

# Changes in milk yield in the proximity of AI as predictors of conception risk

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## INTRODUCTION

- Adequate increments in milk yield during early lactation are an indication of proper transition from the negative energy balance after calving to more stable stages as lactation progresses
- Changes in milk yield in proximity of AI may better predict the probabilities for a successful insemination
- We hypothesize that the change in milk yield in two consecutive monthly test days around AI is associated with potential fertility of insemination

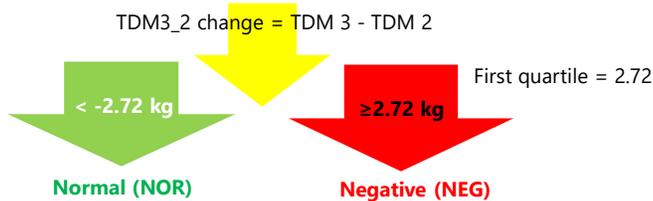
## OVERALL OBJECTIVE

To test the effect of magnitude of change in milk production in the proximity of AI on the risk of conception in a large population of Holstein cows. The potential associations with cow survival also were analyzed as a secondary objective.

## MATERIAL & METHODS

### Milk yield:

Monthly DHI test day milk (TDM) yield were available.



### Statistical analysis:

- The relative risks for pregnancy at first AI (PAI1) and for pregnancy loss at first AI (PLAI1) by category of TDM3\_2 change were calculated using PROC GENMOD (SAS).
- The risk for survival after 50 DIM by category of TDM3\_2 change was assessed.
- Parity, season, farm, and region were included as control variables in the models.

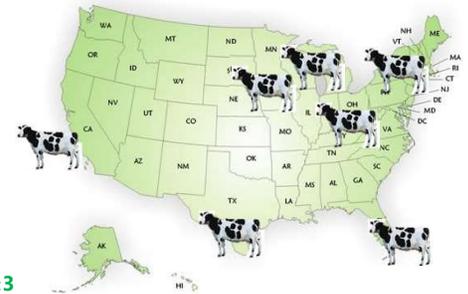
## MATERIAL & METHODS

**Study Population:** A total of 11,733 cows calving in 16 farms located in 4 regions: Northeast [4 herds], Midwest [6 herds], Southeast [1 herd], and the Southwest [5 herds].

**Procedures:** Cows were enrolled at parturition and monitored weekly for multiple reproductive events, disease occurrence, and survival.

### Outcomes included:

- Pregnancy:** Ultrasonography on **d 32 ± 3** after AI and reconfirmed at **d 60 ± 3**
- Pregnancy loss:** **d 32 vs. d 60** after AI



## RESULTS

Average (SE) TDM2 = 41.9 (0.001) kg  
Average (SE) TDM3 = 42.3 (0.001) kg

Average (SE) DIM2 = 46.8 (0.001) d  
Average (SE) DIM3 = 73.9 (0.001) d

Figure 1: Frequencies (%) for pregnancy and pregnancy loss at first AI and death or culling after 50 DIM

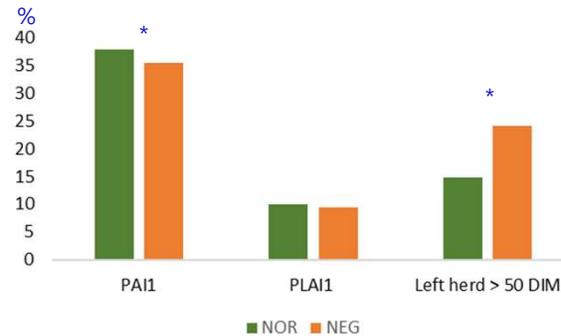
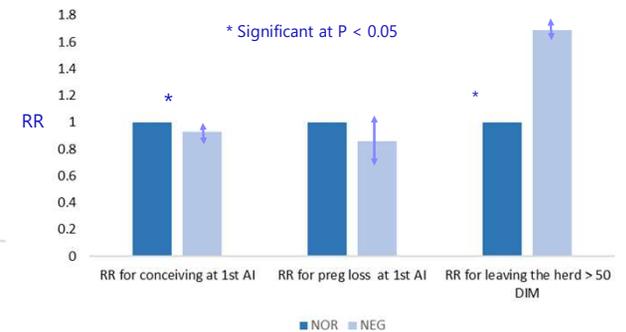


Figure 2: Relative risk (RR) for pregnancy and pregnancy loss at first AI and death or culling after 50 DIM



## CONCLUSIONS

Negative changes in milk yield in consecutive monthly test days during early lactation are likely an indication of cows facing health, nutritional, or management challenges. Cows with pronounced decreases in milk yield between their second and third TDM had lower chances of conceiving at their first AI and greater chances of leaving the herd after 50 DIM.

