

Introduction: special issue themed section on milk production with cow and calf together

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Editorial

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Three years ago I had the opportunity to write an editorial for JDR, asking for reports on work with cows and calves kept together in dairy production. It is with great satisfaction I now introduce the themed section on cows and calves together in this special issue of the *Journal of Dairy Research*. The papers in this section are a combination of literature based suggestions for important aspects on production systems with cows and calves together, proposals for a common terminology and methodology for describing and studying these systems, novel data from research projects and identification of knowledge gaps that are a priority for furthering the field. The publications in this section are linked in one way or another (sometimes simply by inspiration!) to the EU COST Action DairyCare that enabled an incubator for discussions on calf management in dairy production, including the possibility to keep calves together with their dams. The funding from EU COST made it possible to bring scientists, who may not have met otherwise, together for workshops. This has resulted in new collaborations that have been very fruitful and we now have a closely-knit network of scientists in Europe, North and South America working together to forward the knowledge about dairy production with cows and calves together. DairyCare is greatly acknowledged for this.

The dominating practice for calf management in high-income countries is to separate cow and calf within the first 24 h after parturition. There are many very good arguments for this practice but there are also good reasons to study alternatives. Some of the challenges with raising calves separated from their dams are commented on by Mikuš *et al.* (2020) and Relić *et al.* (2020) in the last two papers in the previous section of this issue. The growing concern among farmers and consumers over possible adverse effects on cows and calves from separation is driving an increase in farms across Europe keeping cows and calves together. These farms are very few compared to mainstream dairy production but the numbers are steadily increasing and it is important that science and extension services at least keep up or, possibly, stay ahead of these developments. In these farms, calves are kept with their dam or foster cows during parts of (or the entire) 8–12 week milk feeding period. Some farms keep them together longer than that, which also means a longer milk feeding period. The behavioural mechanisms underlying the development of the relationship between mother and young and possibilities for fostering from the perspective of an ethologist is presented by John Kent in the first contribution to this section (Kent, 2020) Several research projects on keeping cows and calves together are running now or just about to start. Research questions span from attitudes, farm surveys, management solutions, effects on cow and calf regarding production, health, welfare and reproduction and evaluations of sustainability and farm economy. Funding is provided from the EU Core Organic, national research funds, private foundations and industry. We know of a range of projects, small and large, and are sure that there will be a rapid increase in scientific publications in the field within the next few years. It will help the field if some common standards are used and I therefore encourage anyone who is active in the ongoing projects, or planning new projects, to read and reflect on the three papers in this themed issue that propose terminology and methodology for Cow-Calf work (de Oliveira *et al.*, 2020; Ferneborg *et al.*, 2020; Knierim *et al.*, 2020; Sirovnik *et al.*, 2020). If we have common characteristics between studies then the chances of combining data for evaluating health, resilience and sustainability are much better. There is also a need for data on genetic factors that are important for these systems and it is a great advantage if many projects can contribute to a pool of data for evaluation of genetic factors.

The next contribution is by Kerstin Barth, who has the longest experience by far of studying dairy production with cows and calves together in a controlled research setting. In her paper you will find effects on milk yield and milk composition in dairy cows that are machine milked in a parlour system and also suckle their calves (Barth, 2020). In Kim Santo *et al.* (2020) and Waiblinger *et al.* (2020a, 2020b) we learn about effects on activity, emotionality, social behaviour, play including reactions towards humans in calves that have or have not had contact with their dam. Zipp and Knierim (2020) also report results in adult cows that were reared in a calf-dam-contact system, comparing effects on whole-day and half-day contact on physical development, how heifers integrate into the dairy herd and how they perform in their own first lactation. It is very valuable to have data on the whole life cycle of the dairy cow and this is needed to enable complete evaluation of the possibilities for dairy production with cows and calves together.

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Enjoy the papers and do not hesitate to contact any of the authors in this section if you are interested in the field; they are keen to network and continue to forward the understanding of these systems.

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