

The Agricultural Research Institute of Ontario



ANNUAL REPORT 2022-23

Image source: the University of Guelph

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ABOUT ARIO

The Agricultural Research Institute of Ontario (ARIO) is classified under the Agencies and Appointments Directive as a Board Governed Operational Service Agency reporting to the Minister of Agriculture, Food and Rural Affairs. ARIO was created in 1962 by the *Agricultural Research Institute of Ontario Act (ARIO Act)*. Through the *ARIO Act*, ARIO seeks to enable and ensure Ontario maintains its competitive advantage in agri-food research and innovation and concentrates ARIO's efforts in four ways:

1. Providing strategic advice to the Minister on agri-food research and innovation.
2. Implementing the ARIO Infrastructure Strategy to modernize the province's agri-food research and innovation physical and virtual infrastructure (i.e., data, digital equipment, virtual platforms).
3. Promoting the Ontario agri-food research and innovation system.
4. Provide oversight of open research programs, and the 14 ARIO-owned research centres.

Vision

Enabling high-impact and transformational research for the agri-food sector

Mission

ARIO is a trusted, authoritative, credible body to the Minister on:

- Research and infrastructure programs and strategic relationships.
- Optimizing and leveraging the research infrastructure owned by ARIO.
- Driving research into action, evaluating, and communicating the value of research.
- Fostering, through stimulation of research and innovation, a prosperous, sustainable, and resilient agri-food system.

Strategic Pillars

- **Infrastructure:** Ontario's research and innovation infrastructure and assets are leveraged to maximize benefits for the agri-food sector.
- **Advice:** Provide bold, informed strategic advice to the Minister on transformative, high-impact agri-food research and innovation.
- **Strategic Relationships:** Establish strategic relationships that enhance the research ecosystem and align with the priorities and objectives of the Ministry and sector.
- **Promote:** Communicate the value of Ontario's agri-food research, including opportunities and successes in research and innovation.



2022-23: A YEAR IN REVIEW

A MESSAGE FROM THE CHAIR, DR. LORNE HEPWORTH

I am pleased to share the 59th Annual Report of the Agricultural Research Institute of Ontario (ARIO). ARIO continues to deliver on its mandate and provide strategic advice to the Minister of Agriculture, Food and Rural Affairs to drive innovative research forward for a resilient agri-food system

The province has been impacted by global challenges and elevated uncertainty that presents risks and opportunities for a resilient and stable agri-food sector. Amidst labour shortages, outdated supply chain infrastructure, declining food processing capacity, climate change, global emergencies, and fiscal and economic pressures, the ARIO will be key to advancing Ontario's competitive advantage through state-of-the-art agri-food research platforms and enabling high-impact and transformational research and innovation for today and into the future.

The agency is entering into a pivotal time. The province launched Grow Ontario, its plan to strengthen the agri-food sector of which research and innovation are critical for success. Also, the proposed *ARIO Act* modernization, the new Ontario Agri-Food Innovation Alliance Agreement, the development of strategic relationships and enabling increased research and innovation demonstrates ARIO's expanded commitments in the agri-food research and innovation sphere.

ARIO's new and ambitious 10-year strategic plan sets out the path for the agency to deliver and implement on its elevated role to enable modern and relevant agri-food research and innovation for Ontario in collaboration with industry, academia, and the private sector.

In the fiscal year 2022-23, three ARIO member meetings were held. During these meetings ARIO members provided leadership and strategic advice on key strategies, policy, research priorities and projects which include, the ARIO Strategic Plan 2023-32, ARIO Infrastructure Strategy, OMAFRA Research Agenda, ARIO Innovative Breeding Research Program,

Act Modernization, ARIO Strategic Relationships, and the Research System Project.

The agency's co-related strategies and activities work to advance Ontario's efforts to promote a competitive and resilient agri-food sector and to provide economic growth, sustainability, and opportunities in the province and rural communities.

ARIO research centres are located across Ontario on aboriginal land that has been inhabited by Indigenous peoples from the beginning. In the last fiscal year, the agency has made strides to build, strengthen, and advance Indigenization, equity, diversity, and inclusion (IEDI) values and priorities. In 2022-23, ARIO made a commitment to advance the agency's knowledge capacity, historical awareness and to strengthen meaningful and respectful relations with Indigenous Peoples through continuous learning and a discussion series on IEDI and government-Indigenous relations at ARIO member meetings.

Looking ahead to the 2023-24 fiscal year, the agency will begin to focus on implementing the agency's strategic plan. At the core of ARIO's plan is the modernization of core research capacity and platforms in several key sectors ranging from livestock and field crops to greenhouse, horticulture, and aquaculture.

The agency continues to be excited about its vital role in maintaining and revitalizing the province's network of 14 research stations to enable agri-food research and innovation priorities for a prosperous, competitive, and resilient agri-food sector.

Sincerely,



Dr. Lorne Hepworth
Chair, Agricultural Research Institute of Ontario

ARIO GOVERNANCE 2022-23

Director of Research, Greg Wootton

The Director of Research is appointed by the Minister under the *ARIO Act* and has responsibilities related to administration of ARIO's business affairs. The Director of Research is the Assistant Deputy Minister of Research and Corporate Services Division in the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

Chair, Dr. Lorne Hepworth

The Chair, acting on behalf of the Members, is accountable to the Director of Research for the Agency's performance in fulfilling its mandate, and for carrying out the roles and responsibilities assigned to the Members and Chair by the *ARIO Act*, the Memorandum of Understanding, and applicable Treasury Board /Management Board of Cabinet and Applicable Government Directives.

ARIO Secretariat

ARIO secretariat is accountable to the Director of Research for fulfilling the operational and administrative requirements of the Agency, and to the Ministry Liaison in supporting the ministry's requirements of the Agency. The ARIO secretariat is comprised of OMAFRA employees within the Research and Innovation Branch including:

- Jen Liptrot, Director, Research, and Innovation Branch
- Kelli Rice, Manager, Research Accountability, Management, and Administration Unit
- Adam Meyer, Manager, Research and Knowledge Management Unit

Comptroller, Sue Mihelchic

The Comptroller is responsible to the ARIO Director of Research. The Comptroller is responsible for supervising the business affairs of the agency.

ARIO Members

ARIO membership can be comprised of up to 15 members who reflect the broad-based nature of Ontario's agri-food, agri-tech, and innovation industry, and research development. ARIO members are appointed by the Minister. The ARIO Chair recommends candidates for appointment to the ARIO to ensure a strong mix of skills, experience, and perspectives. Members are appointed for three-year terms and may be reappointed.

Agriculture and Agri-Food Canada, Sérgio Paulo

The Director General from AAFC serves to contribute a federal perspective on research activities across Canada. Sérgio Paulo is the Director of Research, Development and Technology office for Harrow, London, and Ontario.

ARIO MEMBERS 2022-23

There are 11 ARIO members. One third of ARIO's memberships are scheduled to expire in the fall of 2023. To reflect the diversity of Ontario and expertise across the agri-food value chain, the ARIO identified a natural opportunity to refresh, expand, and diversify ARIO's members. ARIO will take steps to canvas for new member appointments in 2023-24.

Dr. Lorne Hepworth



Rose-Marie Gage



Jennifer Doelman



Denise Hockaday



David Jenkins



Nevin McDougall



David McInnes



Dr. Gordon Surgeoner



Evert Vedhuizen



Ken Wall



Dr. Youbin Zheng



2022-23 ARIO Members	Appointment Date	Expiry Date	Per Diem Remuneration	Total Remuneration 2022-23
Dr. Lorne Hepworth (Chair)	Jan. 18, 2019	Jan. 25, 2025	\$221	\$8,508.50
Ms. Rose Marie Gage (Vice-Chair)	Mar. 9, 2018	Mar. 8, 2024	\$184	\$1,380
Ms. Jennifer Doelman	Mar. 8, 2021	Mar. 7, 2024	\$168	\$504
Denise Hockaday	July 8, 2021	July 7, 2024	\$168	\$1,596
Mr. David Jenkins	Nov. 30, 2020	Nov. 29, 2023	\$168	\$1,512
Mr. Nevin McDougall	Nov. 30, 2020	Nov. 29, 2023	\$168	\$1,344
Mr. David McInnes	Nov. 30, 2020	Nov. 29, 2023	\$168	\$1,680
Dr. Gordon Surgeoner	Jun. 2, 2005	Mar. 12, 2025	\$168	\$252
Mr. Evert Veldhuizen	Jan. 2, 2019	Jan. 1, 2025	\$168	\$1,344
Mr. Ken Wall	Dec. 7, 2020	Dec. 6, 2023	\$168	\$0
Dr. Youbin Zheng	Jan. 21, 2021	Jan. 20, 2024	\$168	\$1,344



Annual Letter of Direction

Fall 2021

In the fall of 2021, Ontario's Minister of Agriculture, Food and Rural Affairs, the Honorable Lisa M. Thompson, issued the Annual Letter of Direction to the ARIO Chair, outlining the government's 2022-23 priorities and expectations for all agencies including priorities specific to the ARIO. The work completed by members to establish the goals, objectives, and strategic direction ensured that ARIO continued to support research and innovation in the agri-food sector and drive economic growth, jobs, and sustainability in Ontario.

As part of the government of Ontario, agencies are expected to act in the best interests of Ontarians by being efficient, effective, and providing value for money to taxpayers. This includes:

Innovation, Competitiveness, Sustainability and Expenditure Management

- Operating within your agency's financial allocations.
- Identifying and pursuing opportunities for revenue generation, innovative practices, and/or improved program sustainability.
- Complying with applicable direction related to supply chain centralization and Realty Interim Measures for Agency Office Location Criteria.
- Working with the Ministry, where appropriate, to advance the Ontario Onwards Action Plan.
- Encourage competitors to work together under a cooperative structure to help modernize the agri-food sector.

Transparency and Accountability

- Abiding by applicable government directives and policies and ensuring transparency and accountability in reporting.
- Adhering to requirements of the Agencies and Appointments Directive, and responding to audit findings, where applicable.
- Identifying appropriate skills, knowledge and experience needed to effectively support the board's role in agency governance and accountability.

Risk Management

- Developing and implementing an effective process for the identification, assessment and mitigation of risks, including planning for and responding to health and emergency situations, including, but not limited to COVID-19.
- Developing a continuity of operations plan that identifies time critical/essential services and personnel.

Data Collection

- Improving how the agency uses data in decision-making, information sharing and reporting, including by leveraging available or new data solutions to inform outcome-based reporting and improve service delivery.
- Supporting transparency and privacy requirements of data work and data sharing with the Ministry, as appropriate.

Digital Delivery and Customer Service

- Exploring and implementing digitization or digital modernization strategies for the provision of services online and continuing to meet and exceed customer service standards through transition.
- Using a variety of approaches or tools to ensure service delivery in all situations, including COVID-19.

Diversity and Inclusion

- Developing and encouraging diversity and inclusion initiatives promoting an equitable, inclusive, accessible, anti-racist and diverse workplace.
- Demonstrating leadership of an inclusive environment free of harassment.
- Adopting an inclusion engagement process to ensure all voices are heard to inform policies and decision-making.

COVID-19 Recovery

- Identifying and pursuing service delivery methods (digital or other) that have evolved since the start of COVID-19.
- Supporting the recovery efforts from COVID-19.

Priorities Specific to the ARIO:

Property Management

- Continuing to provide value for money in effectively owning and managing the Province of Ontario's agri-food research facilities and infrastructure.
- Providing advice on a long-term strategy for the province's agri-food research infrastructure and recommendations on future investments in research infrastructure within the current fiscal limitations.
- Continuing to revitalize the province's agri-food research infrastructure necessary to support innovative research and the long-term sustainability and growth of the agri-food sector by developing state of the art, integrated research infrastructure built on shared funding models and partnerships between industry and government.
- Continue the work to digitalize and harvest data from the research centres.

Strategic Advice

- Continuing to provide strategic advice to the Minister and the Ministry on current and emerging research issues and priorities that contribute to prosperous, competitive and sustainable agricultural and food sectors and rural communities in Ontario, including finding ways for private sector partners to increase research on-farm.
- Providing advice to support research that is responsive to the changing needs of the sector, especially as the province recovers from COVID-19.

- Providing strategic advice to the Minister and the Ministry on the long-term research needs that will enable the agriculture and food sectors to remain a global leader in years to come.
- Continuing to work on an implementation approach on OMAFRA's Intellectual Property Strategy as innovation and commercialization will be critical in sustaining the sector's competitive advantage.
- Assessing potential legislative or non-legislative options to ensure ARIO's legislation and governance documents reflect the current mandate of the agency in a modern context.

Promotion and Advocacy of Ontario's Agri-Food and Agri-Products Research and Innovation System

- Advancing OMAFRA's agriculture research and commercialization system through driving outreach opportunities, strengthening relationships between ARIO and industry stakeholders to broaden awareness, nurture support for research and innovation priorities and the research infrastructure renewal needed to maintain and enhance Ontario's local, national and global competitiveness.
- Continuing to drive the value and return on investment for ARIO infrastructure and the innovative research system it supports.
- Enhance work to ensure that research results are communicated to the sector.

Efficient and Effective Administration

- Continuing to source secretariat services from OMAFRA that provide effective and efficient administration of ministry open research programs, timely and accurate financial operations and reporting, and all aspects of property management and capital revitalization.
- Providing recommendations on new agency members as necessary to support robust strategic advice and the delivery of the ARIO mandate.
- Continuing to meet all Agencies and Appointments Directive provisions and requirements.

CHAIR AND DIRECTOR OF RESEARCH'S REPORT

We are pleased to provide an update and highlights on the agency's key pieces of work from the 2022-23 fiscal year. ARIO's objectives and strategic direction continue to fulfill the expectations as set out in the Annual Letter of Direction and align with the government of Ontario's priorities to enable agri-food research and innovation in Ontario.

A. 2023-28 Ontario Agri-Food Innovation Alliance Agreement

The "Ontario Agri-Food Innovation Alliance Agreement" (i.e., Agreement) is a tripartite Agreement between OMAFRA, ARIO and the University of Guelph (U of G) to advance research and innovation that contributes to the success of the province's agri-food sector and promotes rural economic development. ARIO's network of agri-food research and innovation platforms across the province plays a keystone role to enable the delivery of objectives in the new Agreement. Owned by the ARIO, the research stations referenced under the Agreement are managed and operated by the U of G to bring farm-tested innovations for a secure, sustainable, and resilient agri-food sector for the province of Ontario.

From 2022-23, the Ministry and the U of G worked collaboratively to successfully negotiate the renewal for an additional five-year Agreement that builds on the success of the previous Agreement and continue to strengthen the long-standing and unique relationship that has supported the agri-food sector for over 25 years.

The new 2023-2028 Agreement is a \$343 million dollar investment over five years to support agri-food research and innovation. This funding will be used for research focusing on food safety and animal welfare and support the development of a highly skilled workforce that will lead to more economic growth opportunities for our sector.

The new Agreement supports fundamental programming to help farmers and the broader agri-food sector build resiliency by:

- Managing threats to food production and food security such as African swine fever and avian influenza.
- Advancing science, research, innovation and commercialization of new products, processes and practices that support the long-term success of the agri-food system.
- Building a future skilled workforce and develop talent that will advance Ontario's agri-food sector, including veterinary medicine.
- Maintaining and maximizing the use of the network of revitalized research centres owned by the Government of Ontario through its agency, the ARIO, and managed by the U of G through the Ontario Agri-Food Innovation Alliance.



2023-28 Ontario Agri-Food Innovation Alliance Agreement signing and announcement. March 15, 2023, Elora, Ontario. In photo: representatives from U of G, OMAFRA, ARIO and industry.

A.1 Alliance Agreement Renewal: Highlights

Alliance programming reflects the diverse nature of the agri-food sector and will continue to build on the many demonstrated positive results realized to date. The following are highlights from the new Alliance Agreement and key aspects that enable and in alignment with ARIO's Strategic Plan.

- Increased Government of Ontario and ARIO visibility at research centres through communications and signage.
- Provisions to develop a plan to encourage greater access to the research centres by third parties.
- Commitment to Indigenization, Equity, Diversity, and Inclusion.
- Continued management by the U of G for the majority of ARIO research centers.

A.2 ARIO Property Management

The University of Guelph (U of G) and the Vineland Research and Innovation Centre (VRIC), in addition to providing program delivery, maintain and operate ARIO-owned research centres, provide property management services, and modernize infrastructure at ARIO's research centres to address research needs under agreements with OMAFRA and ARIO. Additionally, U of G and VRIC provide oversight of the Minor Capital Program across all of ARIO's properties.

Vineland Research and Innovation Centre (VRIC)

The ARIO owned Vineland Research Station is managed by Vineland Research and Innovation Centre (VRIC) who is an independent, not-for-profit, horticultural research and innovation centre created in 2007. VRIC is led by an independent board comprised of leading industry representatives. VRIC's vision is to "be recognized as Canada's leader in horticulture research and innovation." This is

supported by VRIC's mission to "improve the economic viability, sustainability and competitiveness of horticulture in Canada." Their mission is supported through the provision of vital applied research, innovation and commercialization activities focused on the needs of Ontario's horticulture industry. The resulting value proposition to Canada and the horticultural sector is to strengthen Canadian companies by making them globally competitive through the application of Vineland supported innovation.

VRIC works across the value-chain to align horticultural research and innovation activity in Ontario and has established infrastructure and innovation capacity in five areas: Consumer, Sensory and Market Insights; Plant Variety Development; Automation; Plant Responses and the Environment; and Biological Crop Protection. For example, to support technology development and adoption in horticulture, VRIC is working with stakeholders to develop four Technology Roadmaps for subsectors such as berries, processing vegetables, asparagus, and northern agriculture.

Going forward property management services for ARIO's Vineland Research Station will be provided by VRIC.

OMAFRA, ARIO and VRIC staff will continue to frequently collaborate on research projects and industry initiatives including collaborating with staff from the Agriculture Development Branch (ADB) on specific projects related to their specialty commodities, e.g., sweet potatoes, pest management, greenhouse tomatoes, hazelnuts, tender fruit and most recently on long-cane raspberries.



The Vineland Research and Innovation Centre.

1 of 14 ARIO Research Stations.

A.3. Access to ARIO Research Infrastructure

Researchers leverage the ARIO network of research centres through the Alliance Agreement. U of G researchers are provided subsidized access to the ARIO research centres to enable a broad spectrum of research across the agri-food sector and to deliver on the province's evidence-informed research priorities.



Alliance research investments that led to new businesses in Ontario include Clean Works, a \$7M agri-food innovation company that has commercialized a novel waterless process called Clean Verification for decontaminating fresh and frozen produce, proteins, dried goods, and shipping containers.
(Image source: U of G)

Below are examples of 2021-22 provincial priority research being delivered at ARIO research stations. 2022-23 Data not yet available.

Lead Applicant	Project Title	Ministry Priority
Shayan Sharif	Development of vaccines against necrotic enteritis in chickens	Animal Health & Welfare
Amar Mohanty	Innovative solution for compostable greenhouse plant supplies	Competitive Production Systems
Wael Ahmed	Energy-efficient pumping technology for sustainable food production systems	Innovative Products & Product Improvement
Peter Sikkema	Innovative weed management strategies for control of emerging weed biotypes in dry beans - acceptable herbicide residues in beans for export markets	Plant Health & Protection

Kari Dunfield	Novel approaches for assessing biological indicators of soil health	Soil Health
Wayne Caldwell	Assessing the capacity of municipalities (counties and regions) to respond to evolving rural and agricultural issues	Strong Rural Communities
Silvia Sarapura	Understanding transitions in Ontario's potato sector - a study of key drivers to behaviour changes in the uptake of sustainable BMPs	Sustainable Production Systems

Data from U of G's 2021-22 Consolidated Annual Report. 2022-23 Data not yet available.

Research Station Capacity and Utilization¹

Livestock Research Station	Capacity (*ARD)	Research Utilization (*ARD)	Research Preparation (*ARD)	2021-22 Utilization Rate (%)
Arkell Equine Research Facility	11,680	11,315	365	100.0%
Arkell Swine Research Facility	156,950	49,212	14,600	40.7%
Ontario Aquaculture Research Centre	111,690	3,830	28,105	28.6%
Ontario Beef Research Centre – Elora	206,995	77,680	38,895	56.3%
Ontario Beef Research Centre – New Liskeard	164,250	0	27,375	16.7%
Ontario Dairy Research Centre	173,010	28,136	83,950	64.8%
Ontario Poultry Research Centre	3,923,750	1,350,334	335,800	43.0%
Ontario Sheep Research Centre	102,200	3,023	10,950	13.7%
Ponsonby General Animal Facility	100,375	17,095	21,900	38.8%
Total	4,950,900	1,540,625	561,940	44.7% (Total average)

*Data from U of G's 2021-22 Consolidated Annual Report. (*ARD = Animal Research Day). 2022-23 Data not yet available.*

¹ As noted in the 2021-22 U of G Consolidated Annual Report, the utilization rates are calculated by adding research utilization to the research preparation requirements and dividing the total by the capacity of the Research Centre. The research preparation requirement accounts for the need for crop rotation, replacement animals or cycle time in space-based animal facilities. As noted by the U of G, in general, the utilization rates for the Crops Research Centres are higher than those of the Livestock Research Centres as crop trials can better expand to utilize available research plot area by increasing replications or increasing the number of varieties being tested or evaluated for breeding or performance determination. Livestock trials, on the other hand, are more limited to the nature of the resident herd or available housing spaces or types, and therefore cannot be easily scaled to increase usage. The Livestock Research Centres had an average utilization rate of 44.7% in 2021-22, which is approximately equal to 2020-21 rate and 9% below the target of 48.9%. There were several factors that influenced Livestock Research Centre utilization rates in 2021-22 including retirement and transition of facilities and the conclusion of larger research trials.

Metric	2018/19	2019/20	2020/21	2021/22	2022/23	Target
Average Livestock Research Centre Utilization Rate	48.9%	50.5%	44.3%	44.7%		48.9%

Data from U of G's 2021-22 Consolidated Annual Report. 2022-23 Data not yet available.

Crop Research Station	Capacity (Plot Area (ha))	Research Utilization (Plot Area (ha))	Research Preparation (Plot Area (ha))	2020-21 Utilization Rate (%)
Ontario Crops Research Centre - Bradford	2.06	1.62	0.00	78.4%
Ontario Crops Research Centre - Cedar Springs	7.28	6.47	0.00	88.9%
Ontario Crops Research Centre - Elora	154.35	56.25	95.51	98.3%
Ontario Crops Research Centre - Emo	17.85	7.32	2.10	52.8%
Ontario Crops Research Centre - Huron	42.90	20.23	20.23	94.3%
Ontario Crops Research Centre - New Liskeard	51.31	14.45	11.37	50.3%
Ontario Crops Research Centre - Ridgetown	96.32	39.66	52.61	95.8%
Ontario Crops Research Centre - Simcoe	46.78	15.38	26.30	89.1%
Ontario Crops Research Centre - Winchester	40.51	23.76	12.71	90.0%
Ontario Crops Research Centre - Woodstock	58.88	17.40	27.11	75.6%
Total - Crop Stations	518.24	202.55	247.95	81.4% (Total average)

Data from U of G's 2021-22 Consolidated Annual Report. 2022-23 Data not yet available.

Metric	2018/19	2019/20	2020/21	2021/22	2022/23	Target
Average Crops Research Centre Utilization Rate	78.1%	80.7%	78.1%	81.4%		78%

Data from U of G's 2021-22 Consolidated Annual Report. 2022-23 Data not yet available.

B. ARIO Strategic Plan 2023-32

The work on ARIO's Strategic Plan 2023-2032 is largely complete as of fiscal year 2022-2023. ARIO's ambitious 10-year strategic plan will enable the agency to optimize its capacity through effective resource management and prioritization to meet agency's goals and objectives. The ARIO Strategic Plan is in alignment to deliver on the Alliance Agreement and Grow Ontario's innovation and technology goals for a secure, safe, and resilient supply chain; and maintaining Ontario's competitive advantage in today's modern agri-food innovation and research environment through the proposed *ARIO Act* modernization.

In the upcoming years, the ARIO will continue to review and identify new opportunities, priorities, and measurements to further develop the ARIO Strategic Plan and ensuring that the ARIO is working towards achieving the agency's long-term objectives. The ARIO Strategic Plan's long-term objectives focus on four pillars:

1. Infrastructure
2. Advice
3. Strategic Relationships
4. Communications

B.1. Infrastructure Pillar

ARIO's network of 14 state-of-the-art agri-food research centres are vital provincial investments and key enabler for Grow Ontario's priority to deploy and adopt new technologies to strengthen the sector and enhance the competitiveness and create new growth opportunities.



Map of ARIO's 14 agri-food research properties. (Image source: U of G)

ARIO's agri-food research Infrastructure Strategy provides a plan for the renewal and modernization of Ontario's network of 14 agri-food research stations. Implementation of the Strategy is resulting in the establishment of renewed and modernized, multi-disciplinary research and innovation platforms focused on consumer, market, and economic outcomes as well as improving the overall competitiveness and sustainability of the Ontario agri-food sector.

Benefits include the creation of new and value-added products, developing solutions to current and emerging issues, and validating new technologies, processes, and approaches to Ontario conditions.

A cornerstone of ARIO's Infrastructure Strategy involves industry engaging directly with government and academia to address the highest research priorities and needs of the Ontario agri-food sector. Modernized infrastructure enables scientific excellence, knowledge dissemination and industry adoption, all of which are necessary to the economic growth of the agri-food and agri-products sector for the province. Stable funding for research infrastructure is essential to enable world class research and innovation.

ARIO continues to make some strategic infrastructure investments. The investments are supported by industry who provides capital dollars to projects (typically 20 per cent) and is guided by two key pillars which seek to 1) renew and modernize research infrastructure, as well as 2) drive operational efficiencies across the research station portfolio through consolidations of facilities and livestock.

2022-23 Infrastructure Strategy Strategic Oversight Highlights:

ARIO Asset Management Policy and Plan

In 2022-23 the agency began the work on developing ARIO's Asset Management Policy and Plan (AMPP) to provide effective long-term oversight and management of ARIO's physical assets. The AMPP will consist of policies and principles that drive improved asset management within the ARIO. This approach aligns with broader government policy for managing provincial assets. The AMPP will enable ARIO to manage its assets optimally and sustainably, and asset systems, their associated performance, risks, and expenditures over their lifecycle for the purpose of achieving ARIO's Infrastructure Strategy (Major Capital and Minor Capital). This approach will enable the ARIO to make informed decisions on the maintenance, retrofitting and replacement of core research assets now and in the future.

2022-23 Major Capital Project Highlights:

Ontario Swine Research Centre - Elora

- In early fall 2021, the ARIO and Ontario Pork commenced construction of a new swine research centre at the Elora Research Station.
- The new centre at Elora will replace the current facilities at Arkell which were constructed in the early 1980's and are well past their useful lifecycle, costly to operate and difficult to retrofit due to age. The planned research facilities will more closely resemble the current state of industry production taking place in Ontario, leading to better applied research outcomes for the sector.
- Completion date, August 2023.



Construction in progress at the Ontario Swine Research Centre in Elora. (Image source: OMAFRA)

Ontario Poultry Research Centre- Elora

- In 2022-23 ARIO worked to develop and sign a Memorandum of Understanding with the Poultry industry boards and U of G that will help enable the planning, design, and construction of new poultry research facilities at Elora.
- ARIO has confirmed \$13.5M towards the project and confirmed from industry their 20 per cent financial contribution.
- The new centre will replace the current poultry facilities at Arkell Research Station which is past their useful lifecycle, costly to operate and maintain, do not adequately support a wide variety of research platforms supporting today's industry needs.
- Completion of the project is expected in 2026.

Minor Capital Program

The ARIO Minor Capital Program (MCP) is an ongoing multi-year program that allocates funds across the ARIO property portfolio to support significant investments in addressing maintenance, upgrades, program related systems, equipment, and building/site infrastructure. The MCP is in line with ARIO's broader Infrastructure Strategy to target development and renewal of ARIO's core research infrastructure, and to support the move away from aging infrastructure by creating operational efficiencies through consolidation and co-locations to reduce the overall footprint of the research stations.

Criteria for determining MCP needs on an annual basis is guided by priority areas such as human health and safety, animal health and welfare, code compliance, building integrity, life cycle replacement, efficiency and conservation and program capacity (maintain or improve) that affect building and program operations across the network of ARIO properties.

Annual minor capital plans are submitted to ARIO by the U of G and VRIC and approved at the beginning of each fiscal year outlining the priority projects for each research station. These projects can be completed throughout the fiscal year or can cover multiple fiscal years depending on the size and scope of the project. The program is funded through an annual transfer payment from OMAFRA to ARIO.

2022-23 Minor Capital Project Highlights:

Quarantine, Isolation and Recirculation (QIR) Building Upgrades – Alma

- Funded by the ARIO Minor Capital Program. Upgrades to QIR building to meet physical and operational requirements for Level One Aquatic Animal Pathogen Containment (federal code). Construction also included installation of new alarm and monitoring systems needed to support the new equipment. Meeting these federal requirements will allow for enhanced capacity in breeding and genetics research.
- \$4.3M over five years. Substantially completed in spring 2023.

Station House Renovations at Ontario Aquaculture Research Centre – Alma

- Upgrades to house required full demolition to studs, replace appliances, new geothermal, and separate municipal utilities, and internet from the rest of the station. Numerous deficiencies were identified including mold and ventilation concerns. Project included upgrades to the kitchen and washroom.
- The research station residence was constructed in the 1990s as a vital component of the station operation as having a staff person living on-site is a critical element of the rapid response process.
- The life support system for the fish rearing tanks requires that water and air pumps run continuously, as such, multiple alarm systems and redundancies are in place to ensure uninterrupted operation
- Project completed February 2023
- Total project cost was approximately \$200K over three years

General Animal Facility Redevelopment – Ponsonby

- Multi-year project will address end of life cycle building systems and structures.
- Upgrades will include expansion of alternative and flexible housing space and construction of environmental monitoring chambers for livestock to accommodate a wider range of projects in the building.
- Project began in January 2023
- Total project cost approximately \$2M over six years

Tabletop Grain Analyzer – New Liskeard

- Purchased FOSS Infratec NOVA grain analyzer for processing small grains.
- Project completed March 2023
- Total project cost approximately \$55K

High Speed Fibre Infrastructure Upgrades – VRIC

- Upgrades across station to high-speed fibre infrastructure to improve connectivity and production considering increasing amounts of online/ virtual work.
- Fibre Optic lines will significantly improve the connectivity of the research centre. Opportunities for improved data accessibility for researchers around the property
- Project completed November 2022
- Total project cost approximately \$51K over one fiscal year

Upgrades and Repairs of South Greenhouse Facility – Vineland Research & Innovation Centre

- South Greenhouse facility required deep excavation & shoring, removal of boiler pipes and capping, foundation reinstatement, waterproofing, soil remediation, foundation waterproofing, receiving door replacement, and window replacements
- Further need realized for emergency replacement to wiring from South Greenhouse to other facilities on site.
- Project completed January 2023
- Total project cost approximately \$95K over one fiscal year

B.2. Advice Pillar

ARIO is committed to providing the best strategic advice to the Minister and the ministry on agricultural research directions that are in line with government priorities and contribute to the prosperous, competitive, sustainable, and resilient agri-food sectors and rural communities in Ontario.

In 2022-23, the agency made significant progress in advancing its work on developing programs, priorities, plans and legislative changes to enable the agency to continue to provide bold and informed strategic advice to the Minister.

2022-23 Pillar 2 Advice Highlights:

Proposed ARIO Act Modernization

- To secure Ontario's competitive advantage in today's modern agri-food innovation and research environment, the ARIO is proposing to modernize the *ARIO Act*.
- In 2022-23, three stakeholder consultations were held. As a result of stakeholder feedback, the Agency has proposed updates to the current legislative framework to open the door to establish current and future research needs that promote innovation and enable farmers to be on the cutting edge of best production practices; implementing new technologies and techniques that will increase the competitiveness and sustainability of the agri-food sector.
- A discussion paper on the proposed *ARIO Act* modernization was posted on the regulatory registry for public comment for 30 days and was sent to Indigenous communities for feedback.

Research System Project – Review and Synthesis of the Ontario Agri-Food and Rural Research System

- In 2022-23 ARIO completed the Research System Project that reviewed and synthesized the extent of investment in the Ontario agri-food and rural research system so that ARIO might optimize the agency's advice on research programming and deliver greater impact from Ministry and ARIO-funded research.
- The Research System Project included data collection (i.e., literature review, interviews with key stakeholders, and a broader survey of agri-food stakeholders) data analysis, recommendations, and a final report.
- The data and analysis from the Research System Project will inform ARIO's next steps to maximize the ROI for research in the province and align resources to support the optimal use of research dollars and inform policy/program design decisions.

Indigenization, Equity, Diversity, and Inclusion

- ARIO is committed to continuous improvement as we work on reducing barriers to access programs and supports that enable research and infrastructure within the agri-food sector. ARIO continues to engage with Indigenous Peoples, communities and organizations in order to strengthen meaningful relationships.
- In 2022-23, ARIO worked to build, strengthen, and advance Indigenization, equity, diversity, and inclusion (IEDI) values and priorities within the agency:
 - ARIO Vice Chair, Rose Gage served as Co-Chair to the Alliance IEDI Advisory Group. The Advisory Group led the development of new IEDI and Reconciliation Statements, and principles. The Advisory Group's work concluded December 2022.
 - ARIO is committed to enabling the implementation of Alliance IEDI strategies. This

commitment demonstrates the agency's support and leadership to advance IEDI principles in the "Ontario Agri-Food Innovation Alliance Agreement" between the OMAFRA, U of G and the ARIO, particularly as they relate to research infrastructure.

- To reaffirm and express the agency's responsibility and commitment to strengthen meaningful relationships with Indigenous Peoples, Communities and Organizations and to acknowledge established and asserted Aboriginal and treaty rights, ARIO developed an ARIO Land Acknowledgement for member meetings.
- In September 2022 ARIO made a commitment to advance the agency's knowledge and capacity on government-Indigenous relations and IEDI values through continuous learning and discussion sessions at ARIO member meetings. The ARIO Secretariat has since developed two learning and discussion presentations and will continue to do so in the upcoming fiscal year
- Recognizing the need to diversify the ARIO to include Indigenous leadership as part of the commitment to Indigenization, Equity, Diversity and Inclusion ARIO has made a commitment to canvas for a new member appointment that serves as ambassador at large for agri-food research and is recognized as a leader within Indigenous communities and organizations.

ARIO Innovative Breeding Research Program

- The "Ontario Agri-Food Innovation Alliance" and ARIO have a long history of supporting breeding research to advance the agri-food sectors. Historically, the Plant Germplasm Revenue Reinvestment Program (PGRRP) delivered through ARIO has funded researchers at the University of Guelph to produce new, high-value plant varieties and animal genetics that support the agri-food sector.
- The PGRRP was paused in 2020-2021 to allow ARIO time to explore options to reinvest ARIO's proportionate share of the IP revenue more strategically and further advance livestock and plant breeding programs within the province.
- In 2022-23, the ARIO began analyzing the scope, focus, and other design elements of a new potential breeding program and identify areas where breeding research can be focused.

Research Programs

OMAFRA's open research programs, New Directions and Food Safety, previously administered by ARIO, were replaced in 2019-20 by the Ontario Agri-Food Research Initiative (OAFRI), funded through the Canadian Agricultural Partnership (CAP). This initiative combines and builds on the success of the former New Directions and Food Safety Research Programs. OAFRI successfully completed its applied research, KTT and Commercialization pilots (a total of 66 projects funded across 49 Ontario organizations) through CAP funding. We are currently working on the transition of the OAFRI to SCAP (2023-2028).

Out of cycle emerging research needs are also addressed through a jointly administered Alliance Special Initiatives program. OMAFRA continues to evolve this program to meet the needs of various sectors. For example, in 2022-2023 there were two emerging needs addressed by the special initiative program, one on bee health and best management practices, and the other on climate change using a One Health approach.

Research Priority Setting

OMAFRA continues to deliver on the government's agenda contributing to jobs and investment, environment and climate change, and safe food and public assurance. To support delivery, the Research Agenda provides the overarching framework for the ministry's research investments. The agenda aligns with OMAFRA's core businesses to clearly link Research Priority Areas to outcomes we are trying to achieve under each core-business and integrates advice from across the ministry and agri-food sectors.

As a foundational framework, the 11 Research Agenda Priority Areas are meant to remain static, however, research focus areas and research questions are reviewed for emerging needs as part of the annual research priority setting cycle. ARIO provides advice to the Minister on strategic direction for research priority setting. This includes providing advice to the Minister on emerging research issues and opportunities to drive the development of Ontario as a globally competitive agri-food sector.

OMAFRA's research agenda informs a range of ministry programming that spans across the research and innovation continuum. Program levers allow engagement with a diverse range of expertise and is flexible to support varied degrees of intervention, directedness, and specificity of priorities. This is a long-term strategy that fosters and creates space for innovation and research to occur.



Research Priorities	Number of Proposals Awarded 2022-23
Animal Health & Welfare	13
Competitive Production Systems	10
Food Safety	2
Innovative Products & Product Improvement	3
Plant Health & Protection	8
Productive Land Capacity	1
Soil Health	4

Strong Rural Communities	3
Sustainable Production Systems	3
Trade, Market & Targeted Sectors	3
Total	50

Knowledge Translation and Transfer (KTT)

ARIO's network of research centres enables research, discovery, innovation and knowledge mobilization among researchers, veterinarians, students, and industry; transferring knowledge and research to Ontario's agri-food sector to yield real impacts and positively influence business decisions. For example, as a direct result of the Ontario Agri-Food Innovation Alliance KTT grant, Beef at Guelph provides beef stakeholders a centralized location for research information, much of which comes from research at the Ontario Beef Research Centre in Elora.

As property manager of ARIO's research stations, the U of G organized several KTT events and activities to showcase the research happening at the ARIO research centres and to enhance collaboration and application of knowledge from Alliance-funded research. According to the U of G, the following occurred in 2022-23:

- 115 tours at the Research Centres in Elora including several groups of international research collaborators and government.
- Beef Research Event delivered on November 29, 2022. The U of G welcomed Beef Farmers of Ontario members to the Ontario Beef Research Centre and provided guided tours with graduate students presenting posters focused on beef research. More posters were set up in the Precision Feed Facility following the tours and producers were able to interact with students, staff, and research faculty focused on beef cattle research.
- Welcomed delegations participating in the Association for International Agricultural and Extension Education (AIAEE) Conference hosted at U of G. Two bus tours through the Livestock Research Centres in Elora and the Soil Health Improvement Centre at the Ontario Crops Research Centre – Elora showcased the Research Centres to AIAEE participants (approximately 60 people from around the world).
- Updated the meeting room at the Ontario Dairy Research Centre to support high-quality hybrid meetings thanks to a grant from Compute Canada.

KTT highlights

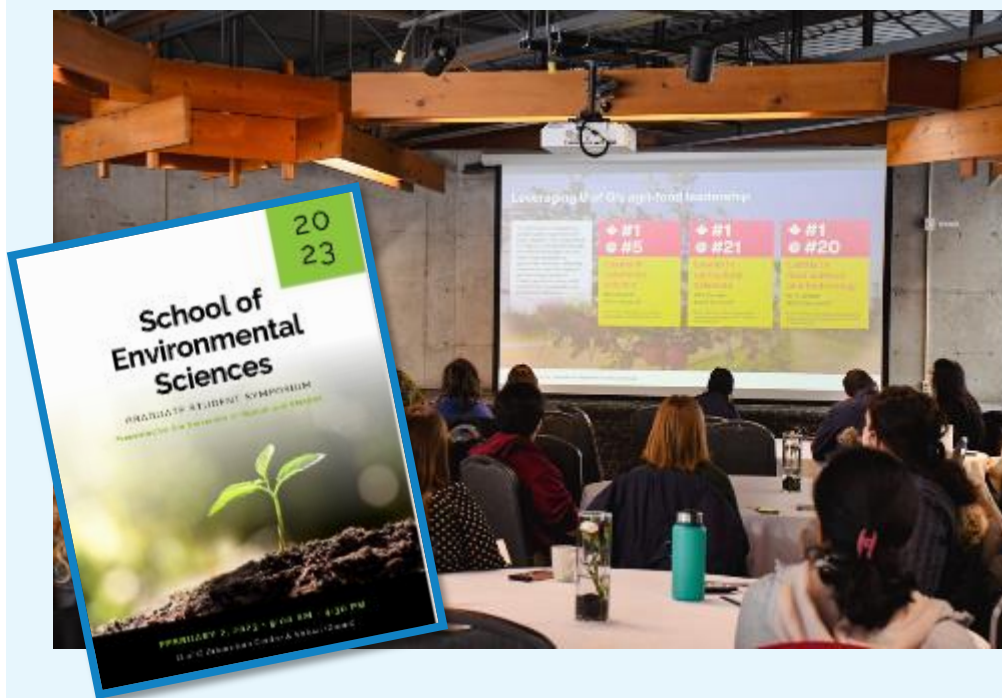
Both directly and indirectly, OMAFRA and ARIO continue to deliver knowledge dissemination services both internally and externally through virtual, in-person and hybrid events and products. Flexibility in delivery has allowed the sustainability of strategically planned activities and also expanded the number of activities performed and the reach of these activities to broader audiences, reaching those we might have otherwise not been able to.

KTT efforts have a strong focus on ensuring research knowledge is mobilized to serve end users (farmers, rural communities, industry, other researchers, etc.) and equip ministry staff with knowledge, tools, and resources to inform their own work and engage clients. This includes:

- A Research-In-Action webinar series to share key research updates in a timely, accessible, virtual approach: a total of 22 since beginning in 2020, averaging about a 100 participants per session

(OMAFRA staff, other OPS and some external stakeholders).

- Large, full day research forums, for example: Addressing Complex Problems in Agriculture and the Environment Forum attracted well over 200 participants. The Indigenous Research Symposium: Weaving Knowledge hosted by OMAFRA's Indigenous Relations Community of Practice in conjunction with the Research and Innovation Branch. The goal of this symposium was to create awareness of current Indigenous research, weaving Indigenous and western knowledge systems, and a discussion on the importance of relationships and relationship building. The groundbreaking OPS event included presentations and a panel with six indigenous researchers; 240 attended this event.
- In 2022-2023 there were four graduate student symposiums held by the departments of Animal Biosciences, School of Environmental Science, Food, Agricultural and Resource Economics, and School of Environmental Design and Rural Development. Each saw 60 – 100 participants join.
- Helping coordinate and implement the first ever OMAFRA Innovation Pavilion at the 2022 Canada's Outdoor Farm Show. This highlighted new innovations and technology driven solutions to Canada's agricultural and food producers created a platform to showcase several OAFRI funding recipients and other Ontario produced innovations.
- Through a 2018-2023 Transfer Payment Agreement, the ARIO supported the transfer of the Thunder Bay Agricultural Research Station (TBARS) (now Lakehead University Agricultural Research Station (LUARS)) from the Thunder Bay Agricultural Research Association to Lakehead University (LU). LU is the station operator and administrator of LUARS and is committed to the operation, promotion, and transfer of agricultural research for furthering the development and diversification of the agricultural industry in Northern Ontario. [As reported by LUARS in 2022](#), LUARS' research has had significant positive impact on their end users (including area farmers) through its research, extension, and outreach activities, and have made a significant impact for the betterment of the agricultural industry particularly through 'Crop Diversification' and adoption of 'Beneficial Nutrient Management Practices'. Area farmers continue to diversify their cropping systems, adding new crops, clearing land and tile drainage.



School of Environmental Science (SES) Graduate Research Symposium

was held on February 2, 2023 in the Arboretum Centre at U of G. This hybrid event was an opportunity for SES students to practice presentation and networking skills while informing the audience of research projects, a number funded via OMAFRA programs. The event was between OMAFRA and the U of G. Approximately 100 attendees joined.

An **Innovation Program and Ontario Innovation Pavilion** was coordinated and implemented at the 2022 Canada's Outdoor Farm Show. This highlighted new innovations and technology driven solutions to Canada's agricultural and food producers and created a platform to showcase several OAFRI funding recipients and other Ontario produced innovations. Providing a platform to connect innovation talent with sector stakeholders (investors and collaborators), the pavilion focused on pre-commercialized/near market innovations including sustainable bale wrap alternative, energy efficient pump, farm biosecurity management software, digital grain trading platform, and new crop inputs.



B.3. Strategic Relationships Pillar

In line with the [Grow Ontario strategy](#) and the Annual Letter of Direction, the ARIO has taken steps to advance the agency's work on pursuing strategic relationships through increased collaborations with sector organizations, research institutions, and industry organizations for the benefit of the province and agri-food sector.

2022-23 Pillar 3 Strategic Relationships Highlights:

- ARIO developed an ARIO Strategic Relationship Evaluation Framework to evaluate the feasibility and risk of proposals and ensure alignment with the vision and objectives of ARIO and OMAFRA strategies.
- Lakehead University's five-year transfer payment agreement (TPA) concluded in 2022-23. In anticipation of the ending of this agreement, in 2022-23, ARIO began engaging Lakehead on the renewal of the TPA to fund operations, knowledge translation and transfer activities, and agricultural research programming at the Lakehead University Agricultural Research Station (LUARS) for the further development and diversification of the agricultural industry in Northern Ontario.
- ARIO engaged in dialogue with sector organizations to consider collaborations that will enable the agency to pursue climate change and environmental sustainability projects and further embed sustainable approaches into station operations (i.e., use of green bedding, support for renewable natural gas, etc.)



Field tour at LUARS with Dr. Sahota, Director LUARS, Thunder Bay, 2022. Through a Transfer Payment Agreement with Lakehead University, ARIO continues to enable knowledge transfer activities for the further development and diversification of agricultural industry in Northern Ontario. (Image source: Lakehead University)

B.4.Communications Pillar

The proposed *ARIO Act* modernization and Grow Ontario Strategy demonstrate the agency's expanded commitments in the agri-food research and innovation sphere. In light of the agency's elevated role, in 2022-23 ARIO has begun to take steps to advance ARIO's communication strategy to increase the prominence of the agency and promote the agency's efforts to enable modern, relevant agri-food research and innovation for the agri-food value chain.

2022-23 Pillar 4 Communications Highlights:

Station signage

In 2022-23 ARIO continued to work with the U of G and VRIC to create updated and permanent ARIO station signage at each of the 14 centres to raise the profile of the agency and champion ARIO's infrastructure investments in research and innovation across the province.

ARIO communications material

ARIO has worked towards developing tools and communications materials (external and internal materials) to support the Ministry, the agency, and its members to effectively communicate the agency's mandate, opportunities, and successes

C.Resources to Meet Objectives, Mandate and Strategic Direction

In 2022-23 ARIO operated within the agency's financial allocation with reasonable variance and utilized the following resources to meet the objectives, mandate, and strategic direction:

- The Ministry, through the Secretariat provides the ARIO with the ongoing administrative support and funding needed to effectively operate the agency. The ARIO secretariat is comprised of Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) employees within OMAFRA's Research and Innovation Branch.
- The cost to administer the programs within ARIO (including the proportionate cost of salaries and benefits for OMAFRA staff that provide secretariat services) was paid from OMAFRA's budget. The cost to provide the secretariat functions to ARIO in 2022-23 was \$1.97M.
- ARIO also received annual Transfer Payment funding from OMAFRA for the Minor Capital Program (\$4.5M) and Payment in Lieu of Taxes (\$1.25M).
- ARIO Major Capital funding concluded as of March 31, 2023, and the agency has expressed concern for continued and stable funding to support the implementation of the Infrastructure Strategy.
- Without some form of continued Major Capital funding, core infrastructure projects planned within the strategy will be deferred indefinitely pending the provision of available funding and end of life assets will be wound down.
- For infrastructure projects, ARIO continues to seek out non-government sources of capital investment from industry (i.e., commodity organizations). The current model being used whereby industry will provide 20 per cent of the capital costs of any new construction/redevelopment projects.
- ARIO also receives intellectual property revenues (\$695,900) realized from research funded under the Ontario Agri-Food Innovation Alliance Agreement (Alliance) with the University of Guelph.

D.Digital Delivery & Customer Service

- ARIO continues to modernize the agency's accounting and financial management system.
- In fiscal year 2022-23, ARIO migrated to an online cloud-based accounting software.
- ARIO's conversion to an online financial management system enables the agency's ability to monitor business performance, improve financial reporting capabilities, increase efficacy and the agency's transparency and financial accountability.
- In 2022-23 ARIO took steps to modernize the agency's banking and expenditure management through online banking and the implementation of electronic funds transfers. These digital modernization strategies have reduced the risk of financial fraud and enhanced ARIO's customer service standards for payment recipients and reducing the agency's administration time and expenses.

E. Risk Management and COVID-19 Recovery

- ARIO continues to comply with the rules and accountability framework set out by the Agency Accountability Directive to identify, assess, and mitigate the agency's risks through the completion of ARIO's quarterly provincial agency risk reports. In 2022-23 ARIO completed four risk reports to Treasury Board Secretariat to properly identify the agency's risks, risk mitigation activities, and plans.
- As identified in the agency's quarterly risk reports, ARIO research stations continue to meet public health guidelines regarding COVID-19 protocols.
- To date, there have been minimal impacts on research and the day-to-day operational activities of the ARIO research stations. The research system is now largely operating under normal conditions with the impacts of COVID-19 being mitigated and operationalized to allow research to carry on. Overall, ARIO research stations have sustained substantial research activities with research productivity to return to near normal levels in 2022-23, depending on any resurgence of the virus.
- To ensure business continuity ARIO research stations maintain an Emergency Response Plan and a Business Continuity Plan that outlines how the ARIO research stations will continue operating during an unplanned disruption in services. These plans are updated annually based on feedback from the emergency simulation exercises at the ARIO research stations.
- Since COVID-19, ARIO has adopted a digital and hybrid approach to ARIO member meeting
- This cost-effective approach offers ARIO members with the flexibility to engage virtually from any region.
- In addition, since COVID-19, OMAFRA and ARIO have adapted to deliver the intended knowledge dissemination and exchange services both internally and externally through virtual and hybrid products and events. The shift to virtual and hybrid delivery has allowed both the sustainability of strategically planned activities and in some cases, expanded the number of activities able to be performed and the reach of these activities to broader audiences, reaching those we might have otherwise not been able to.

F. Audited Financial Statements

Audited financial statements for 2022 – 2023 can be found on [the ARIO website](#).

- ARIO's audited financial statements are prepared in accordance with Canadian generally accepted accounting principles.
- Management is responsible for the accuracy, integrity and objectivity of the information contained in the financial statements.
- The ARIO financial statements have been prepared within reasonable limits of materiality with information available up to and including information provided by year end (annually).
- In discharging its responsibility for the integrity of the financial statements, management maintains financial and management control systems and practices designed to provide reasonable assurance that transactions are authorized, assets are safeguarded, and proper records are maintained.
- The ARIO financial statements are annually examined by an independent external auditor appointed by OMAFRA, on behalf of ARIO. The external auditors' responsibility is to express an opinion on whether the financial statements are presented fairly in accordance with generally accepted accounting principles. The auditors' report outlines the scope of their examination and opinion.

Conclusion

This past year saw several milestone accomplishments. ARIO's mandate and the Agency's forward looking 10-year strategic plan that encompasses the Grow Ontario strategy, will be keystone to advancing Ontario's competitive advantage through state-of-the art provincial agri-food research platforms and enabling high-impact and transformation research and innovation for today and into the future.

Finally, we would like to thank all those who support agri-food research and innovation across the province – industry, academia, and the various levels of government.