



## Rearing calves on milking cows: key points to consider



### Introduction

Organic agriculture has the aim of letting animals perform their natural behaviour, such as letting them take care of their offspring. Mothers and their new-born calves have a strong natural need to be together. When keeping cows for milk production, cows and calves are usually separated early after calving. Keeping calves with their mothers is the rearing system which allows cow-calf interaction and most likely meets the natural needs of both cow and calves. It is rarely practised under European production conditions, for different reasons: it can be practically difficult to manage, and it will probably reduce the milk for sale quite significantly. As part of the SOLID project, some farmers were curious how keeping cows and calves together could be practised because they acknowledge its potentials to meet animals' needs as it is emphasised in the organic principles. However, many other farmers are very sceptical about the idea because of the milk loss and

the difficulties in managing the separation of cows and calves if a strong bond has been established and perceived risks of damaging the calves. We therefore took up this topic as a farmer led innovation to explore the practicalities of rearing calves on milking cows.

### Learning from experience in different types of systems

We learned about maternal suckling from three different 'cases':

1. A Danish farmer who had for 20 years practised a system with seasonal calving and calves kept mainly with their mothers and some of them with suckler aunts;
2. A British farmer with all year round calving who tried for the first time keeping calves with their mothers inside their cubicle housing system; and
3. A study tour to The Netherlands visiting 6 different farmers who have practised rearing calves this way for several years.





## The Danish dairy farm

The Danish farm had about 50 crossbred cows. The farm is autumn calving from August to November and sold about 6500 kg milk per cow. Milking cows and heifers had access to outdoor areas. Calves were fattened until slaughter on the farm. The farm had a strategy of extensive farming and was also working actively on health improvements and on phasing out of antibiotics. A case study observing the cow-calf rearing was carried out in 2013.

The cows give birth in a common calving area, outdoor or indoor. Cow and calf are transferred to a separate box to bond, and machine milking happens from the second day. Together, they will typically be first included in a smaller group of cows and calves, and then a bigger group, where cows and calves are together between morning milking and until after evening milking (of the others without suckling calves). All suckling cows are milked in the morning, and not in evening when they have been with their calves during the whole day. Cows produce more milk than what their own calf can drink, and therefore the numbers of calves and cows are balanced so that there is no milk left for evening milking. This means that not every calf had his/her mother in the cow-calf-area. The 'best suited' cows are gradually selected to become suckler aunts for the calves without their own mothers. Approximately 20 calves stay with 12 cows per area. By the end of December, the cows and calves – now between 1 to 4 months of age – are separated abruptly: the cows do not go back to the calves after morning milking. In 2013, fence line separation was tried out and proved to be successful. Bull calves often stay longer with suckler aunts.

### What did we observe in the Danish herd?

In the period with suckling, an observing person stayed in the herd for a full day every fortnight. There were no stillborn or dead calves in 2013, no assisted calvings and no peri-partum complications (retained placenta or milk fever). The bulk tank SCC was 327,000 during the study period. The calves had an average birth weight of 35.3 kg. There were no treated diseases among cows or calves during the study period observed or reported by the farmer, but traces of liver flukes in slaughtered animals. All calves followed a weight curve above the standard average, except one Jersey bull. The weight gains were generally a bit lower (not significant) among the youngest calves, compared to the first born. The calves which had their own mother during the whole period generally grew bigger than the calves which partly suckled 'aunts'. The calves were observed eating roughage within the first weeks of life, often together with their mother or other grown-up cows.

Farmer time spent at the cow-calf system was observed through one day, and on that day, 80 minutes were spent with cows and calves in the system, and of them, 28 minutes

*A good sign of bonding between a cow and a calf: reverse parallel position*



were used for talking and patting. These 'talking and patting' periods observed happened often while talking on the mobile phone or waiting for the water troughs to be filled. Fear tests were performed on 14 one-year old heifers in a group, to see if they seemed wilder than 'normal heifers', and they were absolutely not: they let the owner get close.

Cows and calves were observed during two full days, and a wealth of detailed info was recorded, all giving witness of a highly complex dynamic pattern between cows and calves. These observations informed the following recommendations:

- A useful sign of a good relationship is when calves suckle their mother or 'aunts' in a 'reverse parallel position' typically seen for calves having their mothers with them, and for small calves suckling aunts. Generally, calves suckled aunts in a 'stealing position' between their hind legs, with few exceptions; e.g. one cow seemed to be a favourite cow for many calves. Young calves generally only suckled their mothers; slightly older calves could occasionally cross-suckle also when their own mother was present.
- Young calves rested closer to their mother, whereas older calves went into a calf group and slept together as a group. Mothers of young calves often seem more protective towards them and attempt to keep their calves closer.
- The calves started suckling in the Danish system, when 'feeding and milking sounds' started, because they knew that now their mothers/aunts would leave soon. Similar patterns were observed in Dutch herds.
- The calves seemed to enjoy when the mothers/aunts left in the evening, because it gave them the space for running and playing. The cows seemed happy having a bit of evening concentrate and being able to be with the other cows and have outdoor access. In the morning, both groups seemed to enjoy getting back together.

## The British dairy farm

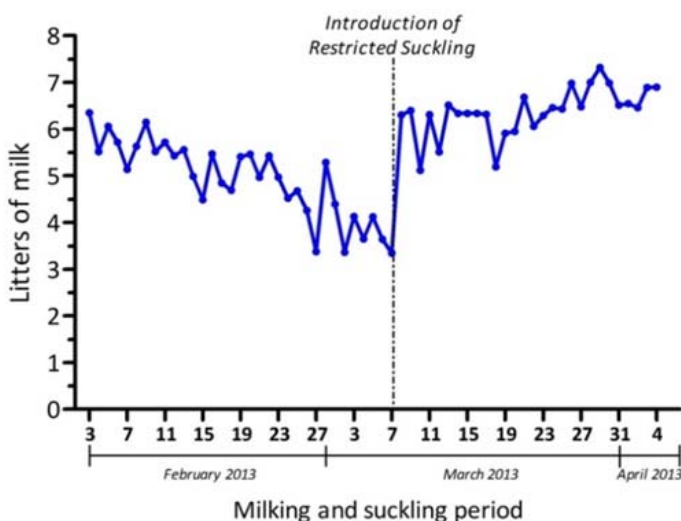
In the British case-study farm cows and calves were housed in a cubicle housing system with concrete floor, and calves were allowed to be with their mothers throughout the day in the cubicle area. The design allowed cows to lie in a variety of positions, including diagonally across the cubicle space, and even parallel to the dung passage, underneath the cubicle divisions.



*Calves resting together with their mothers in the cubicle area*

### What did we observe in the British herd?

The overall saleable milk per cow per day averaged 4 to 5 litres, which was disappointingly low for the farmer. Therefore restricted suckling was introduced, where calves were kept separated from their mothers during the day and were allowed unrestricted access to their mothers from after the afternoon milking onwards. During the day, the cows and calves could still see each other and interact through gates. The overall milk yield remained below the expected level (Figure 1), which caused a significant impact on the farm's profitability.



*Figure 1: Daily milk production retrieved at the parlour of cows that were suckled by their calves during the period 1 February 2012 to 4 April 2012*

Suckled calves were slaughtered 193 days earlier than bucket reared calves. Suckled calves achieved a daily live weight gain of 0.9 kg/day compared to 0.65 kg/day of the bucket fed calves.

Slightly rough and very rough teats in terms of dryness were more prevalent in the group of cows suckling calves than in the lactated cows not suckled by calves. In contrast, occurrences of warts were less common in the teats of the suckled cows compared to those of the non-suckled cows but suckling seemed to result in dryer skin in the suckling cows.

The collected data indicate that restricting the amount of milk taken by calves is necessary to retain an economic level of milk for sale. Further adaptation of the management system is necessary to achieve a financially viable way of producing milk for sale while rearing calves naturally on their dams. One alternative system would be using multiple suckling, which can be considered a compromise between increased 'natural living' and practical and economic implications.

## Summary of interviews and study trip to The Netherlands

Two researchers from Aarhus University visited one farm where cows and calves were together 1½-2 hrs after each milking, and five farms where the calves were part of the milking herd night and day. In some herds, the calves were kept inside when the cows went out to pasture, for security reasons (e.g. a motorway close to the farm). In most farms, the bull calves were sold off at an age of 3 weeks. Heifer calves were normally kept with their mothers until an age of about 2-3 months. The following recommendations were drawn from this study trip, based on the Dutch farmers' experience:

- Bonding should be ensured from the beginning. Some farms had the cows and calves isolated in a calving box for a few days, before they were let into the main herd; others just kept a close eye on them. It was normally uncomplicated, although some had to be helped at the start. It was paramount to ensure that it worked well within the first day or two, no matter which system was applied, before the cow and calf went into the herd, where many more disturbances challenged them.
- The major challenge was the process of de-bonding. One farmer let the calf stay with its mother but with a 'nose-ring' that hindered suckling. Others made various versions of fence-line weaning, meaning that the calf had to suckle through a fence, which limited it and made the calf more aware of presence of humans – who then should make positive contact to the calf and feed and pat it, and of other calves. It would be an advantage to have several calves together.
- Most herds had an all-year-round calving pattern. This can be a challenge for the 'peace' of the herd – both in the calf group and the cow group, and with regard to behaviour as well as hygiene issues. However, calf-cow systems for block calving would require quite a lot of extra space used only during one period of the year.



- The design of the housing system needs to be considered carefully: minimum metal bars, corners, narrow places and blind ends, and maximum overview, space to move and equipment for the calves like lower water troughs and feeding tables which they can reach.
- A special area for calves, unreachable for cows, could be useful, but only very few of the visited farms had it.
- The very young calves preferred often to stay with their mothers – sometimes they walked with them to the slatted floor areas and lay there while their mother was eating. Solutions to this such as to offer mothers of young calves feeding in a more ‘calf friendly’ area were not really developed.
- Calves normally preferred to eat the same feed as their mothers. The farmers would offer calves special calf concentrate, but the calves preferred the cow feed.
- The calves could have diarrhoea caused by ‘overdrinking’; this was seen occasionally but was not regarded as life threatening.
- All farmers had experienced having a calf that was injured or had died, but it was very rare. In response, one farmer took out cows in heat from the herd, and others emphasised the design of the housing system.
- The people taking care of the herd should be highly attentive and ready to interact! It is a wrong assumption that humans do not need to do much because ‘the cows will now take care of the calves’.
- The biggest challenge in the cow-calf system is clearly the de-bonding process, and to a lesser extent also the bonding.

## References

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## Conclusions and recommendations

In addition to lessons learned from the examples presented in this leaflet, the following overall conclusions can be drawn:

- All examples show that calves that are allowed to suckle a cow drink more milk compared to those restricted to a twice-a-day-milk-feeding programme. This leads to healthier calves and improved weight gains but also less milk in the tank.
- A farmer from Finland summed up her experience with rearing calves on cows as follows: “Every litre of milk invested in the calf is returned in the form of higher milk production by the cow she grows into”.
- Skill and adaptation to the herd conditions is paramount for the success of rearing of calves on cows. It requires observation and knowledge of cow and calf behaviour, as well as quick action and reaction to all observations made. The Danish farmer had developed his system over a 20 year period, whereas the British farmer who did not have much prior experience ran into a lot of challenges. All the interviewed farmers in The Netherlands also supported this. So: start carefully and make sure that there is time for observation, actions and interactions, and room for constant adjustments.
- All farmers emphasised that calves learn from grown-up cows when they are allowed to be together. Farmers’ observed that such calves were much better equipped to join the herd when they grew up. They ate roughage and had social contact with fellow calves and grown-ups, which also gave them a good start as ruminants and as social animals.

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