

Effect of calf rearing method and milking method on milk yield and udder health of crossbred cows in Thailand

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Problem and objectives

Material and Methods

Results and Discussion

Conclusion

Problem and Objective

- Large increase in market demand for dairy products in Thailand
- Local production meets only 35 % of domestic demand
- Expanding dairy production sector based on crossbreeding and western technologies : Bucket feeding of calves, machine milking
- Udder health problems with high mastitis incidence (56%) in smallholder dairies
- Appropriate calf rearing and milking methods need testing

Material and Methode

- 40 HF-crossbred cows (75 to 87 % HF)
- Two x Two factorial design with
 - two calf rearing treatments:
 - artificial rearing Bucket, cow milk, from 4 to 84 days
 - restricted suckling after milking until 84 days
 - two milking methods:
 - Hand milking
 - Machine Milking

Management procedures:

- Milking twice daily
- Bucket feeding of calves with 236 kg milk over 84 days
- Restricted suckling for 15 minutes after each milking
- Weaning of calves at 84 days/ 12 weeks
- General procedure for mastitis prevention: teat dipping, udder washing, cleaning of milking machine

Material and Methods

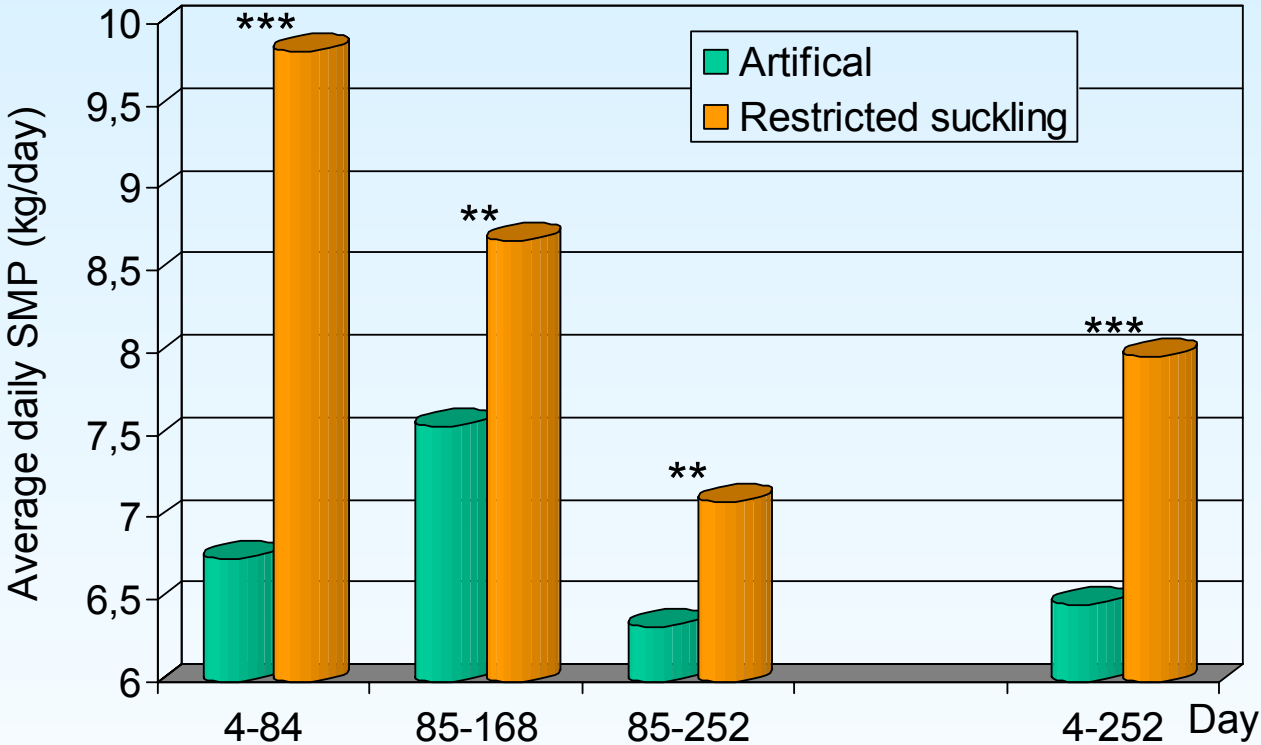
- Milk recording
 - Daily milk recording from 4 to 284 days of lactation
 - Weekly recording of milk intake by restricted suckling with the weigh - suckle - weigh - method
- Somatic Cell Score (SCS)
 - every fortnight
 - for individual quarter

Material and Methods

Milk yield traits

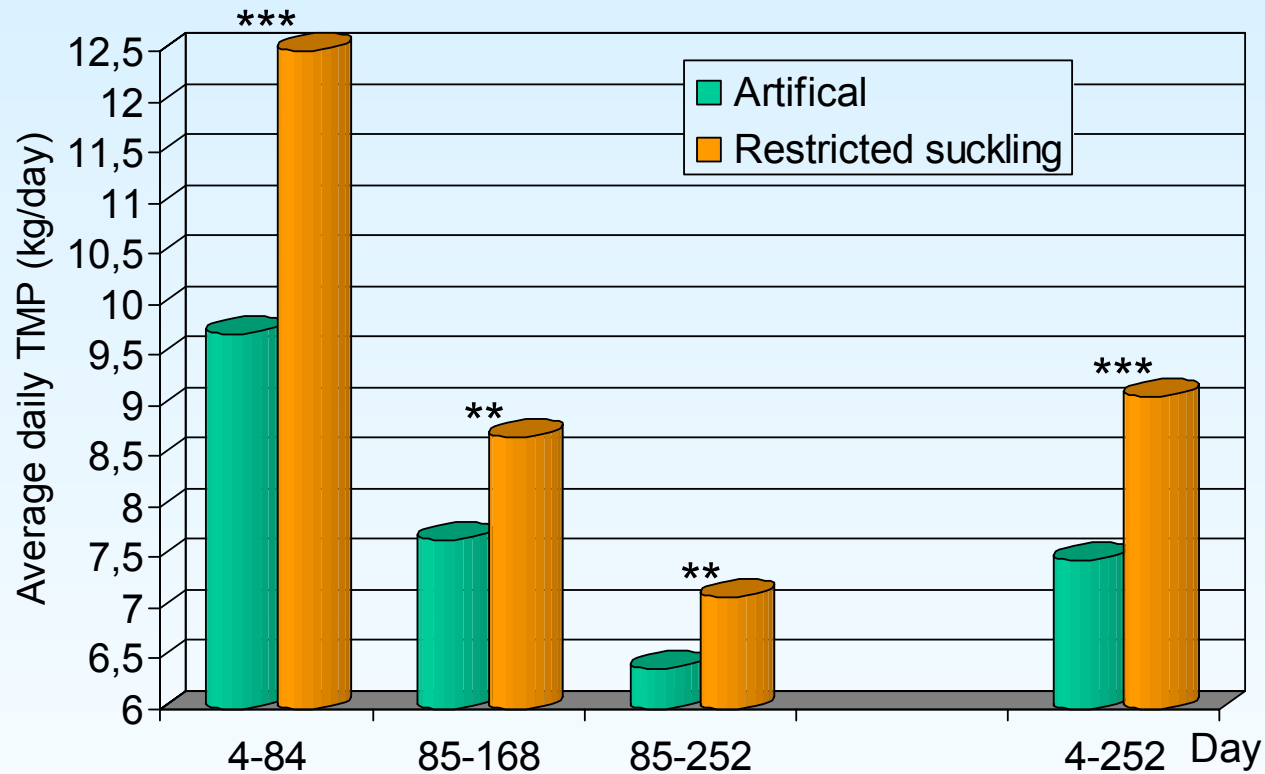
- Daily Salable Milk (SMP) milked out
 minus milk for bucket feeding
- Daily Total milk (TMP) milked out
 plus milk suckled by calves
- Total lactation milk (TLMY) TMP for full lactation
- Average total milk yield (ATMY)
 $TLMY * 365 / \text{Calving interval}$
- Lactation salable milk yield (LSMY)
 Total lactation milk
 minus milk for bucket feeding
- Average salable milk yield (ASMY)
 $LSMY * 365 / \text{Calving interval}$

Effect of rearing method of calves on Daily Saleable Milk production (SMP) (LSQ-means)



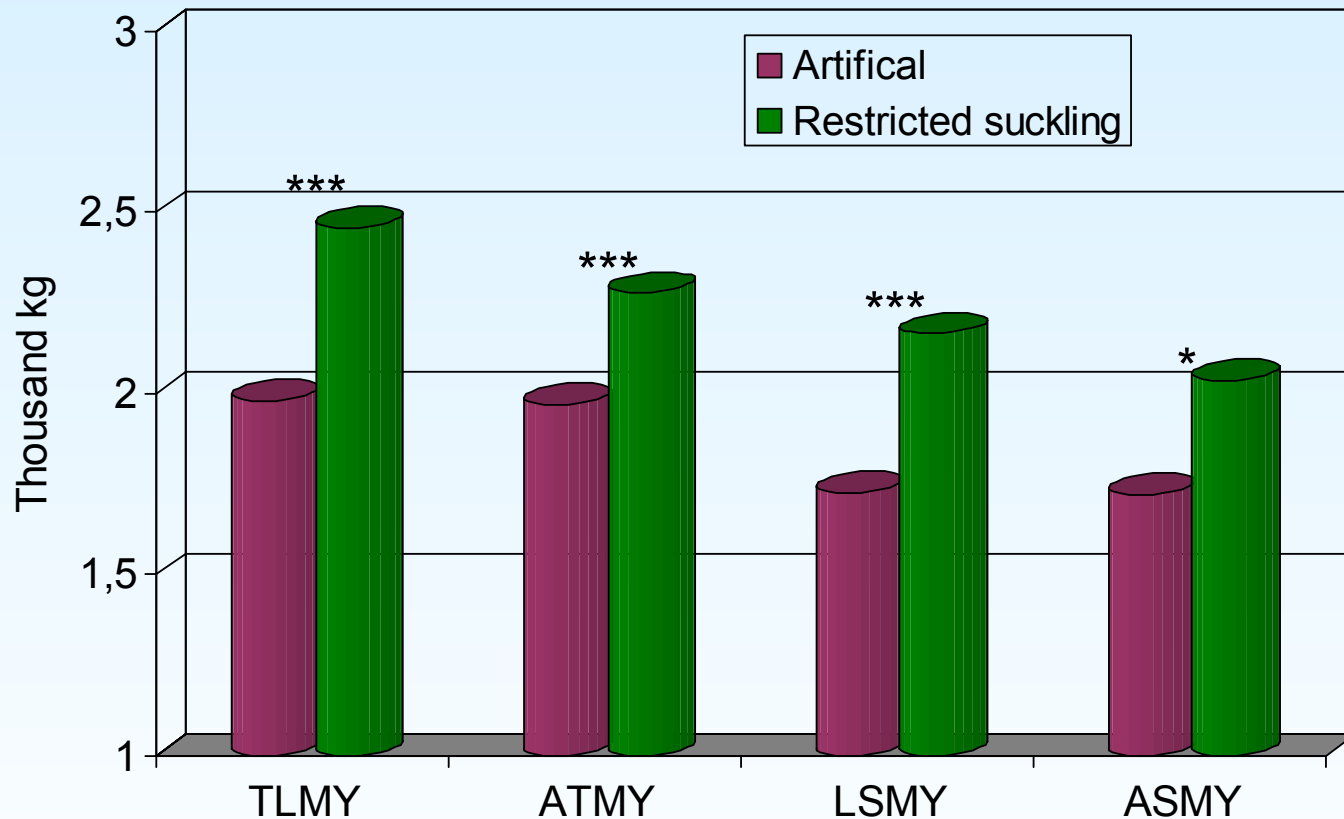
** = p > 0.01, *** = p < 0.001

Effect of rearing method on daily Total milk production (TMP) (LSQ means)



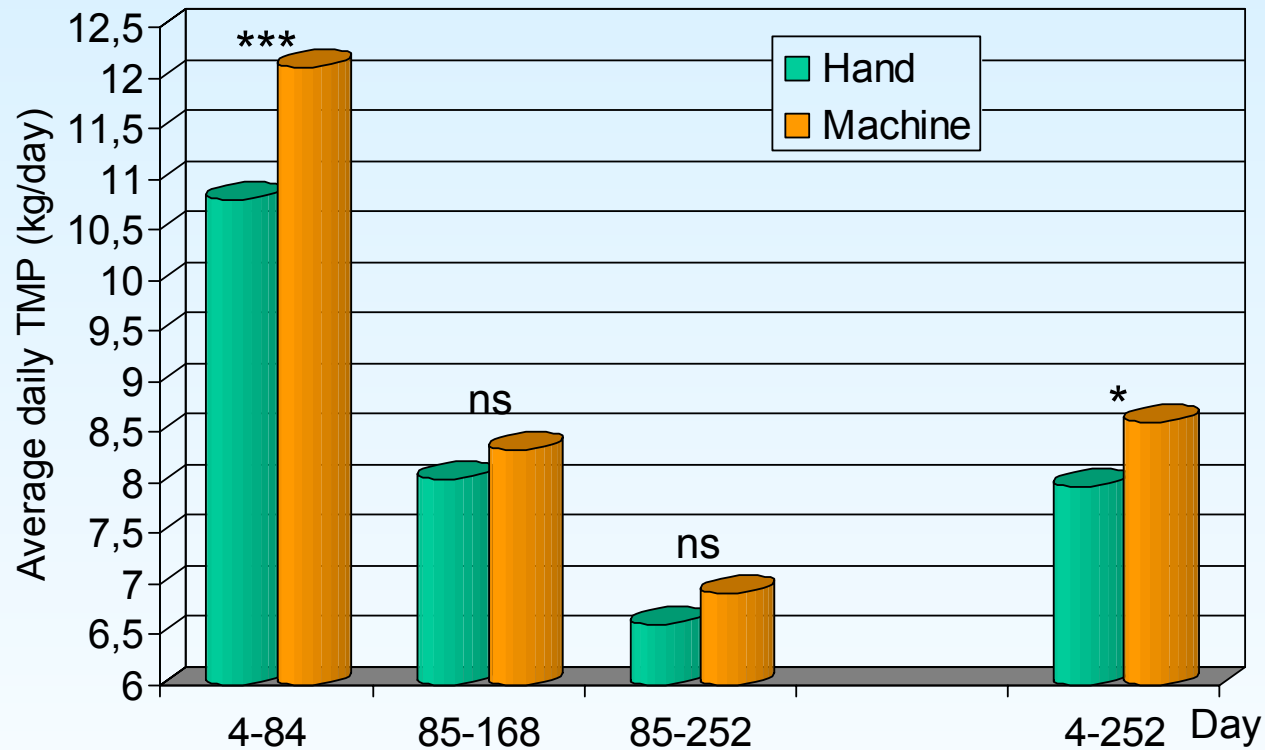
** = $p > 0.01$, *** = $p < 0.001$

Effect of calf rearing method on Total lactation milk yield (TLMY), Annual total milk yield (ATMY), Lactation saleable milk yield (LSMY) and Annual saleable milk yield (ASMY) (LSQ means)



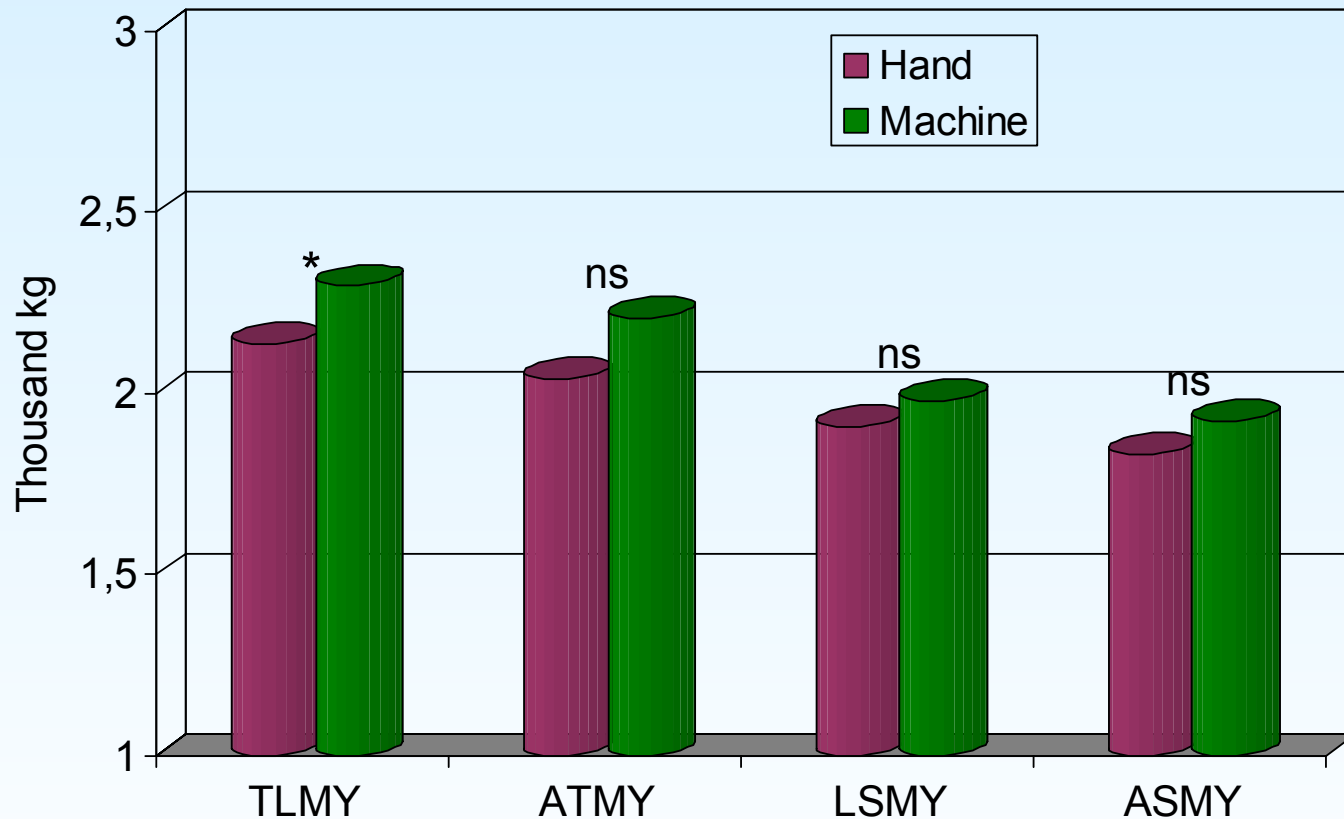
* = $p < 0.05$, *** = $p < 0.001$

Effect of milking method on daily Total milk production (TMP) (LSQ-means)



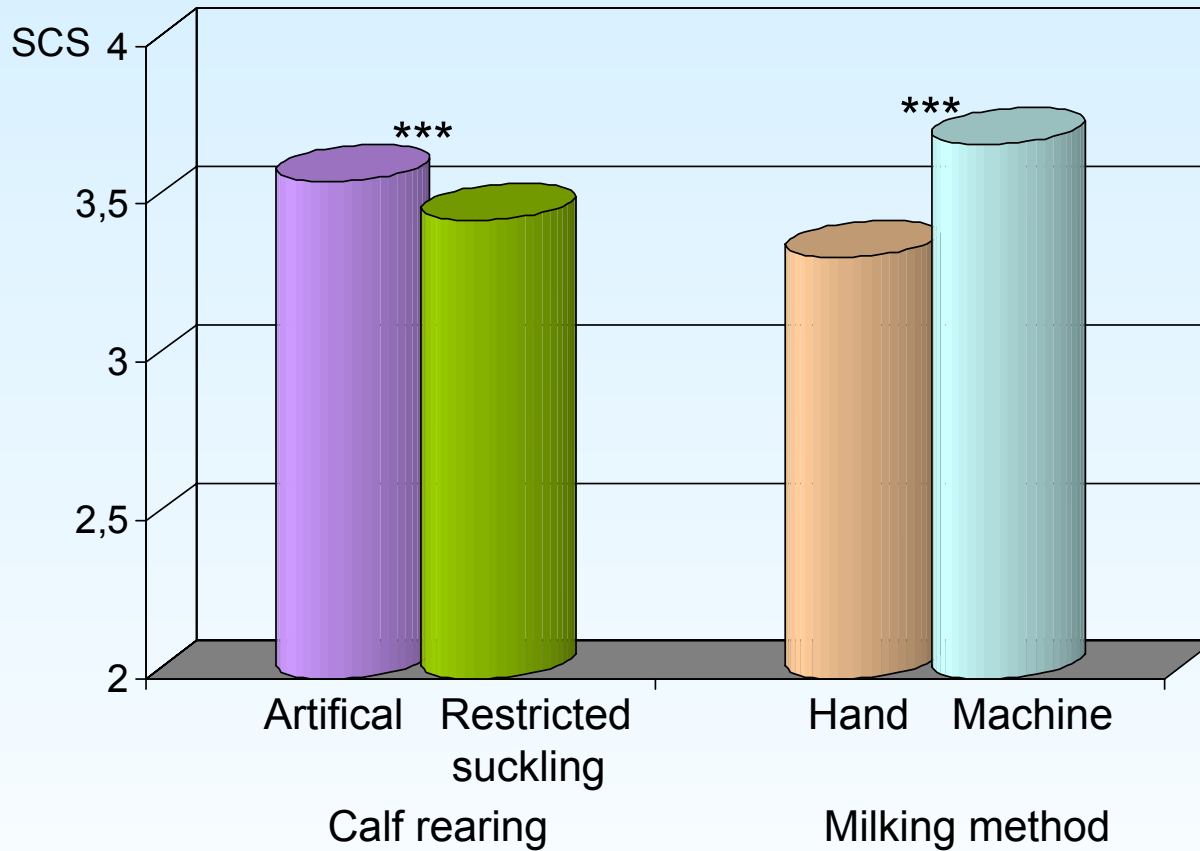
ns = non significant, * = $p < 0.05$, *** = $p < 0.001$

Effect of milking method on Total lactation milk yield (TLMY), Annual total milk yield (ATMY), Lactation saleable milk yield (LSMY) and Annual saleable milk yield (ASMY) (LSQ-means)



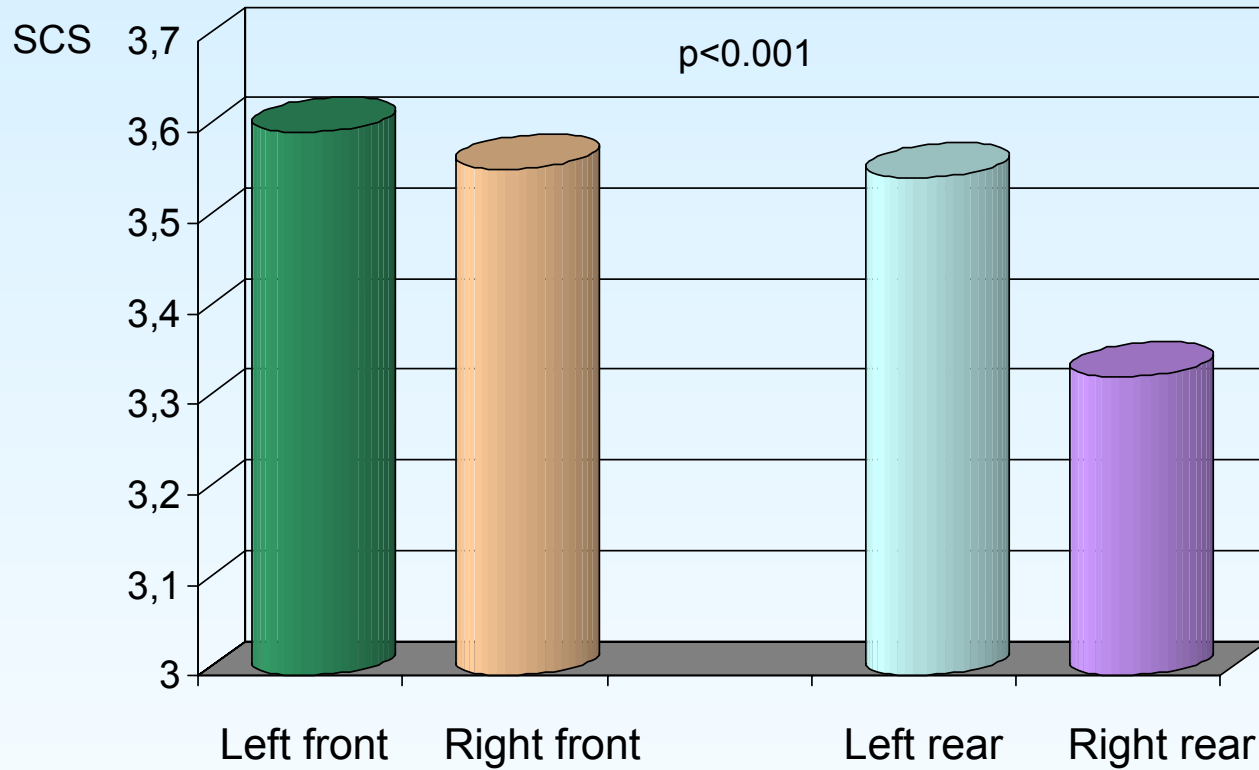
ns = non significant, * = $p > 0.05$

Somatic Cell Score (SCS) as effected by calf rearing method and milking method (LSQ means, full lactation)

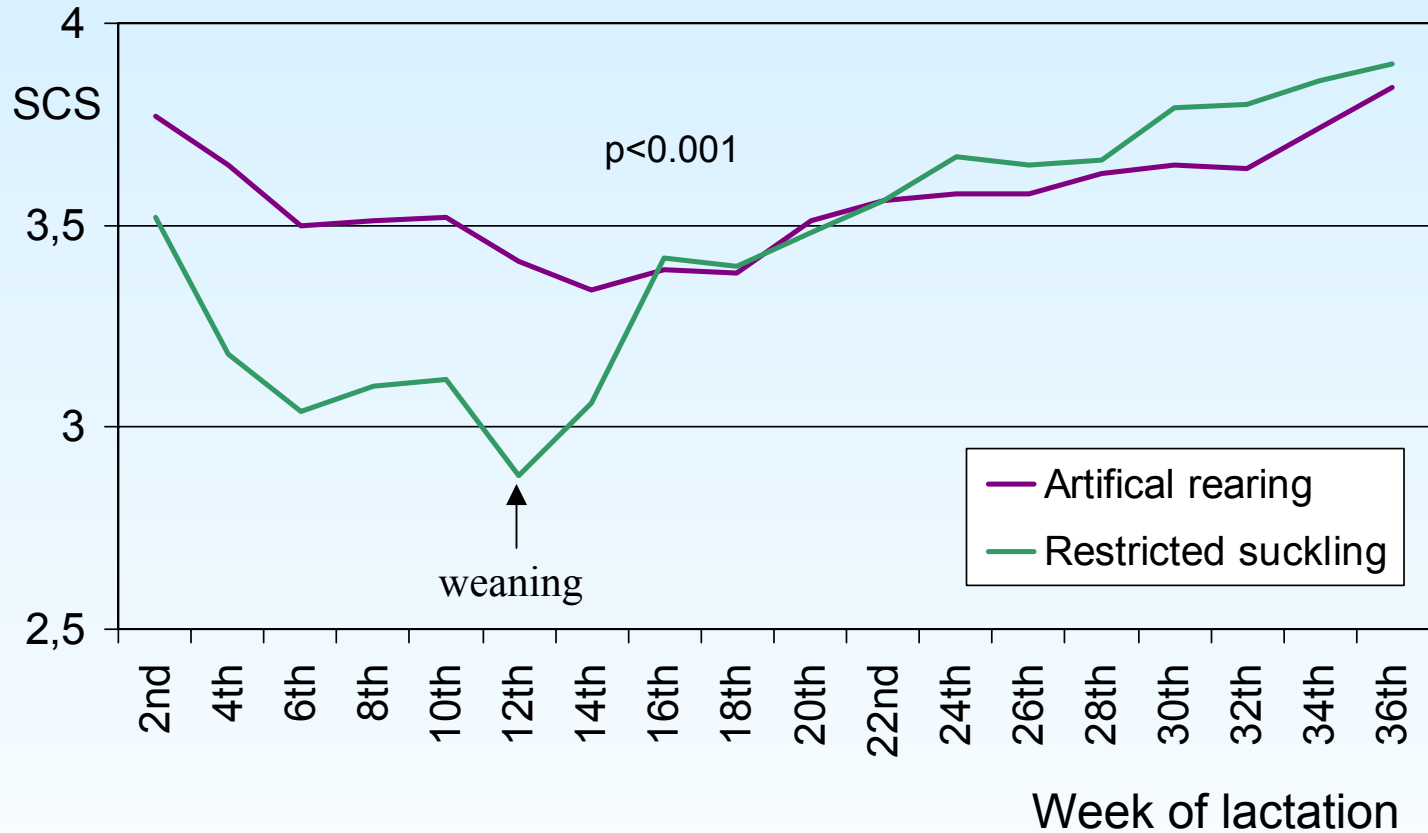


*** = $p < 0.001$

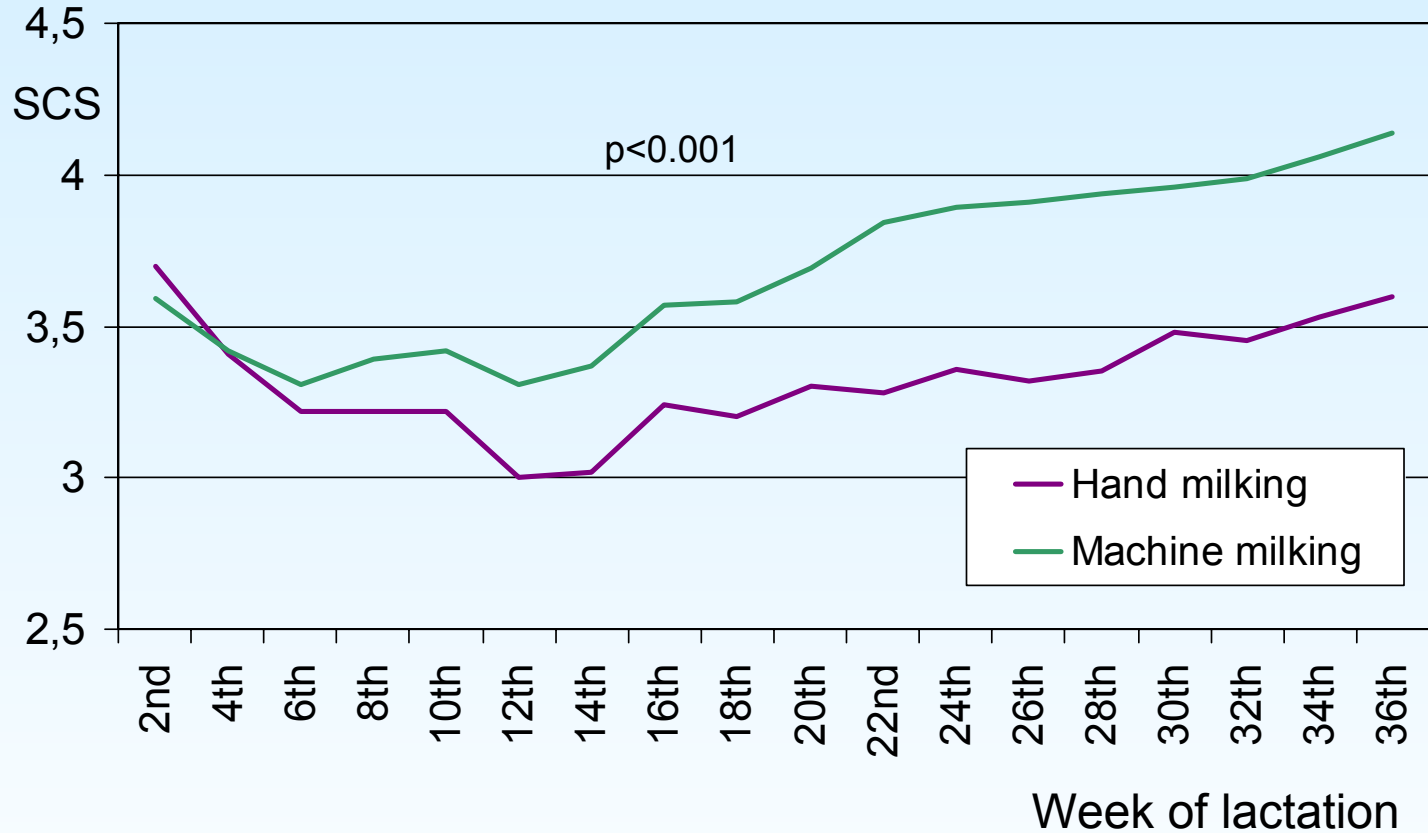
Somatic cell score (SCS) of different udder quarters (LSQ means, full lactation)



Somatic cell score (SCS) as effected by calf rearing method (LSQ means)



Somatic cell score effected by milking methods (LSQ means)



Conclusion

Restricted suckling

- leads to highly significant higher salable milk yield during the suckling period
- significantly improves the total lactation yield and amount of salable lactation yield
- does slightly prolong calving intervalls without loosing yield edge
- does highly significant improve Udder Health/reduces SCS during the suckling period
- does not fully overcome increased health risk in distant quarters

Conclusion

Machine milking

- improves milk yield due to shorter milking time
- has advantage over hand milking in cows with high milk yield
- significantly increases Udder Health risk / SCS with progressing lactation period
- may not be the appropriate milking method for small holders