



Swine Innovation Porc

Swine Innovation, What Does It Mean for Producers?



Ken Engele, BSA.
Manager Information
Services

The pork industry is no stranger to change. While the change in the industry has garnered most of the headlines in recent years, Canadian pork producers have always been on the leading edge of incorporating new technologies and management practices that enhance the competitive position of their business. One of the roles researchers play is ensuring producers have all the tools available to remain competitive.

Research is addressing some of the questions of the pork industry through the Canadian Swine Research and Development Cluster. The Canadian Swine Research and Development Cluster rebranded as **Swine Innovation Porc** is a multi-year \$9.6 million program established within the Growing Canadian Agri-Innovation Program – Canadian Agri-Science Initiative of Agriculture and Agri-Food Canada, in addition to receiving financial support from private sector and provincial government organizations.

Swine Innovation Porc objectives are to facilitate research, technology transfer and commercialization initiatives designed to enhance the competitiveness and differentiation of Canada's pork industry; it is aligned with the Canadian Pork Value Chain Strategic Framework and its four pillars:

- 1. Competitive Environment:** We facilitate research designed to help reduce the costs of production; hence improving competitiveness.
- 2. Market Penetration:** We foster research that assists the Canadian Pork Value Chain differentiate its products in its key markets.

- 3. Value Chain Integrity:** We promote and encourage research that assists the Canadian Pork Value Chain to demonstrably strengthen the integrity of the value chain.
- 4. Innovation:** We put in place the organizational and scientific resources to permit innovation to flourish.

(More information on the Canadian Pork Value Chain Framework can be found on the Canada Pork Council website www.cpc-ccp.com.)

The research program conducted within Swine Innovation Porc consists of 14 research projects (see page 9) with 10 focused directly on increasing revenue or decreasing the cost of production, four focus on product differentiation, and three technology transfer initiatives. It is truly a collaborative project involving the coordination

management strategies developed through Swine Innovation Porc. Research projects have identified short, intermediate and long term benefits to the Canadian pork industry in the areas of swine nutrition, genetic improvement, animal welfare and environmental and engineering management.

The kick off of Swine Innovation Porc was held in conjunction with the 2012 Banff Pork Seminar through hosting a special breakout session Breakthroughs in Canadian Swine Nutrition.

This session focused on delivering some of the expected research results in conjunction with three research projects:

Sustainable Precision Livestock Farming: A Vision for The Future of the Canadian Swine Industry
Candido Pomar, AAFC Lennoxville, QC

Results from the Banff Pork Seminar indicate that feed costs may be cut by as much as \$8/pig marketed.

of 22 private partners, 100 researchers, 14 universities, and 13 research centres (16 organizations throughout Canada). Prairie Swine Centre and CDPQ have been given the task of developing a coordinated technology transfer program that effectively delivers the research results to pork producers and the industry.

Benefits to the Producer

The ultimate goal of Swine Innovation Porc is to ensure adoption of research results in the Canadian pork industry, and ensure measurable results by the completion of the funding agreement (March 2013). This will happen in a number of ways including the translation of research results in both official languages, and the development of a lead users program (demonstration farms) that would implement new technologies or

Towards Integrated Nutritional Management of Growing-Finishing Pigs

Kees de Lange, University of Guelph, ON
Novel Swine Feeding Programs To Enhance Competitiveness And Pork Differentiation
Ruurd Zijlstra, University of Alberta, AB

Looking at the material presented at the Banff pork seminar, preliminary results indicate that feed costs may be cut by as much as \$8/pig marketed. In today's world of above average feed costs this would have a significant impact on a producers bottom line.

Table 1 provides a listing of the 14 projects funded through Swine Innovation Porc. For More detailed information regarding the research projects can be found at www.swineinnovation.com.





Table 1. Swine Innovation Porc Projects

Project Title	Objectives
Food safety and microbial quality	
Use of tools related to molecular characterization, systemic analysis of stakeholders and geomatics for identification of principal vectors and contamination sources by bacteria and virus indicators at the farm and slaughterhouse level.	To identify vectors and microbial contamination sources among herds and slaughterhouse using geomatic, systemic and genomic tools.
Animal welfare	
Sow Housing: risk factors and assessment techniques for lameness, productivity and longevity in group and individually housed gestating sows.	Assessment of risk factors affecting the productivity and longevity in gestating group housed sows, and over a variety of management systems, with a special focus on lameness.
Study of 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.	To provide the pork industry with a clear procedure to employ on the truck in warm conditions, with the aim of limiting animal losses during transportation and improving pork quality.
A comparison of three animal welfare assessment programs on Canadian swine farms.	Compare the three on-farm animal welfare programs as they pertain to Canadian farms.
Use of non-penetrating captive bolt for euthanasia of neonate, suckling and weaned piglets up to 9 kg.	Investigate the effectiveness of the modified design of the non-penetrating captive bolt for euthanasia of neonatal piglets as well as older piglets.
Environmental changes	
Development of an innovative air cleaning system for swine buildings.	To improve the acceptability of swine facilities in rural areas by reducing their potential environmental impacts.
Equipment standardization	
Development of an innovative precision farming system for swine.	Develop a commercial, fully automated precision feeder and acquire the required scientific knowledge to feed pigs individually with daily diets tailored for optimal management of both feeds and animals.
Development of standards for swine production systems.	To develop a methodology for analyzing the cost/benefit of system optimization and standardization that can be applied to commercial swine farms
	To ensure that concepts identified in this project can be translated to the farm, providing a competitive advantage to Canadian pork producers.
Feed inputs and feeding	
New and innovative swine feeding programs to enhance competitiveness and pork differentiation: The Canadian feed & pork value chain	To develop a unique Canadian feed management strategy and feed ingredient data base for optimum productivity that also considers nutrient excretion, reduced antibiotic use during the growth phase, and pork quality. This unique database combines digestibility and bioavailability trials and novel feedstuff analyses.
Novel nutritional strategies for optimum sow and piglet productivity.	To develop unique Canadian feeding management strategies for optimum sow and piglet productivity, taking into consideration production efficiencies, including pig performance up to market weight, food safety, pig welfare and use of antibiotics.
Mycotoxins	
Efficacy of feed additives in mitigating the negative impacts of mycotoxin contaminated feed on performance and health of piglets.	Develop a protocol to evaluate the efficacy of feed additives available in Canada to attenuate the toxicity of naturally contaminated grains that may contain more than one mycotoxin and to mitigate the negative impact of mycotoxins on pig performances.
Mycotoxins contents evaluations of corn hybrids adapted to Quebec growing conditions.	To determine, under natural disease pressure, whether there are any differences between hybrids (Genotype effect, G) in their grain content levels for four different mycotoxin (Deoxynivalenol, fumonisin, zearalenone and T-2 toxin) in 3 different environments (Environment effect, E). G x E interactions will also be evaluated.
Genomics	
Capturing genetic merit in differentiated pork production systems through genomics.	Demonstrate that alignment of the excellent genetic potential of Canadian dam-line sows and AI stud boars, with management strategies that recognize the origins of major variation in phenotypic traits of terminal line litters, provides major competitive advantages to Canadian pork producers.
Development of new genomic tools to improve meat quality traits and production efficiency in pigs.	Develop new genomic tools to improve meat quality traits as well as enhance product differentiation and efficiency of pork production.