

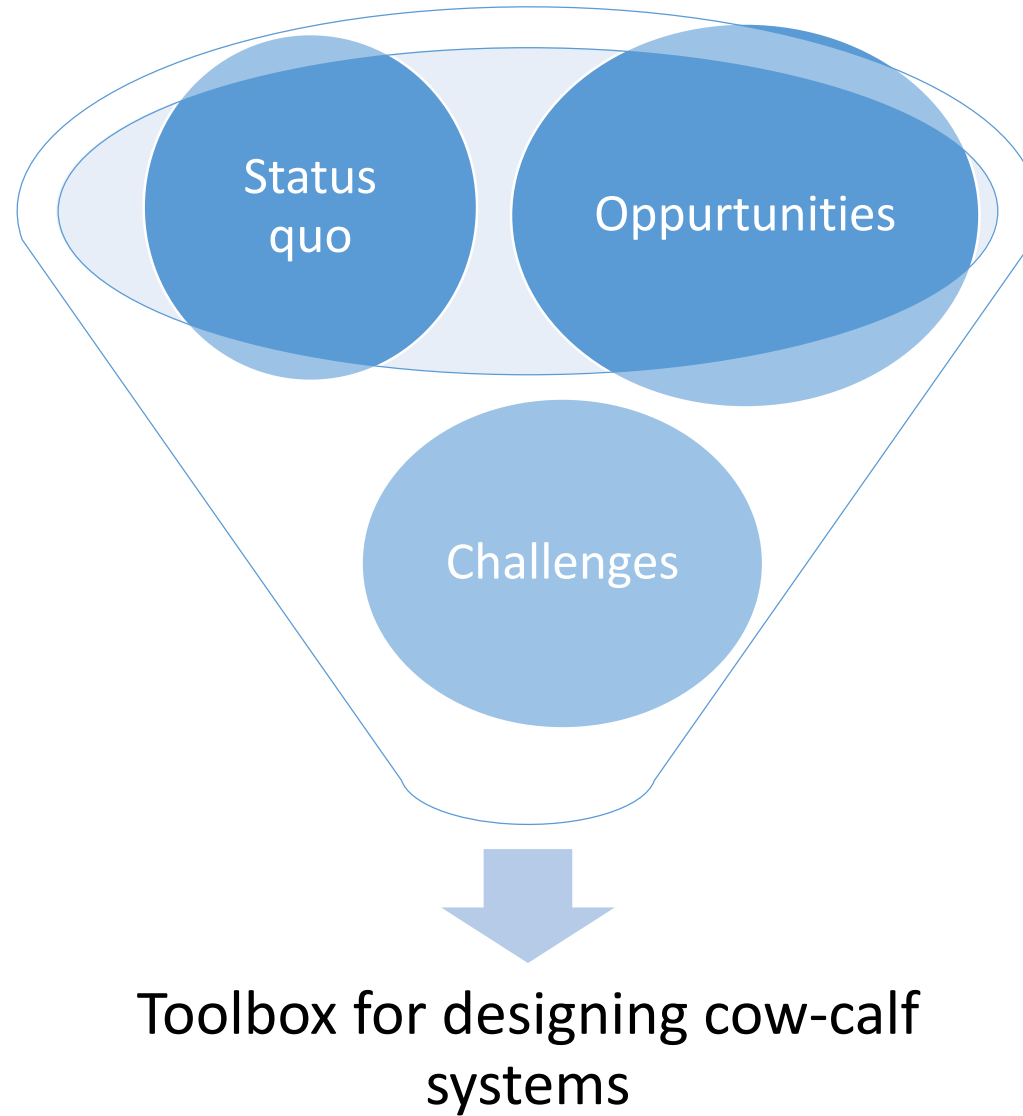
# Cow-calf contact in dairy production: opportunities and challenges

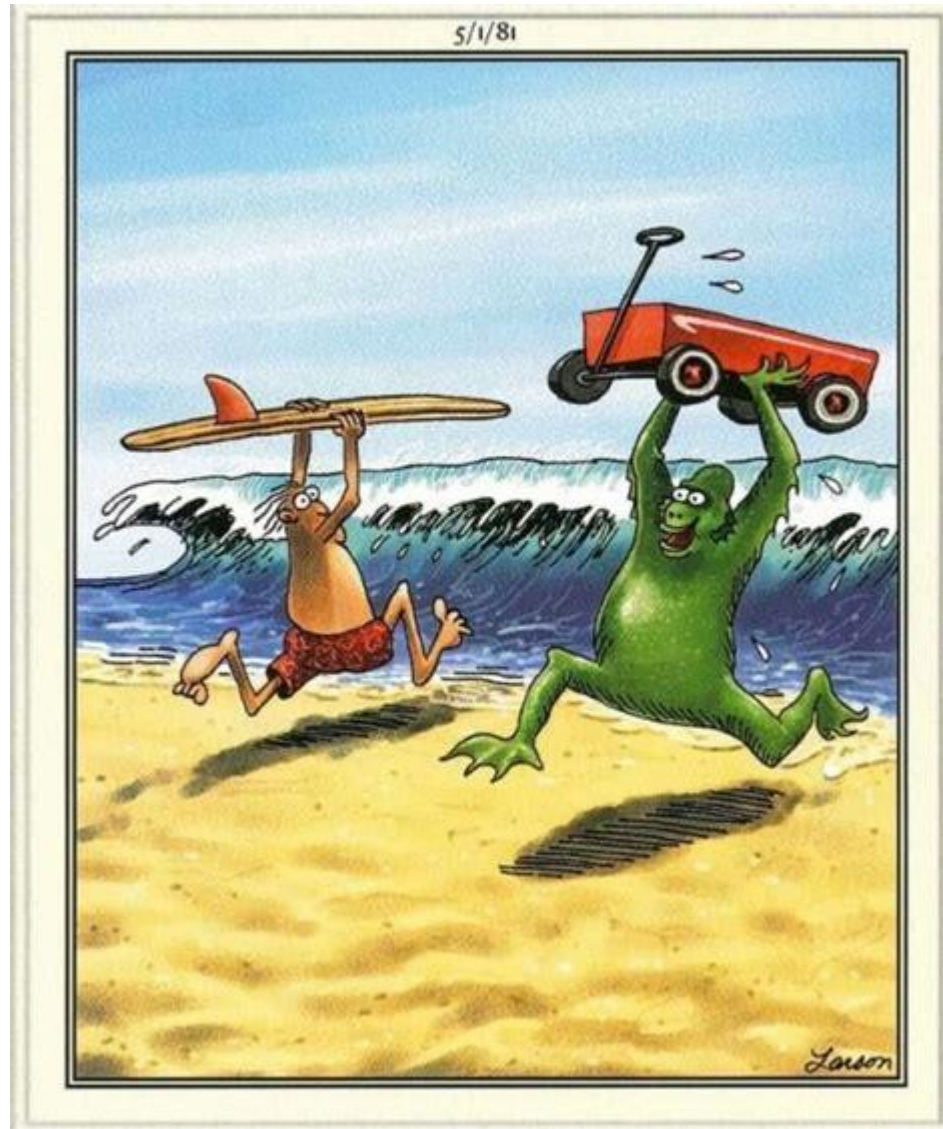


Julie Føske Johnsen, Valio Barn Seminar 2019



# Outline





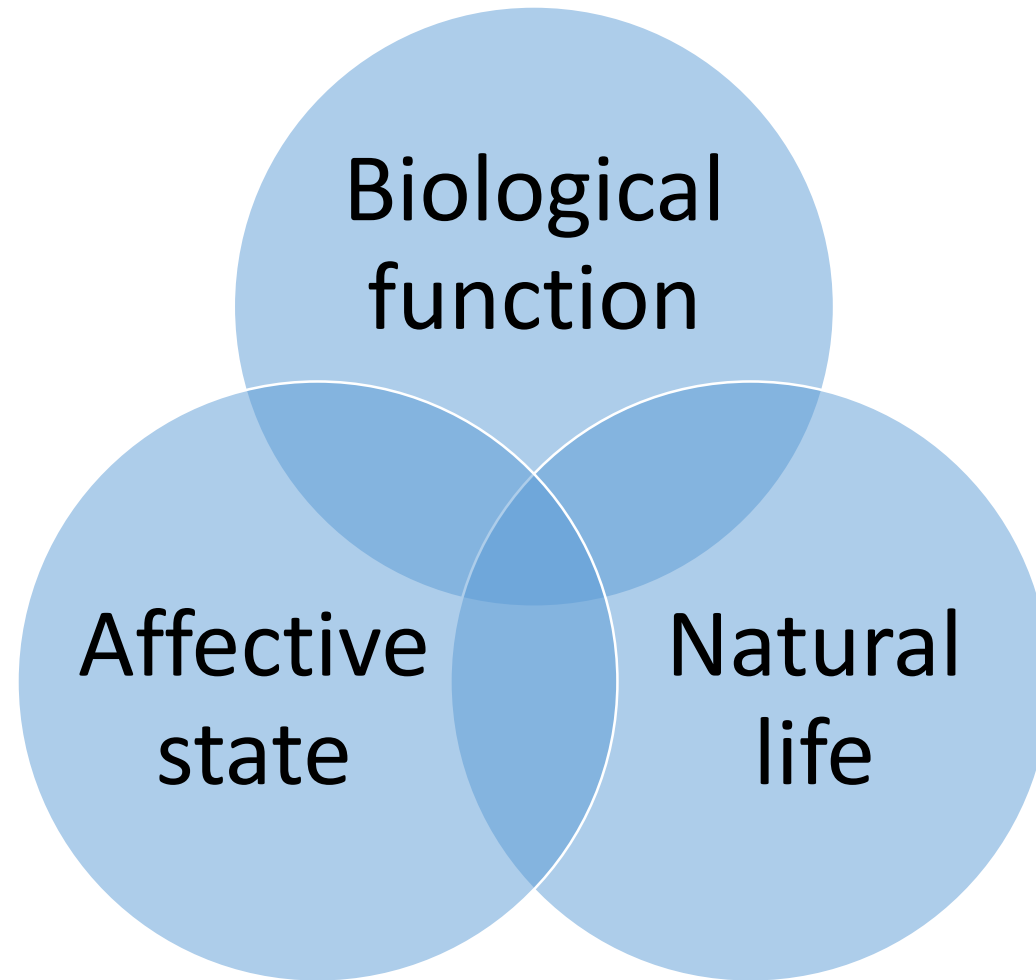
Status quo..



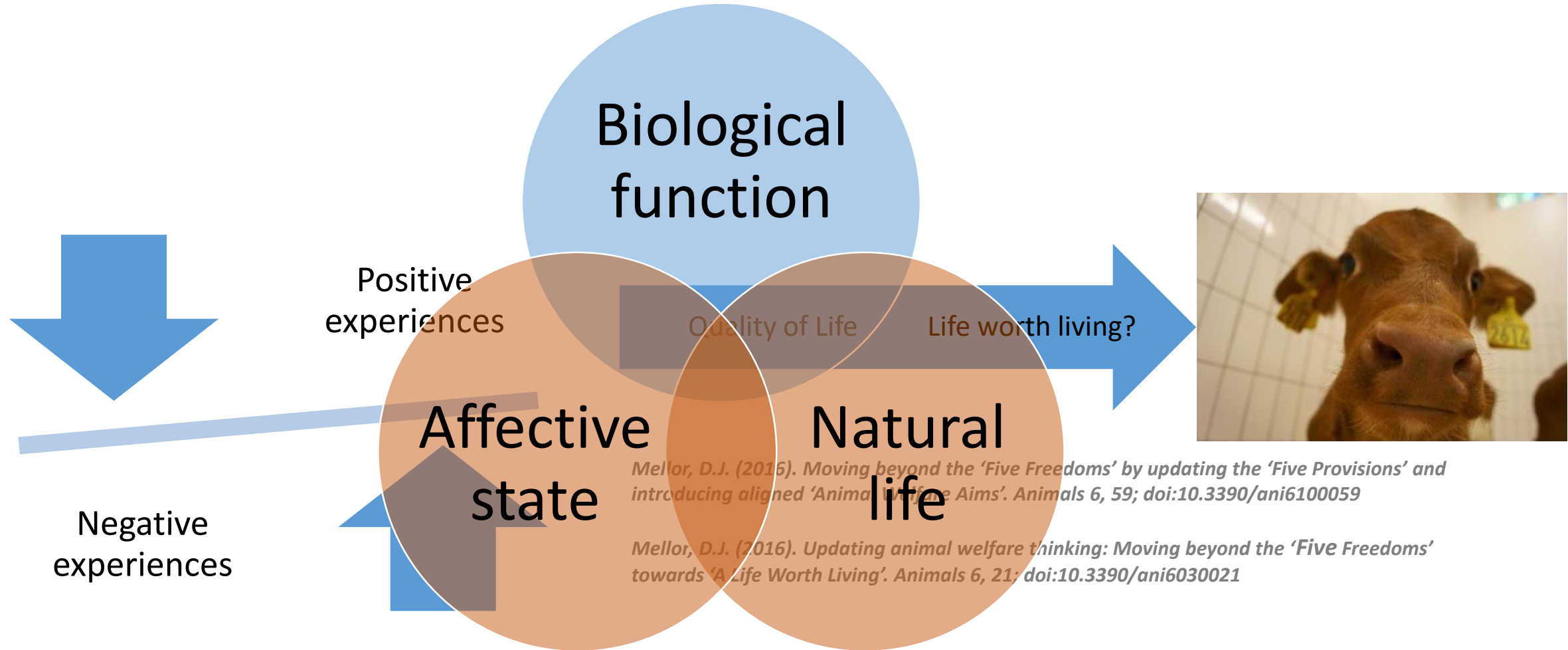
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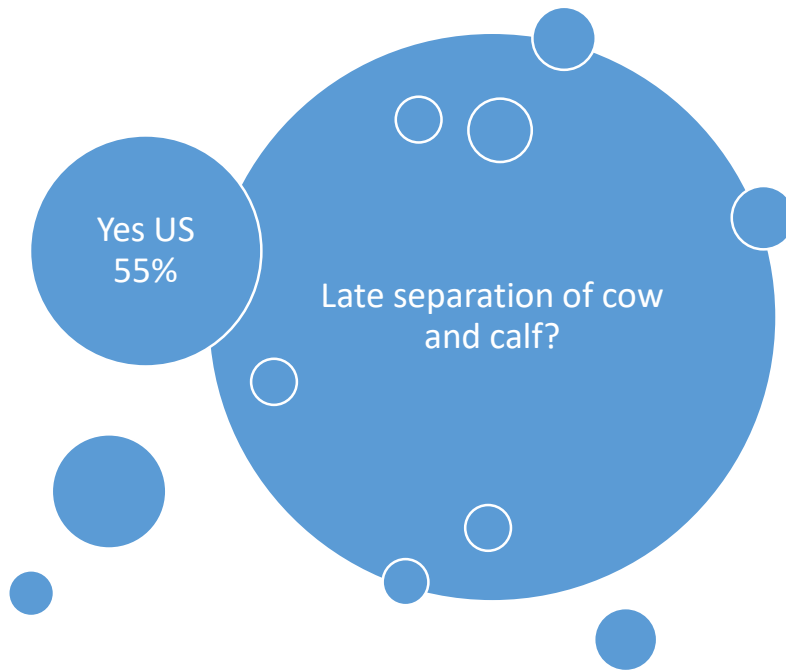
# Animal welfare



# Animal welfare



# Separation of cow and calf is contentious



Ventura, B. A., M. A. G. von Keyserlingk, C. A. Schuppli, and D. M. Weary. 2013. *J. Dairy Sci.* 96:6105-6116.

Busch, G., D. M. Weary, A. Spiller, and M. A. G. von Keyserlingk. 2017. *PLOS ONE* 12:e017401

Ventura, B. A., M. A. von Keyserlingk, H. Wittman, and D. M. Weary. 2016. *PLoS One* 11:e0154733.



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# Animal welfare labelling



## Bedre Dyrevelfærd



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...breastfeeding on demand  
(that is, as often as the child wants, day and night)  
WHO, 2016



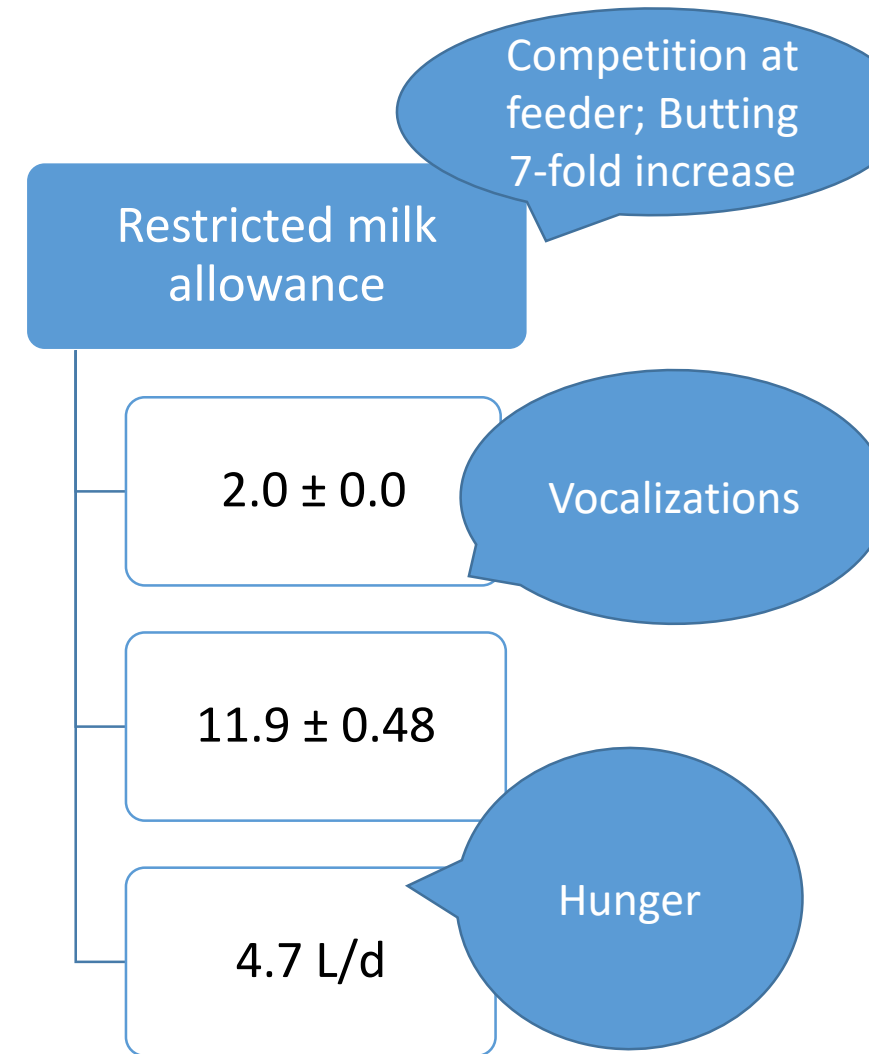
# Calf milk feeding

Weight gain 0,9-1 kg/day  
versus 0.36 kg/day

Rewarded visits per day  
(freq)

Length of suckling bout  
(min)

Milk intake per d



De Paula Vieira, A., et al., 2008. *Appl. Anim. Behav. Sci.* 109: 180-189

Appleby et al., *Appl. Anim. Behav. Sci.*, 74 (2001), pp. 191-201

Thomas et al., 2001. *Appl. Anim. Behav. Sci.* 74:165-173.



# Assets of high pre-weaning weight gains

- ↓ Age at first calving
- Milk yield ↑
- Bull reproductive performance ↑
- Calf welfare-prevention of hunger



*Davis Rincker, L. E., et al., J Dairy Sci 94:3554-3567*

*Soberon, F. and M. E. Van Amburgh. 2013. J of Anim Sci 91:706-712*

*Soberon, F., E. et al., 2012. J. Dairy Sci. 95:783-793.*



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# Social housing



Provides  
social  
support

Reduces  
fear of  
conspecifics

Improves  
social skills

Stimulates  
feed intake

Improved  
weight gains  
pre and  
post  
weaning

Calf health?

Social  
contact  
improves  
welfare

*Costa, J. H., M. A. von Keyserlingk, and D. M. Weary. 2016. Invited review: Effects of group housing of dairy calves on behavior, cognition, performance, and health. J Dairy Sci 99:2453-2467.*

# To sum up

- Quality of life and positive emotions pivotal for good animal welfare
- Important assets associated with feeding more milk and housing calves socially
- Early separation of cow and calf is a contentious issue





“Bummer of a birthmark, Hal!”

Challenges..



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# Suckling in dairy production



- “..In improving the rearing of young stock, the challenges are: to find innovative methods for keeping dairy calves that allow mother-infant contact without negative productivity effects,....”



Foto: A. M. Grøndahl



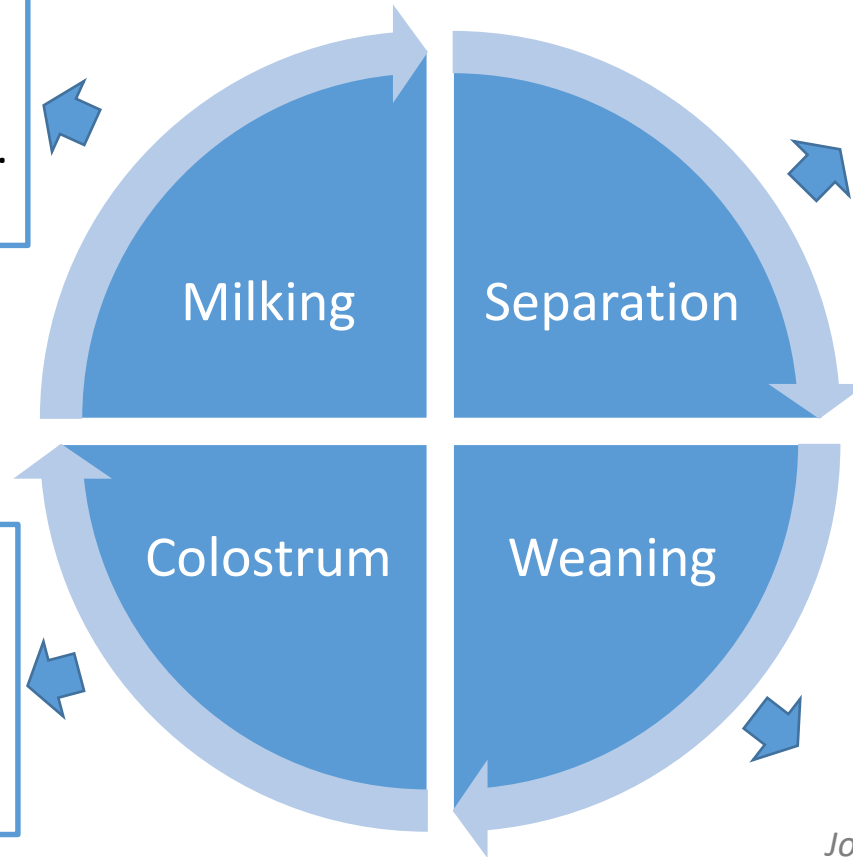
Foto: Louise Buxant



# Challenges associated with cow-calf systems

Effect on milk production: none or positive.  
Some experience impaired milk ejection.  
Long term studies are lacking

Loss of milk and dam-not simultaneously!



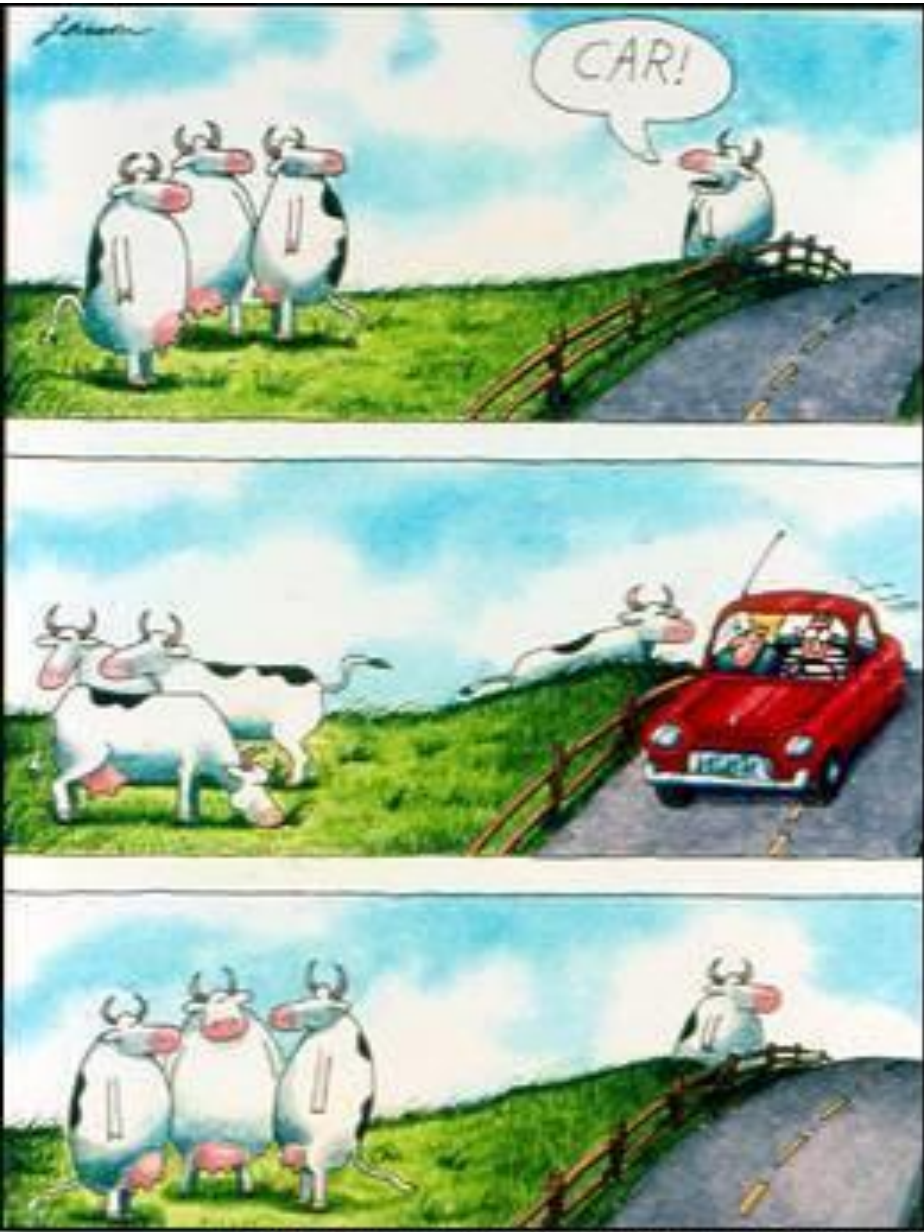
30 % of suckling calves insufficient transfer of immunity  
↓  
Calves that suckle on their own->low risk

Supplemental milk ->nutritional independency from the dam

*Johnsen, J. F., et al. 2016, Appl. Anim. Behav. Sci.*



Opportunities..



Gary Larson / Andrews McMeel Publishing / AP



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# Calf weight gain



Grøndahl, AMG. et al., 2007. Growth rate, health and welfare in a dairy herd with natural suckling until 6-8 weeks of age: a case report. 49-16



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# Affiliative behaviours-positive emotions



Cow and calf->  
environmental enrichment?

Mandel et al. Invited review: Environmental enrichment of dairy cows and calves in indoor housing. Environmental enrichment, J Dairy Sci, 2016



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# Suckling for at least 7 weeks positively affects farm economy.



## Suckling 7 weeks

- Improved cow health
- Improved calf health
- Improved calf growth

## Suckling during the colostrum period

- Higher replacement

*Asheim, L. J., et al., 2016. Review of Agricultural, Food and Environmental Studies:1-12.*

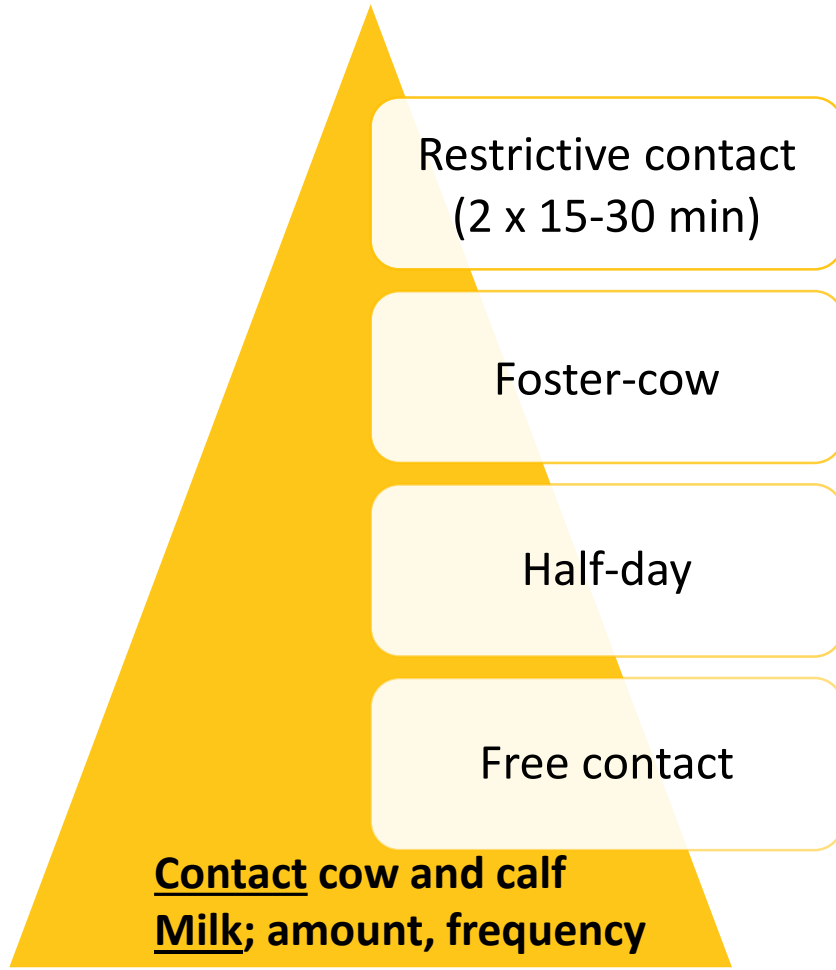


# Health

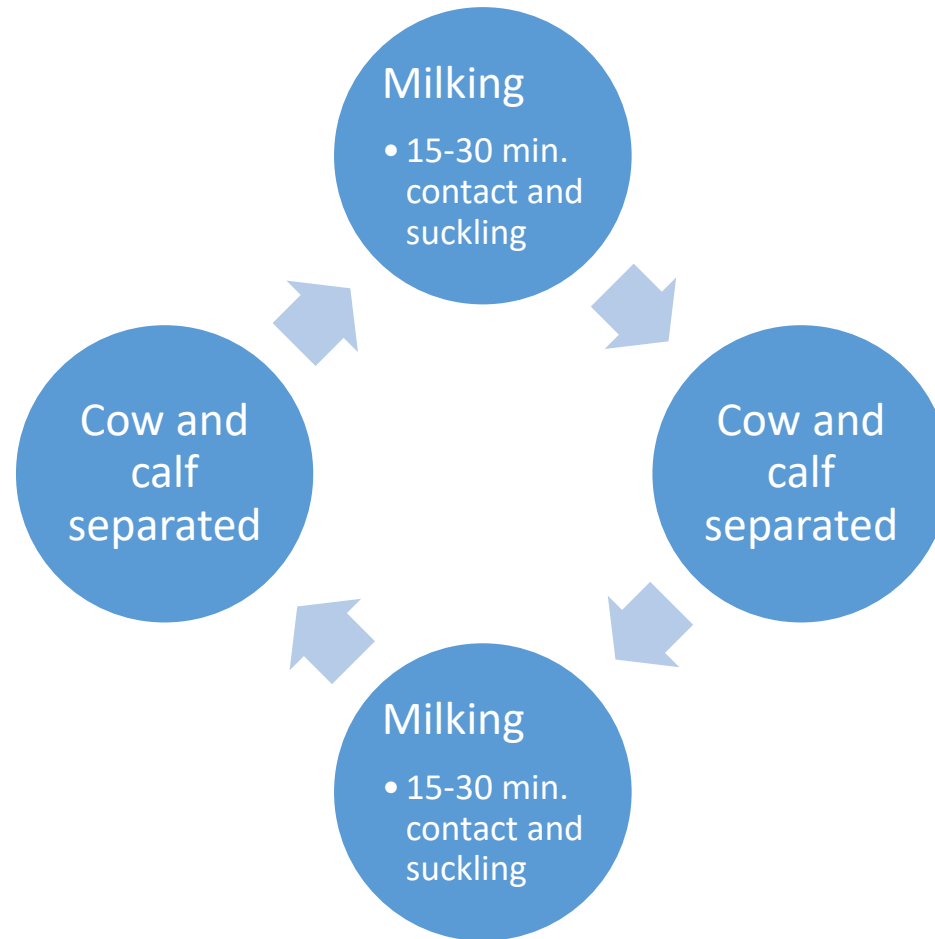
- The scientific peer-reviewed literature on cow and calf health provides no consistent evidence in support of early separation.
- No consistent evidence that early separation impedes the spread of Paratuberculosis
- Knowledge is needed on long-term effects on health and production and hygienic effects



# Suckling systems



# Suckling systems-restricted suckling



Das, S.M., et al., 1999. *Acta Vet. Scand.* 40, 57-67.  
de Passille, A.M. et al., *J. Dairy Sci.* 91, 1416-1422.  
Froberg, S. et al., 2007. *Trop. Anim. Health Prod.* 39, 71-81.  
Froberg, S. et al., 2008. *Appl. Anim. Behav. Sci.* 113, 1-14.



# Suckling systems-foster cow



# Suckling-free suckling





# Cow-calf suckling and AMS



## Preweaning (6-8 w)

- ✓ High preweaning weight gain
- ✓ Less cross-suckling and abnormal behaviours
- ✓ Less solid feed intake

## Post weaning

- ✓ Weight gain depression
- ✓ Behavioural signs of stress at separation and weaning

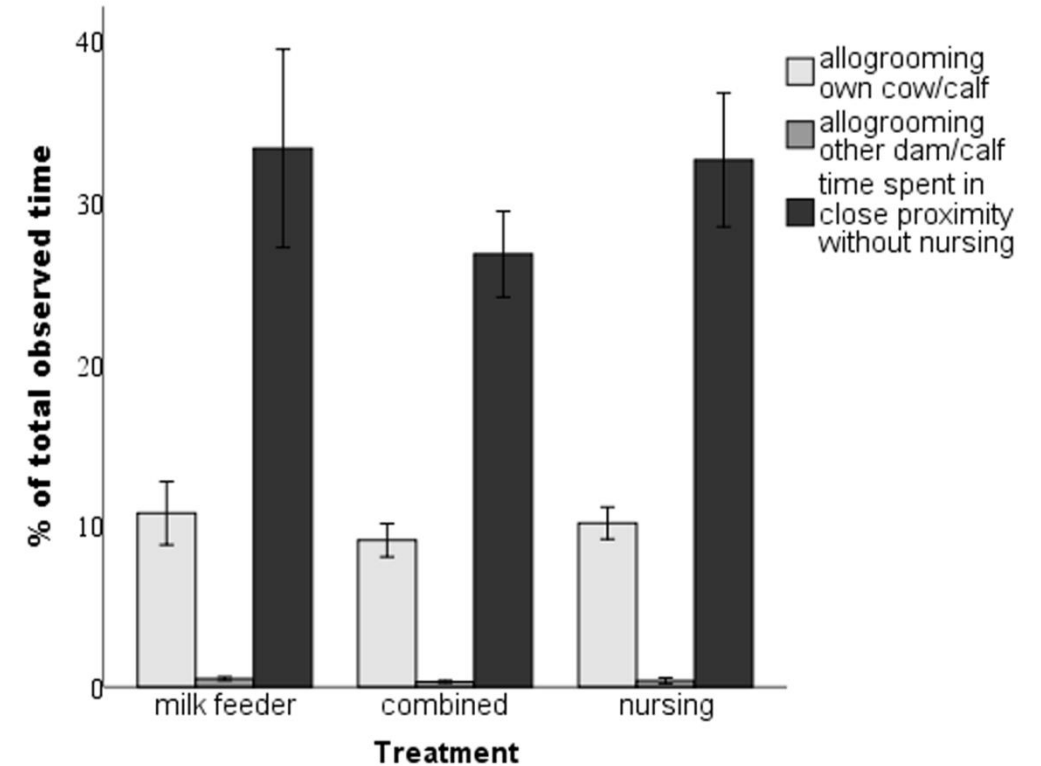
*Froberg, S. & Lidfors, L., 2009. Appl. Anim. Behav. Sci. 117, 150-158.  
Froberg, S. et al. Acta Agric. Scand. Sect. A-Anim. Sci. 61, 145-156.*



# Is nursing a prerequisite for the formation of the cow-calf bond?



## Affiliative behaviours



Johnsen et al 2015 Applied Animal Behaviour Science. 163, 50-57



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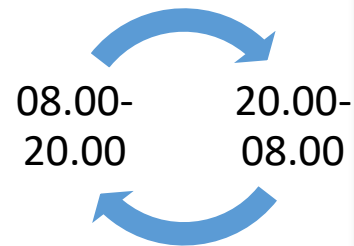


# Suckling systems-half day contact

Housed in adjacent pens during the day



Together during the night



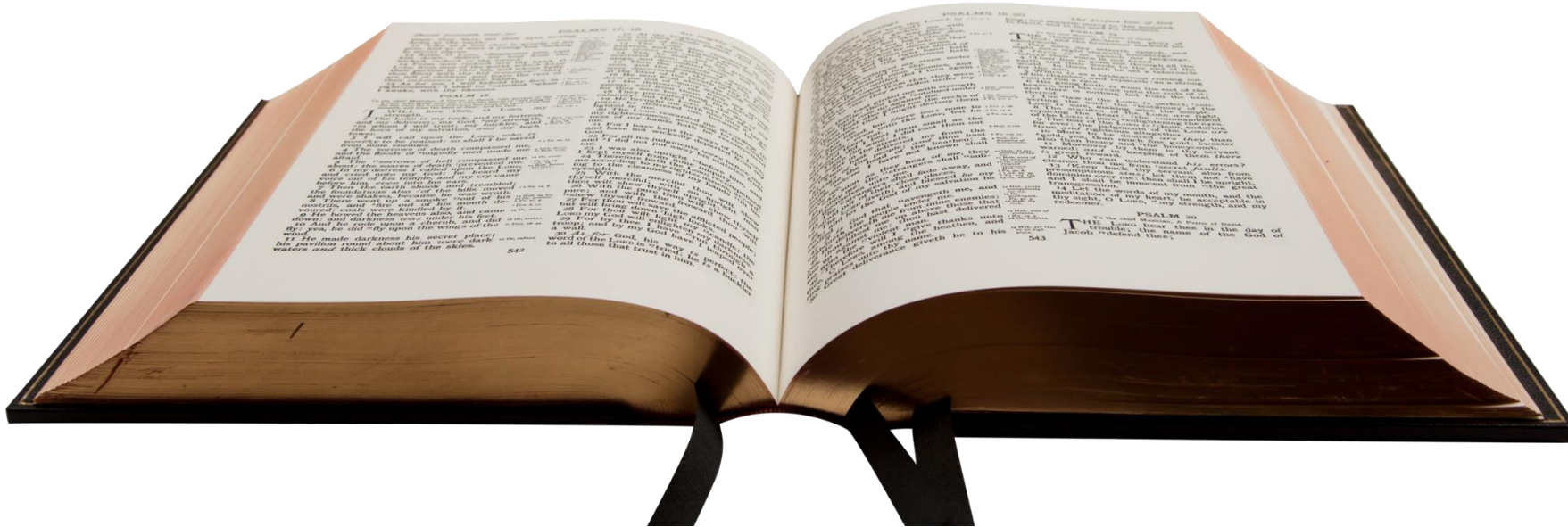
*Veissier, I., S. Caré, and D. Pomiès. 2013. Appl. Anim. Behav. Sci. 147:11-18.*

*Johnsen, J. F. et al, 2015, J Dairy Sci 98:4800-4810.*

*Johnsen, J. F., Appl. Anim. Beh. Sci. 163:50-57.*



*Exodus 22:30... Do the same with your cattle and your sheep. Let them stay with their mothers for seven days, but give them to me on the eighth day.*



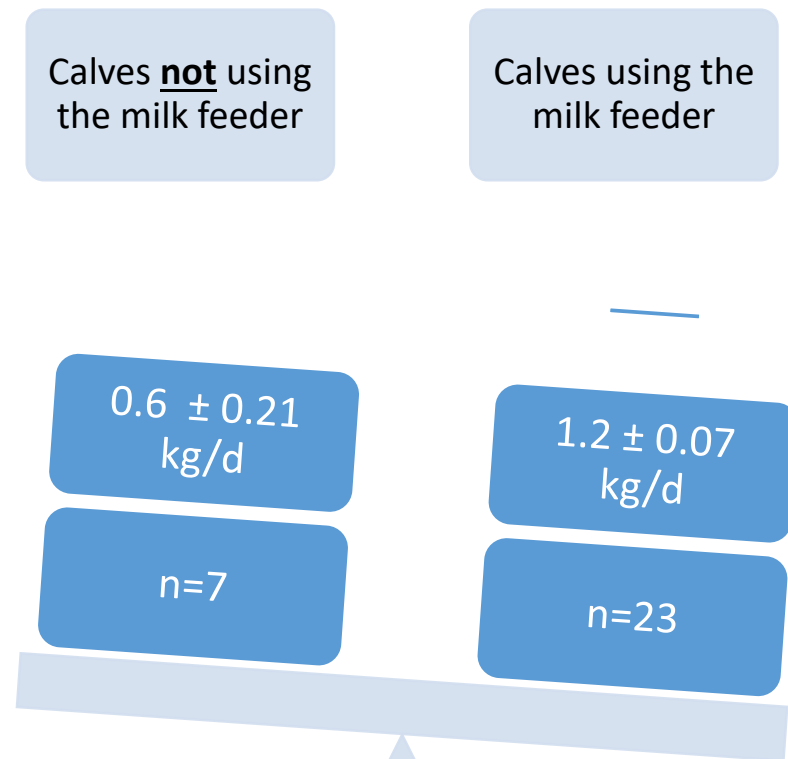
A toolbox to design cow-calf systems

# Bonding in a maternity pen

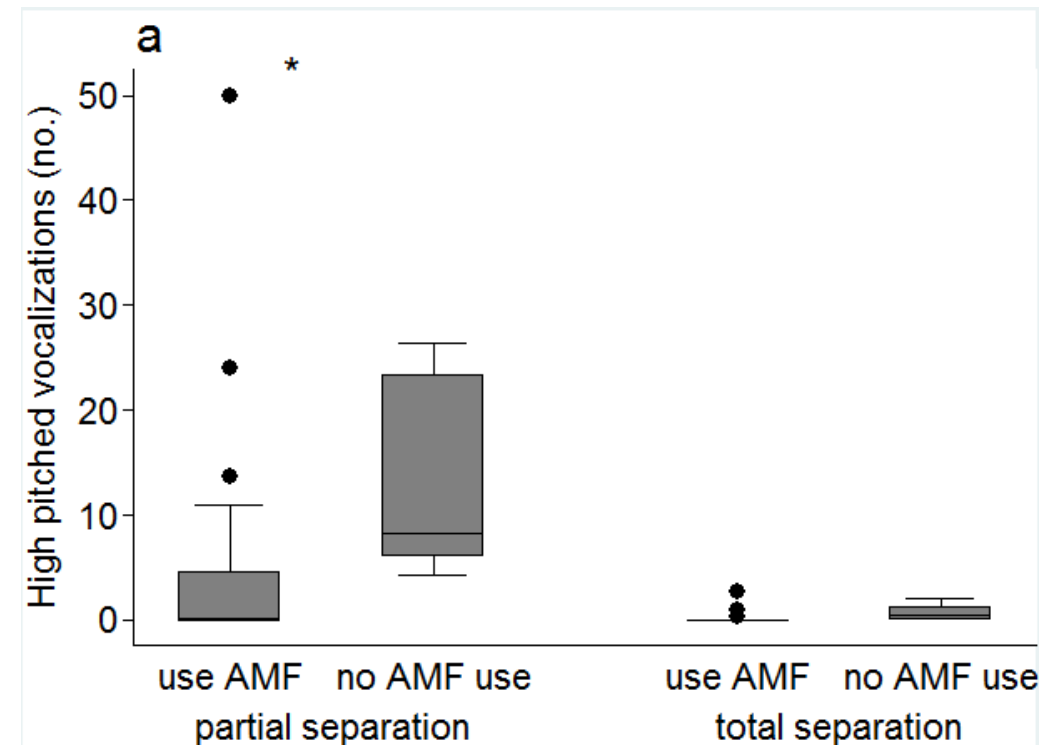


# Supplemental milk to suckling calves

## Calf ADG after separation



## Calf Vocalizations



Johansen, J. F. et al, 2015, J Dairy Sci 98:4800-4810



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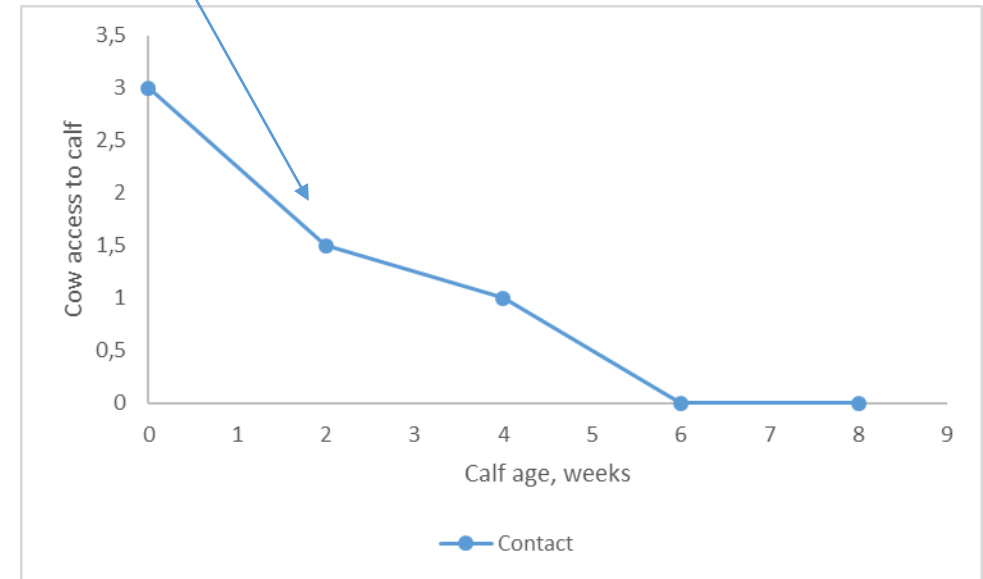


# Cow and calf have regulated and not full access

Flexibility!



Milk quota



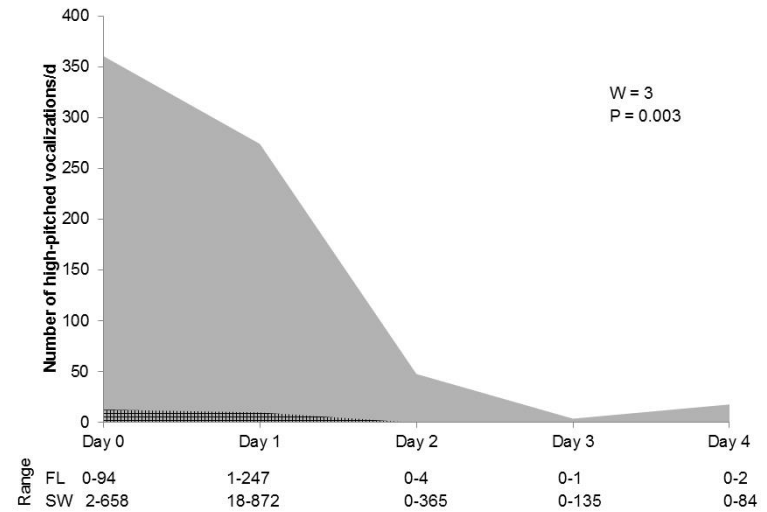
Roth, B.A., et al., E., 2009. *Appl. Anim. Behav. Sci.* 119, 143–150.  
Wagner, K., et al., et al, 2012. *Appl. Anim. Behav. Sci.* 141, 117–129.





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# Physical contact at separation can decrease separation stress

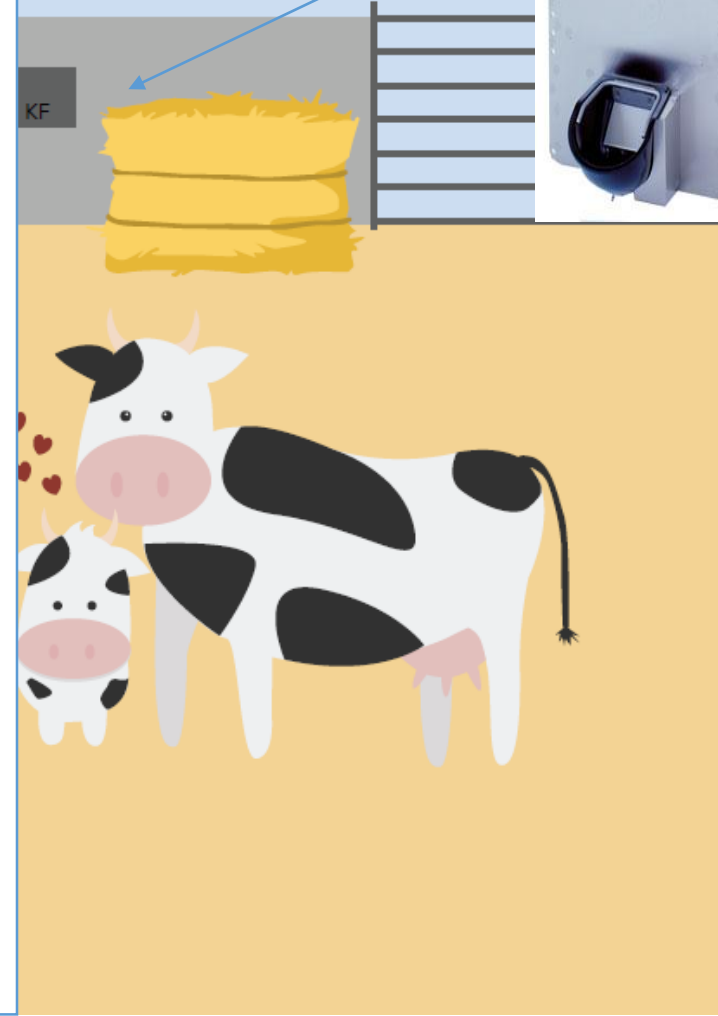
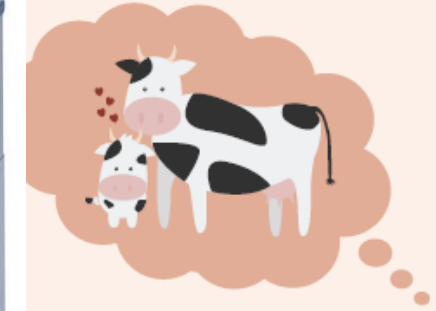


-  Calves separated from the cow with a Solid wall (no physical contact)
-  Calves separated from the cow by a Fence-line (physical contact)





## SmartCare



- ✓ Supplement milk (milk feeder)
- ✓ Farmer regulated access of the cow to the calf (smartgate)
- ✓ Physical contact at separation
- ✓ Gradual weaning

Thank you for your attention!

