

Marie-Pierre Létourneau-Montminy

Precision feeding hits the mark

Whether you say “precision feeding” or “alimentation de précision”, it translates to a paradigm shift for producers toward greater savings. Since aiding industry has long been a focus for Dr. Létourneau-Montminy, precision feeding fits the bill. Bolstered by Swine Innovation Porc (SIP) support, she strives to learn more about feed and how to reduce producers’ greatest expense.



Tell us about your background

I come from Quebec, where I completed my Bachelor’s in Agronomy at Université Laval. At that time, there was a moratorium on swine production in Quebec due to environmental issues. This sparked my interest in the “green” aspects of the pork sector, leading to a master’s in reducing phosphorus excretion in swine in Brittany, France. Following that, I earned my PhD as a dual degree between France and Canada, focused on phosphorus and phytase (an enzyme that helps reduce phosphorus excretion) in the swine and poultry sectors. Seven years later, I returned to Canada for post-doc work on precision feeding of pigs.

At present, I am a professor at Université Laval and hold a Canada Research Chair in Sustainable Animal Protein Production. I am currently working on strategies to reduce the environmental impact of swine and poultry production by optimizing their nitrogen (N) and phosphorus (P) utilization.

Can you give us a brief description of your research under the Swine Cluster?

For Swine Cluster 4, I am involved in three projects. In one, I am assisting with a study of precision feeding. I am also the lead on a project aiming to optimize N and P through nutrition, using a low P and protein diet and gauging the impact on manure. This initiative is a true prairie partnership involving a number of soil scientists from the University of Manitoba, University of Alberta, and the Prairie Swine Centre in Saskatoon.

For the third study, I am aiding a team of about 10 researchers. Together, we

are hoping to enhance sustainability and efficiency of grow-finish operations by reducing feed costs.

Why did you become involved in the swine cluster program, and what do you see as the value of collaborative research?

My involvement began in Swine Cluster 2 when I was a post-doc working with Dr. Candido Pomar. We were asked to conduct a swine nutrition study with approximately 20 researchers from across the country. As a rookie researcher, I found this collaboration of great value, both in terms of the project itself and in making contacts at other universities. The team approach has continued to serve me well in subsequent clusters, and I really like the team spirit and Canadian perspective that it promotes.

What do you see as the key outcomes and practical applications of your research for producers and industry?

I work in close collaboration with industry to try and answer their questions. One such query involves phosphates, a non-renewable resource that has become very expensive in recent years. To ensure I find answers that will be relevant on-farm, I talk to producers and nutritionists and tap into the network of contacts I’ve developed through SIP. Through these efforts, we can better understand the effects of nutrition on the environment, efficiency, and animal health.

Using our modelling approach, we help industry to balance different, and sometimes conflicting, priorities. How can we optimize both growth

performance and bone mineralization (the process by which bone tissue becomes hardened and strengthened through the deposition of minerals, primarily calcium and phosphate). If we reduce feed efficiency, how does that negatively impact the environment? How do we lower protein excretion without hurting gains in the barn? There is a lot of pressure these days to do our part for global warming, so we are working closely with the pork sector on this issue.

Precision feeding is another area where we can reduce costs. By employing automatic feeders, producers can save on feed expense and labor costs. They can also use these feeders to identify pigs that have reduced their intake. Since feed consumption is the first thing affected when an animal is sick, even before fever or other signs, you can set up alerts in the system telling you, for example, if a pig has reduced his intake by 25% in the past week. This enables producers to intervene quickly before a health concern worsens and harms growth performance, possibly requiring antibiotics to address. We think that all these advantages will allow for a rapid return on investment with automated feeders in development.

What are your future research plans?

I want to look more closely at both phosphorus excretion and retention. If we can match excretions with the needs of crops, it could be an added benefit for farmers. This was not an option 15 years ago, but science is now close to making it possible.