



**DIREC** DAIRY INDUSTRY RESEARCH  
AND EDUCATION COMMITTEE

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2015

## Effects of Feeding Frequency on Plasma Estradiol and Progesterone and its Consequences on Ovarian Dynamics and Estrous Expression of Dairy Heifers

**Project Lead:** Ronaldo Cerri and Bruna Silper

**Collaborating Partners:** NSERC, BCDA and CNPq (Science without Borders)

**Total Project Funding:** \$24,000

**Contribution from DIREC:** \$10,000

### Objectives:

- To determine if increased frequency of feed delivery (4x vs. 1x/d) can alter the circulating levels of estradiol and progesterone large enough to affect ovarian dynamics and intensity of estrus behaviour.
- To evaluate the effect of feed delivery 1x vs. 4x/d on circulating estradiol and progesterone concentrations, ovarian dynamics, and intensity of estrus expression.
- To develop a model to study the associations between hormonal concentrations and reproductive performance that represents an alternative to exogenous hormone administration.

### Activity Description:

- The study was conducted at the UBC Dairy Education and Research Centre.
- Another experiment with similar questions followed due to unforeseen issues.
- Both studies were done between October 2016 and May 2017.
- Daily routine included ovarian scans, blood sampling and hormone injections.
- Intake was controlled via automated feed bins and activity by neck sensors.

## Results:

- No pattern of altered hormonal milieu could be identified in association with treatments (1x vs 4x/d).
- Among the 24 estrus events studied, 13 had poor or no estrus alert, despite 100% ovulation rate.
- A new project was planned and conducted to answer similar questions.
- In the new project, we observed greater estrus expression by lactating cows when progesterone concentration was higher in the luteal phase preceding the estrus event.

## Key Messages:

- The experimental routine of feeding heifers 4x/d did not allow for evaluation of estrus expression and hormonal milieu and therefore requires further refinement to serve as an experimental model.
- Among the 3 tested variations of an estrus synchronization protocol with the objective of altering the hormonal profile of cows, there was no effect on estrus intensity or ovulation response.
- Cows that naturally had greater progesterone during the synchronization period had greater estrus expression.
- Further studies should focus on better understanding the control of expression of estrus. Results from this study will help develop methods to better use estrus data in breeding decisions and genetic selection.

## Acknowledgements:



## DIREC Mission Statement:

The BC Dairy Association actively funds research and education projects. Our objective is to facilitate, encourage and financially support projects and programs that have been identified by the BCDA to benefit the BC dairy industry.

