

ANNUAL REPORT

2014  
2015

Facilitating  
Research  
for the Swine  
Sector



Swine Innovation Porc



# Swine Innovation Porc

**Swine Innovation Porc increases  
Canadian swine industry competitiveness  
through a national R&D structure**

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# Message from the Chair

Swine Innovation Porc is a national organization committed to facilitating research for the Canadian swine industry. Our objective is to work with private, government and research partners in order to develop innovative technology and strategies that will make the industry stronger. Our research programs are a major component of achieving this objective. In 2014-2015, the Swine Cluster 2 program was launched and more than 45 agreements were signed, effectively committing scientific expertise and research dollars to innovation over a five-year period. This ambitious program involves 15 projects and a \$17.3 million budget, where \$13 million was provided by Agriculture and Agri-Food Canada (AAFC) and \$4.3 million from private sources.

The main focus of Swine Cluster 2 is to reduce production and feed input costs, increase product attributes and prices, as well as enhance the adaptability and sustainability of the swine sector. Research projects are well underway and we look forward to reporting results from these projects in the near future.

## Partners in Industry

One of SIP's key roles is to leverage industry contributions to match public funding. In order to accomplish this, SIP established an agreement between seven provincial pork producer organizations, dedicating 2.5 million dollars to swine research between 2013 and 2018. These organizations are: Alberta Pork, Les Éleveurs de porcs du Québec, Manitoba Pork, NB Pork, Ontario Pork, PEI Pork and Sask Pork.

This agreement marks a significant achievement in securing national collaboration in swine research. In addition to our pork producer partnerships, and due to researcher's efforts, SIP has also signed 20 agreements with private enterprises nation-wide and internationally. This multifaceted approach to generating funding ensures that industry's burning needs for research are met from a national and industry-driven perspective.

## Partners in Research

SIP is proud to have made links with over 30 research organizations involving over 90 Canadian and international researchers that will bring forward innovative responses to the pork industry's challenges. We believe that SIP has created a real national strategy to bring together researchers and industry stakeholders. One example of this national coordination is the implementation of a series of "networking meetings" which allows researchers to come together and improve the coordination of activities and to better achieve research objectives.





## Partners in Government

Continued collaboration with AAFC is essential to the continued success of our research programs. SIP acknowledges the crucial role of governmental agencies in generating results in innovation. Understandably, today's public funding is subject to rigorous governance processes; we however are focused on keeping management costs low. With this in mind, we are working closely with our government partners to streamline administrative processes.

## Strategic Objectives

To ensure that SIP remains a sustainable and dynamic corporation, SIP's strategic plan is always top of mind. Communication with our partners is part of its strategic orientations and is the key to success in ensuring a seamless flow of information between governmental, industry and research partners.

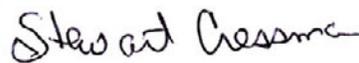
Another strategic objective is the development of a knowledge transfer program, where research results will be made available to the end users of innovative technologies and strategies.

SIP is currently looking into expanding its portfolio and diversifying its research activities. Part of this involves developing strategies to increase investment in swine research, an activity which we have been actively involved in over the past year. We look forward to continuing this work in the coming months and years.

## Acknowledgements

**SIP will work hard over the next year to ensure efficient communications with its stakeholders. Without the continued support of its government, industry and research partners, innovation for the swine industry would not be possible.**

In conclusion, I want to take this opportunity to thank SIP's Board of Directors for their time and commitment to SIP over the past year. Their hard work has enhanced the corporation's ability to respond to the needs of the industry, a key part of SIP's vision. I would also like to thank the management team for their dedication and role in enhancing SIP's presence in the Canadian swine sector.



**Stewart Cressman**  
Chair

# Board of Directors

From left to right:

Back row

**Mike Teillet**

Director  
Manitoba Pork

**John Webb**

Director  
Pork Value Chain  
Roundtable

**Neil Ketilson**

Treasurer  
Sask Pork

**Normand Martineau**

Vice-Chair  
Les Éleveurs de porcs  
du Québec

**Jean-Paul Laforest**

Chair of the Science  
Advisory Body

**Tim Seeber**

Director  
Prince Edward Island Pork  
& New Brunswick Pork

**Daryl Possberg**

Director  
Alberta Pork

From left to right:

Front row

**Danielle Pettigrew**

Director  
Quebec Porc Sector

**Stewart Cressman**

Chair  
Ontario Pork Sector

**Beth Clark**

Director  
Ontario Pork





Swine Innovation Porc

## Our Vision

Swine Innovation Porc increases Canadian swine industry competitiveness through a national R&D structure

## Our Mission

Swine Innovation Porc is committed to provide national leadership in coordinating and facilitating research, knowledge transfer and commercialization initiatives to enhance the competitiveness of the Canadian swine industry





# Management Report

**Now that the Swine Cluster 2 research program is well underway, the corporation is now developing a new portfolio of research to provide the pork industry with rapid and practical solutions to its burning issues. We are looking forward to be even more active in facilitating swine research in Canada.**

## Research Program and Projects

### Swine Cluster 2 Research Program

Over the past year, most activities included in Swine Cluster 2 have started. I invite you to browse over this annual report to discover what researchers have achieved over the last year in the fifteen research projects and their different sub-projects.

At the end of this fiscal year, SIP had signed a total of twenty-four agreements with universities and research centres. Activity and financial reporting from researchers and research institutions has begun as well as the process of submitting claims and activity reports to Agriculture and Agri-Food Canada (AAFC). Over the year, the management team has submitted two advance requests and three claim reports to AAFC.

### New Research Projects

Our intent is to develop the business in such a way to stay sustainable while at the same time facilitate swine research and provide practical solutions to the Canadian swine industry's burning issues. Arguably, the most serious issue this year has certainly been porcine epidemic diarrhea (PED). It is known that transportation plays a key role in preventing the spread of the disease. The high cost of cleaning trucks, the time it takes to do this as well as the number of washing facilities in Canada quickly became a burning issue for the entire industry.

The question was therefore asked: would it be possible to wash, sanitize and dry a trailer within an hour for \$200?

With this question in mind, two projects were performed over the year by the University of Saskatchewan and the Prairie Agricultural Machinery Institute (PAMI). They first proceeded with carrying out a preliminary investigation regarding the destruction of pathogens and the concept of using a vacuum system for cleaning trailers after hauling pigs. The preliminary work to date suggests that a two-level straight trailer could be cleaned within 40 minutes while using approximately 143 litres (32 imperial gallons) of water.

## Governance

Again this year, the Board members have been very involved in various activities. Six Board of Directors meetings have been held, along with three Executive Committee meetings, one Finance Committee meeting and one Audit Committee meeting.

SIP also filed articles of continuance and instated new by-laws in order to comply with the new Not-For-Profit Corporations Act, which came into force last October. According to the new by-laws, the Board was required to admit members to the corporation, which they did last March. The corporation is now governed by eight members, including the Canadian Pork Council, Alberta Pork, Les Éleveurs de porcs du Québec, Manitoba Pork, NB Pork, Ontario Pork, PEI Pork, and Sask Pork.

In order to make a case for increasing funding for pig research, the Board has put together a portfolio of proposed research projects across a wide range of priority areas. These priorities include, for example, meat quality, antibiotic resistance, health as well as nutrition. Increasing funding for pig research is seen to be supported by producers; therefore the timeframe for putting this together is very short and must produce visible benefits. To achieve this, a sub-committee of the Board was put in place and have held five meetings to date.

## Communications & Knowledge Transfer

SIP has been quite active this year in communicating to its partners. An annual report and four activity summaries were provided to the provincial pork organizations and two press releases were issued. A letter of information was sent to the researchers and five different presentations have been provided. Forty interviews with Board members and researchers have also been delivered, courtesy of partnership with Bruce Cochrane of FarmScape.com. The team has also attended three major events promoting SIP.

### Knowledge Transfer Plan

The transfer of knowledge to producers is a key part of SIP's role and mission. A plan for this and a significant budget was included in our request for funding for Swine Cluster 2, but in the end, it was not retained by AAFC. The Board has therefore mandated the Prairie Swine Centre (PSC) to prepare a new knowledge transfer program and provide options for its funding. It is viewed that the Swine Cluster 2 knowledge transfer program will be a joint effort between SIP, PSC, Centre de développement du porc du Québec (CDPQ) and the provincial producer associations.

## Finance

### Provincial Producer Organization (PPO) Funding

This pooled funding is provided by Alberta Pork, Les Éleveurs de porcs du Québec, Manitoba Pork, NB Pork, Ontario Pork, PEI Pork and Sask Pork. It gives the organizations the opportunity to leverage their research dollars in order to take advantage of public funding sources. This year they will have invested \$557 801 in the research program and new projects.

### Annual Statements

Although revenues were slightly under budget, expenses have been well under budget, leaving a surplus of \$120 000 at the end of the year. With SIP being a young company, any surplus is welcome. This gives the corporation a healthy margin to manage potential financial risk.

## Conclusion

This coming year (2015-2016) will be devoted to develop a business plan that will deliver our vision of being the 'go-to' facilitator of swine research in Canada. We should take any opportunity that will bring solutions to industry's burning issues while remaining a sustainable organization. In the medium-term, we will be seeking new funding based on up-to-date research priority and research project ideas reflecting industry's needs. We will also have a knowledge transfer plan developed to ensure that research results get implemented at the farm level and deliver tangible benefits. Finally, communication is key to the leadership role that SIP envisions. A communication strategy will be implemented for reaching PPOs, researchers, government and industry.

Finally, I would like to personally thank each and every member of the management team. Through your dedication and determination, you have contributed to the success of this past year.

On behalf of the entire staff of Swine Innovation Porc, I would also like to highlight the commitment and much appreciated guidance of the Board of Directors. In particular, I would like to note the vision and constant availability of our Chair, Stewart Cressman, the Vice-chair Normand Martineau and the Treasurer, Neil Ketilson.

The management team is determined to continue working with thoroughness and perseverance toward the goals of the corporation and the current research program.



**Pierre Falardeau**  
General Manager



# RESEARCH &



# DEVELOPMENT

# Swine Cluster 2 Research Program

*Swine Cluster 2: Driving Results Through Innovation* is a five-year research program that includes fifteen research projects across five areas of research. Reducing production and feed input costs as well as increasing product attributes and prices are the primary themes for these projects. The following pages highlight these fifteen research projects.

A third theme within this program focuses on enhancing the adaptability and sustainability of the swine sector. This part of the program allows Swine Innovation Porc to engage in various activities to help industry, such as addressing emerging issues in the swine sector, enhancing collaboration between researchers and establishing national swine – related research priorities.

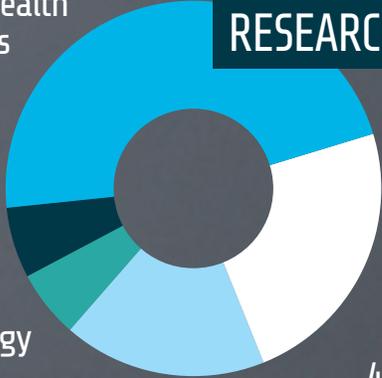
The total budget for this program is \$17.3 million: Agriculture and Agri-food Canada, through its AgriInnovation Program, has contributed \$13 million and \$4.3 million is provided by provincial pork producer organizations and private partners.



Animal Health  
8 projects

Pork Quality  
1 project

Technology  
1 project



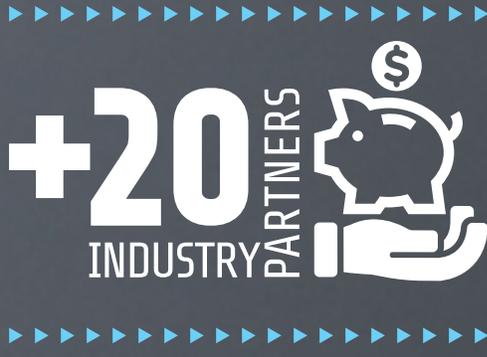
Animal Welfare  
4 projects

Nutrition  
3 projects

## New Research Projects

### Truck Washing Project

In addition to managing a national research program, Swine Innovation Porc's role includes helping the swine industry find solutions to present-day challenges. One example of this is realized in the Truck Washing Projects, which were launched in response to the need to prevent transmission of the porcine epidemic diarrhea virus. In 2014-2015, a preliminary investigation was conducted as well as the first phase of the development of an efficient truck washing system. You will find more details about these projects in this annual report.



# Epidemiology of porcine reproductive and respiratory syndrome virus (PRRSv) among swine herds, an applied research program supporting PRRS control projects

► Sylvie D’Allaire, University of Montreal

## Objective

Use a multidisciplinary approach to develop and apply a new methodology integrating traditional and molecular data to assess various aspects of PRRSv transmission dynamics.

## Summary

Sequencing is now viewed as an essential tool to better manage PRRS in Canada. An effective PRRSv classification system of sequence data is under development. With this system, it will then be possible to group strains into different genetic clusters in order to observe their movements and to facilitate the detection of emerging strains. Moreover, as sequencing of PRRSv is gaining popularity in the field, a better integration of these laboratory results and epidemiological data would be highly advantageous to better understand the spatial and temporal trends of PRRSv strains dispersal in the field, but also of the most likely sources of infection at the population level.

## Highlights

A centralized PRRS sequence database has been developed at Université de Montréal, in partnership with other institutions. Sequences are obtained from herds in Quebec through excellent participation of practicing veterinarians, as well as the collaboration of other diagnostic laboratories. This database will allow more valid sequence comparisons and possibly better tools to understand the transmission of PRRSv.

## Collaborators

<b>Julie Arsenault</b>	University
<b>Marie-Ève Lambert</b>	of Montreal
<b>Zvonimir Poljak</b>	University of Guelph

# Towards the development of a method for determining the antimicrobial susceptibility of *Brachyspira*

► Joseph E Rubin, University of Saskatchewan

## Objective

Develop, standardize and implement antimicrobial susceptibility testing methods for *Brachyspira* spp. in order to improve the Canadian swine industry's ability to combat *Brachyspira*-associated disease by providing evidence-based treatment recommendations.

## Summary

There are currently no standardized methods for determining antimicrobial susceptibility of *Brachyspira*. By leaving Canadian swine veterinarians without any laboratory information to guide their therapeutic selection for treating affected herds, this gap is a serious impediment to the evidence-based use of antimicrobials. Through this research, laboratory tools will be developed to allow the Canadian swine industry to effectively combat *Brachyspira*-associated disease.

## Highlights

Up to now, some basic questions about the growth characteristics of *Brachyspira* have been successfully addressed. The effect of antibiotics on its ability to grow in culture has also been measured and these characteristics need to be understood before clinical laboratory testing can begin. The results of the basic research conducted so far have been promising.

## Collaborators

**John Harding**  
**Janet Hill**

University  
of Saskatchewan

# New tools to enable effective genomic selection for disease resilience

► Graham Plastow, University of Alberta

## Objective

Deliver genomic tools to enable the selection of more resilient commercial pigs while maintaining competitive reproductive and production performance in Canada.

## Summary

Using traditional breeding approaches to improve health is very challenging due to the fact that health traits are difficult to measure. Therefore, genomics offers the opportunity to increase the effectiveness of improving health through breeding and to eventually be able to select for animals that are more resilient to disease.

Genetic variation for resistance to specific pathogens is present in most animal populations and has been demonstrated in commercial pig production. Building on previous projects and focusing on PRRS, researchers are working to identify:

- Regions of the genome that have an impact on fetal resilience to PRRS
- Gene expression biomarkers for disease resilience
- SNP markers, genomic regions and quantitative trait locus (QTLs) affecting sow lifetime productivity in commercial environments

Researchers will also analyze data from commercial herds to study the frequency of the PRRS “resistant” allele.



The team involved in collecting detailed phenotypic information and samples from the reproductive PRRS model being investigated in the project. Source: University of Alberta

## Highlights

New results have been generated from genome wide association analysis and gene expression studies using RNA sequencing that suggest pathways and genes involved in variation in fetal phenotype after PRRS virus infection. Initial results on sow lifetime productivity are also promising. Two chromosome regions previously associated with variation in PRRS virus IgG-antibody levels were validated and will be further investigated as predictors of resilience.

## Collaborators

**John Harding** University of Saskatchewan

**Jamie Wilkinson** University of Alberta

**Benny Mote** PigGen Canada

# Bio-exclusion and bio-containment strategies to control epidemics resulting from airborne viral and bacterial transmission

► Caroline Duchaine, Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec, affiliated with Laval University

## Objective

Evaluate the effect of different bio-exclusion and bio-containment strategies on the amount and transmission of airborne viral (Porcine reproductive and respiratory syndrome virus [PRRSv], Influenza virus) and bacterial (*Streptococcus suis* serotype 2) pathogens.

## Summary

To reduce economic losses associated with infectious diseases, the study aims to find, in an experimental set-up, ways to combat the penetration of pathogenic agents into pig buildings. Using a wind tunnel, researchers will evaluate the capture efficiency of various pre-filter and filter combinations for Influenza, PRRSv and virulent *Streptococcus suis* serotype 2 models. The viral (phage Phi6) and bacterial (*Streptococcus* sp.) models being used to mimic animal pathogens are not harmful to animals or humans.

## Highlights

Researchers have completed a literature review titled 'Air filtration as bio-exclusion and bio-containment strategies for Canadian pig buildings' which will soon be available. Based on the literature review, filters and filtration strategies have been chosen to be studied in trials which will be conducted in 2015-2016.

## Collaborators

<b>Laura Batista</b>	Batista & Asociados
<b>Stéphane Godbout</b>	Institut de recherche et de développement en agroenvironnement (IRDA)
<b>Marie-Aude Ricard</b> <b>Jean-Gabriel Turgeon</b>	Centre de développement du porc du Québec

# Development of a multiplex Luminex immunoassay for serologic diagnosis and subtyping of swine influenza virus (SIV) infections

► Yohannes Berhane, National Centre for Foreign Animal Diseases, CFIA

## Objective

Develop a multiplex immunoassay to identify antibody response to SIV infections rapidly and identify the influenza hemagglutinin (HA) and neuraminidase (NA) subtype.

## Summary

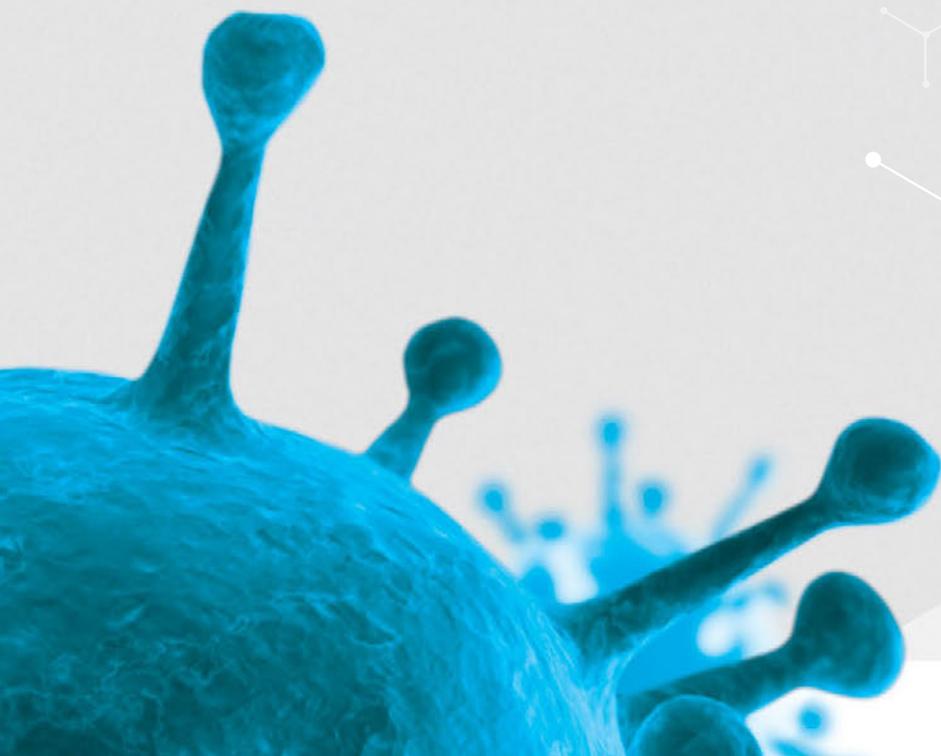
For serologic diagnosis of swine influenza, most laboratories use ELISA (enzyme-linked immunosorbent assay) based assays. However, the currently used ELISA-based assays don't have the capability to diagnose and, at the same time, subtype swine influenza infections. The assay to be developed in this project is a triplex fluorescent microsphere immunoassay to be used to rapidly identify antibody response to SIV infections and subsequently subtype this antibody response to either a H1 or H3 subtype.

## Highlights

The first part of the assay, which generally detects antibodies to any infection with all known influenza A subtypes (H1 to H16), seems to work very well. Further work is now needed to optimize other parts of the assay.

## Collaborators

<b>Shawn Babiuk</b>	National Centre for Foreign Animal Diseases, CFIA
<b>John Pasick</b>	Biovet
<b>André Broes</b>	University of Guelph
<b>Davor Ojkic</b>	



# Dynamics of influenza infection in swine populations

► Zvonimir Poljak, University of Guelph

## Objective

Understand the epidemiology of influenza viruses in swine and to design optimal control and surveillance strategies at herd and regional levels.

## Summary

Multi-source nursery herds are being studied to describe patterns of virological positivity and to identify risk factors for recurrent infection. Viral dynamics is also being investigated by studying the molecular characterization of viruses that has circulated at different times to determine whether recurrently infected animals are being infected with the same virus.

Certain factors, like Maternal Derived Antibodies (MDA) for example, that can contribute to the successful control of Influenza A Virus (IAV) in populations of nursery pigs are also being studied using a simulation approach.

## Highlights

Researchers discovered that a considerable proportion of pigs in the nursery could exhibit recurrent infection with exactly the same influenza virus. The likelihood of such infections was associated with having a high level of maternal antibodies against viruses that showed important antigenic differences in comparison to the resident virus.

## Collaborators

**Rob Deardon** University  
**Robert Friendship** of Guelph  
**Eva Nagy**



# Determining the optimum space allowance for nursery pigs

► Jennifer Brown, Prairie Swine Centre

## Objective

Establish a precise value for the minimum space allowance for nursery pigs, one which provides an optimal and scientifically defensible balance between profitability and animal welfare.

## Summary

The quantity of space provided for pigs substantially affects animal welfare by influencing behaviour, stress and social interactions, and has significant economic impacts on productivity and the total pig throughput possible on a farm. While there are significant research results available on the effects of space allowances in grow-finish pigs, very little is known about nursery pigs.

## Highlights

The research is being carried out in two phases. Phase I trials conducted in a research barn, are now complete. Phase II trials are currently running at two commercial farm sites. This study examines six space allowances for nursery pigs. At the research barn only, these space allowances were compared over large and small pen group sizes. Data is being collected on productivity, piglet postures, injury, as a measure of aggression, as well as room climate. At the research barn, additional data on piglet stress physiology and immune competence is being collected.

## Collaborators

<b>Denise Beaulieu</b>	Prairie Swine Centre
<b>Yolande Seddon</b>	Centre
<b>Dan Bussi�eres</b>	Groupe C�er�es Inc.
<b>Sandra Edwards</b>	Newcastle University, UK



Piglet pen during the nursery density trial.  
Source: Prairie Swine Centre

# Optimizing flooring and social management of group housed gestating sows

► Laurie Connor, University of Manitoba

## Objective

**Determine the factors associated with flooring and social management of group-housed sows that promote sow well-being and the viability of pig production**

Taking backfat measurements.  
Noel Generoso.  
Source: University  
of Manitoba.

## Summary

The transition to sow group housing, as recommended by the revised Code of Practice for the Care and Handling of Pigs (2014), requires sound information about housing system options and sow management. This project addresses three specific knowledge gaps related to the management of gestating sows in groups:

- What are the most effective concrete floor slat and gap width ratios for comfort and well-being of sows as well as ease of manure management?
- What sow mixing strategies after weaning provide the best results for reproductive performance, low economic risk and sow well-being?
- What environmental enrichment strategies can be incorporated into slatted-floor pen systems for sow groups that would enhance space quality and decrease aggression?





Saliva sampling for measuring cortisol.  
Lindsey Lippens. Source: University of Manitoba.

## Highlights

In order to determine the most effective slat and gap widths, as well as orientation, a pre-test protocol was conducted using visual and kinematic analyses. The selected flooring will be tested *in situ* with grouped sows over two gestations.

Researchers are examining the mixing of sows into gestation groups at three different times, at i) weaning, ii) post-insemination, and iii) four weeks post-breeding after confirmation of pregnancy, in each of three different housing system variations: partially-slatted and straw-bedded ESF systems, and fully slatted walk-in/lock-in free access stalls. Cost-benefit analyses of barn and production modifications for each of the mixing strategies will also be completed.

The studies investigating development of sustainable environmental enrichment for sows will begin in 2015-2016.



Kinematic corridor,  
pre-test slat orientation.  
Source: University of Manitoba.



Laying test flooring. Farhoud  
Delijani and Deanne Fulawaka.  
Source: University of Manitoba.

## Collaborators

<b>Derek Brewin</b>	University of Manitoba
<b>Qiang Zhang</b>	University of Manitoba
<b>Jennifer Brown</b>	Prairie Swine Centre
<b>Yolande Seddon</b>	Prairie Swine Centre
<b>Nicolas Devillers</b>	Dairy and Swine Research and Development Centre, AAFC

# National sow housing conversion project

► Jennifer Brown, Prairie Swine Centre



Hog-Tied Farms, Ontario. Source: Prairie Swine Centre

## Objective

Assist Canadian pork producers in the transition to group-housing systems for sows by providing technical and engineering support for barn renovations and documenting renovations on commercial farms in Quebec, Ontario, Manitoba, Saskatchewan and Alberta.

## Summary

The National Sow Housing Conversion Project (NSHCP) will be following four barns as they go through the process of conversion. The research team will document production, housing, management and costs before, during and after the conversion process. Information from ten sites that have already converted to group sow housing will also be collected.

## Highlights

The NSHCP released its first biannual newsletter in October 2014. A website is under development and expected to be launched in 2015 under the domain name [www.groupsowhousing.com](http://www.groupsowhousing.com).

The first full barn conversion being followed by the project will be documented in 2015 on a farm in Ontario. Information from farms in Alberta and Saskatchewan that have already made the transition to group-housing will also be available later in 2015, via the website

The project will also establish a national working group on sow housing to aid in the overall direction of the project and to ensure that the specific needs of each region are met. This group is composed of representatives from provincial pork organizations, the Canadian Pork Council, the swine research community, agricultural engineers and the swine industry.

## Collaborators

<b>Laurie Connor</b>	University of Manitoba
<b>Qiang Zhang</b>	FGC Groenestage Construction Ltd
<b>Murray Elliott</b>	Manitoba Pork Council
<b>Mark Fynn</b>	Centre de développement du porc du Québec
<b>Sébastien Turcotte</b>	Prairie Swine Centre
<b>Lee Whittington</b>	

# Monitoring the effects of transport on the behaviour, physiology, carcass and meat quality of pigs through the study of truck micro-climate, vibrations and cooling systems

► Luigi Faucitano, Dairy and Swine Research and Development Centre, AAFC

## Objective

Provide the pork industry with a practical procedure to apply to trucks in warm conditions and with new knowledge about vehicle design features to limit animal losses during transport and improve pork quality.



Ventilation system. Source : Dairy and Swine Research and Development Centre, AAFC

## Highlights

Transportation trials are to be carried out in the summer of 2015.

## Collaborators

**Trever Crowe** University of Saskatchewan

**Nicolas Devillers** Dairy and Swine Research and Development Centre, AAFC

## Summary

This study is to evaluate, in warm conditions, the impacts of ventilation combined with water misting, on the behaviour, physiology, carcass and meat quality of pigs waiting to be unloaded at the slaughterhouse in warm conditions. In addition, the project will look into the impacts of vibration during transport to the slaughterhouse on the posture of the pigs (for example, standing, sitting or lying down). The vehicles to be used in the study will be pot-belly trailers.

Combined water sprinkling and ventilation system. Source: Dairy and Swine Research and Development Centre, AAFC



# Innovative piglet management strategies for optimum performance up to slaughter weight and profitable pork production

- ▶ Denise Beaulieu, Prairie Swine Centre
- ▶ Frédéric Guay, Laval University
- ▶ Kees de Lange, Jim Squires, Julang Li, Niel Karrow, Vahab Farzan, Robert Friendship, University of Guelph
- ▶ J. Jacques Matte, Dairy and Swine Research and Development Centre, AAFC
- ▶ Martin Nyachoti, University of Manitoba
- ▶ Andrew Van Kessel, University of Saskatchewan
- ▶ Ruurd Zijlstra, University of Alberta



Source: Dairy and Swine Research and Development Centre, AAFC

## Objective

**Develop effective newborn and newly weaned piglet feeding strategies that maximize profits based on performance up to market weight, minimize reliance on in-feed antibiotics, and improve pig robustness and health.**

## Summary

The swine industry will face a number of challenges in the foreseeable future. Among these is the high cost of feed ingredients, which has historically represented the largest portion of operating costs. Furthermore, increasing public demand and regulatory restrictions on antibiotic use are anticipated. Therefore, novel nutritional strategies designed must, in addition to minimizing costs, maintain if not promote, animal health and resistance to infectious challenges. To address these challenges researchers are working on three focus areas:

- 1 Nutritional strategies for newborn piglets
- 2 Low cost post-weaning nutritional strategies
- 3 Novel bioactive feed supplements

## Highlights

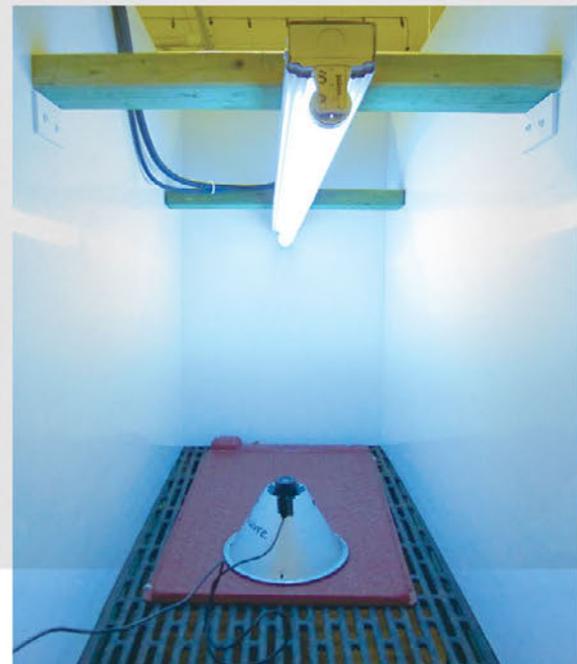
### 1 Nutritional strategies for newborn piglets

(J. Matte and F. Guay)

It has been demonstrated in previous research that, as for iron, piglets are likely to suffer from a deficit in vitamin A, vitamin D, and copper shortly after birth and thereafter during lactation. Therefore, a first trial was conducted to determine the best route of administration, either directly to the piglets or indirectly through the sow diet, for these micro-nutrients. After this is completed, trials will be conducted over the next years to determine the impact of supplementing micro-nutrients on piglets' health and performances.

Station for exposing piglets to UV radiation, which was measured by placing a device next to the piglet.

Source: Dairy and Swine Research and Development Centre, AAFC





**2 Low cost post-weaning nutritional strategies**

**- Pre-treatment of feed ingredients to enhance value**  
(D. Beaulieu, A. Van Kessel, M. Nyachoti)

A series of experiments will be performed to establish the efficacy of ensiling or direct acidification of high moisture cereal grains and protein co-products to reduce anti-nutritional factors and improve nutritive value, health and performance of pigs. Practical aspects relating to the processing and handling of preserved grains and protein co-products will be examined.

**- High residual protein and fermentable carbohydrates** (R. Zijlstra and A. Van Kessel)

Several Canadian crops and plant-based co-products may serve as an alternative to soybean meal in nursery pig feed. However, due to their lower protein digestibility, the residual protein content in the gut lumen and the abundance of toxic fermentation products will increase. It is hypothesized that such protein alternatives will increase disease susceptibility and reduce growth performance under commercial conditions, especially in diets without antibiotics. A series of studies will be conducted to: 1) define low-cost protein sources and indigestible protein residue, and 2) gain a basic understanding of the effects of these residues in the gut.

Preservation jars are being used for small scale screening of various acids and bacterial inoculants on preservation and chemical composition of high moisture barley and wheat.  
Source: University of Saskatchewan



### - Simple versus complex post-weaning diets (K. de Lange, V. Farzan and M. Nyachoti)

#### Ability to deal with disease stress

Researchers will perform a number of studies to evaluate the impact of feeding inexpensive nursery diets on the piglet's ability to deal with disease stress and on how to improve their robustness.

Feeding piglets with diets that varied in protein complexity (soybean meal vs plasma proteins) and in oil type (corn oil vs fish oil) showed that dietary fat type is more important than protein quality for the development of immune response in newly weaned piglets. In particular, feeding fish oils containing poly-unsaturated omega-3 fatty acid benefits the piglets' active immune response to a greater extent than replacing soy protein with animal proteins, such as blood plasma.

Another study in which piglets were fed diets with low protein complexity (soybean meal) and varying levels of fish oil established that the optimum ratio between omega-3 and omega-6 fatty acids is 0.35 in low quality diets for newly-weaned piglets. This study also showed that providing a diet with low complexity protein and containing about 2.5% fish oil is as effective in supporting growth performance as feeding a high protein complexity diet.

#### Epidemiology study: impact of nursery simple diet under commercial farming condition

Eight farrow-to-finish farms with different health statuses will be studied. On each farm two cohorts of piglets will be selected. One cohort will be assigned with a simple nursery diet, i.e. low-level animal protein without in-feed antibiotics, and one cohort to a conventional feed. The impact of simple nursery diet on growth performance and carcass quality, immune function and occurrence of infectious diseases, as well as salmonella shedding and colonization will be studied. The influence of the genotype will also be investigated. Three farms are currently involved in the project.



Source: University of Guelph



Source: University of Guelph

### 3 Novel bioactive feed supplements

#### - Epidermal growth factor (J. Li)

Porcine epidermal growth factor (EGF) is a powerful bioactive peptide that stimulates gut health and development in newly-weaned piglets. A three-step research program has been proposed to work towards commercial application of the EGF containing fermentation products.

Results from Step 1 showed that piglets' growth performance was optimized when providing 80ug Lactococcus Lactis-derived EGF, per kg of body weight, per day, for the first 3 weeks post-weaning in pigs fed diets devoid of plasma protein. This suggests that EGF increases intestine health and development, as well as early weaned pig growth by influencing the gene expression.

#### - Probiotics and oral vaccination (R. Friendship)

Experimental challenge studies will be conducted to determine the efficacy of vaccines against enterotoxigenic *Escherichia coli* (ETEC), which causes porcine post-weaning diarrhea. A first ETEC vaccine has been produced and will be evaluated in a challenge study.

#### Collaborators

<b>Nathalie Bissonnette</b>	Dairy and Swine
<b>Jérôme Lapointe</b>	Research and
<b>Martin Lessard</b>	Development
<b>Guylaine Talbot</b>	Centre, AAFC



Source: University of Guelph

# Increasing sow milk yield and piglet growth via low-cost feeding and management strategies during gestation and/or lactation

► Denise Beaulieu, Prairie Swine Centre

► Chantal Farmer, Dairy and Swine Research and Development Centre, AAFC

## Objective

Develop low-cost feeding and management strategies that will increase sow milk yield and piglet growth while ensuring maximum animal welfare.

## Summary

Restricting feed intake for gestating sows is required to prevent excessive body weight gain and associated negative consequences on mammary development, locomotion, farrowing and feed intake during lactation. Aggression and stereotypies associated with restricted feeding become a welfare and production concern when sows are housed in groups.

Moreover, another challenge is that sows do not produce enough milk to sustain optimal growth of their piglets; this is a problem exacerbated in recent years with hyperprolific sow lines. Therefore, researchers are working to develop low-cost feeding and management strategies for gestating sows to reduce aggression, maintain optimum production and increase sow milk yield during lactation.



Milking a teat.  
Source: Dairy and Swine Research and Development Centre, AAFC





Newborn piglets.  
Source: Dairy and Swine  
Research and Development  
Centre, AAFC

Pressure  
cooked straw.  
Source:  
Prairie Swine Centre



Piglet suckling.  
Source: Dairy and Swine Research  
and Development Centre, AAFC

## Highlights

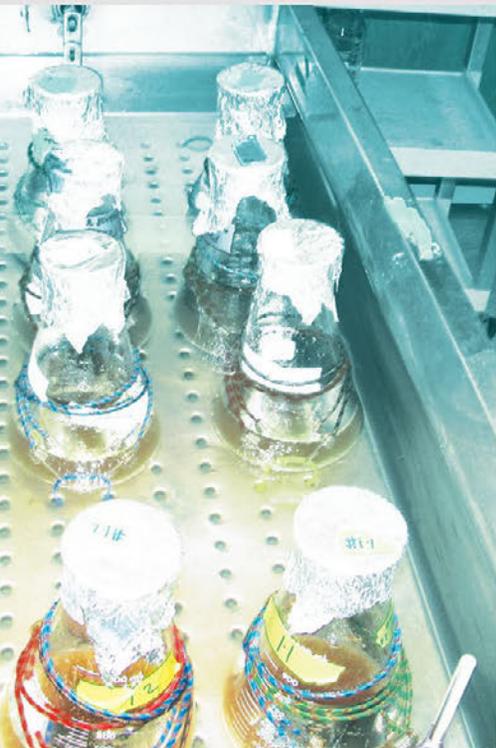
In order to reduce aggression and maintain optimum production in gestating sows, researchers are investigating whether processing straw can alter the fibre fraction to improve its satiating effect. Samples of wheat and oat straw have been processed under varying conditions and subjected to *in vitro* digestibility experiments which simulate digestibility in the swine fore-stomach.

A series of studies have also been conducted to improve milk yield and piglets' growth. These studies involve investigating the impact of body condition and naturally-occurring bioactive feed compounds on mammary development, milk yield and fetal growth. Researchers will also study how to prolong the colostrals phase in early lactation in order to improve piglets' immune resistance and growth.

## Collaborators

<b>Jennifer Brown</b>	Prairie Swine Centre
<b>J�r�me Lapointe</b> <b>Marie-France Palin</b>	Dairy and Swine Research and Development Centre, AAFC
<b>Tom Scott</b>	University of Saskatchewan

*In vitro* pepsin pancreatin digestion. Source: Prairie Swine Centre



# Feeding programs for growing-finishing pigs to enhance global competitiveness: Opportunities across Canada

- ▶ Denise Beaulieu, Prairie Swine Centre
- ▶ Eduardo Beltranena, Alberta Agriculture and Rural Development
  - ▶ François Dubeau, University of Sherbrooke
- ▶ Marie-Pierre Létourneau-Montminy and Frédéric Guay, Laval University
  - ▶ Martin Nyachoti, University of Manitoba
- ▶ Candido Pomar, Dairy and Swine Research and Development Centre, AAFC
- ▶ James Squires, Kees de Lange, Julang Li, Ira Mandell, Bob Friendship, University of Guelph
  - ▶ Ruurd Zijlstra, University of Alberta

## Objective

Match dietary nutrient supply with the growing-finishing pig's nutrient requirements to reduce feed cost per kilogram of carcass or lean pork and also to reduce nutrient losses into the environment.

## Summary

Feed cost is by far the greatest cost of pig production (65-70%) and growing-finishing pigs account for around 80% of feed consumed. The continued high costs of feed with peaks in 2012 are evidence of the need to develop cost-effective feeding strategies for growing-finishing pigs to ensure the long-term competitiveness of the Canadian pork industry. Researchers are working on four strategic areas:

- 1 Novel feedstuffs and enhanced nutritional values
- 2 Precision feeding of individual pigs
- 3 Optimizing feeding strategies for groups of pigs
- 4 Validation of feeding strategies

## Highlights

### 1 Novel feedstuffs and enhanced nutritional values

The nutrient content of emerging ingredients will be characterized in detail to develop unique Canadian databases, building on the NRC (2012) and developing precision feeding systems to allow rapid prediction of the feeding value of feedstuffs of varying quality. Researchers will also explore means to maximize nutrient utilization from such ingredients and dietary inclusion levels.

#### - Characterize the nutritive value of emerging feedstuffs (M. Nyachoti and K. de Lange)

Flaxseed meal and oat hull chemical composition and physical properties were determined. Further fractionation of the corn DDGS into a high protein DDGS, which is more suitable for swine, is being explored.

#### - Means to enhance nutrient utilization and maximum inclusion rates: Fermentation of feedstuffs (J. Li and K. de Lange)

The feeding value of corn DDGS for use in swine liquid feeding has been improved by fermentation with commercially available silage inoculant.

Novel bacteria with high cellulase activity have been isolated and will be further characterized. Tests will also be carried out on the efficiency of these bacteria to ferment feedstuff.

## 2 Precision feeding of individual pigs

- **Modeling phosphorus (P) and calcium (Ca) digestion and metabolism for real-time estimation of individual pig requirements** (C. Pomar)

A model was developed and is able to simulate: the deposition of P and Ca, the impact of dietary Ca and P imbalance, the impact of protein deficiency on P retention and the consequences of P and Ca depletion and repletion sequences.

This model will be updated to estimate real-time P and Ca requirements in growing pigs and will be incorporated in precision feeding systems.

- **Optimal management of farm resources** (F. Dubeau)

A feed formulation method aiming at minimizing feeding cost and excretion of nitrogen and phosphorus is under development.



Oat hulls.  
Source:  
University  
of Manitoba



Ground  
oat hulls.  
Source:  
University  
of Manitoba



Defatted  
flaxseed meal.  
Source:  
University  
of Manitoba

## 3 Optimizing feeding strategies for groups of pigs

- **Represent the impact of between animal variability on responses of groups of pigs to dietary nutrient levels** (K. de Lange)

A mathematical procedure to characterize individual growing-finishing pigs with regards to nutrient partitioning for growth from observed feed intake curves, growth curves and back fat thickness at slaughter has been developed.

A mathematical representation has also been developed regarding the use of dietary non-protein nitrogen for the endogenous synthesis of non-essential amino acids as well as for growing pigs that are fed diets deficient in non-essential amino acid nitrogen.

These new mathematical procedures are being integrated in a biological model that can be used to assess the financial and environmental impact of alternative management strategies for growing finishing pigs (Porkmaster).

## 4 Validation of feeding strategies

- **Model validation and entire males** (I. Mandell and J. Squires)

A growing-finishing pig performance study was conducted to evaluate, among others, effect of gender (entire male vs. immunological castration using improvest) and finishing-feeding regimes (Control vs. a ractopamine supplemented diet). Use of ractopamine produced heavier carcasses with lower fat deposition and more muscling, but at the expense of decreasing loin tenderness. Administration of the second dose of Improvest at 8 vs. 4 weeks preslaughter decreased feed conversion and increased back fat deposition; these pigs were more like conventional barrows.

Studies are now in progress to evaluate the use of a select number of feed additives to control boar taint in entire male pigs.

## Collaborators

**Jean-Pierre Dussault** University of Sherbrooke

# Use of novel technologies to optimize pig performance, welfare and carcass value

► Brian Sullivan, Canadian Centre for Swine Improvement (CCSI)

## Objective

Use new technologies to develop objective and accurate phenotypes for growth, feed efficiency, welfare, carcass value and meat quality in Canadian pigs.

## Summary

Certain economically important traits, such as growth, feed efficiency, welfare and carcass quality, are difficult or expensive to measure in pig farms and slaughter plants. Recent technological developments have provided new opportunities to collect information on live pigs and carcasses.

This project looks at validating some of the new technologies available to provide objective indicators of performance, welfare and carcass value.

## Highlights

Eight pilot studies were started, covering the following areas:

### 1 Automated recording of feed/water intake and weight/conformation (Centre de Développement du Porc du Québec)

#### - Individual water recording systems

A major step was achieved in precision livestock farming: all pens in the Deschambault swine testing station are now equipped with individual water intake recording systems. It will be further tested and improved as part of this project and will become part of the regular station test once all the fine-tuning is completed. Individual water intake will be a very valuable new trait in commercial trials and research projects.



Water dispenser.  
Source: CCSI

#### - Vision systems to predict animal weight and conformation

Some preliminary work was carried out with the *optiSORT* hog sorter (Hoelschter+Leuschner, Germany) an automated, contactless system to predict live weight, carcass weight and weights of primal cuts.

A literature review was also carried out to determine the best approach and protocol to create a 3D image of a live pig. The use of multiple cameras in stereo has been identified as a means to create 3D images of live animals.

An *optiSORT* system.  
Source: CCSI

### - Animal behavior assessment using vision systems

A literature review was conducted in order to review available software programs. The EthoVision XT software developed by Noldus Information Technology seems to have the best potential. It is a video tracking software used to monitor and analyze behavior, movement and activity of any animal. Individual data can also be obtained if the pigs are marked. Trials were conducted to track individual pigs.

### 2 Infrared thermography diagnostic platform for swine (Lacombe Research Centre, AAFC)

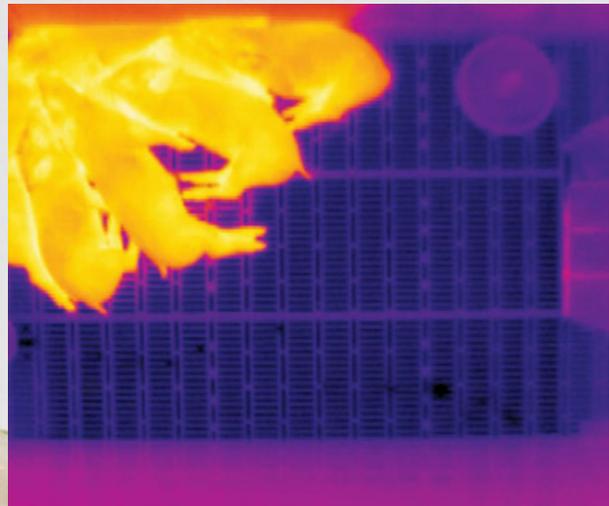
Changes in the metabolic rate can be monitored using infrared thermography. The technology can be used for illness detection and also to predict feed efficiency variation. A series of trials is being conducted in post-weaning and growing units to assess the potential of infrared thermography as a diagnostic platform for swine.

### 3 Use of accelerometers to automatically assess pig behaviour and welfare (Laval University, Dairy and Swine Research and Development Centre, AAFC and University of Guelph)

The use of live or video observation to measure behaviour and welfare in animals is time-consuming and tends to be subject to human error. This study proposes to validate the use of accelerometers as tools to investigate pig behaviour as they interact with their environment. Various enrichment objects are under testing to evaluate activity levels of pigs in relation to these objects.



Infrared imagery. Source: CCSI



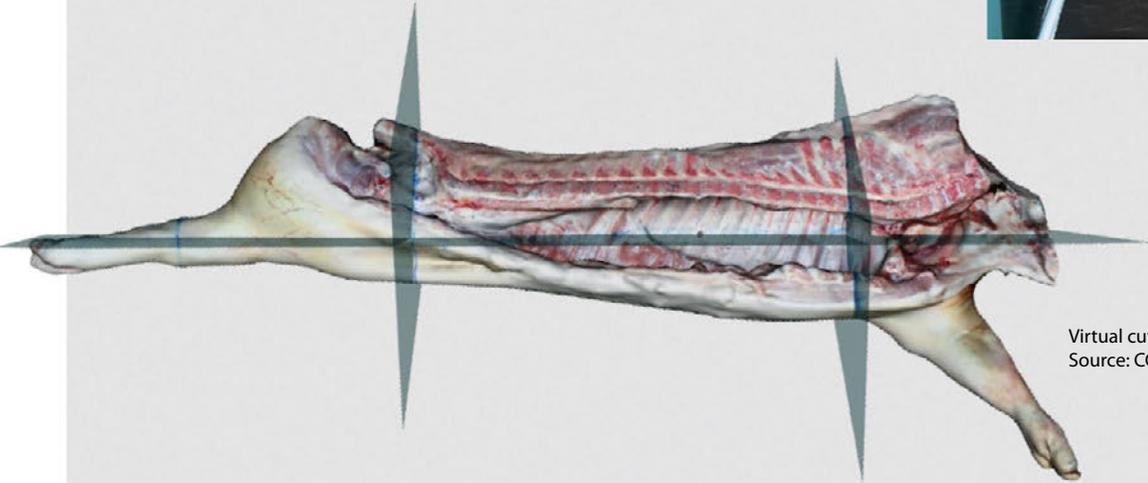
Enrichment objects. Source: CCSI



Carcass evaluator.  
Source: CCSI



Near-infrared reflectance spectroscopy (NIRS).  
Source: CCSI



Virtual cutting.  
Source: CCSI

**4 Use of 3D vision systems for rapid and objective hog carcass quality assessment**  
(Swine Research and Development Centre, AAFC)

There are opportunities to use computer vision systems to more accurately assess not only carcass weight and leanness, but also the weight and lean yield of each carcass cut, allowing for more efficient carcass sorting and valorization. A carcass evaluator prototype including a 3D vision system has been designed and will be tested on cuts and half-carcasses in 2015-2016.

**5 Rapid *in vivo* prediction of composition and quality traits using near-infrared spectroscopy**  
(Lacombe Research Centre, AAFC)

Near-infrared reflectance spectroscopy (NIRS) has been proven to be one of the most efficient and advanced tools for the estimation of quality attributes in meat and meat products. The potential of NIRS as a rapid *in vivo* technology for the prediction of composition and quality traits is assessed. Preliminary results show that the approach has potential for ranking carcasses on various traits related to carcass composition and fatty acid composition in back fat.

**6 Determination of age of bruises at slaughter**  
(Swine Research and Development Centre, AAFC)

The objectives are to develop objective methods to count, categorize and determine the age of bruises on pork carcasses on the slaughter line. Lesion healing process is studied via histological and histochemical analyses of lesions at different stages. Digital image analysis will also be performed to be able to count and classify bruises according to their origin and age.

**7 Application of rapid methods for non-invasive assessment of pork quality** (Food Research and Development Centre, AAFC and McGill University)

There is a need for non-invasive, reliable, objective methods that are able to determine the entire array of quality parameters while preserving the integrity of meat cuts. Two technologies in the measurement and prediction of meat quality traits from the external surface of the entire Longissimus muscle will be assessed. These technologies are nuclear magnetic resonance (NMR) and hyperspectral imaging (HSI).

**8 Quick, non-invasive technology for prediction of marbling in fresh loins**  
(Centre de Développement du Porc du Québec)

Pork marbling is a key trait for slaughter plants but is not easy to predict accurately without cutting the loin muscle. Recent results indicate that induced current and resistance measurement could provide good predictions for loin marbling or intramuscular fat. The first prototype for measuring loin resistivity (without contact) using induced current and resistance measurement will be available for testing in 2015-2016.

Collaborators

<b>Renée Bergeron</b> <b>Flavio Schenkel</b>	University of Guelph
<b>Nicolas Devillers</b> <b>Luigi Faucitano</b> <b>Candido Pomar</b>	Dairy and Swine Research and Development Centre, AAFC
<b>Frédéric Fortin</b> <b>Joël Rivest</b>	Centre de Développement du Porc du Québec
<b>Claude Gariépy</b> <b>Marie-Rose</b> <b>Van Calsteren</b>	Food Research and Development Centre, AAFC
<b>Manuel Juarez</b>	Lacombe Research Centre, AAFC
<b>Jean-Paul Laforest</b>	Laval University
<b>Michael Ngadi</b>	McGill University
<b>Tim Nelson</b>	PigGen Canada

# Increasing Canadian pork consumption, market share and competitiveness through enhanced nutritional values and overall quality with a functional molecule in pork meat

- ▶ Claude Gariépy, Food Research and Development Centre, AAFC
- ▶ Brian Sullivan, Canadian Centre for Swine Improvement

## Objective

Differentiate Canadian pork by increasing the content of a functional molecule in the meat.

## Summary

Levels of a functional molecule are being measured in purebred pigs in Canada and a study is being done to look at the effect of this on meat quality traits. Further analyses will be carried out to identify genetic reasons why some animals have a higher content of this molecule by looking at important genes related to its metabolism. A test will be carried out on live pigs to find out whether levels of this functional molecule can be enhanced through feeding. Meat quality as well as sensory analyses will be done on pork samples from these animals. Surveys will be carried out to gauge the public's perception and interest in this new product and the latter information will be used to create strategies to motivate the consumption of enhanced pork by health-conscious consumers.

## Highlights

Meat samples from Duroc, Landrace and Yorkshire barrows have been analyzed and showed different levels of the functional molecule. Positive correlations between the level of the functional molecule and the physicochemical meat quality traits have been obtained. Preliminary analysis also supports potential for genetic selection of the functional molecule content.

## Collaborators

<b>Marie-Ann Binnie</b>	Canadian Pork Council
<b>Frédéric Fortin</b>	Centre de développement du porc du Québec
<b>Ellen Goddard</b>	University of Alberta
<b>Marie-France Palin</b> <b>Candido Pomar</b>	Dairy and Swine Research and Development Centre, AAFC
<b>Jacques Pomerleau</b> <b>Michael Young</b>	Canada Pork International

# Preliminary investigation of a reliable and effective swine transportation sanitization system

► Joy Agnew, Prairie Agricultural Machinery Institute (PAMI)

## Objective

Develop a work plan to guide the collaborative effort required to design, build, and assess a more efficient and effective transport sanitization system.

## Summary

Existing procedures and technologies for trailer sanitization were evaluated and information was gathered from the industry and stakeholders. The survey of facilities focused on Western Canada, but the technology used and the research being conducted in Eastern Canada, the United States and Europe were also assessed. Technologies used in other industries (e.g.: food industries, oilfields) were also evaluated.



Trailer wash facility.  
Source: PAMI

Inside of trailer.  
Source: PAMI



Condition of floor after flood wash.  
Source: PAMI

## Highlights

Existing protocols rely heavily on manual labour. Therefore, if truck washing personnel are not properly trained, the trailer may not be properly sanitized. Therefore, it is recommended that alternative methods of sanitization be evaluated for existing trailer designs. In addition, trailer design should also be reviewed to determine if modifying the design can improve sanitization efficiency.

This study revealed several potential technologies or methods that could reduce the time and cost associated with trailer sanitization. These technologies range from hydrovac systems (to replace scraping and washing) to the use of ozone or nanoparticles to deactivate the organism of interest.

## Collaborators

University of Saskatchewan

Prairie Swine Centre

Manitoba Pork

Les Éleveurs de porcs du Québec

# Technology and methodology development for improved biosecurity in livestock transport vehicles – Phase 1

► Terry Fonstad, University of Saskatchewan

## Objective

Develop a proof of concept of a vacuum system to clean livestock transport units and carry out a preliminary literature review regarding the inactivation of pathogens of concern.

## Summary

The ultimate goal is to create an automated trailer cleaning system that offers high quality, consistent cleanliness. The work carried out in this first phase included two issues to be solved:

- 1 Removal of manure and bedding from the trailer in a timely and efficient manner
- 2 Inactivation/elimination of pathogens of concern

## Highlights

### 1 Removal of manure and bedding from the trailer in a timely and efficient manner

(Prairie Agricultural Machinery Institute – PAMI)

Results indicate that a vacuum system is effective in removing the bedding and manure from the trailer. A high pressure wash in combination with the vacuum system has the potential to be even more effective in cleaning the floors of livestock trailers. This combination was also effective in removing frozen bedding and manure from a simulated section of a trailer.

Work to date suggests that a two-level straight trailer could be cleaned within 40 minutes while using approximately 143 litres (32 imperial gallons) of water.

### 2 Inactivation/elimination of pathogens of concern

(University of Saskatchewan)

Results show that there may be a temperature and time combination that may inactivate all of the pathogens of interest. Exposing the trailers to a temperature of at least 70°C and ensuring the entire trailer reaches this temperature for at least 10 minutes has the potential to inactivate most, if not all, of the pathogens of concern.

## Collaborators

<b>Hubert Landry</b>	Prairie Agricultural Machinery Institute
<b>Denise Beaulieu</b>	Prairie Swine Centre
<b>Tadele Kiros Gebreyohannes</b>	University of Saskatchewan
<b>Volker Gerdts</b>	VIDO-InterVac

Dry vacuuming the bulk material on the trailer floor.  
Source: PAMI



Second pass with the wet attachment to perform a pressure wash combined with vacuuming. Source: PAMI





# Communication, Collaboration, Sustainability

## Networking Meetings

One of Swine Innovation Porc's (SIP) roles as a national facilitator of research is to help researchers collaborate and coordinate activities. This is particularly important when researchers who are working on the same project are based in different provinces. Therefore, SIP has held two 'networking meetings' in 2014-2015, one in Banff, Alberta and one in Montreal, Quebec. There has been positive feedback from the researchers involved and more of these meetings will be organized in the coming years.

## Setting Research Priorities

As a leader in Canadian swine research, it is essential that SIP stay informed on the pressing needs of swine industry. For that reason, the Board of Directors formed a committee to determine the top research needs in Canada. Part of their work involved consulting leaders from various sections of the pork value chain to round out SIP's priority list.

## Partnerships with Swine-Related Conferences

In order to continue its work in enhancing collaboration and communicating with stakeholders, SIP is working on partnering with swine-related conferences throughout the country. In addition, this gives an opportunity to researchers involved in SIP's projects to present their results. In 2014-2015, SIP was proud to work with the London Swine Conference where several Swine Cluster 2 researchers talked about their projects to a large audience. The team is looking forward to developing business relationships with a variety of national swine events in the coming year.

## Farmscape Interviews

SIP is proud to work with Bruce Cochrane of Farmscape Online to produce weekly reports on activities undertaken by those involved in SIP projects. Visit the "Publication" section of our website ([www.swineinnovationporc.ca](http://www.swineinnovationporc.ca)) to read these reports and listen to interviews.



Attendees of the networking meeting held in Montreal in February for the project "Use of novel technologies..."  
Source: Swine Innovation Porc



Networking meeting held in Banff in January for the project on piglet and growing/finishing nutrition.  
Source: Swine Innovation Porc



# Science Advisory Body

The Science Advisory Body (SAB) is a committee that evaluates the scientific integrity of research proposals submitted to Swine Innovation Porc. Members of the SAB are recognized professionals who are well-known in their fields and represent a diverse range of expertise within swine research. This committee reviews research proposals, offers scientific expertise, gives technical advice and ultimately provides the Board of Directors with their recommendations. The following individuals are the current members of the Science Advisory Body:

## **Jean-Paul Laforest**

Chair  
Professor  
Laval University

## **Brad Chappell**

Veterinarian  
Swine Health Professionals Ltd

## **Graham Plastow**

Professor  
University of Alberta

## **Jacques Surprenant**

Director - Research, Development, and Technology  
Dairy and Swine Research and Development Centre, AAFC

## **Neil Ferguson**

Swine Nutrition Research Manager  
Nutreco Canada

## **Serge Pommier**

Scientific Advisor  
Olymel

## **Catherine Templeton**

Veterinarian  
Synergy Services Inc.

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# Management Team

## **Pierre Falardeau**

General Manager

## **Abida Ouyed**

Assistant Manager

## **Marie Vachon**

Research Coordinator

## **Leslie Walsh**

Executive Secretary

## **Pierre-Dominique Munger**

Assistant Accountant



# Partners in Research

## Canadian Partners

- Alberta Agriculture and Rural Development
- Batista & Asociados
- Biovet
- Canada Pork International
- Canadian Centre for Swine Improvement
- Centre de recherche de l'Institut Universitaire de Cardiologie et de Pneumologie de Québec, associated with Laval University
- Dairy and Swine Research and Development Centre, AAFC
- Food Research and Development Centre, AAFC
- FGC Groenenstage Construction Ltd
- Group Cérés inc.
- Guelph Food Research Centre, AAFC
- Canadian Pork Council
- Centre de développement du porc du Québec
- Health Canada, Nutrition Research Division
- Institut de recherche et de développement en agroenvironnement
- Lacombe Research Centre, AAFC
- Manitoba Pork Council
- McGill University
- National Centre for Foreign Animal Diseases, Canadian Food Inspection Agency
- PigGen Canada
- Prairie Agricultural Machinery Institute
- Prairie Swine Centre
- University of Montreal
- University of Sherbrooke
- Laval University
- University of Alberta
- University of Guelph
- University of Manitoba
- University of Saskatchewan
- VIDO-InterVac

## International Partners

- Leibniz Institute for Farm Animal Biology, Research Unit Muscle Biology and Growth (Germany)
- Newcastle University (United Kingdom)



# Financial Partners

 Agriculture and Agri-Food Canada    Agriculture et Agroalimentaire Canada

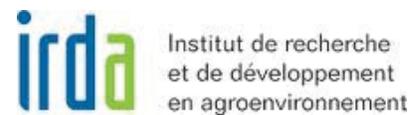
**Canada**  **Growing Forward 2** | **Cultivons l'avenir 2** 



Canadian Pork Council  
Conseil canadien du porc

Swine Innovation Porc is a corporation of the Canadian Pork Council.

# Financial Partners



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