

ANNUAL REPORT

SEPTEMBER 2019 – AUGUST 2020

UNIVERSITY
of GUELPH

IMPROVE LIFE.



ARRELL
FOOD INSTITUTE

AT THE UNIVERSITY of GUELPH



Our Vision: A future where people in all communities have secure access to safe and healthful food through transparent, competitive and sustainable food systems.

Acknowledgments

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 Mississaguas, 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 privileged to be surrounded by a huge range of wonderful and supportive colleagues at the University of Guelph, Canada's Food University, without whose support driving the mission of the Arrell Food Institute – to improve life by elevating food – would be impossible. Special thanks to the Arrell Family Foundation for the ongoing support of the 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 that have been historically and structurally excluded, including BIPOC communities, people with disabilities, LGBTQIA2 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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Letter from the Director



As a lockdown unfolded, and the early days of isolation turned into weeks and months, it has been astounding to watch the effect of the global pandemic on the food system. We witnessed the dedication of Canadian truckers, food processors, farmers, food inspectors and grocery store clerks as they worked tirelessly to keep the food system running. And aside from the panic buying in March that emptied grocery stores of some key items, in many ways the food system in our country has proven remarkably resilient.

However, the pandemic also reveals important areas where our food system needs to be improved. Some of the people we rely on most for our food security – such as temporary migrant farmworkers or packing plant employees – are those who are paid the least, have the poorest job security, and are the most precarious in terms of immigration. Meanwhile, the closing of the restaurant industry not only devastated the dreams of tens of thousands of independent entrepreneurs but also put a million people out of work, hurt farm incomes, and precipitated a tidal wave of food waste as supply chains reorganized to feed diners who suddenly were eating at home. Finally, both in Canada and internationally, the economic cost of the global pandemic has caused food insecurity to skyrocket. Food banks in Canada have seen unprecedented demand while the United Nations suggests hunger will double this year.

Learning the lessons of the global pandemic for the food system is crucial if we want to come out of the current predicament stronger, more resilient, more efficient, healthier, and sustainable. Canada should see agriculture, and the agri-food sector, as an engine for economic opportunity that can put our country firmly onto a path of “green recovery”.

Arrell Food Institute is at the center of these conversations and is working to offer our expertise and collaborate on strategic initiatives. From our work on how the pandemic might affect food prices through to our partnerships with key industry, community, civil society and government actors, we have had the very great privilege of helping steer the conversation nationally and internationally.

In this report, you will see evidence that AFI was already committed to work that served a stronger agri-food system, and when the pandemic arrived, we adapted so that our expertise could provide guidance to our colleagues, industry and government.

The challenges of this year have been profound for every sector of the food system. And Arrell Food Institute is determined to use our growing platform as one of the most recognized and trusted voices about food in Canada to ensure the opportunity afforded by the crisis helps us grow stronger together as a nation.

Evan Fraser
Director, Arrell Food Institute

A man in a dark t-shirt, brown pants, and a baseball cap walks through a grassy field. In the background, several black cows are grazing. The sky is filled with large, dark, dramatic clouds, with a bright light source breaking through in the distance. A flock of birds is visible in the upper part of the sky.

RESEARCH FOCUS


Canadian Agri-food and the Pandemic

The pandemic has precipitated a moment where we are asked to rethink and redesign our current approach to food in order to ensure all Canadians enjoy a food supply that is safe, sustainable and secure at all times.

To help guide this national conversation, Arrell Food Institute's faculty wrote more than 17 op-eds this year and were interviewed for national and international print, radio and television more than 90 times between March and May. Drs. Evan Fraser, Maria Corradini, Phil Loring, and Simon Somogyi applied their research as leading voices in Canada and internationally on pressing topics such as the effect of the pandemic on food prices, migrant

labour, food system resilience, food safety, and food insecurity amongst students, marginalized and minority groups.

Arrell Food Institute's team deliberated in the early days of the pandemic to map a plan forward and pivot our efforts to become a leading and collaborative source examining COVID-19's impacts on our food systems. As a result, we used the time during lockdown to consult with a range of campus colleagues (including the University of Guelph's Food from Thought and One Health Initiatives) to launch a webinar series on COVID-19 and the agri-food system. This series has already reached 2000 viewers and covers a range



of diverse topics including the impacts of COVID-19 on both rural communities and the culinary industry.

We also used this time to enhance our presence on social media and developed new online resources. This includes new videos featuring University of Guelph experts explaining the impacts of COVID-19 on food safety protocols in grocery stores, changes in food waste behaviour, and new developments in the field of food fraud. These actions helped ensure that the University of Guelph's leading experts were better able to connect with the public during the time of significant disruption and uncertainty.

All of these efforts built towards a new and exciting project, *Growing Stronger*.

A partnership with Canadian Agri-Food Policy Institute (CAPI), *Growing Stronger's* goal is to understand how the Canadian food system is impacted and uses a collaborative model where recommendations and policy suggestions were built out of the real experiences of Canadians. The outcomes of this project will be featured at the 2020 Arrell Food Summit.

AFI's team pivoted to become leaders in examining COVID-19 impacts on our food systems.

RESEARCH FOCUS

Strengthening Value Chains at Canada's Food University

One of the key lessons from the COVID-19 pandemic is how dependent we all are on long and complicated value chains that not only bring us our daily bread but also supply us with everything from labour for our farms to sanitizers that keep our milking operations clean. Understanding these value chains, identifying where they are vulnerable, and exploring the ways that technology may improve efficiencies is one of the major themes that AFI has explored over the past 12 months.

Led by Arrell Chair Simon Somogyi, key research outputs in this theme include an evaluation of the economic and ethical implications of new

This work is attracting a high-level of policy and industry attention.

value chains and a focus on innovative forms of protein, including trout, tofu-specific soybeans, and lamb for “ethical” markets. Dr. Somogyi also explored how new technologies (such as e-commerce platforms) may result in new supply chains emerging as producers and consumers are linked together in new and exciting ways.

Professor Somogyi successfully used his position at Arrell Food Institute to leverage additional funds from organizations such as Ontario Ministry of Agriculture, Food and Rural Affairs, the Social Sciences and Humanities Research Council of Canada, and a range of industry sources.

This work is attracting a high level of policy and industry attention and in the past 12 months, Dr. Somogyi has spoken to audiences including the Canadian Institute of Food Science and

Technology, the Quebec Ministry of Agriculture, the Maritime Beef Council, and Ontario Pork.

Each year, work on this key research theme attracts tremendous public attention through the annual food price report, a collaboration between a number of professors at the University of Guelph (including faculty in computer science) and Dalhousie University. In 2020, this collaboration will expand and feature western Canadian experts. Dr. Somogyi co-leads writing this report and the 10th anniversary edition in 2019 attracted enormous media attention, including coverage in almost all major Canadian news outlets.

In response to the pandemic, Dr. Somogyi also co-wrote a special mid-year report on how the pandemic might affect food prices. This pandemic-edition predicted (correctly) that the effect of the lockdown would only have relatively minor impacts on overall food prices and generated significant public debate. Further research to address the pandemic's impact on restaurants and retail provided opportunities for collaboration with Ontario Agricultural College's Dr. Mike von Massow and Gordon S. Lang School of Business's Dr. Bruce McAdams.

Arrell Food Institute's work on value chains has drawn on colleagues from across both the University of Guelph and Canada as a whole. This has enabled AFI to provide scholarly insights, as well as public reflections and high-level policy advice, on the way we all depend on value chains providing us with daily food security.





Connecting into Community Food Systems

Despite living in one of the world's richest countries, and despite the fact that Canadians on average only spend a small percentage of their income on food, food insecurity is still unacceptably high. Particularly in rural areas and amongst Indigenous communities, levels of food insecurity in Canada are on par with some of the poorest parts of the world. Better understanding the root causes, and working collaboratively with relevant stakeholders on innovative solutions, is at the heart of this theme of AFI's work. Led by Arrell Chair Dr. Phil Loring, we are engaged with a range of international and Canadian stakeholders, trying to facilitate constructive dialogues on food insecurity that will solve some of these very serious problems.

In academic terms, recent publications on this theme include reflections on how to solve complex problems where both social and environmental factors interact, the way in which food systems and tourism can intersect to help reduce food insecurity amongst Indigenous communities in the Amazon, and significant engagement with rural Indigenous communities in North America where fish are a staple not only of people's diets but also of their culture.

In addition to building on a very strong track record of traditional academic outputs, Dr. Philip Loring has led work that helped develop a range of other unique science communication initiatives including short animated videos and a podcast called *Social FISHtancing*. With over 2400 listens, this podcast explores COVID-19's impacts on fishing communities and features a diverse range of guests including fishermen and fisherwomen, community leaders, and an exclusive interview with the Minister of Fisheries, Oceans, and the Canadian Coast Guard, the Hon. Bernadette Jordan.

Another highlight from this theme of AFI's research was the release of the film *Wetland/Wasteland* that documents how farmers, Indigenous leaders and conservationists came

together to sustainably manage wetlands in the Canadian prairies. The film already has 13,000 views. By complementing traditional academic publications with such innovative popular digital communication tools, Dr. Phil Loring has expanded his national and international profile over the past year.

Another of AFI's efforts to strengthen community food systems is to provide state-of-the-science reports, coupled with policy recommendations, called the *Spotlights*.

The first two of these *Spotlights*, released in Spring 2020, focused on community food systems, led by Dr. Loring, and school food and nutrition, co-led by Arrell Scholar Amberley Ruetz, and Dr. Jess Haines from the Dept of Family Relations and Applied Nutrition. The school food report advocates for Canada to join the other G8 countries in offering a comprehensive school nutrition program, which will help address child food insecurity in communities across the country.

AFI is using podcasts and videos to boost engagement on the issues around food insecurity.



RESEARCH FOCUS

Safeguarding Food Quality and Sustainability

Maintaining food quality throughout the food supply chain, while reducing waste and plastic packaging, is a critical issue facing food systems today. However, these issues are often seen as being in conflict with each other given that one way of consuming food at peak quality is through prematurely discarding food items or using durable material like plastic to keep food from spoiling. Unfortunately, food waste and use of plastic packaging are both unsustainable for a healthy planet. Developing the scientific insights needed to address this conflict is at the core of this theme of AFI's work and is led by Arrell Chair, Professor Maria Corradini.

Recent academic publications by Professor Corradini include new insights on food quality and safety, such as developing techniques to increase and monitor food deterioration, all the way to understanding how biodegradable food packaging can be as equally functional as conventional plastics. Dr. Corradini's many publications include 9 peer-reviewed journal articles this year alone, many of which have been published in top rated international journals such as *Scientific Reports*.

This publication trajectory has allowed Dr. Corradini to establish an extremely well-funded research program and she and research partners raised nearly \$700,000 in funds this year from competitive granting agencies including Natural Science and Engineering Research Council of Canada (NSERC), Mitacs and United States Department of Agriculture (USDA).

Exploring trade-offs between long-term sustainability and the immediate needs of maintaining the highest levels of food safety requires the best scientific insights and a careful understanding of the limits of municipal infrastructure and policymaking. Providing both academic publications that advance the discipline,

along with helping policy makers navigate tough social and political issues, sits at the core of AFI's work on food safety and food packaging.

AFI has built close relationships with a range of stakeholders, ensuring Dr. Corradini's cutting-edge scientific work and expertise are applied in our own community. For instance, Dr. Corradini is actively engaged in creating a dialogue that links colleagues across the University of Guelph campus to local levels of government. She is also working with policy makers at many levels on how real-time sensing tools can be deployed throughout the supply chain and the feasibility of treating biodegradable packaging in municipal waste handling facilities. Dr. Corradini has also been active nationally and internationally through significant engagements with governmental offices and global organizations, such as Environment and Climate Change Canada and CGIAR.

Public education tools developed by the team led by Dr. Corradini are helping translate science into practice and include an infographic that unpacks the confusing reality of how to dispose of plastic packaging, allowing Canadians to actively reach their sustainability goals based on sound science.

AFI's commitment to these topics is also reflected in the research of its scholars. Arrell Scholar Karthika Sriskantharajah's PhD work with Dr. Jay Subramanian's lab looks into shelf-life extension of tender fruits and consequent reduction in post-harvest losses using natural compounds. Arrell Scholar Sujani Rathnayake's MSc research in Dr. Robert Hanner's lab looks into chemical and genetic markers of quality and authenticity in tea. Arrell Scholar Maleeka Singh, during her PhD at Dr. Corradini's lab, will explore the stability of food quality attributes and identity markers during food storage to reduce food waste.

RESEARCH FOCUS

The Ag Tech Frontiers

An explosion of digital technologies is reshaping what we eat and how we produce food, and this has not gone unnoticed by Arrell Food Institute. From smart tractors deciding what to plant, to hamburgers that taste like meat but contain no animal products, the future of food has never been more exciting or innovative. In fact, recent technological advances suggest that humanity is beginning a transformation as profound as any agricultural revolution from the past, and Canada has a role to play.

Over the past year, members of Arrell Food Institute not only developed research programs around the next agri-industrial revolution, but

Working with industry and government, AFI has developed research programs around emerging agri-technology.

also worked closely with industry and government on this topic. Key insights include changing how we train the next generation of agri-food leaders, the importance of developing robust data management systems to protect farmer privacy, and the need to develop better cyber security systems in case our food systems become vulnerable to malicious hacking. Drs. Rozita Dara, Ali Dehghantanha and Hadis Karimipour from the College of Engineering and Physical Sciences provided vital

collaborations with AFI to advance this work. Graduate students, including Arrell Scholar Abdul-Rahim Abdulai and Dr. Fraser's PhD candidate Emily Duncan, contribute to this work within their own studies or as part of AFI special projects.

Together, we have secured major funding to support this work through a range of partners including the Social Sciences and Humanities Research Council of Canada, the Natural Science

and Engineering Research Council of Canada, the University of Guelph's Food from Thought initiative, the Ontario Ministry of Agriculture Food and Rural Affairs, and George Weston Limited.

Academic results of this research theme have been published in top tier journals such as *Trends in Food Science and Technology* (the highest impact factor of any food science journal), as well as *PLOS ONE*, *The Journal of Rural Studies*, and an academic book called *Uncertain Harvest: The Future of Food on a Warming Planet*.

As evidence that this work is having impact, Arrell Food Institute experts were invited to speak on these issues to a range of government and industry groups including the World Economic Forum, Chatham House, and the Ditchley Foundation as well as numerous Canadian committees and associations.

AFI's work over the past year clearly shows that, in the near future, the wise use of technology will allow us to produce more high-quality food on less land and with fewer inputs. Furthermore, our work shows that so long as this is properly done, digital tools will help us reconcile the need to produce more food for the growing human population with the need to be better stewards of the environment. Realizing these benefits, however, requires a new approach to training agri-food leaders, as well as key investments in data governance and cybersecurity, and AFI is ready to take these on.



OUTREACH
RESEARCH
EDUCATION
AWARDS
EVENTS



Outreach

Growing Stronger

A new initiative by AFI and Canadian Agri-Food Policy Institute, the *Growing Stronger* Project aims to steer Canada's food system out of the pandemic disruption into a more resilient future.

Gathering evidence from organizations and individuals, the project examines the experiences and develops policy recommendations as well as other outreach materials.

The project is supported by a Trusted Advisor Network consisting of a range of people who lend their view and experiences to ensure the project includes perspectives from all parts of the food system.

Spotlight

The Spotlight project is a knowledge mobilization program, aiming to deliver synthesized state-of-science reports to policy makers. The seven "spotlights" focus on topical issues such as school food programs and food waste, and the recommendations developed came from not only scientists but also industry leaders. Released on a rolling basis, the Spotlights allow AFI to provide thought leadership for a food system with untapped potential.

Spotlight Topics

- School Food and Nutrition
- Community Food Systems
- Consumer Behaviour
- Food Waste
- Food Safety
- Ecological Services
- Food Fraud

Enhanced Digital Outreach

AFI committed to expanding its digital offering in the 2019-2020 period, including providing more resources on important food topics, delivering more op-eds and expanding our digital footprint. This includes developing a new website to better serve our communities that will be launched in the Fall semester.

To support these efforts, AFI has been working with global communications firm Edelman to improve our offerings and better target our audiences. This has already resulted in AFI's "share of voice" (a common metric used to measure impact in the media landscape) on food related topics growing to 9% in May 2020 from 5% in December 2019.

Following the lockdown, AFI ramped up online outreach to continue to provide high quality programming. These efforts included the COVID-19 + Agri-Food Disruption webinar series, authored op-eds on how COVID-19 affected the sector, infographics breaking down the issues for public consumption, as well as short informational videos advising consumers on good food safety practices.

2019-2020 Highlights

- ◆ Supported the launch of RBC's Farmer 4.0 report
- ◆ Dr. Fraser has been working with the World Economic Forum.
- ◆ AFI supported Hungry for Knowledge, an inter-University roundtable aimed at establishing a coalition among Ontario universities to find solutions for student food insecurity.
- ◆ AFI experts gave keynote speeches at nearly 25 conferences
- ◆ Dr. Simon Somogyi is writing a bimonthly column for *Grocery Business Magazine*.
- ◆ Dr. Phil Loring produced a series of whiteboard videos to explain sustainability concepts.
- ◆ Dr. Fraser and Dr. Corradini supported the ICON class, an experiential learning opportunity for undergraduate students.
- ◆ Dr. Corradini developed a landing page to explain bioplastics as well as infographics consumers can reference as they sort waste.
- ◆ Dr. Fraser developed an audio-drama and podcast series with the Theatre Studies department and a team of graduate students.



An illustration of the circular food economy from the Spotlight Project.



Critical thinking skills at work at the Improve Life Challenge: Hack the Farm.



7.25x

increase in media features
for AFI experts over
last year (in response to
COVID-19 analysis requests,
March – May)

18

op-eds by AFI experts,
including scholars

36%

growth in new visitors to the
AFI website this year



OUTREACH
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Research Highlights

In just two years at the University of Guelph, Arrell Chairs, Dr. Maria Corradini, Dr. Simon Somogyi and Dr. Phil Loring have demonstrated their ability to lead in research excellence by establishing multidisciplinary collaborations, publishing in high-impact journals and attracting top graduate students.

Leveraging AFI

AFI's researchers have successfully leveraged funding from a diverse range of funding agencies to expand their teams, invest in cutting-edge lab equipment and enhance their research portfolios. As lead and co-applicants on funding opportunities from the following agencies, Arrell Food Institute's faculty members are contributing to elevating the University of Guelph's role as a global leader in agri-food research. Funding has been secured from:

- Social Science and Humanities Research Council of Canada;
- Canada First Research Excellence Fund Project Food from Thought;
- Mitacs;
- Natural Sciences and Engineering Research Council of Canada;
- United States Department of Agriculture; and
- Ontario Ministry of Agriculture Food and Rural Affairs.



Dr. Maria Corradini is currently working on food authenticity protocols that compile and integrate complementary data streams, and novel materials and processes, to deal with chemical and microbial deterioration and contamination. This work is supported by a top-ranked NSERC grant, a USDA grant, and a Mitacs grant in collaboration with the industry.

To leverage funding for her research program, Dr. Corradini has applied her findings from past and current projects to directly shape new grant applications that will support her team's work in developing measures of food quality and safety of the food environment. To do this, she is actively working with colleagues across campus, nationally and internationally (McGill University, UMass Amherst - USA, Universidad de Lima- Peru, Rutgers University-USA, Jomo Kenyatta University- Kenya, among others), and non-profit organizations such as CGIAR. Corradini's ability to couple her research expertise and willingness to collaborate with her aptitude for science communication has led her to make significant strides this year in advancing her role as a leader in her field nationally and internationally.



Dr. Evan Fraser's research over the past year has contributed to research on envisioning the future of food and to better understanding the impacts that climate change has on food production. Dr. Fraser, Arrell Chairs, and other University of Guelph faculty, are leading a SSHRC insight grant on Farming 4.0 and technology adoption. This funding is leveraging Dr. Evan Fraser's collaborative work with leaders across the University on developing a future of food where new technology, training and practices are adopted to build food systems that are just, resilient and sustainable.

As part of an international research collaboration, Dr. Fraser published a paper in *PLOS ONE* that outlines how climate change may transform agricultural landscapes. This research led to new collaborations with researchers at Western University to explore the future of staple crop production in warmer climates.



To further expand his research collaborations, **Dr. Phil Loring** has fostered a new partnership through Coastal Routes with Local Catch, a non-profit that represents over 500 fishermen, women and companies. Dr. Loring and fellow Coastal Routes collaborators created an opportunity to explore the resilience of the global seafood system to major disruption and are working on a high impact article reporting their findings.

In his ongoing work exploring the sustainability of agriculture in the Canadian Prairies, Dr. Loring published a paper in *Biological Conservation* that offers a diagnostic framework for researchers and community practitioners to diagnose and manage tense conflicts among water, wetlands conservation, and farming.



Dr. Simon Somogyi is advancing research on identifying how to effectively include new technologies along agri-food supply chains to enhance efficiency and sustainability. At the consumer stage, with the support of OMAFRA Gryphon LAAIR funding, Somogyi is examining Canadian consumers' preferences for smart food cabinets.

In response to COVID-19, Somogyi was awarded two University of Guelph COVID-19 Research Development and Catalyst Fund grants. The first focuses on how COVID-19 has impacted the sustainability initiatives of Canadian food service business and the second on how COVID-19 has changed Canadian female consumers use of online and virtual forms of grocery shopping. From these projects Somogyi plans to submit journal publications in late summer.



OVER \$1 MILLION
in new grants leveraged for
agri-food research

31

peer reviewed articles and
1 academic book

28

graduate students
supervised by AFI
researchers

23

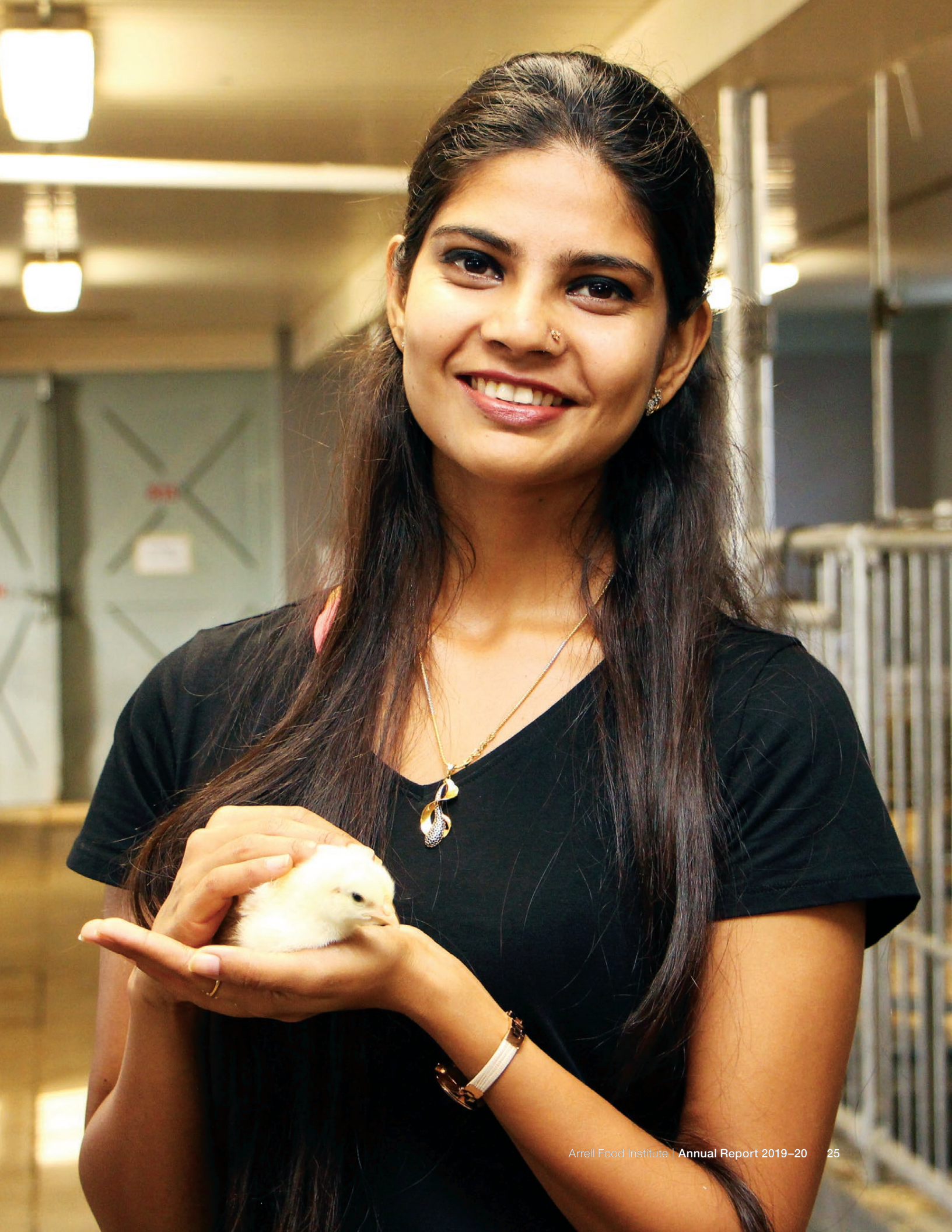
presentations delivered

6

research staff



OUTREACH
RESEARCH
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Education

Scholars

In 2020, Arrell Food Institute reached an exciting milestone for the education program: with 4 cohorts at each stage of their graduate degrees, we have reached steady state for the Arrell Scholar program. But numbers alone do not speak to the success of this program. The students themselves continue to demonstrate leadership in research as well as community engagement in each of their disciplines.

INNOVATORS

AFI 2019 Scholar, **Andrew Nixon** was presented with an unexpected opportunity during the pandemic. Andrew and partners had previously established Zerocery, a home-delivery zero-waste grocery business in the Guelph and Waterloo regions. The popularity of the service exploded when homebound customers came to depend on food delivery during the lockdown.

AFI 2017 Scholar **Katya Kudashkina** designed and launched “Connecting Agriculture & Food Research and Artificial Intelligence”. This exploratory initiative brings together machine learning techniques and research in agriculture and food to support critical global issues around human health and a sustainable food supply.

PROGRESS AND RECOGNITION

Several Arrell Scholars celebrated important milestones as part of their studies. **Sabrina Rondeau** (2018), **Abdul-Rahim Abdulai** (2018), **Sughanda Raj** (2018), **Karthika Sriskantharajah** (2017)

NEW FACES

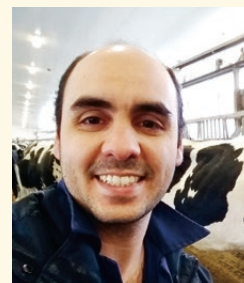
Arrell Food Institute welcomed a record of six new scholars in 2020. **Regan Zink, Fatemah Fazel, Guilherme Madureira, Maleeka Singh, Katherine Eckert** and **Jessica Castellanos Labarcena** represent a broad range of disciplines, including poultry health, food quality, insect biodiversity and cattle genetics. Guilherme is the first Arrell Scholar to originally hail from South America.



Regan Zink



Fatemah Fazel



Guilherme Madureira



Maleeka Singh



Katherine Eckert



Jessica Castellanos Labarcena

and **Katya Kudashkina** (2017) all successfully completed their PhD qualifying exams this year. **Victoria Lesy** (2018) is preparing to defend her MSc. and conclude her Arrell Scholar tenure by 2021.

KNOWLEDGE MOBILIZATION LEADERS

From op-eds to podcasts, Arrell Scholars are constantly taking the initiative to share their research insights with practitioners and the

public. **Sujani Rathnayake** (2019) established a blog to highlight underutilized crop species and **Sabrina Rondeau** (2018) helped initiate a French-language citizen science project on pollinator biodiversity monitoring. **Kathleen Johnson** (2017) participated in the intense 3 Minute Thesis competition and **Abdul-Rahim** (2018) continues to regularly produce new *FoodFarm Talk* radio shows for CFRU.



PUBLICATIONS

Karthika Sriskantharajah (2017) recently published two new papers on the salt tolerance of cash crops and 2019 Scholar **Emily Kaliel**'s paper on *Women's Health Practitioners and Community-Based Health Services in 20th century Alberta* is currently in press. Together, Arrell Scholars have produced nearly 30 new papers this year, published or under review.

BUILDING RELATIONSHIPS

Roshan Pudasaini (2019) is working with the UK's Chatham House on how agriculture drives biodiversity loss and what policies can prevent this. **Amberley Ruetz** (2017) continues to advocate for school-food nutrition programs and co-led a Spotlight report on the subject that will aid policy makers in building a healthy system for Canadian children. **Abdul-Rahim Abdulai** (2018) is wrapping up an extensive collaboration with colleagues at John Hopkins University on the links between agriculture and nutrition in the Developing World.

Education Initiatives

UNIV*6050: INNOVATION & ENTREPRENEURSHIP IN AGRI-FOOD SYSTEMS

A new set of graduate students participated in an AFI co-designed course planned to train our future leaders in the food and agriculture sector. In partnership with the University's Food from Thought Initiative, the Ontario Ministry of Agriculture and Rural Affairs' "Highly Qualified Personnel" scholarship and the Lang School, UNIV*6050 helps graduate students working on agri-food topics build interdisciplinary teams to solve problems for community partners. The result is an opportunity for students from across the University to practice and refine their critical thinking, collaboration and communication skills. From addressing food waste to utilizing machine learning to predict the most desired traits of dairy bulls, these teams collaborated across disciplines to support the sector with solutions.



30

publications by
scholars

19

scholars supported
since 2017, from

9

countries



Education

2019-20 Community Partners Projects

Community engaged projects prepare our students to lead in the agri-food sector through experiential learning, while partner organizations pair with a dedicated, multi-disciplinary team to work through a challenge identified by the partner.



Food Waste and Food Sustainability

Oreka Solutions

Oreka Solutions' mission is to harness the power of the black soldier fly to transform animal feed.

The graduate team supported Oreka Solutions through mapping and identifying food waste streams in Guelph/Wellington area and informing the creation of a management and tracking software system to track input at all levels (retail, processors, farmers, and brewers),



Fresh Food Rx Pilot: Addressing Food Insecurity

The SEED

The SEED is a community project of the Guelph Community Health Centre whose goal is to eradicate food insecurity in Guelph by increasing food literacy and access to healthy food. The SEED's Fresh Food Rx Pilot identifies patients who are food insecure and provides them with fresh food prescriptions that improve food literacy and include a voucher to redeem fruits and vegetables at Community Food Markets.

The graduate team participated in the Fresh Food Rx Pilot by conducting surveys and interviews of potential clients. They also supported the pilot in data analysis, community and policy advocacy and future study design.

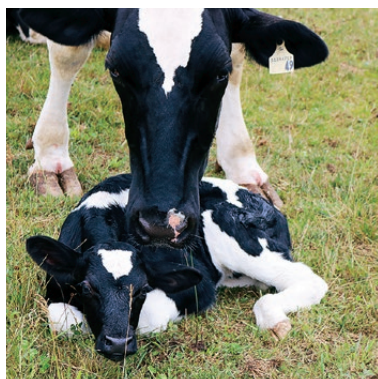


Measuring the Environmental Impact of Agri-tourism

Culinary Tourism Alliance

Agritourism can contribute to more sustainable local food systems across the globe by connecting people to where their food comes from, providing income diversification opportunities for farmers, and encouraging conversations about sustainable farming.

Through a series of case studies, the graduate team examined environmental impacts of agri-tourism, including impacts due to over-tourism. This information will aid CTA in determining how destinations prioritize environmental sustainability and how tourists value environmentally-friendly practices.



Sustainability through Efficiency in Livestock Production

The Semex Alliance

Semex is an international company that provides high quality semen from selected elite sires for the dairy and beef industries. Understanding the factors that affect what product will be popular in each market is a large challenge. Semex would like to utilize machine learning or artificial intelligence capacity to help solve this problem in a novel way and design a product line to meet the growing diverse needs of dairy farms around the world.

The graduate team conducted market research and technology development services to propose a course of action for Semex in predicting the desired genetics for each region.



Food Innovation to Increase Sustainability

Ripple Farms

Ripple Farms is an aquaponics farm system balancing sustainability and innovation to grow high quality crops and Toronto's freshest seafood and greens 365 days a year.

The graduate team conducted a market feasibility study involving qualitative market research in order to produce convincing communications.



Food Waste

10C Nourish

Food waste at the household level accounts for 47% of Canada's food waste. Thus, identifying effective strategies to reduce household food waste is critical to ensuring the sustainability of our food systems.

This graduate team was a part of a larger pilot study to test the feasibility, acceptability, and preliminary impact of a Food Waste Reduction Toolkit for families. This project involved developing intervention messages (i.e. text messages) to support food waste reduction, primary data collection from families, recruitment of families, facilitating parent /child cooking nights and education sessions, data analysis, and creating a variety of knowledge mobilization tools.

OUTREACH
RESEARCH
EDUCATION
AWARDS
EVENTS



ARRELL
FOOD INSTITUTE
OF THE UNIVERSITY OF CALIFORNIA

Arrell Food Innovation Awards

OPENING REMARKS

FIRST COURSE
Purple Farms Salad
Red Russian kale, aquaponically grown arugula and pea shoot greens
roasted Cookaboo rutabaga, hot smoked Arctic Char
vanilla and sherry vinaigrette, cold smoked salmon

Awards

In 2020, the award nominations pool presented a unique opportunity to the adjudication committee. The adjudication committee determined that the work of two organizations were worthy of the community prize, and so for the first time, AFI is pleased to present three awards.



RESEARCH AWARD

Dr. Rattan Lal

Dr. Rattan Lal is a world-leading soil scientist with a tremendous body of published work. Dr. Rattan is currently a Distinguished University Professor at The Ohio State University, and his career has spanned over fifty years across six continents. His work has focused on a soil-centric approach to agriculture sustainability and prosperity that has become even more vital in the context of climate change mitigation and adaptation. The applicability of his research has addressed food insecurity globally.



COMMUNITY AWARD

Community Food Centres Canada

Community Food Centres Canada is a nation-wide food security organization building health, belonging and justice in disadvantaged communities. CFCC has grown from two centres to 11 across the country, with two new centres being established shortly. Their model goes beyond food charity to offer a community respite, as well as develop skills and encourage advocacy. These dignified spaces adapt programming to local culture and needs. Through collaboration, they have had a global impact with their innovative model for addressing food security, as well as on businesses and donors in Canada, and they have monumentally shifted dialogue around food security.



COMMUNITY AWARD

Appetite for Change

Appetite for Change is a social enterprise in Minneapolis, Minnesota that uses food to build health, wealth and social change in their community. An employer of local youth, their impact on the community has been significant and rapid, with a quadrupling of size since 2014. They have helped catalyze a national youth-led food justice movement, as well as created space for people of colour to become entrepreneurs and community leaders. Their advocacy has led to changes in state legislature to create food funding and access. Appetite for Change's efforts also led to over \$5 million being invested in their community through their work, and as collaborators are working on innovative community research programs. Their dedication to capacity building and food security is a model for local efforts everywhere.



Adjudicators

The Arrell Global Food Innovation Awards Adjudication committee is a reflection of the excellence demonstrated by the winners of the award. For the 2020 award selection, AFI was pleased to welcome three new agri-food leaders to the committee.

Maria Andrade

Maria Andrade is a Principal Scientist of the International Potato Center, a co-recipient of the 2016 World Food Prize, with 30 years of working experience in Africa. She has released 30 bio-fortified sweet potato varieties of which 20 are drought tolerant. She served as Vice-President of the International Society for Tropical Root Crops, in charge of fundraising.

Christine Daugherty

Chairing this year's committee, and participating for the second time in adjudication, Christine Daugherty is the Vice President Global Sustainable Agriculture &

Responsible Sourcing at PepsiCo. She drives PepsiCo's short-term approach and long-term strategic direction for their sustainable agriculture agenda, including delivery against relevant PepsiCo Performance with Purpose 2025 goals. Prior to PepsiCo, Christine worked at Tyson Foods, where she held various roles, most recently Vice President of Sustainable Food Production.

Leon Kochian

Leon Kochian, is a professor in the University of Saskatchewan's Department of Plant Science and Department of Soil Science, recognized globally for translating his discoveries into improved crop production, particularly on acidic soils. Dr. Kochian is the Canada Excellence Research Chair in Global Food Security and the Associate Director of the Global Institute for Food Security at the University of Saskatchewan. He received the Arrell Global

Food Innovation Award for research in 2019.

Joseph LeBlanc

Dr. Joseph LeBlanc is a life-long Northern Ontarian, member of Wiikwemkoong Unceded Territory and has recently become the inaugural Associate Dean, Equity and Inclusion at the Northern Ontario School of Medicine. Joseph was previously the Director of Indigenous Affairs at the Northern Ontario School of Medicine, and the Executive Director for the Social Planning Council of Sudbury. Before joining the council in 2015, he worked for a diverse range of organizations, including academic institutions, non-profits, and Aboriginal non-profit governance corporations.

OUTREACH
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Thought
Leadership



John Stackhouse

SVP, Office of the CEO

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@StackhouseJohn

Arrell
Food
Summit

Oct 2, 2019

Events

Summit 2019

The 2019 Arrell Food Summit was a celebration of AFI's ability to convene important conversations that will drive Canada forward as an agri-food leader on the world stage. Against the backdrop of Toronto's skyline, AFI brought together industry experts from around the world to confront the complexity of the food system's challenges and determine how Canada can fulfill its potential in this arena.

THOUGHT LEADERS

The Summit allowed AFI to expose Canadian food leaders to new ideas and new voices. Former US Chief Agricultural Negotiator and our keynote speaker, ambassador **Darci Vetter**, set the stage for the day's conversations by laying out the impact that agricultural trade can have on the well-being of our societies.

FOOD'S POTENTIAL

The day's conversations included debates over the role of institutions, such as hospitals, in driving change in food systems. Participants emphasized the various ways that food impacts the health of our communities, our cultures and our planet.



Industry experts from around the world addressed the Summit and interacted with Canadian food leaders in forums and panel discussions. There were also opportunities for one-on-one interactions throughout.



WHAT IS CANADA'S ROLE?

Canadian agri-food leaders took the stage to imagine what Canada could accomplish as an agri-food leader. In this, the dialogue highlighted the way that improved collaboration, data sharing and increased transparency are necessary if the federal government is to reach its goal of ensuring Canada becomes the world's trusted supplier of safe and sustainable food.

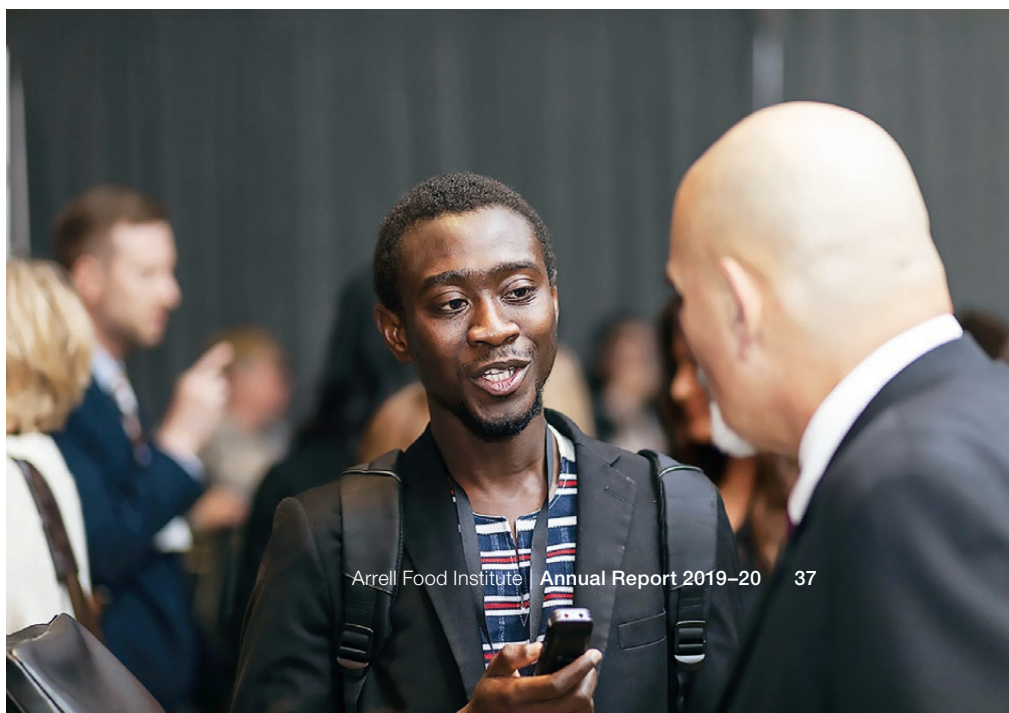
NEW FACES

John Stackhouse, Senior Vice-President at RBC, asked three young leaders in the agri-food industry about what the future of work in the sector might look like and what their generation will need to meet the challenges in agri-food. "We need generation C," John shared from the recently published *Farmer 4.0* report. "A nation of collaborators and communicators."

The sold-out event concluded with a celebration of the 2019 Arrell Food Innovation Award Winners. Appreciation for the community of agri-food leadership was highlighted by the attendees and 95% of participants told us they would come back for more.



While the food system challenges are complex, the Summit highlighted Canada's role in finding opportunities within them. The day was co-hosted by Dr. Evan Fraser (pictured above) and Dr. Maria Corradini.



Events

Improve Life Challenge: Hack the Farm

The Improve Life Challenge: Hack the Farm was a one-day immersive event bringing together interdisciplinary teams of graduate and undergraduate students and community partners to solve the most pressing and wicked challenges facing the food and agriculture sector today. AFI staff helped colleagues from Gordon S. Lang School of Business and Economics, Ontario Agricultural College, College of Engineering and Physical Sciences bring together a wide range of community partners that allowed students to come up with interesting possible solutions.

At the end of the day, teams pitched solutions to a panel of judges for a chance to win cash prizes. The event included students from all colleges at the University of Guelph and created an environment that harnessed the power of interdisciplinary collaboration as well as highlighting the participation of campus colleagues and community partners.

Since participating in the challenge, industry partners have been inspired to run similar challenges with their employees to spur innovative thinking.



Improve Life Challenge: Hack the Farm focused on interdisciplinary collaboration and participation from various colleges across the University of Guelph to solve pressing challenges facing the food and agriculture sector today



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