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*Mother-bound calf rearing in Switzerland:
Aspects of management and milking*

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Summary

In the survey of the 17 farms in Switzerland that operate a mother-bound calf rearing system, eight farms use a whole-day cow-calf contact system. In addition to this prominent contact system, three farms operate a cow-calf contact system after milking and three farms operate a cow-calf contact system before milking.

According to the farmers' statements, 12 of the 17 farms regularly have a suboptimal milk release during machine milking and 11 farms have already taken measures, for example by bringing the calf into the milking parlour, injecting oxytocin, or using homeopathy or a Blow Fixx.

Ten farms with were selected for data collection. In addition, five control farms with motherless calf rearing were visited. On the 15 farms, various parameters linked to the milk flow and behaviour of the cows were collected during two milkings. In this summary, the results of the three main indicators of poor milkability are presented. Other parameters, such as the activity of the cows' hind legs, the condition of the teats, the bimodality of the milk flow of the milk flow curve and the length of the milking phases were collected to assess the role of the housing system on the animal welfare and milking quality.

85% of the observations with significant ejection disorders (<1kg milk) occurred in farms with whole-day cow-calf contact. In addition, more than half (65%) of the observations with significant ejection disorders were recorded on farms with a whole-day contact system during the suckling period. Belo et al (2009) found that 4% of dairy cows in Switzerland, irrespective of breed, show disturbed milk delivery. Our finding that 10.3% of lactating cows on farms with mother-bound calf rearing showed significant ejection disorders suggests that the presence of a suckling calf does indeed lead to more signs of poor milkability.

Stripping milk fat content, as an indicator of a poorly emptied udder at the end of machine milking, showed more signs of poor milkability in lactating cows on farms with whole-day cow-calf contact and with cow-calf contact after milking. Barth et al. (2020) showed that milk fat content decreases during the suckling period and stabilises after the suckling period for all contact systems, which was confirmed in this study.

As hypothesised, milk yield was influenced by the interaction between the presence of a suckling calf and the type of cow-calf contact. In the presence of a suckling calf, only cows on farms with cow-calf contact prior to milking and whole-day cow-calf contact showed a lower milk yield.

In contrast, the milk yield of lactating and non-lactating cows on the farms with cow-calf contact after milking was comparable to the milk yield of the control farms, suggesting that milk productivity of this contact type is similar during and after the suckling period.

Higher milk flow has previously been associated with improved milking efficiency, including shorter milking phases (Samoré et al., 2011). Milk flow was higher in non-lactating and lactating cows on farms with cow-calf contact after milking, again indicating good milking efficiency of this contact type. It has been shown that after weaning, lower milk yield can persist for a few weeks (Metz, 1987), but then increases again (de Passillé et al., 2008; Krohn, 2001), which was also found in this study.

In summary, the whole-day contact type is the system with the most frequent ejection disorders, with low fat contents of the stripping milk in the presence of a suckling calf, low milk yield and average milk flow compared to the other systems. The cow-calf contact type before milking had lower milk yield and average milk flow, but the fat content of the stripping milk was comparable to the control farms. The contact type before milking resulted in milk yield and milk flow comparable to the control farms throughout the lactation. In terms of profitability, the cow-calf contact after milking seems to be the most efficient system. The question remains whether this system with a restrictive suckling period after milking allows a sufficiently similar suckling process as occurs in nature.

As with any study, there are limitations and room for improvement. Additional factors not considered in this study to reduce the complexity of the statistical model may influence milkability. For example, it has been shown that cows with previous suckling experience were less prone to reduced oxytocin release and thus poor milk yield during machine milking (Tančin & Bruckmaier, 2001). Furthermore, the inclusion of variables such as the breed of cows as well as the feeding regime at farm level in the statistical model would have increased the reliability of the results. Nevertheless, this study aimed at describing the current situation of mother-bound calf rearing in Switzerland and is the first study to compare the different cow-calf contact systems in practice, resulting in higher external validity.