



Industrial Research Chair on the Sustainable Life of Dairy Cattle

Duration: 2016 – 2021

Highlights

- Dairy farmers are tasked with challenge of providing the market with high quality products while ensuring an increased productivity by understanding the nutritional and physiological needs of the cow, and integrating the social expectations regarding the environment, animal welfare, and economical accessibility.
- Increasing the lifespan of dairy cattle raised in a comfortable and healthy environment is a sustainable solution to decrease involuntary culling and increase the profit of the enterprise, while limiting the environmental footprint and answering the concerns of animal welfare.
- On these premises and in order to have a new expertise in this area, the industrial research Chair on the sustainable life of dairy cattle took form at McGill University on January 1st, 2016. This important research initiative aims to deliver concrete data and tools to help dairy farmers optimize comfort, with a particular focus on tie stall farms, and increasing the lifespan of cows.
- The research Chair also aims to improve the recommendations of welfare to help prepare farmers for the implementation of the welfare component of the proAction® national program.
- The work from the past two first years produced results regarding the modifications on the configuration of stalls to improve the movement opportunities and comfort of dairy cows.

Objectives

The research Chair's objective is to optimise the comfort, with a particular focus on tie stall farms, and to increase the lifetime of cows while considering the sustainability of dairy farms.

Results and potential benefits

The Chair pursues its research activities based on three main themes. Here are the results of the two first years:

Theme 1: Cow comfort and herd management

- New knowledge on behavioural measures, which could be used to automate the monitoring and detection of welfare problems in tie stalls, have been developed. For example:
 - A 3-D pedometer (IceTag) precisely measures the numbers of steps taken by a cow in her stall (Shepley et coll. 2017 Agriculture 7:53).
- Many studies have been conducted to evaluate the impact of the stall configuration on the opportunities of movement and cow comfort, here is what we found:
 - We tested different height-forward combinations of the tie rail position following the cow neck line: the neck injuries move with the bar. Next step: what alternatives? (for more information, consult the summary of the student Jessica St John from the Forum 2018).
 - The cows with a longer chain seem more comfortable with their environment: they will hesitate less when lying down, while the cows in a wider stall will display better lying postures and will utilise the additional space they are provided with to extend their legs (for more information, consult the summary of the student Véronique Boyer from the Forum 2018).

Theme 2: Cow Longevity (results coming)

- The second research theme will look at long-term profitability and animal survival measures in herds. The replacement animals and the cows in production will be examined. The projects under this theme will benefit from combined data collected on commercial farms and databases from Valacta.



Results and potential benefits, continue...

Theme 3: Environment and society (results coming)

- The third research theme will allow us to widen the perspective on the international standards, the studies on life cycle, and the acceptability of consumers. This will involve validating that the measures to improve welfare and longevity are in accordance with the global sustainability (environmental, economical and social) of dairy farms.

Professionals trained

The research chair is involved in training highly qualified personal. Since its creation, 31 people have been trained. From 2016-2017: one Ph.D. student, five thesis based masters students and seven applied masters students (not thesis based), Four postdoctoral fellows, four research assistants, nine bachelors students and one research exchange student are actively involved.

Elise Shepley – Ph.D.

Masters thesis: **Maria Puerto Rodriguez**, **Sarah McPherson**, **Erika Edwards** (in collaboration with University of Tennessee, USA), **Véronique Boyer**, **Jessica St John**

Applied masters: **Maria Francesca Guiso** (University of Sassari, Italie), **Giovanni Obinu** (University of Sassari, Italie), **Manon Demaret** (ISA Lille, France), **Géraud Plas-Debecker** (AgroCampus Ouest, France), **Marianne Berthelot** (AgroCampus Ouest, France), **Anthony Pic** (vetAgroSup Clermont, France), **Sirine El Hamdaoui** (ISA Lille, France)

Postdoctoral fellows (in collaboration with Valacta): **Maxime Leduc**, **Daniel Warner**, **Liliana Fadul Pacheco**, **Hector Delgado**

For further information

- Two articles following the work achieved by the chair were published in the magazine *Le producteur de lait québécois*.
- Poster presentations at the Forum Techno Novalait de 2018
http://www.nserc-crsng.gc.ca/Chairholders-TitulairesDeChaire/Chairholder-Titulaire_fra.asp?pid=954
- Chair holders' website: <https://www.mcgill.ca/animal/staff/elsa-vasseur>
http://www.nserc-crsng.gc.ca/Chairholders-TitulairesDeChaire/Chairholder-Titulaire_fra.asp?pid=954
- The Chairs Blog: <http://cowlifemcgill.blogspot.ca/>
- The Chairs twitter account: @CowLifeMcGill

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The industrial partners are:

- Novalait
- Dairy Farmers of Canada
- Valacta

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