An Overview of Ontario’s Agri-Food Research and Innovation Direction

Mike Toombs, Director, Research and Innovation Branch Presentation to: Poultry Research Infrastructure Workshop November 25, 2015
Ontario’s approach to supporting poultry research starts with a recap of the province’s:
- network of agri-food research stations and the broader Infrastructure strategy;
- agri-food research programs and engagement of industry partners; and
- investments in poultry research.

**Arkell Poultry Research Station:**
- 5 individual barns: hatchery, brooder, adult, special studies, turkey
- Processing plant for further processing of broilers, roasters, spent fowl, turkeys
- Approximate capacity: 10,000 birds
- Part of ARIO’s network of 17 agri-food research facilities
ARIO agency: overview

ARIO
An agency of OMAFRA responsible for:

Advice
Strategic advice to the Minister on agri-food research

Infrastructure
Modernizing the province’s agri-food research infrastructure

Oversight
Managerial oversight of open, competitive research programs and 17 research properties

Promotion
Promoting the Ontario agri-food research system

Ontario’s Agri-food Research Network

[Map of Ontario showing locations of research properties]

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[Map of Ontario showing locations of research properties]
ARIO Infrastructure Strategy: background

• Properties transferred to ARIO from within broader government portfolio
• Review of infrastructure (2007-08) led to multi-year Infrastructure Strategy:
  – move towards a system that is operationally efficient, encourages third-party investment and collaboration, and aligns with shared industry and government priorities
  – move away from a system with aging infrastructure, expensive maintenance and replacement costs
  – Two key thrusts Reinvestment and Realignment

Current objectives of the strategy:
• Deliver on Jobs and Growth (“Building Ontario Up”): “Investing in People”; “Investing in Infrastructure”; “Helping Business Succeed”
• Leverage stakeholder contributions and investments
• Move results of research and innovation up the value-chain
• Maintain industry and commodity connections, link research to on-farm impacts via KTT
• Coordinate research across multiple disciplines
• Focus research of provincial importance and sector benefits with broad application and scope – not specific to any one region, with the exception of field crops
• Integrate provincial field crops research: maintain core locations to recognize regional soil/ climate
ARIO Infrastructure Strategy: overview

- **Reinvestment**: targeted towards development of an integrated network of up to five industry-partnered centres; industry to fund 20% of capital costs

- Each centre has been structured to meet the needs of the respective sector
  - Vineland Research and Innovation Centre (*horticulture*)
  - Livestock Research and Innovation Centre at Elora (*multi-species livestock, crops*)
  - Enhanced Field Crops Research System; Bioeconomy; Food for Health
  - Turfgrass (main UofG campus, extensive fields at Elora)

- **Realignment**: to achieve efficiencies through consolidation, co-locations, repurposing and asset disposal to reduce overall footprint

- Modernizing Ontario’s agri-food infrastructure and research platforms will:
  - **drive innovation**, creating new value-added products with economic and social benefits
  - **foster industry participation** and leadership where industry sets research and innovation priorities, working across the value chain
  - **maximizes return-on-investment (efficiencies; smaller footprint)** with state-of-the-art research infrastructure to support scientific excellence, knowledge sharing, industry adoption
**Reinvestment: new centres**

**Vineland Research and Innovation Centre**

- Construction of new greenhouse facility nearing completion (Spring 2016)
- Partially funded (approx. $10M) from provincial capital funds (2008)
- Federal and provincial partnership via Growing Forward (GF) and GF2
  - supports horticultural research, innovation, research coordination, scientific, business/organizational capacity
- Industry buy-in for new greenhouse
  - capital commitments Niagara region, Meridian Credit Union, Farm Credit Canada

**Livestock Research and Innovation Centre**

- $25M dairy research facility: (May 2015)
  - $20M prov. capital investment; $5M from DFO ($3M from AAFC as part of DFO contributions)
- $300k/yr GF2 funding: Livestock Research Innovation Corp. to coordinate and establish livestock research priorities with industry
- Additional phases at LRIC:
  - redeveloping beef research facilities
  - consolidate livestock research from Arkell, turf and environmental research from Guelph
Enhanced field crops research system

• Concept for integrated provincial system and governance model developed with industry; confirmed support with many other field crop groups
• Land-based integrated system focused on sustainable crop production
• Regional presence to reflect different soil and climate types
• Coordinated approach that provides benefits of modernization and reinvestment; helps to maintain funding to research vs. maintaining infrastructure

Bioeconomy

• Ongoing provincial research investments
• Looking to enhance coordination and co-investment between government, industry and academia
• May be further opportunities to leverage existing investments; potential opportunity to invest in new initiatives

Food for Health

• Emphasis towards food, health (but not health claims), wellness (e.g. functional foods) and food processing
• Explore opportunities with Food and Beverage Ontario and existing institutions, co-investing on specific priorities to help boost innovation in private sector
OMAFRA research programs: framework

- Supporting research for ready receptors in policy, programs or the marketplace

Research Themes
- Agricultural and Rural Policy
- Bioeconomy-Industrial Uses
- Emergency Management
- Environmental Sustainability
- Food for Health
- Products and Value Chains
- Production Systems (Plants and Animals)
Engagement of our external partners

Involvement of partners and representation across sector and value-chain

**Priority Setting (ORAN)**
- Stakeholder input on research needs
- VRIC: coordinates input from horticulture sector
- LRIC: coordinates input from livestock sector
- Expert panels and theme advisory groups

**Research Program Admin.**
- Priorities identified by TAG approved by theme Director Champion & ADM
- Priorities inform UofG Partnership research program & open programs
- Review committees and external peer reviewer involvement

**Research Projects**
- Funding award recipients
- Collaborators/ research team members
- Co-founders
- Access to research infrastructure
- Target audiences for KTT
- Technical transfer support

**Poultry Sector Participation**
- **TAG meetings:** Tim Nelson (LRIC)
- **Review Committees:**
  - Tim Nelson (LRIC)
- **Peer reviewer:** Academia across/ subject experts across North America
- **Collaborators:** L.H. Gray and Son, Maple Leaf Foods (Poultry Division), Canadian Poultry Research Council, Poultry Industry Council, LRIC
- **Co-founders:** Over $2M from poultry industry organizations
Research priority setting process: OMAFRA Research Advisory Network (ORAN)

- Annual collaborative process with university, industry, other governments through ORAN

- As part of ORAN, Theme Advisory Groups (TAGs) meet annually to evaluate progress in research and advise on priorities

- Membership:
  - *Standing members*: Director Champion (OMAFRA), Research Program Director (UofG), Theme Research Analysts (RIB, OMAFRA), Federal representative (AAFC)
  - *Non-permanent/ invited members*: OMAFRA technical, policy and program area staff/managers, other external stakeholders as determined by Director Champion

- Specific to poultry, external stakeholders have participated in Animal Production Systems and Emergency Management TAG meetings:
  - Selection based on cross-sector knowledge and expertise related to livestock production

- Some advantages of ORAN
  - Defined and flexible approach addressing needs of all research themes
  - Provides long term, strategic guidance for research program development, and identification of short-term/emerging research issues
  - Allows participation from a board array of stakeholders and institutions
Poultry related research priorities

- Poultry research addressed primarily via Production Systems (animals) and Emergency Management. Other themes and respective priorities applicable to poultry identified below

<table>
<thead>
<tr>
<th>Theme</th>
<th>Research Priorities (most applicable to poultry)</th>
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<tbody>
<tr>
<td>Agricultural and Rural Policy</td>
<td>• Economic growth (Local food)</td>
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<td>• Stewardship (Sustainable agriculture/ food system, climate change mitigation/ adaptation)</td>
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<td></td>
<td>• Sustainable rural communities/economies</td>
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<td>• Changing rural economies</td>
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<td>Bioeconomy</td>
<td>• Feedstock related research</td>
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<td>• Processing technologies research</td>
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<td></td>
<td>• Bioeconomy – Industrial use policy</td>
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<td></td>
<td>• Bioproduct development</td>
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<td>Emergency Management</td>
<td>• Economic analysis</td>
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<td></td>
<td>• Threat identification and prioritization</td>
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<td>• Prevention and control of disease</td>
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<td>• Detection and surveillance</td>
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<td>• Pathway analysis</td>
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<td>Environmental Sustainability</td>
<td>• Drivers/ stressors influencing agri-food system interactions with the natural environment</td>
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<td>• Managing effects of agri-food system BMPs</td>
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<td>• Measuring performance of agri-food system mngt’ practices</td>
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<tr>
<td>Food for Health</td>
<td>• Policy, Regulations, Investment and the Economy</td>
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<td>• Consumers and Healthy choices</td>
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<td>Products and Value Chains</td>
<td>• Product development and assessment</td>
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<td>• Value chain development and assessment</td>
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<td>Production Systems (Plants)</td>
<td>• Product diversification (field crops)</td>
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<td>• Production efficiency (field crops)</td>
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<td>• Plant protection (field crops)</td>
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<td>• Product quality improvement (field crops)</td>
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<td>• Environmental/ Ecosystem Impact</td>
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<td>• Genetic technologies</td>
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<td>Production Systems (Animals)</td>
<td>• Animal Health</td>
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<td>• Animal Welfare</td>
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Vision: World renowned model of government-university collaboration that is instrumental to success in Ontario’s agriculture, food and bioproduct sectors, to the vibrancy of its rural communities, and to the health and well-being of the province, its environment and citizens.

Programming:
1. Research Program ($50M/year):
   • Research projects – 7 themes
   • KTT Funding Program
   • HQP Scholarship Program
   • Gryphons LAAIR
   • Faculty, scientific staff
   • Research station operation

2. Animal Health Laboratory
3. Agri-Food Laboratory
4. Veterinary Clinical Education

Funded poultry projects:
• Since 2009, 29 (tier 1 and 2) poultry related projects funded through UofG ($2.5 M).
Recent examples:
  − Modelling Ontario’s Chicken Industry for Policy Analysis (Prof. Alan Ker)
  − Enhancing immunity to avian influenza viruses (Prof. Shayan Sharif)
  − Best management practices for control of nuisance files in poultry production (Prof. Simon Lachance)
Vision: Supports a science-based, farm-to-fork approach to food safety in Ontario.

Programming:
- $0.5M annual budget
- Since 2001, over $9M invested in 107 projects in the areas of development and validation of detection methods, risk assessment, risk management
- 2005 to 2015: 10 projects funded related to poultry (approx. 750K)
- 2015/16 call: 4/10 full proposals received focus on improving food safety at the production level (poultry focused).

Funded poultry projects:
- Antimicrobial resistance, beta-lactamases and molecular epidemiology: an investigation into E. coli from chickens slaughtered in provincially inspected facilities in Ontario (Prof. Joseph Rubin)
- Subunit vaccines directed against Salmonella Enteritidis in poultry (Prof. Wolfgang Koester)
- Assessment and mitigation of contamination risks: critical knowledge to reduce disease and increase biosecurity compliance (Prof. Keith Robbins)
Vision: Stimulate sustainable growth and competitiveness of Ontario’s agri-food sector, agri-businesses and rural communities. The Program aims to:

- Expand the knowledge base of Ontario’s agri-food and rural sectors to address challenges and market opportunities
- Support sustainable production for the future
- Support new and alternative products and technologies

Programming

- $1.35M annual budget
- Since 1999, over $28 M invested in > 300 projects in diverse topics and institutions
- Flexible research priorities that shift annually (e.g. away from traditional research areas such as production systems) to address new priorities/other urgent needs
- 2015 call: LOIs received for priority area of antimicrobial resistance. Proposed projects to explore reduced use of antibiotics in livestock production.
- 1 project funded related to poultry (2010)

Funded poultry projects:
- Dry fermentation of energy crops and poultry manure for enhanced biogas production (Prof. Anna Crolla)
Poultry research trends and opportunities

17 Tier 1 Poultry Projects Funded

Tier 2 poultry projects funded: animal health (6), animal welfare (4), production efficiencies (1), Product quality improvement (1)