

**INNOVATION
FOR THE SUSTAINABILITY
OF THE SWINE
INDUSTRY**

2010-2013

**RESEARCH
ACTIVITY
REPORT**

SUMMARY



Swine Innovation Porc



347.8
215.6
678.6
457.8
321.5
668.9
421.5
112.4
345.1
135.1
147.8
347.8
215.6
678.6
421.5
112.4
345.1
135.1
147.8
347.8
215.6
678.6
421.5
112.4
345.1

THE RESEARCH PROGRAM WAS DESIGNED TO ENHANCE THE COMPETITIVENESS AND DIFFERENTIATION OF CANADA'S PORK INDUSTRY. AS FOR THE TECHNOLOGY TRANSFER PROGRAM, ITS AIM IS TO ACCELERATE THE ADOPTION OF NEW KNOWLEDGE BY USERS.

The titles and highlights of the 14 research projects that were conducted from 2010 to 2013 are presented according to the two objectives of the research program.



INCREASING CANADIAN PORK INDUSTRY COMPETITIVENESS

Sow housing: risk factors and assessment techniques for lameness, productivity and longevity in group and individually housed gestating sows (L. Connor et al.)

A model to determine the optimal time for culling a sow from an economic standpoint was validated.

Force plate scale, a promising technique developed to identify early lameness.

A study on the efficiency of water sprinkling in the truck after loading and prior to unloading at two different environmental temperatures on core body temperature and carcass and meat quality in pigs (L. Faucitano et al.)

As its recommendations are now included in the training handbook of the Canadian Livestock Transport Certification Program, this project is believed to have a definite impact on transport practices, pig welfare and meat quality.

Development of an innovative precision farming system for swine (C. Pomar et al.)

Adjusting the nutrient supply in order to meet the individual requirements is one way to reduce environmental impacts (25%) and feeding costs (by more than \$8 per pig) during the growing-finishing period.

Evaluation and development of standards for swine production systems (L. Whittington et al.)

The current knowledge and value people place on standards in barn design, construction and operation is very low and 'rules of thumb' dominate equipment purchase and barn design decisions. Other industries have demonstrated significant economic returns from adoption of standards.

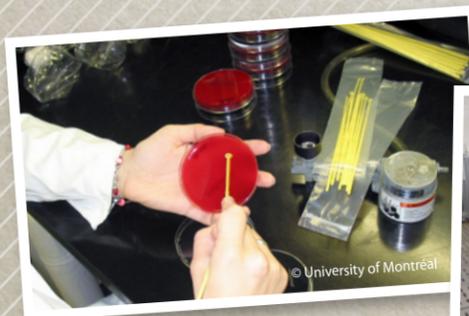
The Canadian pork industry could reduce costs and producer frustration through the adoption of standards particularly in the areas of feeder/waterer, space requirement, loadout and farrowing crate design.

Novel swine feeding programs to enhance competitiveness and pork differentiation: The Canadian feed & pork value chain (R. Zijlstra et al.)

Relevant information on nutritional value of co-products was developed and gathered in a database. When formulating pigs' diet, this new knowledge of co-products can be used and help to reduce feed costs.

New user-friendly software is now available to estimate nutrient requirements of different categories of pigs under varying conditions. This information is already published in NRC 2012.

Additional software (PorkMaster), which includes a feed ingredient data base and a least-cost feed formulation package, has been made available to industry experts and allows assessment of financial and environmental impacts of alternative feeding strategies for individual growing-finishing pig units.



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Novel nutritional strategies for optimum sow and piglet productivity (M. Lessard et al.)

Feed costs could be reduced by \$2/pig or more, by using low complexity diets for piglets.

Parity segregated phase feeding could reduce feed costs by more than \$10 per sow per year based on sow amino acids and energy requirements during gestation.

Efficacy of feed additives to mitigate the negative impacts of mycotoxin contaminated feed on performance and health of piglets (F. Guay et al.)

Mycotoxin content evaluations of corn hybrids adapted to Québec growth conditions (G. Tremblay et al.)

Capturing genetic merit in differentiated pork production systems through genomics (G. Foxcroft et al.)

Segregated management strategies for low birth weight and high birth weight litters might provide more economic value than targeting the entire sow herd.

Development of new genomic tools to improve meat quality traits and production efficiency in pigs (B. Sullivan et al.)

Genomic evaluations of economically important traits linked to productivity and meat quality were developed and implemented. The swine industry is now positioned to start routinely applying genomic evaluations in breeding programs.

INCREASING CANADIAN PORK INDUSTRY DIFFERENTIATION

The use of tools related to molecular characterization, systemic analysis of stakeholders and geomatics for identification of the principal vectors and of contamination by bacteria and viral indicators at farm and slaughterhouse level (A. Letellier et al.)

Biosecurity is a shared responsibility. All stakeholders must be involved in the food safety process to limit the microbial dissemination and animal health/food safety impact.

Simple actions such as cleaning and disinfection of transportation trucks can have a significant impact!

A comparison of three animal welfare assessment programs on Canadian swine farms (T. Widowski et al.)

The data obtained can be used to identify the best measures and to review the training for on-farm animal welfare assessment programs.

Use of non-penetrating captive bolt for euthanasia of neonate, suckling and weaned piglets up to 9 kg (T. Widowski et al.)

The Zephyr-E is a highly effective and humane method of euthanasia for piglets weighing up to 9 kg. It is now available for use on farms.

Development of an innovative air cleaning system for swine buildings (S. Lemay et al.)

The air treatment unit, tested at both the laboratory and commercial scale, offers promising results to reduce odour, ammonia, dust and bacteria emissions from new or existing swine buildings.

IMPLEMENTATION OF TECHNOLOGY TRANSFER STRATEGIES

A bilingual website was developed and can be visited at www.swineinnovationporc.ca.

A key element of the technology transfer activities was the development and implementation of the "Lead User Program."



HIGHLIGHTS 2010-2013

PROGRAM



- 14 projects
- 100 researchers
- 27 research organisations across Canada + around the world
- 22 partnerships with industry stakeholders

Enhanced expertise:
contributed by training
highly skilled professionals
for the pork sector

28 Master's students

16 doctoral candidates

23 postdoctoral scholars

DISSEMINATION OF RESULTS



210 TECHNOLOGY TRANSFER ACTIVITIES AND DOCUMENTS SHARED WITH THE INDUSTRY

Seventy percent destined for producers

15 e-newsletters

28 Farmscape interviews, 8 articles in Western Hog Journal and 11 in Porc Québec

6 conferences at the Banff Pork Seminar/ 320 people attended in all

90 references and publications associated with Swine Innovation Porc's research projects

RESEARCHERS WROTE MORE THAN 190 PEER-REVIEWED PAPERS

To date, more than 70% published in scientific journals

SYMPOSIUM ON MYCOTOXINS 273 PARTICIPANTS



Canadian Pork Council
Conseil canadien du porc

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

The Canadian Swine Research and Development Cluster is established
within the Growing Canadian Agri-Innovation Program – Canadian Agri-Science
Cluster Initiative of Agriculture and Agri-Food Canada (AAFC).



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Agri-Food Canada

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Agroalimentaire Canada

Canada



Swine Innovation Porc

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

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