive oral behaviours ( $p = 0.038$ ) and had more access to pasture ( $p < 0.001$ ). No association of rearing system with avoidance distance (AD), agonistic, cohesive, play behaviour and the other 13 clinical parameters was found ( $p > 0.05$ ).

Over all farms (n=50), calves played more on farms where calf caretakers rated regular positive contact with cattle of all age classes more important ( $r_s = 0.36$ ,  $p = 0.01$ ), enjoyed working with the cattle more ( $r_s = 0.28$ ,  $p = 0.05$ ) and agreed more on cows' cognitive abilities ( $r_s = 0.28$ ,  $p = 0.05$ ). Higher agreement of calf caretakers on 'needs of cows' tended to correlate with a higher frequency of cohesive behaviour ( $r_s = 0.25$ ,  $p = 0.08$ ), lower mortality ( $r_s = -0.24$ ,  $p = 0.1$ ) and provision of longer access to pasture ( $r_s = 0.25$ ,  $p = 0.08$ ) while shorter access to pasture was given on farms where caretakers agreed more on negative behaviour during moving cows ( $r_s = 0.35$ ,  $p = 0.01$ ), but also on the need to touch cows before attaching milking clusters ('warn',  $r_s = 0.29$ ,  $p = 0.04$ ). AD was lower if farm managers had more positive beliefs about cows ( $r_s = -0.32$ ,  $p = 0.02$ ) and less animals could be touched if they scored higher on 'warn' ( $r_s = -0.28$ ,  $p = 0.05$ ).

In sum, more positive attitudes of stockpeople and CCC rearing, being also interlinked, may contribute to better welfare of calves. Thus, our hypotheses were confirmed, although effects were rather weak.

The project COWLEARNING is funded by the Austrian Science Fund (CM 400-B).