

Ph.D. in Animal Science

Title

Optimized phosphorus supply to gestating and lactating sows

Research directors

Marie-Pierre Létourneau Montminy, Ph.D. and Patrick Schlegel, Ph.D.

Research environment

This Ph.D. project will be funded by Laval University via a MITACS Elevation grant in collaboration with Abvista. During his Ph.D. program, the candidate will be part of the dynamic research team of Laval University Animal Science department and Agroscope in Switzerland.

Project description

Context: Environmental concerns and legislations in swine production has put tremendous pressure to reduce mineral excretion, especially phosphorus (P). Pig manure is a valuable fertilizer that meant to reduce the use of mineral fertilizers and to improve soil structural stability and biodiversity. However, when slurry spreading exceeds the recycling capacity of the farmland and the surrounding natural environment, negative impacts on soil occurs, the air is fouled, and waterways undergo eutrophication, resulting in bad press for the livestock industry. The dietary supply, which is not absorbed or retained in the animal body is excreted in feces and urine, respectively. Scientists have to face the challenge of making an appropriate P/Ca diet to maximize performance and health of animal while ensuring the environmental and social acceptability and profitability of production.

To feed the pigs according to their requirements, it is first necessary to have precise evaluation of P of feedstuffs and to define the needs of animal that is to be fed for a specific objective that can differ between contexts. To do this a mechanistic modeling approach has been developed for growing finishing pigs. The objective of the current PhD will be to develop similar approach in sows.

The objective is to functionalize our knowledge of the basis of P and Ca metabolism in sows. The program will be orientated to adapt the current model developed in growing pigs and replacement gilts to sows. More precisely, the first step will be to generate data of bone ash evolution throughout production cycle and parities at Agroscope. These data will then be used to develop the model. A second experiment will be performed to generate additional data necessary for the model development that will be decided during the project. Third, the model will be used to predict requirements in Ca and P in sows.

Qualifications

- Master's degree in animal science or related topics
- Skills and interest in modelling is a prerequisite
- The candidate must be able to follow courses in French

Other information

- The selected candidate must be admitted in the Ph.D. program



Faculté des sciences de l'agriculture et de l'alimentation
Département des sciences animales



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Département fédéral de l'économie,
de la formation et de la recherche DEFR
Agroscope

- This position will be available for 3 years starting in 2021
- A 21 000\$/year scholarship will be available as well as some helps to travel between Canada and Switzerland.
- The Ph.D. will take place respectively about half the time in Quebec and in Switzerland

Contacts

Marie-Pierre Létourneau-Montminy, Ph.D.

Professeure agrégée

Phone: 1 418 656-2131 407352

Email: Marie-Pierre.Letourneau@fsaa.ulaval.ca

Patrick Schlegel, Ph.D.

Researcher

Phone: +41 (0)58 466 72 75

Email: patrick.schlegel@agroscope.admin.ch