Executive Summary

Ontario Pork represents the 1,600 farmers who market hogs in the province in many areas, including research, government representation, environmental issues, consumer education and food quality assurance. The pork industry in Ontario accounts for 1 in 7 jobs, and it is estimated that total industry output from farm gate sales is worth $5.6 billion to the Ontario economy.

The primary purpose for raising pigs is to provide us with food, or pork to be specific. Ontario farmers produce some of the highest quality pork in the world and abide by strict on-farm food safety regulations. Research and Development has always been a cornerstone to the industry and provide valuable knowledge, practices and information which allows the industry to continue to advance.

A session was held on November 21, 2012 to develop research priorities and build research outcomes to be used to solicit measurable and achievable research project and programs for the benefit of Ontario pork producers. The session was attended by 30 invited producers and industry leaders and facilitated by Tim Nelson from the Livestock Research Innovation Corporation (LRIC).

The group attending the facilitated workshop identified eight theme areas of interest/concern that impact the ability of the industry to be as efficient, profitable and sustainable. Three themes were recognized as areas of concern, however, outside the scope of research. Notes of these areas are included in appendix A. The group identified the other five themes with the priority areas identified by Ontario Pork (see table below)

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<th>Research Priority</th>
<th>Theme Area</th>
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<td>Production - Herd Health, Nutrition, Environment and Reproduction</td>
<td>Production, Animal Health</td>
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<tr>
<td>Economics – Competitiveness and Business Sustainability, Industry (Market) Trends</td>
<td>Trade, Animal Health, Consumer Trends</td>
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This document outlines the outcomes within each priority area where Ontario Pork will focus their research expenditures. It will provide researchers with direction to focus their research submissions, be it proposals or programs. The targets in this document will guide Ontario Pork to conduct attainable research with measurable results and assist researchers to create programs and/or proposals that will meet respond to the needs of the Swine Industry in Ontario.
Production

The measurement of success in this priority would be to manage production throughout our pork value chain in such a manner to achieve competitiveness in the North American Market in the short term, and globally in the long term. Production incorporates the areas of Herd Health, Nutrition, Environment and Reproduction which are critical for the future success of the Ontario swine industry. Through investment, it is important to identify how to reduce and prioritize costs of production and increase efficiencies to enhance competitiveness and quality. It is key to develop or change techniques, products and/or inputs that will result in reduced production costs in Ontario production facilities.

Outcomes

Note that Animal Welfare outcomes are found later in the document under SOCIETAL TRENDS and PERCEPTIONS. Animal welfare is paramount and will be considered with in all production research.

Nutrition

Research conducted that will lead to:

1. Ontario producers using feeding strategies to measurably reduce production costs and increase profit.

2. Innovative products and nutritional strategies that:
   - utilize alternative feedstuffs
   - derive increased nutritional value from feedstuffs
   - improve feeding techniques, e.g. precision feeding
   - reduce production limiting feed contamination

Additional outcomes and priorities for nutrition are included within the Herd Health Environment, and Reproduction areas below.

Herd Health

Research conducted that will lead to:

1. Effective techniques and protocols that reduce the negative effects of disease/stress on pig performance. Techniques and protocols should be regarded in the broadest terms. Examples might include genomics, herd management, nutrition and biosecurity.

2. The industry recognizes major diseases and pathogens that may impact the health of the swine herd in Ontario including but not limited to:
   - their origin and spread
   - their influence on health status and productivity and
   - effective methods to diagnose control and/or minimize their influence

3. Understanding the origin, spread and predisposing factors of common production limiting, emerging and re-emerging diseases of hogs that impact Ontario herds.
4. Improved understanding of disease causation, diagnostics and prevention with a focus on reducing costs (cost benefit).

5. Identifying the major disease threats to the industry and effective identification and control methods including but not limited to:
   - new diagnostic methods or techniques that enhance the speed and accuracy of diagnosing production limiting diseases
   - improve current diagnostic techniques that enhance the speed and accuracy of diagnosing production limiting diseases
   - new interventions and improve techniques that reduce disease impact
   - increase speed and treatment accuracy of control measures

6. Ontario Producers using cost effective, innovative communication tools that utilize collaboration and information sharing, including but not limited to:
   - an increase of the speed with which research results are disseminated
   - a reduced impact of disease on the Ontario swine herd

7. Methods that more effectively engage Ontario Producers in industry wide disease mitigation initiatives.

8. Practical and cost effective alternatives to antibiotics are known and available to producers e.g. management techniques, genetics, nutrition etc.

Environment
Research conducted that will lead to:

1. New and innovative manure management techniques and treatments that demonstrably increased the value of manure as a crop input and simultaneously decreased our environmental footprint (nutrient, pathogen and greenhouse).

2. Innovative application equipment improvements for the timing and accuracy of manure application.

3. Understanding if there is any link between Algae blooms caused by soluble phosphorous in the Great Lakes and no till farming methods thought to contribute to soluble phosphorus.

Water quality research conducted which will lead to:

4. Ensuring that nutrients are applied in an agronomical manner in such a way as to make sure they stay attached to soil and used by the plant and out of surface and ground water.

5. Precision manure/fertilizer application – (how to better supply/position nutrients to get the best crop performance with the least environmental impact).

6. Reducing nitrates levels in ground water.
7. Understanding how to properly mix and incorporate manure with the soil to allow bacteria to be neutralized and prevent from entering surface or ground water.

8. Understanding of how land drainage can be designed and/or managed to control sedimentation.

Air quality research conducted which will lead to:
9. Knowing optimal in-barn and pen levels for production, welfare and health. This includes, but is not restricted to:
   - excess ammonia
   - temperature
   - relative humidity
   - draughts
   - dust
   - carbon monoxide
   - hydrogen sulphide
   - methane

10. Cause of foaming manure.

11. Improved barn designs for optimal air quality for animals and humans.

**Reproduction**
Conduct research that will lead to:

1. Measurable benefits in Reproduction and Herd Breeding Management techniques and technologies to the swine herd.

2. Identification of genetic markers to improve disease resistance and improve the health status of swine.

3. Improvement in genomic and reproductive management techniques to improve hog productivity and producer profitability.
Economics

The measure of success in this priority would be to manage the production economics in such a manner to achieve competitiveness in the North American Market in the short term, and globally in the long term. Through investment it is important to identify how to reduce and prioritize costs of production and increase efficiencies to enhance competitiveness and quality. Research in this area will invest in market intelligence and engage the value chain partners to cultivate value added markets.

Outcomes

Competitiveness and Business Sustainability

Conduct research that will lead to:

1. Development of a model for gathering and sharing market data that:
   - allows comparison and contrast production and processing costs locally and within global markets and
   - enables an assessment of competitive advantages and market opportunities for Ontario pork producers and value chain partners and
   - highlights opportunities for cost reductions along the value chain

2. Value Chain partners (VCPs) reporting increased profits from accessing and sharing market intelligence provided through the model.

3. Value chains:
   - that are clearly identified
   - that are formally recognized by the partners which may including government
   - partnerships that develop ways in which they can enhance profits by working together more effectively

4. Systems that:
   - ensure opportunities with potential to provide future industry benefits are not limited by current knowledge or thinking and,
   - enable producers and processors to react quickly and cost effectively to emerging market trends

5. VCP’s accessing new markets and/or capturing more value from the markets by using a collaboratively and collectively developed framework for gathering and sharing market data and information.

6. VCP’s report increased profits from accessing and sharing market intelligence provided through the framework.

7. Identify pork quality attributes to maintain and expand market share in both the domestic and foreign market places.
Societal Trends and Perceptions

It is important for Ontario Pork to monitor social perceptions and trends. Research is required that will demonstrate the priority of addressing sound science based management practices throughout the value chain, which will gain the trust in our social contract at a sustainable cost. The goal is for the Ontario pork value chain to receive very positive public recognition and cultivates trust by indentifying and addressing consumer perception and welfare concerns. Expand our customer base within the value chain and improve our return on investment realizing consumer wants and needs is critical.

Outcomes

Consumer Perceptions
Research conducted that will lead to:

1. Ontario Producers and Processors having timely knowledge of current and emerging consumer trends which could include but not limited to:
   - changes to accepted management
   - handling
   - transport practices

2. Method to accurately measure the financial impact (individual producer and industry wide), of making changes to common industry practices that may be required as a result of public pressure.

3. Factors that predict key market drivers being identified and programs and systems that accurately anticipate market changes being developed.

4. Translation of current and future pork consumption trends into but not limited the following area:
   - production criteria
   - pork traits and pork qualities

Welfare
Research conducted that will lead to:

1. Resolving the most important gaps in scientific knowledge related the swine welfare. These gaps include but are not restricted to:
   - pain control – analgesics, anti-inflammatories, anesthetics – products are available to producers
   - evidence pigs are not suffering
   - inventory of potential concerns
   - housing systems

2. A metric or metrics for measuring and benchmarking animal welfare used by producers.
**Innovation**
Specifically to the areas of Health Benefits, Products and Process Development is important to gain intelligence of which new or novel approaches that warrant investment. Innovation has been recognized as being a significant and integral element within the previous research areas. Innovation is considered as having the potential to provide future industry benefits to pork producers in any area across the pork value chain not limited by current knowledge or thinking.

**Outcomes**

**Health Benefits and other attributes of pork**
Research conducted that will lead to:

1. Development of a system for monitoring health trends including the impact of new/emerging health trends on pork production and marketing.

**Product and Process Development**
Research conducted that will lead to:

1. Expanding out-sourced product development for pork product offerings to consumers including but not limited to:
   - novel pork products
   - pork product applications
   With the goal of increased returns along the value chain

2. Information and logistics systems that enable producers and processors to react quickly and cost effectively to emerging market demands.
Conclusion

The outcomes and priorities areas presented in this document have been created with overarching success and investment statements by which all proposed research can be measured. This document will provide researchers and the research community with clear direction on the research criteria and requirements, and necessitate the targeting of their research. The end goal will be accomplished through collaboration with stakeholders throughout the swine industry; involving academic and research facilities, regional, nationally and internationally, for the benefit of Ontario Pork producers.
Appendix A - Non Research Outcomes

Other outcomes were identified throughout these processes that do not require research to address. It is worth noting them for consideration and evaluation within the Ontario Pork Strategic Plan:

- A report is completed and circulated that highlights the future infrastructure needs of the hog (or all of agriculture) industry in Ontario. Because deteriorating rural infrastructure is an important issue for the entire agricultural sector in Ontario, the report should be jointly funded and commissioned by a number of organizations or perhaps OFA.

- Industry infrastructure needs to be reviewed with a focus on barns (loss of productivity due to lack of investment)

- Ontario Pork and the both Provincial and Federal policy makers have developed a participatory mechanism to assess the need for and draft regulations as needed.

- The regulators do not commence developing regulations without first having reached agreement on the need for regulation with Ontario Pork

- A rural infrastructure needs assessment including costs is completed and the results presented to Ontario Pork (this is an outcome to be directed to LRIC)

- Succession planning primarily at the University of Guelph in the area of Nutrition and Animal Health. Ensuring that programs have longevity and are not impacted by researcher retirement or employment changes. Note: This issue is not isolated to these areas related to Swine Research but is an inherent agriculture issue with the University of Guelph. There have been preliminary discussions with other Ontario Livestock organizations and the groundwork established for the Livestock Research Innovation Corporation to collaborate and take the lead on resolving this issue with the University of Guelph.

- Identify Ontario pork products in the global market (let’s brand it)

- Enhanced engagement of academia in the Ontario Pork Research Committee

- An important method to direct research is to influence research capacity (people and facilities) so efforts to influence appointments are valuable

- Promotion and encourage participation in existing benchmarking initiatives (pigchamps, agristats)
• Transfer of accurate science and facts to the consumers regarding the swine industry