

ANNUAL REPORT

SEPTEMBER 2023 – AUGUST 2024

SHARED VISION

A sustainable, reliable, and just food system.

COLLECTIVE GOAL

Informing resilient and sustainable global food systems based on a rigorous and comprehensive understanding of the latest evidence.

Land Acknowledgments

The University of Guelph is on the territory of the Mississaugas of the Credit and is part of the Land Between the Lakes Purchase (Treaty number 3). The Dish with One Spoon Covenant made between the Anishinaabe, Haudenosaunee and Mississaugas, is an agreement to share territory and protect these lands, now known as parts of Ontario, Quebec and New York State. The Covenant reminds us of our common connection to the land and to each other. Recognizing the contributions and importance of First Nations, Métis and Inuit peoples is an important part of our collective commitment to make the promise of Truth and Reconciliation real in our communities..

Words of Gratitude

We are extremely fortunate to be surrounded by a huge range of wonderful and supportive colleagues at the University of Guelph, Canada's Food University. Without their support it would be impossible to drive the mission of Arrell Food Institute – to improve global food systems. Special thanks to the Arrell Family Foundation for the ongoing support of Arrell Food Institute.

Statement of Inclusion

A world where all communities have access to safe and healthful food is a world where the voices of all communities are uplifted. AFI is an equal opportunity employer and does not tolerate, ignore, or condone any form of discrimination. We work to support people from communities historically and structurally excluded, including BIPOC communities, people with disabilities, LGBTQ2IA+ and those with caring responsibilities. AFI strives to be inclusive in its events and projects so that diverse perspectives are presented, and a full range of individuals have equal opportunity to participate in discussions and conversations. AFI ensures that its resources recognize both non-traditional and traditional excellence. We welcome further feedback and dialogue.



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Read AFI's Strategic Plan 2023–2028
arrellfoodinstitute.ca/strategic-plan

LETTER FROM THE DIRECTOR



This year has felt like a big year for food systems, in that every recommendation, every new task or barrier to overcome has scaled to global proportions. Feeding a school of students is a shadow of a larger need to feed entire regions of the world. Soil in a single field carries the desire to increase yield in agricultural valleys with climates that vary wildly. A single innovation in food processing feels like it must absorb an entire industry's share of carbon emissions; and while we know that small steps lead to these changes, we are in a time of big conversations.

Global conflict cast a spotlight on the most vulnerable parts of global food systems: Canada's dependence on external fertilizer inputs, the fragility of trade pathways through regions facing environmental or political crises, and the need for unity and cohesion in how we produce and distribute food. Agriculture and food remain a sector of hope and innovation as these challenges are faced head on.

Arrell Scholar Alumna Amberley Ruetz and I contributed research, advocacy, and partnership to support a new national school food program. The benefits and necessity of access to nutritional lunches was explored, reported, and given voice over many years with AFI as part of a chorus of national leaders. What a moment of triumph to see this year's Federal budget reflect the first Canadian national scale school food program supported by the federal government, and provide a focus on local, sustainable, and culturally inclusive options for students and young learners.

My own work has taken me abroad, seeing first-hand the impact of climate change and political unrest. Famine across sub-Saharan Africa, Gaza, and other conflict-affected regions has sparked response from the United Nations and other global groups that have recognized the need for responses; and not just immediate supplies of food, but fundamental changes to food systems to increase resilience and create a brighter future. I am thrilled to have been appointed to the High-Level Panel of Experts on Food Security and Nutrition of the United Nations Committee on World Food Security, working at the highest level internationally to help create more resilient, equitable and sustainable food systems.

The Canadian Alliance for Net Zero Agriculture (CANZA) is a collaborative initiative dedicated to driving collective action to decarbonizing the agri-food system. Understanding the severity of intensifying climate change and extreme weather events that impacts all food systems actors and the agri-food system, a diverse group of leading organizations came together for coordinated action. Royal Bank of Canada, Loblaw Companies Ltd., Maple Leaf Foods, Nutrien, McCain Foods and BCG founded this alliance with additional



partners Arrell Food Institute, Nature United, Agropur, and Co-operators to provide a platform for action-oriented research, thought leadership and collaboration. CANZA has established itself as a trusted and influential voice in the sector, fostering dialogue, innovation, and collective action towards a more sustainable and resilient food future.

These, and many other great initiatives exemplify AFI's continued dedication and diversity of opportunity to address our core mandates. The future looks to new possibilities and new leaders. An increased focus on entrepreneurial education and innovation is a potential path forward as we recognize the increasing need to recruit top talent into the agrifood sector and flood the ecosystem not just with new technologies, but new leaders and thinkers that can support change at all levels. This report also marks the conclusion of the recruitment of two new Arrell Chairs, Dr. Sara Edge and Dr. Sadaf Mollaei. Dr. Mollaei has joined the School of Hospitality, Food and Tourism Management, her research focuses on promoting sustainable food systems, with a particular emphasis on sustainable eating behaviors and food businesses. Dr. Edge is settling into her new role in the Department of Geography, Environment and Geomatics as an Associate Professor. Her research is dedicated to promoting equity and justice in sustainable food systems, with an emphasis on the lived experiences of racialized people, immigrants, and newcomers in accessing food. Both additions give me great optimism for their work both as faculty and as advisors and leaders alongside AFI.

The future is one full of opportunity and necessity, and one which the Institute is meeting with enthusiasm and collaboration!

Dr. Evan Fraser
Director, Arrell Food Institute



FOOD AND PRODUCERS

Meeting the needs of the human population in more sustainable ways, that are safe and uphold the quality of the food, is critical for the future of food systems. Arrell Food Institute is exploring new ways to protect the planet, while providing safer food that retains its nutritional value, all while paying attention to new technologies and approaches to farming and food production.

FOOD AND PRODUCERS

Producers remain not only a vital part of feeding the future, but of creating it as the earliest adopters of new and sustainable technologies. Understanding the challenges and expectations of Canada's farmers helps us shape meaningful research, policy, and education supports to foster a new generation of agriculture. AFI strives to meet producers where they are, and to use what we learn to promote change that benefits both growers and society.

In the Fall of 2023, RBC partnered with BCG's Centre for Canada's Future and the Arrell Food Institute at the University of Guelph to explore what they described as Canada's moonshot: to produce 26% more food by 2050, and with fewer emissions. The result was a report titled: *The Next Green Revolution: How Canada can produce more food and fewer emissions.* The partnership included investment, industry, and academia and led to a series of understandings that are shaping how Canada engages with food production and food systems. Among the many key takeaways were that Canada can be matching investments in climate-smart agriculture with new market mechanisms to help finance sustainable transition in the sector. The report identified that skills gaps are limiting growth due to new technical position requirements such as on-farm managers and data analysts, marking education and training as a critical gap for the sector. The report recommends that early adopters be rewarded, including those who are already engaged in climate-smart agricultural practices, noting that producers must receive a financial benefit for their continued contributions.

At COP28, the United Nations Climate Change Conference, Arrell Food Institute Director Dr. Evan Fraser noted that agri-food was on the table in a serious way. Conversations recognized both the contributions of the agri-food sector to the climate crisis, as well as



the vulnerabilities of the sector to climate events. There was also a continuation of the optimism that food systems can be a key strategy in the solution.

For Canada, an important announcement was the international launch of the Canadian Alliance for Net-Zero Agriculture – or CANZA – as part of a panel featuring AFI's Dr. Fraser, as well as representatives from RBC, Nutrien, The Natural Step, and (Hebert Grain Ventures). The CANZA alliance brings together stakeholders across the agri-food ecosystem to drive progress towards a net-zero agri-food value chain. AFI is excited to be part of this initiative and to work with producers, NGOs, academic and industry partners who are joining this collaboration.

Carrying the lessons from these partnerships and events forward, a team at AFI began developing a series of recommendations about AgTech futures. For this past year, that meant over 100 one-on-one interviews, webinars and focus groups with representatives of industry, academia, government and agricultural organizations across Canada. Through this process, the team was able to record an unprecedented bank of information on what opportunities Canada has in the development of sustainable ag-tech, what barriers exist, and how to address them. The report, which launches in September 2024, will lead conversations across Canada on policy, entrepreneurial support, and AgTech adoption.

FOOD AND PRODUCERS

Case Study: Building Relationships with Ontario's Agricultural Industry

With so many things to consider, including supply chain costs, farm-to-market lead times, and responsiveness to changes in supply and demand, it can be intimidating to know how to meaningfully grow your business.

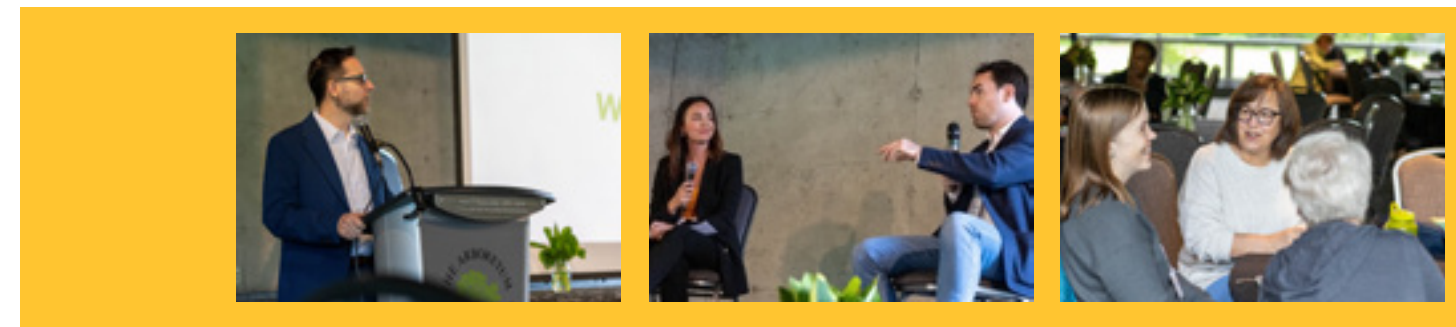
The Ontario Hazelnut Summit's value creation workshop was generated to foster hands-on learning and fruitful collaboration between key stakeholders. Farmers, government agencies, supply chain managers, investors and more joined together for this hands-on workshop.

With presentations and capacity building, the workshop was designed to shift the conversation into implementation and future thinking.

The Summit then transitioned to an AFI led workshop led by that had participants collaboratively identify different approaches to the marketplace and discover areas of opportunity within the Hazelnut community.

Participants of the summit walked away with a deeper understanding of the industry, potential growth opportunities for their product, and newly forged industry relationships they can continue to foster. For the value creation workshop key learnings were:

- **Market Segmentation:** helps focus communication messaging to meet customers where they are on their buying journey.
- **Building an Ideal Customer Profile:** helps focus on how best to understand a specific market segmentations wants/needs/desires.
- **Value Proposition:** Building off of the market segmentation and ideal customer profile, this section focused on how to best demonstrate the value of a product based on a need/want/desire of a buyer.



From left to right: Sean Lyons, Associate Dean Research & Graduate Studies welcomes speakers and participants to the 2024 Hazelnut Summit. Ontario Hazelnut Summit organizer Jonathan Parkes sharing insights during panel discussion with co-host Dr. Kalinga Jagoda. Participants of the 2024 Hazelnut Summit in active discussion. Photos taken by Josh Gonzales.



Photo Submitted by Guilherme Madureira



Photo Submitted by Fatemeh Fazel

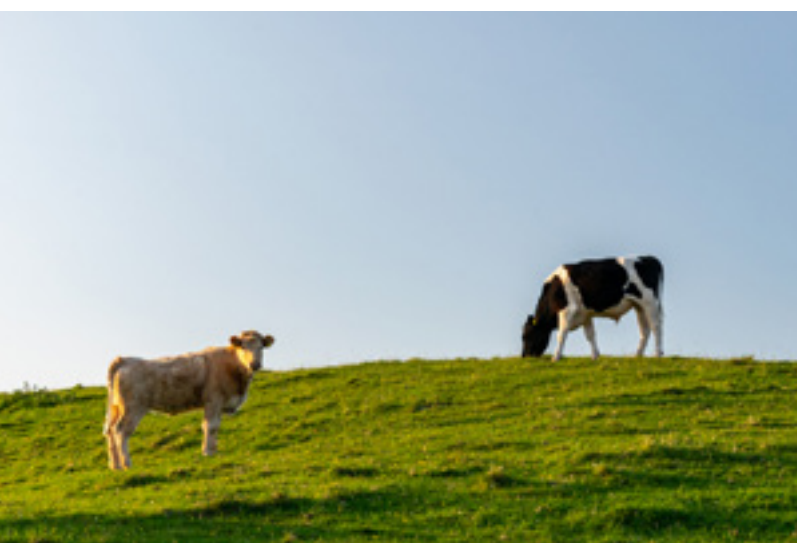


Photo Submitted by Tunmise Faith Ehigbor

FOOD AND PRODUCERS Research Highlights

For the University of Guelph, producers are often the first customers, the first trial grounds, and a legacy source of information and lived experience that shapes both research and market understanding. The Arrell chairs work with this group in various projects, many focused on increasing production or reimagining how our food can be grown, harvested, processed, and shaped.

Dr. Tongzhe Li, Arrell Family Chair in Behavioural and Experimental Economics, conducts an annual experimental auction, where she and her students recruit farmers to bid on hypothetical technologies or projects to indicate how much they are willing to pay or would need to be paid to adopt a particular technique, such as cover cropping. In the summer of 2024, the team investigated how farmers perceive weather events and soil quality, and their preferences for soil tests. This information is then used to promote new technology adoption or shape product development to reflect the outcomes of the team's research.

Similarly, as demonstrated by this past year's geo-political disruptions to various food supply chains, Canada must become not just creative, but more self-sufficient and resource efficient in how we grow food. CANN2ONET is an exciting new initiative co-led by Dr. Tongzhe Li that launched in May, focused on nitrogen fertilizer. The project aims to reduce nitrous oxide emissions from fertilizer application, as nitrous oxide is a potent greenhouse gas that contributes 30% of agricultural greenhouse gas emissions in Canada. Dr. Li is leading a project that aims to understand what factors influence farmer adoption of nitrous oxide mitigation practices, and using this understanding to feed into the development of specific management practices based on economic trade-offs and farmer behaviour.

As part of AFI's work with the CANZA partnership, Dr. Asim Biswas, a professor in the School of Environmental Sciences within the Ontario Agricultural College, has been empowered to apply his vast expertise in soil science to critical new challenges for the agriculture sector. AFI and the entire University of Guelph were thrilled to congratulate him on being awarded the 2023 Steacie Prize, one of Canada's most prestigious awards for researchers 40 years old or younger.

Scholars Update

Research by Arrell Scholars continues to ensure agricultural production is sustainable, productive and efficient. Scholar, **Fatemeh Fazel** published 3 reports on mRNA vaccines responding to the avian influenza virus. **Guilherme Madureira** has published 8 times on how targeted nutritional and hormonal interventions can significantly improve reproductive performance and overall health in dairy cattle. His research speaks to the increased milk production in dairy cows and economic benefits to farmers. **Tunmise Faith Ehigbor** completed his thesis on "Preference for Pecking Blocks and its Association with Keel Bone Status and Eggshell Quality in Laying Hens" which has resulted in presentations to various audiences in the food system including; academia, farmers, producers, industry experts and others.



FOOD AND BUSINESS

Creating and delivering more food with less waste is imperative to the profitability and economic viability for all contributors across the food chain. Arrell Food Institute is examining these issues and bringing them to the forefront, within Canada and globally.

FOOD AND BUSINESS

Building Connections Across Industries

The Arrell Food Institute is a bridge between the knowledge holders, researchers, and new generations of food systems leaders and the complex value chain of agricultural businesses that are working to sustainably feed the world. As new technologies emerge, leading businesses must be ready to adapt not just to new processes, but to new ways of thinking and understanding impact and growth.

AFI continues to lead industry partnerships through the course “Innovation and Entrepreneurship in Agri-Food Systems.” Designed as an experiential opportunity, the course meets imminent challenges in the agri-food sector. There is a growing need for a workforce of qualified individuals with transferable skills that can cross disciplines. This course provides valuable opportunities for students to develop essential skills in entrepreneurship and lived industry exposure.



Bridging the gap between traditional graduate education and workplace readiness for the agri-food sector, graduate students from diverse fields engage in interdisciplinary, problem-based collaboration with community partners in the agri-food sector. This course opens doors to localized partnerships and community engagement while other projects expand more broadly across Canada.

These wider collaborations include Canada’s Food Price Report, an annual collaboration between research partners at Dalhousie University, the University of Guelph, the University of Saskatchewan, and the University of British Columbia. This cross-country research team uses historical data sources, machine learning algorithms, and predictive analytics tools developed over many years to make predictions about Canadian food prices. Canada’s Food Price Report 2024 predicts food prices will continue to increase in 2024 – but by less than last year. The report projects a rise in food prices between 2.5 and 4.5 per cent, an increase of up to \$701.79 for a family of four. This year saw the team taking the lead on a new approach. With the advice of subject matter experts, they identified a series of factors that could impact food prices – including information on climate, economics, and geopolitics. Each year new processes and tools are used to increase accuracy and produce results relevant to current trends in consumer markets.

New business ventures and innovative new entrepreneurs are an excellent motivation to continue creating sustainable and ethical pathways for businesses to access data and support through AFI. Agrifood businesses need to grow more than ever, and that growth is achieved when both the industry and Canada’s graduates are prepared for meaningful work.

FOOD AND BUSINESS

Research Highlights

Chair Update

AFI is delighted to welcome **Dr. Sadaf Mollaei** as the Arrell Chair in Business of Food on September 1st, 2024. As a faculty member of the School of Hospitality, Food and Tourism Management, Dr. Mollaei brings huge energy, connections with the food and hospitality industry, and a vision of helping bring out the best in our students. Her research focuses on understanding sustainable food systems and sustainable marketing. Her innovative research bridges the gap between sustainability, marketing and public health. Over the coming year, Dr. Mollaei will continue to expand on her research in promoting sustainable behaviours with a focus on sustainable food and eating behaviours.



Scholars Update

Arrell Scholars are working on innovations to benefit the future of business. **Evan Tollenaar** continued his work developing a robotic tomato harvester, which was prominently featured during Ontario Premier Doug Ford’s visit to U of G to demonstrate how the University is helping develop commercial solutions to challenges in sectors across Ontario’s economy through technology research and innovation.



As a part of the UNIV*6050 course, **M Manjurul Islam** and an interdisciplinary group of students partnered, with the NGO Farm to Cafeteria to develop policy briefs, newspaper editorials, webinars and infographics. This showcases how business and academia can work hand-in-hand on problem-based learning (PBL), supporting businesses in their ability to scale and flourish and students with hands-on education that has real world implications.





FOOD AND BUSINESS

Case Study: Net-Zero Food System Challenge

The Net-Zero Food Systems Challenge, conducted by AFI in partnership with the Ontario Agricultural College at the University of Guelph and supported by Loblaw Companies Limited, aims to cultivate the skills of emerging food leaders interested in integrating sustainable practices into food systems. The Net-Zero Food Systems Challenge is an experiential learning initiative designed to train future leaders in developing solutions for achieving a net-zero food system. The future of food relies on creating a resilient food system capable of feeding a growing population while safeguarding the planet's health. Graduate students from across Canada engage in this innovative experiential learning initiative to directly address pressing issues through the ideation of specific and actionable items, representing a significant step in achieving this goal.



In 2023, the Net-Zero Food Systems Challenge brought together graduate students, thought leaders and industry decision-makers to tackle critical challenges in sustainable agriculture. Participants were divided into two teams, each addressing a specific challenge facing climate-smart production. Team One concentrated on promoting the adoption of climate-smart agriculture practices among farmers, while Team Two focused on identifying strategies to enhance consumer uptake of climate-responsible products.

Over six months, students engaged in comprehensive research, analyzing academic and industry reports and comparing sustainability practices of food retailers in Canada and internationally. The outcomes of their efforts were encapsulated in two detailed whitepapers, an infographic, and an explainer video.

The research conducted by the graduate students highlights the crucial role that food retailers can play in reducing the environmental impact of their products. By championing climate-smart practices both upstream with farmers and downstream with consumers, retailers can significantly influence the sustainability of the agri-food system.

The final reports offer several key recommendations for Canadian food retailers:

- **Support for Farmers:** Retailers are encouraged to support climate-smart practices on farms, facilitate knowledge sharing among producers, and promote initiatives and incentives for sustainable production.
- **Consumer Engagement:** To foster consumer adoption of climate-responsible products, retailers should enhance consumer awareness by implementing transparent labelling of climate-smart products and utilize third-party verification to ensure credibility.

Through these efforts, the Net-Zero Food Systems Challenge aims to drive meaningful change in how food is produced and consumed, paving the way for a more sustainable and resilient food system. Building on the findings of the first cohort, a second cohort will be guided by Loblaw's vision to develop a better understanding of corporate food Canada's role in scope 3 emissions and the producer realities that impact the carbon intensity of Canada's agricultural commodities.



FOOD AND COMMUNITY

Food is central to the health of people, communities, and our planet. By exploring the links to sustainability, culture, and society, Arrell Food Institute is working to create the foundation of better nourished communities now, and in the future.

FOOD AND COMMUNITY

This year, we have worked at both local levels to build more healthy, equitable and resilient food systems. For example, some of our local work was done in partnership with the City of Guelph, Wellington County and Wellington-Dufferin Guelph Public Health. Together we have recruited a new *Community Food Lead* based at AFI. This post builds on *Our Food Future*, a Federally funded project in Guelph-Wellington that aimed to create a regional circular food economy by rethinking the production, distribution, sales, and consumption of food. Filling this position has allowed AFI to further support the local Food Resiliency Table, actioning the Food Security Action plan that AFI laid out previously with the City of Guelph and Wellington County. This role also bolsters advocacy and leadership in Guelph's complex food ecosystem and connects this work and learning to national and global best practices.

Food security is a global issue, with vast areas of the world facing famine, food shortages, or unsure futures. In Canada, grassroots initiatives, local groups, and community initiatives are critical to addressing this large-scale issue, as the diversity of culture, climate, and resources makes a single solution nearly impossible to navigate. Yet this year has seen substantial progress in children's nutrition and equitable food access in Canada's school system. The announcement of a National School Food Program marks a fundamental shift in the way that the Government of Canada is addressing feeding children for learning. Distinct from local and provincial solutions which saw wide disparity between available meal content and frequency, this new initiative seeks to provide for all Canadian children, focusing additional support where it is needed most.

This shift to a national approach is significant to AFI not just because nutrition and local food economies are crucial to Canada's food systems, but because AFI chairs, scholars, and partners have been working towards a Canada-wide solution for many years. This includes research and advocacy by AFI Director Evan Fraser and Scholar Alumni Amberly Ruetz. Research in food system resiliency, the impact of nutritious diets on academic performance, and mapping of local food supplies have all contributed to the justification and awareness around national action. While the deployment of the program is still underway, and food access extends well beyond schools and there is much more work to do, AFI is proud to be part of the movement towards National solutions and national scale unity for equitable food access.

Arrell Food Institute in Newfoundland

This past year, AFI was pleased to partner with Food First NL's Next Steps at their School Meals Summit in St. John's, Newfoundland. The summit brought together experts at the grassroots, provincial, and national levels, sharing their knowledge and insights surrounding school food.

Food First NL's Next Steps for School Meals project, shared key insights from the consultation process, informing summit attendees of the current state of school lunch programs in the province. Joshna Maharaj shared her expertise and delivered an impactful keynote regarding her dreams for an ideal national school food program; one that includes post-secondary students, values scratch-made meals and collaborations with farmers and chefs.

Dr. Amberley Ruetz, Arrell Scholar Alumna, discussed the current opportunities and considerations to ensure the success of a national school food program. Amberley recently released an in-depth report featuring innovative Canadian school food programs from each province, providing local context and serving as a valuable resource in developing school meal programs.

FOOD AND COMMUNITY

Case Study: The Table

Community Food Lead Pauline Cripps hit the ground running in her new role, ensuring a smooth transition for the Food Systems Resiliency Table (The Table), previously established through *Our Food Future*, to its new home hosted by the Arrell Food Institute.

In response to the systemic issues, underlying risks, fragilities, and inequities in global food systems and those shocks that were felt here at home in Guelph-Wellington, the City of Guelph and the County of Wellington's *Our Food Future* initiative laid the groundwork for the Food Systems Resiliency Table (The Table). This unique regional food policy and programming working group connects diverse collaborators with roles and relations to food focused activities in the Guelph-Wellington region to make a better food system for us all.

The Table aims to understand how the systemic issues in global food systems impact the community of Guelph-Wellington County. It builds off cross-sectoral collaboration to learn from national disasters, such as the COVID-19 Pandemic, to encourage sustainable food system transformation with diverse perspectives equitably represented.

Since its launch in late 2021, The Table has hosted four closed meetings with strategically appointed members representing a diverse cross section of regional food systems actors and four open meetings to engage with the community at large each year. Harmonizing the vision for a better food system in the region, all Table Meetings serve to bring together individuals of diverse experiences together to build relationships and foster innovative and collaborative solutions to community level problems experienced by Guelph-Wellington County.

The Table also uplifts various local food access initiatives that have positively influenced the county. Examples include: Art of Soil Collective, Sheldale Farm Park, Food From Home, Mount Forest Community Garden, Fresh Food Prescription, Community Food and many more.

Being united about how we view and approach issues surrounding food is more important now more than ever. Collective action and mutual aid projects encourage solutions that equitably benefit all food systems actors.



Pauline Cripps (pictured far left) with a group of international food leaders at the Global FoodBank Network Summit in Australia

Stay engaged with the conversation at reimaginefood.ca or follow on instagram: [@thetable_gw](https://www.instagram.com/thetable_gw)



From left to right: Breakout Sessions Focusing on Various School Food Topics at the Food First Newfoundland's Next Steps for School Meals Project. AFI Director of Operations Alice Raine introducing the Key Note Speaker, Joshna Maharaj. Dr. Amberley Ruetz, Arrell Scholar Alumna (far right) speaks on the panel for Next Steps for School Meals.



Photo Submitted by Dakota Cherry

FOOD AND COMMUNITY Research Highlights

Chair Update

AFI also welcomed **Dr. Sara Edge** as the Arrell Chair in Food, Policy and Society on the first of September, 2024. Joining the Department of Geography, Environment and Geomatics, Dr. Edge focuses on advancing equity and justice in food systems while also empowering community innovators and entrepreneurs to tackle food systems issues on their own. Her work focuses on the lived experiences of marginalized communities and how environmental and socio-cultural factors impact food access and health. Over the coming year, Dr. Edge seeks to better understand the unique food justice needs, challenges and opportunities that exist across rural, suburban and metropolitan food systems. She also plans to investigate how decision-makers can plan for and accommodate increasing migration and diversity into small and large cities.



Photo Submitted by Tiwalola Alabi



Photo Submitted by Tiwalola Alabi



Photo Submitted by Tunmise Faith Ehigbor

Scholars Update

Holistic health and wellness are fundamentally tied to food security, food knowledge, food access and food justice. Connecting with rural communities is something Arrell Scholar **Margarita Fontecha** actively practices integrating into her work. In May of 2024, she presented her a photo exhibition and webinar with the Inter-American Institute for Cooperation on Agriculture (IIAC) to share her research on Supporting Rural Youth Leadership in Colombia's Agricultural Sector. With supervisor Dr. Silvia Sarapura-Escobar and other SEDRD students, she additionally presented her research on gender-based violence in the agriculture streams of Canada's Temporary Foreign Workers Program at the CGIAR gender conference in October of 2023.

Continuing to connect with rural communities, **Tiwalola Alabi** worked with smallholder farms to discuss aflatoxin and its management, helping them to better understand the issues and its implications. She also served as a judge with fellow Arrell Scholar **Tunmise Faith Ehigbor** for the Canadian Black Scientists Network (CBSN) Ontario Regional Science Fair at the Summerlee Science Complex, University of Guelph.

Dakota Cherry continued her work in Northern Ontario Communities, developing a toolkit for sowing seeds and supporting the growth of plants in Northern Ontario Climates. Cherry also deepened her relationship with the Nawash First Nation, contributing to the strengthening of food sovereignty and food self-determination through the development of post-harvest toolkits with a culturally relevant food guide specific to the Nawash First Nation.



FOOD AND CONSUMERS

Canada produces and exports large amounts of food to feed people locally, nationally, and around the world. Working to identify pressure points in the food system that can be resolved by policy, markets, or awareness will improve the way global food networks offer safe, healthy, nutritious, and affordable food for all consumers.

FOOD AND CONSUMERS

Having already explored the intricacies of how the Arrell Food Institute engages with producers, businesses, and communities as important actors within the food system, this report now its attention to the critical role of consumers. By focusing on consumer-centric initiatives, AFI aims to ensure that its work directly benefits the people who rely on the food system. Consumers play a vital role in shaping market demand, ensuring food safety, reducing food waste, and promoting social and environmental sustainability. To create positive impacts, we look to strong thought leadership to give voice to what consumers require, what they perceive, and what they demand.

This year, AFI Director Evan Fraser was appointed to the steering committee of the High-Level Panel of Experts on Food Security and Nutrition (HLPE-FSN) of the United Nations Committee on World Food Security (CFS). The HLPE-FSN is the United Nations body for assessing the science related to global food security and nutrition and provides independent and evidence-based analysis and advice at the request of the CFS. This appointment has allowed Evan to offer a strong Canadian perspective to Global issues surrounding Food Security. This thought leadership is further mobilized in opinion editorials and collaborative articles that decode the high-level lessons of AFI's international work.

With increasing pressure on food systems and rising grocery prices, many consumers are experiencing unprecedented levels of scarcity and insecurity. While some policies suggest that increased resourcing for subsidization and public services such as food banks will meet increased demand, data shows that increased prosperity is key to combatting increased prices. A CBC article featuring Dr. Fraser expanded on this concept, as Dr. Fraser shared that:



Dr. Evan Fraser speaking at COP28 United Nations Climate Change Conference

“We have enough food, but it’s poorly distributed. As a result, we live in that world of stuffed and starved, where both the number of hungry people and the number of people struggling with chronic illnesses linked to diet are both rising.”

In November 2023, at the Arrell Food Summit, AFI brought together four leading minds in the food security field to talk through root causes and possible solutions to a more food secure future. The event, moderated by CBC IDEAS host Nahlah Ayed, was recorded at the Toronto Region Board of Trade, and subsequently broadcast to a global audience. The panel addressed the politics of food insecurity, and the power of data sharing. Another key initiative that is helping locally is the campus sliding scale farmers’ market. This is a collaboration between AFI, the Guelph Lab, the Office of Sustainability and the SEED, a not-for-profit organization linked with the Guelph Community Health Centre. By purchasing produce at wholesale rates, The SEED provides the campus market with diverse offerings that mirror its community markets across the city. In September & October, we are also partnering with the Guelph Centre for Urban Organic Farming to sell produce grown on campus.

The market is responding to increasing economic pressure on students by offering a sliding scale model, which allows customers to choose the amount they want to pay within a set range, with no questions asked. The upper end of the scale is comparable to retail value, and the lower end can offer an average of 30% off the retail price. The market is open to everyone at the University of Guelph, with the aim to increase the physical and financial accessibility of affordable nutritious food in our local economy.

FOOD AND CONSUMERS

Case Study: Smart Cookie Science

Baking the perfect cookie requires time, energy and attention to even the smallest detail.

Arrell Chair Maria Cooradini recently sparked a lot of excitement online diving into the mathematical modeling to elevate the cookie baking process.

Stemming from her recent article published in the Journal of Food Science titled “Morphological changes and color development during cookie baking—Kinetic, heat, and mass transfer considerations”, this piece dives deep into how dimensions and colour index can be strongly correlated to moisture content overtime.

Continuing to pick up traffic via a post in the Institute of Food Technologists, this study offers consumers a playful way to understand the delicate nature of the baking process and the importance of understanding each individual stage.

The original article features a fascinating breakdown of the top and bottom surfaces of a cookie in relation to baking time and temperature and another breaks down a correlation matrix of the parameters of this study.

Conclusions of the study identify key factors affecting cookie quality and can develop models to optimize the baking process.



Dr. Maria Corradini teaching at the Advanced Analysis Centre, U of G.



Student researching with Dr. Maria Corradini at the Advanced Analysis Centre, U of G.



Arrell Scholar Chinaza Arinzechukwu performing mass spectrometry analysis at The Mass Spectrometry Facility, University of Guelph.



Dr. Maria Corradini teaching at the Advanced Analysis Centre, U of G.

FOOD AND CONSUMERS Research Highlights

Chair Update

Among the cutting-edge research currently underway on this theme, Dr. Maria Corradini, Arrell Chair in Food Quality, is using 3D printing to examine how the structure of food is affected by various elements. When bread goes stale, for example, that is a change in the structure of the food. By using digital models and 3D printing, Dr. Corradini can vary microscopic elements of food structure, which helps her to understand how food deteriorates, and what changes we could make to reduce food spoilage and waste. A new paper, published in *Nature Food*, went into more detail on the benefits of 3D printing across the food system.



Dr. Maria Corradini at the 2023 AFI Summit

Scholars Update

Arrell Scholars are also hard at work on projects that impact consumers. In July of 2024, **Katherine Ekert** published “Costly, confusing, polarizing and suspect: Public perceptions of plant-based eating from a thematic analysis of social media comments” which aims to provide insight into more effective public health messaging about plant-based eating while addressing systemic barriers. Ekert was also featured in a FoodFarm Talk podcast “Plant based diets and recipes” which in efforts to directly share research insights to consumers and will be presenting at the 2024 RETASTE: Rethink Food Resources, Losses and Waste 4th Annual International Conference in Crete, Greece.

Scholar **Zahra Sagahfi** is working with Protein Industries Canada and Mitacs, examining how regulatory systems impact the prosperity of Canada’s plant food and protein sector. Her research will help evaluate how new regulations, such as a recent update regarding front labeling for plant-based alternative proteins, will impact consumer decisions in practice.

This year, **Chinaza Arinzechukwa** was trained on Liquid Chromatography Mass Spectrometry (LCMS) which she will be using to analyze major compounds and further her work with acrylamide (a common toxin found in popular consumed baked food products). This will lead to consumers being able to make more informed and empowered decisions about their food choices based on evidence-based recommendations.



EDUCATION

Our commitment to innovative agri-food education continues to flourish. This past year, we've expanded our reach through new partnerships, deepened our understanding of student experiences, and celebrated the achievements of our AFI Scholars. We are proud to highlight the ways in which we're shaping the future of agri-food.

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Our collaborations with Boston Consulting Group (BCG) and the University of Fraser Valley, along with our ongoing evaluation efforts, ensure quality education that trains students to think beyond disciplines and silos, communicate and implement complex ideas, and deal with new technologies and data to create innovative solutions.

2024 Graduating Scholars



Tunmise Faith Ehigbor
Department of Animal Biosciences



Tiwalola Alabi
School of Environmental Design and Rural Development



Guilherme Madureira
Department of Animal Biosciences



Erik Dassoff
Department of Human Health and Nutritional Sciences



Nicholas Bannon
Department of Food, Agricultural and Resource Economics



Roshan Pudasaini
Department of Plant Agriculture



Evan Tollenaar
School of Engineering

2024 Announced Scholars



Giselle Shmitz
Department of Geography, Environment and Geomatics



An Sakai
Department of Geography, Environment and Geomatics



Alicia Bohren
Department of Animal Biosciences

2023 AFI Scholars



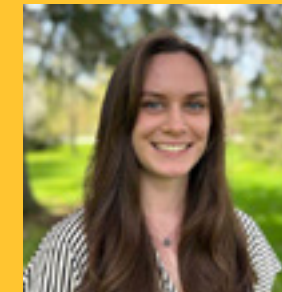
Anna Ngwenyi Mafor
School of Engineering



M Manjurul Islam
Department of Geography, Environment and Geomatics



Kamshajini Raveenthiran
School of Environmental Design and Rural Development



Olivia Willoughby
Department of Population Medicine

AWARDS

Awarded annually since 2018, the Arrell Global Food Innovation Awards consist of two prizes of \$100,000, which are given to global recipients to recognize their impact and leadership in two categories: research impact and community engagement.

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2024 Arrell Global Food Innovation Awards

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50+

high-quality nominations were received for the 2024 Arrell Global Food Innovation Awards



Winner of the 2024 Arrell Global Food Innovation Award for Community Engagement Innovation

Community Engagement Innovation – UpTrade

UpTrade solves for affordability and access to key farming technology and inputs for smallholder farmers in developing economies by enabling them to pay for these assets using their livestock and produce instead of fiat currency.

Using their livestock as money, it makes otherwise unaffordable assets like solar water pumps and solar microgrids, fertilizers and seeds more affordable and more accessible, increasing the farmers' productivity and livelihood, building financial resilience and reducing the need for migration away from their natural lands. Having better access to tools and the subsequent increased productivity strengthens the smallholder's farmers' roles in the food value chain.



Winner of the 2024 Arrell Global Food Innovation Award for Research Innovation

Research Innovation – Distinguished Professor Brajesh Kumar Singh

Singh is a world-leading soil ecologist. His work has brought about fundamental shifts in functional microbial ecology by providing direct evidence that loss of soil biodiversity leads to proportional loss of ecosystem functions from local to global scales.

He has more than 300 journal publications spanning diverse fields including soil biology and health, ecosystem functions, and sustainable food production. Singh is best known for his global studies that demonstrated the central role of soil health and biodiversity in ecosystem functions including crop production and climate regulation.

2024 Awards Adjudicators

Thank you to our team of adjudicators for this year's Arrell Food Innovation Awards who carefully considered over 50 award applications. We appreciate your deep and meaningful contributions to this prestigious award.

This year's adjudicators were:



Simon Winter
Executive Director of the Syngenta Foundation for Sustainable Agriculture



Leticia (Ama) Deawuo
Executive Director of SeedChange



Mohamad Yaghi
Vice President of Innovation Hub and AgExpert at Farm Credit Canada.

EVENTS AND OUTREACH

The Arrell Food Institute strives to connect and empower diverse voices in food and sustainability. Creating opportunities through workshops, panels, and site visits to foster community, share knowledge, and forge collaborative partnerships is vital to the growth of Canada's food sector.



EVENTS AND OUTREACH



Arrell Food Institute has hosted and participated in several events and engagements this year. Topics covered a range of food system themes tailored for different audiences.

Deep Dish Dialogues

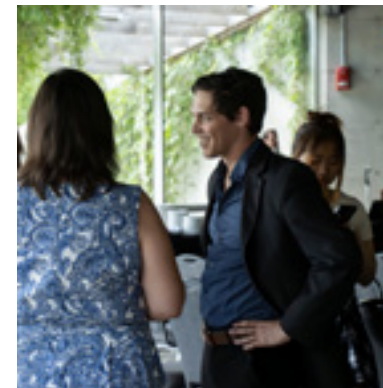
There have been seven Deep Dish Dialogue events in the past year. Deep Dish Dialogues are recurring events that are streamed live from the Anita Stewart Memorial Food Lab at U of G and are a way of bringing different people in the food industry to participate in conversations with members of the U of G community in front of a live audience. Topics covered this year include: Indigenous food education, Scaling from restaurant to retail, food and faith, celebrating Caribbean cuisine, nutritious food on a budget, baking bread science, and local food production. This resulted in over 600 views online viewers and 245 in-person guests. All events can be viewed through the Gordon S. Lang School of Business and Economics YouTube page.

Summit

The 2023 Arrell Food Summit, themed “Pathways to Change,” was a pivotal gathering that brought together over 175 in-person attendees and 400 registrants online from diverse backgrounds. This significant event featured more than 20 distinguished speakers, including industry leaders, policymakers, and researchers, who shared their insights on critical themes such as food security, climate change, and innovation. The event agenda included themed conversations on securing the future, elevating voices, adopting innovations, addressing climate and building community all. The summit fostered thought-provoking discussions and collaborations, exploring potential solutions to the complex challenges facing the global food system. Ultimately, the event concluded with a call for concerted action to build a more resilient, equitable, and sustainable food future.

Food Day Canada

On July 25th, AFI partnered with Food Day Canada and Canada Beef to present A Nations Table which explored the life’s work of Anita Stewart, the “patron saint of Canadian cuisine”. With over 125 community members in attendance, the event started with a screening of the documentary, continued with three panel discussions on filmmakers, food experts and researchers, and then finished with a post-screening reception full of delicious Canadian cuisine. All parts of the food system including government, industry and consumers, were represented and introductory speeches were given by Senator Rob Black and Jeff Stewart, chef and son of Anita Stewart.



Top Viewed Pages:

- AFI Global Food Innovation Awards
- Scholars Page
- Home Page
- Summit Landing Page
- Events Page

576 social posts generated



129,000+ website views
+25% increase in traffic



349.1% increase in impressions compared to previous year
Over 944k+ unique impressions



331% increase in engagement compared to last year

@
@arrellfoodinstitute
over 1,000 increase in net follower growth

Over 40K engagement points this year



Website views @ more than **643k hits** since 2017



AFI PEOPLE

Director
Evan Fraser

Chairs

Maria Corradini, Arrell Chair in Food Quality
Sara Edge, Arrell Chair in Food, Policy and Society
Tongzhe Li, Arrell Family Chair in Behavioral and Experimental Economics
Sadaf Mollaei, Arrell Chair in the Business of Food

Staff

Nina Berry, Finance Manager
***Rosemary Brockett**, Knowledge Mobilization Coordinator
Jac Carson, Project Outreach and Communications Coordinator
Pauline Cripps, Community Food Lead
***Brooke Dietrich**, Communications Coordinator
Erin Doherty, Strategic Initiatives Lead
***Ann Kraus**, Project Coordinator
Janice LeBeouf, Strategic Initiatives Coordinator
Aaron Misener, Communications Manager
***Shelley Morrison**, Project Manager
Muriel O'Doherty, Events Manager
Jeanna Rex, Education Lead
Elizabeth Shantz, Knowledge Mobilization Manager
Alex Sawatsky, Creative Advisor
Alice Tamblyn (Raine), Director of Operations
***Melissa Watkins**, Project Director
Manahil Zaid, Communications Coordinator

During this year, collaboration between AFI staff and Food from Thought (FfT) colleagues has been accelerated, with many shared objectives and common projects underway. FfT is a \$76m research program at UoG funded through the CFREF program and overseen by a small staff team. An asterisk denotes a Food from Thought affiliation.*

Scholars

Chinaza Arinzechukwu	Ngwenyi Anna Mafor
Alicia Bohren	Khamshajini Raveenthiran
Jessica Castellanos Labarcena	An Sakai
Dakota Cherry	Zahra Saghafi
Katherine Eckert	Giselle Shmitz
Maria Margarita Fontecha	Maleeka Singh
M Manjurul Islam	Olivia Willoughby
Emily Kaliei	

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