

## Theme 1. Layer Welfare

**Theme Outcome:** Decisions, management guidelines and legislation are based on scientific evidence and as a result positive bird care practices are understood, accepted being utilized by 100% of Ontario egg producers.

**Theme Objective:** By 2020 critics of the way in which we farm are unable to find any cause to censure poultry welfare practices in Ontario layer production.

### Potential Areas of Investigation:

- 1.1 Work to resolve issues with newly developed and recently adopted housing systems
- 1.2 Improve housing systems - Investigate layer housing systems designed for Ontario conditions that provide a healthy environment for layers and meet or exceed accepted welfare guidelines
- 1.3 Reproduction as it relates to welfare: Investigate mechanisms to identify gender of fertile eggs on day of lay.

## Theme 2. Product Quality (Defined as fitness for use)

**Theme Outcome:** Eggs producers in Ontario confidently claiming that they are meeting the many and varied quality requirements of the end users.

**Theme Objective:** Consumer satisfaction with eggs and egg products produced in Ontario, as measured by survey, is increasing year on year.

The potential areas of investigation section has been separated into two recognizing pre-consumer quality areas for research and those related to consumer experience.

### Potential Areas of Investigation - Egg Quality:

- 2.1 Investigate technologies that will prolong shelf life
- 2.2 Use genetics and/or nutrition to develop technologies that improve exterior (shell & membrane) and interior qualities (physical, functional and nutritional qualities of albumen and yolk).
- 2.3 Use genetics/genomics to develop a bird with extended productive life without compromising egg quality towards end of lay.

### \*Egg Quality – specific project.

Develop research on the impact of feed inputs and breed selection on internal egg quality, particularly egg white.

Project should be completed within two years.

### Potential Areas of Investigation - Consumer Experience:

- 2.4 Develop more definitive methods of assessing consumers' perception and experience of quality.
- 2.5 Research to indisputably establish the nutritional elements in eggs that lead to better health outcomes for consumers
- 2.6 Demonstrate that the nutritional attributes of value-added eggs are no different to those of non-value added eggs.
- 2.7 Elucidate the potential health benefit of eggs in mitigating the impact of diseases such as arthritis, cancer and Alzheimer's

### **Theme 3. Understanding the Market**

**Theme Outcome:** Egg industry is predicting future market trends with >90% accuracy.

**Theme Objective:** The Ontario egg industry is developing profitable products concurrently or in anticipation of with emerging trends.

#### **Potential Areas of Investigation:**

- 3.1 Develop more precise tools (for example customizing aggregate market demand curve analysis) for predicting future consumer trends
- 3.2 Develop tools to provide more accurate analysis of current and future market needs and requirements
- 3.3 Research to clearly differentiate between the production and market economics and social impacts of niche vs. mainstream markets (see also Theme 5. Economics)

### **Theme 4. Food Safety**

**Theme Outcome:** The egg production and processing food safety system in Ontario is recognized as best in class, a national leader.

**Theme Objective:** An (ISO 22000 certified) internationally recognized transparent, auditable, credible food safety system that assures our customers and consumers of the safety of Ontario produced eggs and egg products.

#### **Potential Areas of Investigation:**

- 4.1 Develop a program to reduce food safety related non conformances by 5% (the OFFSAP Hazard Analysis Critical Control Point (HACCP) system currently in place being the benchmark)
- 4.2 Investigate the benefits of International Standards Organization (ISO 22000) certification for a food safety system, as opposed to developing a comprehensive system of food safety audits that are practical, realistic and transparent

#### **\*Food Safety – Specific project**

Develop and initiate a program for third-party audits relating to food safety. Evaluation would be on a mark out of 100 in relation to Hazard Analysis and Critical Control Point (HACCP). All producers should be well positioned to respond to these audits which should be completed by 2014.

### **Theme 5. Economics**

**Theme Outcome:** The egg industry in Ontario is attracting business investment and providing opportunities for new entrants with returns that adequately compensate producers.

**Theme Objective:** To ensure that producers understand the economics of the industry and are using the information to their financial advantage when making business decisions.

#### **Potential Areas of Investigation:**

- 5.1 Develop algorithms to ensure that the cost of production (COP) formula reflects the variety of new and niche egg product offerings to ensure that farmers are adequately compensated for specialty egg production
- 5.2 Understand and benchmark the cost of producing specialty eggs.
- 5.3 Accurately cost egg production from the new production systems and benchmark against traditional system COP.

### **Theme 6. Production Systems**

**Theme Outcome:** Cost effective, welfare 'endorsed' housing systems

**Theme Objective:** To design and develop an optimal housing and management system for Ontario egg production.

**Potential Areas of Investigation:**

- 6.1 Research production systems in similar (geographical and climatological) regions of the world and develop a layer hen housing design specifically for Ontario conditions
- 6.2 Create a management system, taking into account all inputs and outputs from a layer system that best meets the needs of the Ontario egg production system.
- 6.3 Create a facility in which commercial trials of new and evolving production systems can be undertaken.
- 6.4 Create a systematic approach to investigating new production initiatives under commercial conditions to reduce risk to farmers subsequently implementing such systems.

**Theme 7. Nutrition**

**Theme Outcome:** Poultry nutrition is being used creatively as a management tool as well as a source of feed.

**Theme Objective:** To explore the potential of nutritional management to mitigate behavioural and environmental issues.

**Potential Areas of Investigation:**

- 7.1 Examine the relationship between diet and behaviour in laying hens
- 7.2 Understand how managing layer rations can successfully reduce ammonia levels in barns to:
  - Mitigate emissions from poultry barns,
  - Improve egg quality,
  - Positively impact welfare of poultry and personnel working in the area and
  - Improve productivity.
- 7.3 Using feed formulations improve feed efficiency 10% over the next 5 years.

**\*Nutrition – Specific Project**

Initiate research to evaluate feed relating to hen behaviour to determine the degree of feather pecking with different rations. Complete within two-years.

**Theme 8. Human Resource Needs**

**Theme Outcome:** The Ontario Egg Industry is the agricultural career of choice

**Theme Objective:** An optimal number of appropriately skilled people available for all positions in the egg industry supply chain

**Potential Areas of Investigation:**

- 8.1 Develop producer employer training programs to enable producers to get value from and give value to employees.
- 8.2 Identify and develop specific training programs for industry service roles which will bring efficiencies and profitability to the sector.

**Theme 9. Genetics**

**Theme Outcome:** Industry is utilizing emerging gene technologies for management and productivity gains

**Theme Objective:** Producers are able to manage the new genetics as they are developed by the suppliers.

**Potential Areas of Investigation:**

- 9.1 Productivity and value
  - Extend the life of the bird and produce higher-quality eggs at the end of the cycle
  - Investigate the potential to develop a commercially acceptable hen that will lay more than one egg per day
  - Develop an egg with superior interior quality and the nutrient enhanced nutrient value to meet market needs
  - Utilize genomics to select lines with improved shell quality

## 9.2 Health and welfare

- Develop birds with improved behaviour that don't require beak trimming
- Work to select a bird that is better adapted to new housing systems

## Theme 10. Environment

**Theme Outcome:** A measurable reduction in the environmental footprint of the egg industry in Ontario.

**Theme Objective:** To reduce the environmental impact of egg production in Ontario

### Potential Areas of Investigation:

10.1 Research to elucidate those areas where management strategies can be introduced into the Ontario egg industry to reduce carbon footprint on a year on year basis.

10.2 Identify historical 'bench-markable' parameters. Benchmark current productivity against historical results and develop targets for reductions in environmental impact i.e. using 50% less land for the same production.

10.3 Understand water use in the industry and undertake research into why it is used the way it is and how it can be more efficiently utilized.

10.4 develop mechanisms to improve water quality in and around layer farms - less phosphorus and nitrogen released to the water system.

## Theme 11. Poultry Health

**Theme Outcome:** A more robust bird and improved management and housing systems has decreased industry reliance on veterinary medical intervention.

**Theme Objective:** Poultry health is maintained throughout the production cycle with measurably reduced use of medical intervention.



### Potential Areas of Investigation:

11.1 Research on different housing systems to find those that are optimal for hens' health

11.2 Research to identify and develop new, effective vaccines

11.3 Develop "Flock Health Systems" that keep birds healthy over entire production cycle.