



## Heritability of suckling ability of Brown Swiss calves

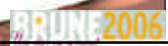

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## Introduction

- ▶ Calves with non optimal feeding during the first days of life exhibit greater postnatal mortality
- ▶ In the Brown Swiss breed, sometimes, newborn calves don't show a sufficient suckling instinct
- ▶ Colostrum is the most important source of nutrition and passive immunization for newborn calves.
  - Colostrum compositions changes according to milk production after calving: all components concentration decrease, especially immunoglobulin
  - Calves' capacity to absorb immunoglobulin decrease quickly after birth.
- ▶ Consequently, calves without an early and strong suckling instinct are not healthy.



## Study aim

- ▶ Investigate the effect of environmental factors on trait variability
- ▶ Estimate variance components of suckling behaviour in Brown Swiss Breed
- ▶ Evaluate the possibility of genetic improvement for this trait.
- ▶ Pilot estimation of EBV

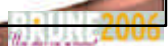

## Data collection

- ▶ Since 1998
- ▶ The breeders' participation to the project was free and voluntary
- ▶ The categories were
  - 1= calves eat without help
  - 2= calves eat with help
  - 3= calves don't eat
- ▶ Data collection is made during the first three days of life

## Method


- ▶ The procedure suggested by Snell (1960) was utilized to score categories so as to conform with intervals of the normal distribution
- ▶ The Proc GLM of SAS package was used to analysing significance of the environmental effect
- ▶ The VCE package was used for the estimation of variance components.

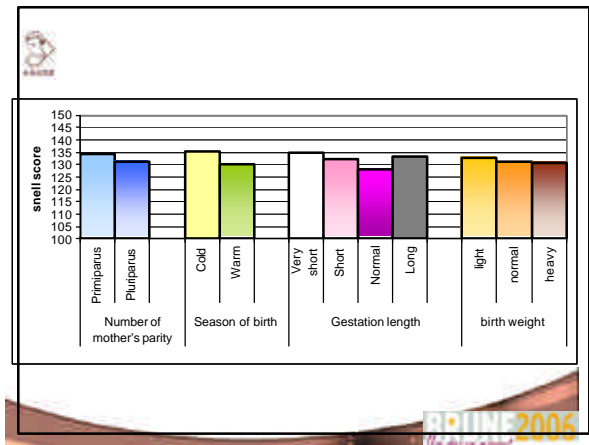
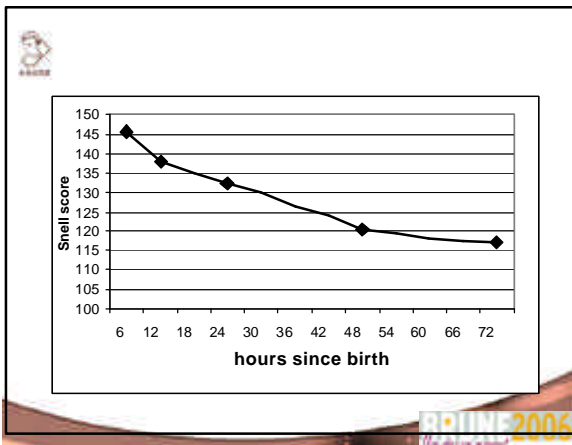
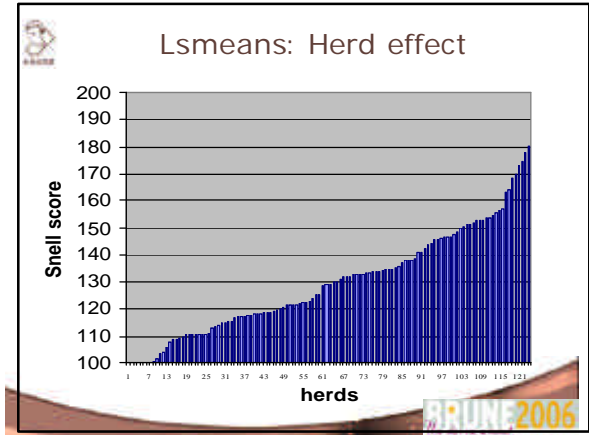
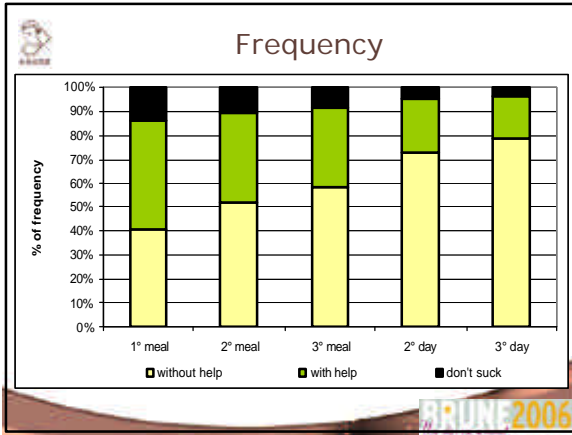



## Model: fixed effect

- ▶ Herd factor is in 126 category.
- ▶ Meals from birth is in 5 category

Interval of data		N obs	N calves
Number of mother's parity			
Primiparus		801	283
Pluriparus		2006	690
Season of birth			
Warm	from April to September	1447	501
Cold	from October to March	1360	472
Gestation length			
Very short	less than 283 days	459	158
Short	between 284 and 288 days	565	194
Normal	between 289 and 293 days	485	171
Long	more than 294 days	391	138
Missing	without record	907	312
Weight at birth			
Small	less than 38 kg	588	198
Normal	between 39 and 42 kg	810	274
Big	more than 43 kg	395	133
Missing	without record	1014	368





### Genetic parameters

	6 hours	12 hours	24 hours	48 hours	74 hours
6 hours					
12 hours	0.72				
24 hours	0.58	0.71			
48 hours	0.48	0.59	0.71		
74 hours	0.42	0.49	0.57	0.78	

*Heritability on the diagonal; phenotypic correlation below the diagonal; genetic correlation above the diagonal*

### Conclusion

- Data from the first days are much more informative
- Suckling ability has moderate heritability (0.13) in first day of calves life and can be identified as a possible trait to be used in a selection scheme.
- Selection to increase suckling ability is possible, but it will require large testing group to ensure sufficient accuracy
- In the future larger dataset are needed.
- Additional information are necessary to confirm these findings and to evaluate the possibility to incorporate suckling ability in the national selection programme.

