Agricultural Research Dissemination

A COLLECTION OF BEST PRACTICES

Agricultural Institute of Canada

aic

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Introduction

The knowledge system underpinning agriculture is a crucial driver of agricultural growth and productivity in Canada. Our full agricultural potential cannot be realized without research that is informed by real problems on the ground – nor without genuine efforts to effectively disseminate research outcomes to end-users and a broader audience.

In April 2016, researchers, government officials, industry representatives, and other agricultural research stakeholders gathered in Ottawa to discuss important issues relating to the dissemination of agricultural research. Several points of consensus emerged in the Conference Report, including:

- The need for further financial resources for infrastructure and staffing to address research dissemination, knowledge transfer and intellectual property issues;
- New participatory research and extension models that engage end-users and stakeholders throughout the research process; and
- Enhanced intellectual property management structures for collaborative research that will enhance its socio-economic impact and accelerate knowledge transfer through commercialization and market development opportunities.

There was especially strong consensus that, in order to accomplish these goals, stakeholders in the agriculture sector would benefit from the sharing of best practices in agricultural research dissemination.

Best Practices for Agricultural Research Dissemination – A collection of examples

The Agricultural Institute of Canada (AIC) has therefore compiled this collection of twenty best practices from across the sector, as a follow-up to our Conference Report, in order to provide concrete examples of knowledge sharing and information dissemination. Our hope is that these examples help give tangible ideas on how, among others, to deliver research results to end-users, engage stakeholders and evaluate programs.

In these examples, you will see a variety of strategies and approaches being implemented. This includes the use of innovative communication channels and knowledge translation strategies that involve all key actors in the research value chain – including producers, researchers, funders, extension specialists, industry, consumers and the public. The ultimate goal underlying all of the examples is to unpack the complexity of agricultural research, explain new research findings, foster public trust and support commercialization of new technologies and processes.

The best practices outlined in this document have been divided into three sections, each of them comprising a set of sub-themes representing different dimensions of research dissemination, namely:

A. Communicating Agricultural Research
B. Transferring New Knowledge
C. Commercializing Agricultural Innovation

While these examples represent only a small part of the remarkable efforts and work being done in the sector, AIC hopes that this document will be used by agricultural stakeholders from across the sector as a valuable reference tool to assist them in their continued efforts to better disseminate agricultural research.

Key Success Factors for Agricultural Research Dissemination

For each best practice in this collection, a consistent review of key aspects – including method, success factors, constraints and lessons learned – was conducted by AIC in conjunction with the organization(s) responsible for each project or program, and presented in detail in this report.

The following are the common success factors that came to light across a broad range of programs as imperative to the success of best practices that facilitate the movement of research into practice either by improving communication pathways between researchers and end-users, promoting ongoing knowledge transfer or accelerating the commercialization and adoption of innovation:

- **Multi-stakeholder participation:** The interaction between stakeholders in the research community and from across the supply chain is essential to facilitate the pairing of scientific knowledge with the expertise of hands-on knowledge. Connecting stakeholders and ensuring industry participation helps ensure research and knowledge communication efforts work to address important industry challenges and consumer concerns.

- **Collaboration:** The engagement of end-users and research stakeholders in the entire research cycle, allows researchers to respond more effectively to industry needs and develop technologies that can be commercialized and adopted more widely.

- **Stable funding and incentives:** Stable, long-term funding agreements and increased incentives for dissemination activities that support the resources necessary for effective communication, knowledge transfer and commercialization efforts.

- **Targeted, user-focused and timely messaging:** Knowledge translation efforts must be designed for the specified target audience to deliver uncomplicated messages in a timely, relevant and appropriate format.

- **Interactive formats:** Programs and technologies should be designed with ease of use, interactivity, audience accessibility and flexibility in mind to ensure broader impact.

- **Skills and expertise:** Focused training of new and existing highly qualified personnel with communication skills and extension expertise.

- **Long-term strategy, transparency, and accountability:** A defined process to benchmark progress towards the attainment of specific targets, supported by a clear long-term strategy, mission and defined description of roles.

- **Informed IP agreements:** A modern regulatory environment, knowledge of intellectual property (IP) and flexibility in IP agreements are essential in collaborative research leading to marketable innovations.

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- Beef Cattle Research Council
- Canadian Seed Trade Association
- Canola Council of Canada
- Center for Food Integrity (US)
- Dairy Farmers of Canada
- Egg Farmers of Canada
- Farm Management Canada
- Farming Smarter
- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) / Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ)
- OMAFRA and University of Guelph Partnership
- Ontario Pork
- Perennia
- Poultry Industry Council
- University of Guelph
- Vineland Research and Innovation Centre

What is a **best practice**?

A “Best Practice” is commonly defined as a particular method, program or intervention that has been proven to work well and produce good results, and is therefore recommended as a model[1].

The aspects of the best practices compiled in this report can be replicated and adapted to similar objectives across commodities.

[1] Food and Agriculture Organization of the United Nations.

Documenting Best Practices

To ensure readability and a clear presentation of what makes a practice successful in improving the path to innovation in the sector, the following format was used:

Title of the Best Practice

Organization	Who runs the best practice?
Target audience	Who are the users or beneficiaries of the best practice?
Objective	What is the aim/objective of the best practice?
Coverage	Where has the best practice been implemented and what is its potential coverage area?
Description	Short description of the best practice, the challenge being addressed and how the best practice is contributing to research dissemination.
Stakeholders and Partners	Who are the institutions, partners or implementing agencies, involved in the best practice? What is their role?
Method	How does the best practice work?
Success Factors	What are the conditions (institutional, economic, social, etc.) that need to be in place for the best practice to be successfully replicated?
Constraints	What are the challenges encountered in applying the best practice?
Lessons Learned	What are the key messages and lessons learned to take away from the best practice experience?
Online resources	URL of the practice or related web site(s).

SECTION A
Communicating Agricultural Research

To realize the full potential of agricultural innovation, knowledge institutions, the private sector, industry and governments must incorporate research systems into their operations that are better connected not only with each other, but also with the farming community.

The adoption of cutting-edge research has rapidly become a social process that relies heavily on both effective access to new technologies and the exchange of information.

This knowledge-intensive environment demands the innovative use of various communication channels and the implementation of new strategies to communicate research results to all end-users - including producers, researchers, funders, extension agents, industry, consumers and the public.

This section highlights eleven best practices for the communication of agricultural research. They have been grouped in three key thematic areas:

A.1. Dissemination Channels
A.2. Dissemination Strategies
A.3. Social License in the Agriculture Sector

A.1. Dissemination Channels

Traditional knowledge diffusion, such as in the publication of research in peer-reviewed journals and academic conferences, constitutes a necessary condition and a first step for communicating research results. Nevertheless, the use of other channels, including online knowledge resources – websites, social media, databases, wikis, blogs, infographics, videos, and podcasts – is of paramount importance to help ensure that stakeholders outside academia can utilize new knowledge.

This section showcases four practices that have facilitated the movement from research into practice. Through the use of a wide range of communication products these initiatives have successfully transferred research information to their determined target audience.

Case Study A.1.1. Agriwebinar® · Farm Management Canada

These agriculturally-themed webinars increase access to leading-edge information for farmers nationwide while encouraging multi-stakeholder participation. Through the Agriwebinar® platform, a wide variety of agricultural industry stakeholders conduct online presentations on farm business management and other knowledge areas relevant to the sector.

Organization	Farm Management Canada (FMC)
Target audience	Farmers and other agricultural professionals including advisors, academia, government, associations and organizations, and corporations.
Objective	To increase access to leading-edge farm management information for farmers and those supporting farmers, nationwide.
Coverage	National - International
Description	Agriwebinar® is an easy-to-use webinar platform used by individuals and organizations in the agricultural sector to present and participate in agriculturally-themed webinars. On average, FMC welcomes over 120 live participants to each Agriwebinar®. Agriwebinars® are typically conducted as presentations from an individual or group of individuals from their office space as a single online seminar. These typically last 60 - 90 minutes. However, webinars can also be live broadcasts from multi-day industry events to extend the reach of the learning opportunity for those with constricted travel availability. Agriwebinar® provides farmers and other agriculture professionals with access to topical and timely farm business management information from anywhere at any time. Since 2004, over 18,000 agricultural professionals have registered to attend Agriwebinar® sessions, with viewers from all over Canada and the world signing up to watch live and recorded presentations. The Agriwebinar® viewership consists of a wide variety of agricultural industry stakeholders.
Stakeholders and Partners	The Agriwebinar® platform is available to interested stakeholder groups. In 2016, webinars were conducted in partnership with the following organizations: Farm Credit Canada, Ag More Than Ever, Saskatchewan Ministry of Agriculture, and Dairy Farmers of Canada, to name a few.
Method	FMC runs webinar sessions from November to March to suit the seasonal availability of agricultural stakeholders. FMC works with partners to drill down into specific knowledge areas. Agriwebinars® are available from any mobile device or desktop computer using any internet connection. All live presentations are archived and also available by podcast. Some webinars require registration, while some are open access.

Case Study A.1.1. Agriwebinar® · Farm Management Canada

Success Factors

- **Multi-stakeholder participation:** FMC offers its Agriwebinar® program to groups that want to use this platform to spread their message.
- **Public and private:** FMC's webinars can be offered to a public audience or a private audience.
- **Ease of use:** FMC's webinars are typically free* for participants and anyone can participate as long as they have a computer and an Internet connection (including dial-up connections).
- **Marketing and promotion:** Marketing using social media and other channels to announce the learning opportunity, share insights during the broadcast and connect engaged stakeholders before, during and after the event has been instrumental to the program's success.

**Partners can alternatively decide to charge a fee for participants.*

Constraints

- **Technology and internet connectivity:** The Agriwebinar® platform relies heavily on technology and a reliable internet connection. At times, issues can arise outside of the control of the program team.
- **Timing for users:** As a national organization, FMC must ensure its programs and services are accessible to stakeholders across Canada. Therefore, Agriwebinars® are typically scheduled for noon EST/EDT, however some industry stakeholders have mentioned they would prefer evening broadcasts.

Lessons Learned

FMC runs its Agriwebinar® broadcasts from November to March to ensure farmers are available to take advantage of the learning opportunity. When FMC has strayed from this time frame, they have received negative backlash from the farming community.

FMC started with a custom-built Agriwebinar® system. Three years ago, FMC moved to an existing platform because as webinar technology advanced, it was getting more expensive to upgrade the custom system, while existing systems moved with technology such as mobile-friendly platforms.

Robust testing and checks must be in place to minimize any risk to a successful broadcast. FMC moved its Agriwebinar® team in house to learn the program inside out and set accountabilities to minimize human error in running the program. FMC has made it their business to understand the program and provide turn-key service to their partners, which not only minimizes their risk, but relieves any anxiety about broadcasting to their stakeholders. FMC has worked hard to develop a very capable, multidimensional team responsible for everything from programming the broadcast to hosting, monitoring, communications and marketing.

Online resources

www.FMC-GAC.com under '*Programs*'

Case Study A.1.2. Beef Research School · Beef Cattle Research Council

This online video series offers an alternative means to transfer research information to farmers and ranchers working to increase understanding of innovations and encourage higher utilization of research-supported knowledge and technologies. Videos feature interviews with scientists and other experts on the latest agricultural research to provide guidance on practical application.

Organization	Beef Cattle Research Council (BCRC)
Target audience	Canadian beef cattle producers
Objective	To encourage producers to utilize research-supported knowledge and technologies that can positively impact their herds, land and bottom lines, and support the competitiveness and sustainability of the industry. The main objective of this project was to create an online video series to allow beef cattle feeders and ranchers to learn the latest in Canadian beef research and the practical application of research information on their own time and at their own pace. The project was also used to demonstrate the value of research in the Canadian beef cattle sector, profile leaders in beef research, and generally raise awareness among producers of where government and industry dollars have been invested to improve production efficiencies and beef demand.
Coverage	National
Description	Knowledge dissemination and technology transfer are critical to realizing the economic, environmental and social benefits of investments in beef research. If industry is to adopt and profit from research, they must be aware of how the research could fit into their operation and how to implement it. Improved communication, collaboration and understanding between researchers and industry results in dissemination of meaningful research results to stakeholders along the production chain, influences management decisions concerning beef production and improves beef products for all customer segments and markets. As part of Beef Cluster I, a 10-year Knowledge Dissemination and Technology Transfer Plan (TEC Plan) was developed that includes a full-range of technology transfer activities with a clear focus on accelerating the uptake of research results and outcomes by industry. In addition to the website *beefresearch.ca,* a full range of social media communication tools have been employed (including Facebook, a blog, Twitter, and a YouTube channel), to engage producers and agriculture media directly and offer mediums for feedback and discussion. Communication channels were broadened through a partnership with RealAgriculture.com to develop the Beef Research School video series. The Beef Research School video series covers numerous beef, cattle and forage research and production issues, and features leading researchers, industry experts and innovative producers. A total of 30 videos were produced between Fall 2012 - Winter 2013.

Case Study A.1.2. Beef Research School · Beef Cattle Research Council

Description	Video topics included research knowledge related to animal health and welfare, feeds, food safety, beef quality, genetics and environmental stewardship. The series also discussed the importance and value of research in the Canadian beef cattle industry, showcased a research centre and highlighted extension resources available across the country.
Stakeholders and Partners	The Beef Research School video series was developed in partnership with RealAgriculture.com, and supported in part by the Alberta Livestock and Meat Agency Ltd. (ALMA) and the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward bi-lateral agreement.
Method	Videos feature interviews with researchers, veterinarians and other industry experts from across Canada on the latest research knowledge and technology, as well as progressive producers and feedlots that put it into practical use on their operations. Each segment runs approximately 6-10 minutes.
Success Factors	• **Multi-stakeholder collaboration:** Partnerships between knowledge experts, video production specialists, funding bodies that support extension and individuals/organizations that can deliver the videos to the target audience. • **Interest:** An inherent interest or need in the target audience for the information provided in videos. • **Communication skills:** Knowledge experts must have good verbal communication skills and audience familiarity in order to effectively communicate with the target audience in a meaningful and interesting way. • **Interactive video format:** Online videos offer an alternative means to transfer research information and encourage the utilization of knowledge and technologies by the Canadian beef cattle industry in an engaging, convenient and applicable manner while overcoming time and geography challenges. They also allow viewers to become more familiar with leading researchers and extension specialists featured in the videos, thereby encouraging future contact.
Constraints	• **Internet connectivity:** Some of the target audience may be in areas with poor internet access and therefore do not/cannot stream videos online.
Lessons Learned	This video series presents information in an alternative format and increases the profile of Canada's leading beef researchers, industry experts and innovative producers. However, if some of the target audience has poor internet access, alternative modes of delivery are required, such as playing videos at in-person meetings or delivering videos to audiences on a USB drive. Some researchers find it challenging to provide a clear, concise, and brief summary of their research in producer-level language. Increased engagement between researchers and industry through events and mentorship opportunities is expected to lessen this concern over time.
Online resources	www.beefresearch.ca/resources/videoaudio/beefresearchschool.cfm www.beefresearch.ca/blog/new-video-series/ www.realagriculture.com/category/features/beef-research-school/ www.beefresearch.ca/files/pdf/BCRC_results_report_jan2014.pdf

Case Study A.1.3. Canola Research Hub · Canola Council of Canada

This state-of-the-art online hub effectively translates agronomy research findings into on-farm practices that result in greater productivity for producers and other stakeholders. User-friendly research summaries, videos, and other multimedia materials communicate targeted messages in plain language to enable the dissemination and adoption of new advancements.

Organization	Canola Council of Canada (CCC)
Target audience	• Canadian canola growers (primary target audience) • Crop production influencers (agronomists, specialists, etc.) • Agricultural and rural media • All other aspects of the canola value chain (scientists, seed developers, processors, exporters, etc.) • Canadian general public
Objective	To establish a Canadian state-of-the-art information hub for the transfer of canola agronomy research findings to the producers and other industry stakeholders who can apply these innovations to their operations to improve productivity and profitability. To ensure that a broad range of Canadian stakeholders understand the significant government/industry support for canola research and how it is benefitting not only the entire canola value chain, but also Canada's economic health.
Coverage	National
Description	The Canola Research Hub translates agronomy research findings into tangible on-farm practices that result in greater productivity and profitability. It was developed to illustrate the science behind best management practices of Canadian canola production, to provide practical tools to evaluate agronomic performance, and to inform production management decisions. A strong foundation of data and information was provided by completed research studies funded under *Growing Forward*, the *Canola Agronomic Research Program* (CARP) and other grower-group funding initiatives with future database expansion planned as more results become available. The research found in the Hub will also be utilized to achieve the higher yields needed to meet the canola industry's new production target of 52 bushels per acre by the year 2025. Research is helping the industry maximize profitability with projects in four main areas: plant establishment, fertility management, integrated pest management and harvest management.
Stakeholders and Partners	The Hub has been made possible by the canola industry's investment in agronomic research through the CCC and grower check-off dollars administered by their provincial organizations. This research is supported by a $15 million Agriculture and Agri-Food Canada canola research cluster investment under *Growing Forward 2* (GF2). The Canola Research Hub project is managed by the CCC.

Case Study A.1.3. Canola Research Hub · Canola Council of Canada

Method

From the Hub's main page, accessible at canolaresearch.ca, users can navigate through a library of research summaries, view and filter research data, watch video interviews and clips, access published resources, download multimedia materials, and keep up to date on science-based industry news and events.

Success Factors

- **Multi-stakeholder collaboration:** The Hub provides the platform for collaboration between growers, consultants, agronomists and the scientific community. This facilitates the pairing of scientific knowledge with the expertise of hands-on knowledge working with the crop, to address the industry's latest hot topics and concerns.
- **Audience accessibility:** As an online resource, the Hub is available to all audiences at all times.
- **Accurate data:** Investment of time up-front is critical to ensure data is accurately represented and referenced.
- **Open communication with data providers:**
  - All Hub content is uploaded and managed by the CCC which is already an integral part of the CARP program and the *Growing Forward* Canola/Flax Agri-Science Cluster, and maintains strong partnerships with the provincial grower groups.
  - Ongoing interaction between CCC and scientists through research programs, industry events such as Canola Discovery Forum and canoLAB, and collaboration with the CCC Crop Production & Innovation team.
  - Keep all communications paths open – eg. hands-on site demonstration at tradeshows.
- **Site design:** Site must be designed to be expandable and sustainable.

Constraints

- **Wide range of users:** It is important to develop content, site structure and user tools that convey the information in a format that is equally relevant to all target audiences.
- **Ongoing maintenance:** Regular updates, ongoing content management and frequent reviews of user experience are necessary to keep the content and site function relevant.
- **Promotion:** Raising awareness, pushing traffic to the site requires some resources allocated to promotion.
- **Internet connectivity:** As an online resource targeting a rural audience, the Hub is subject to access constraints, although this is constantly improving.

Lessons Learned

It is important to pay attention to user experience and make the information easy to access through intuitive search functions or curated data dashboards based on user needs and website behaviours.

Additionally, it is important to monitor site analytics and be flexible with content design and function to meet the evolving needs and usage patterns of target audiences.

Online resources

www.canolaresearch.ca

Case Study A.1.4. PoultryPro · Poultry Industry Council

This commodity-specific e-learning tool is a successful venue for knowledge dissemination to an audience with diverse needs and backgrounds. PoultryPro has provided its diverse target audience with flexible training opportunities to increase its understanding of poultry production.

Organization	Poultry Industry Council (PIC)
Target audience	• New farm workers • New industry employees • New graduates hoping to work in the poultry industry
Objective	To provide an industry relevant, poultry specific training opportunity that will increase the target audience's knowledge and understanding of poultry production in Ontario, and introduce them to important concepts.
Coverage	Provincial (Ontario) - with national reach
Description	This online course was developed in response to a need identified by industry stakeholders for a relevant and comprehensive training opportunity applicable to the entire sector. Previously, no such industry-wide opportunity was available. PoultryPro is all-encompassing for the poultry sector and is not specific to any one company or poultry species. It provides an excellent foundation in poultry production for new farmers or farm workers and new industry employees, as well as new graduates looking to upgrade their practical knowledge of aspects that might not have been covered in school.
Stakeholders and Partners	PoultryPro is being delivered through a partnership with the Business Development Centre at the University of Guelph Ridgetown Campus. This group was chosen as they already deliver other online courses, and thus have the required infrastructure and IT resources in place. Ridgetown also has a staff team experienced in online course delivery and transferring adult education materials into e-learning formats. This project was funded in part through *Growing Forward 2* (GF2), a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists with GF2 delivery in Ontario.
Method	PoultryPro consists of four online modules that focus on Barn Management, Feed and Water Management, Breeder Management, and Disease Management. Each module covers a wide variety of sub-topics and delivers a curriculum that was developed with industry representatives and subject matter experts. To successfully complete each module, participants must take a test that requires a minimum score to pass and move on to the next module. A certificate is issued upon successful completion of the entire course and takes between 10 to 25 hours to complete all modules.

Case Study A.1.4. PoultryPro · Poultry Industry Council

Success Factors

- **Flexibility:** The target audience consists of multiple types of participants who have varying needs and backgrounds. The program was therefore designed to offer flexibility when it comes to learning.
- **Organized course material:** There is critical information that everyone must know which makes up the basis of the course, and there is also a great deal of "good to know" or "extra resource" material that participants can access and spend more or less time on, depending on their background and training needs.
- **Interactive format:** The course information consists of online materials and a textbook, and is provided in a variety of ways. It has been designed to be very interactive, and features a number of learning activities, clickable buttons, links and extra resources throughout each module.
- **Cost and time requirement:** While PoultryPro is a very comprehensive training program, both the time commitment required and cost are very manageable.
- **Multi-stakeholder collaboration:** As PIC's mission is to effectively serve the entire Ontario poultry industry, collaboration in building a course such as PoultryPro is key. Many stakeholders and subject matter experts were consulted during the design and review process of the module curriculums.
- **Relevance:** Together with its industry partners, PIC has ensured that PoultryPro course content is timely, relevant and appropriate for the target audience.

Constraints

- **Wide range of users:** The target audience for PoultryPro encompasses a fairly broad range of individuals. As such, designing curriculums to meet the needs of various groups required a great deal of review and classification of various concepts.
- **Content selection:** PIC had to carefully find a balance between providing participants with a robust understanding and introduction to poultry production, without overwhelming them with too much detail or technical information that was too in-depth.

Lessons Learned

An easy to access and interactive online course with simple navigation is an excellent venue for knowledge dissemination to an audience with diverse needs and backgrounds. Presenting information based on three different priority levels, while maintaining a depth level that provides a comprehensive understanding without attempting to replace the job training, was also key to the success of this program.

An ongoing enrollment window with start and end dates being left to the participant's discretion further allowed PIC to meet the varying needs of PoultryPro's target audience.

Collaboration is a powerful tool in the creation of comprehensive resources, and basic "101" training programs that are easy to access can assist in attracting new individuals to the poultry industry.

Online resources

www.poultryindustrycouncil.ca/education-extension-events/poultrypro-101/

www.ridgetownc.com/bdt/ce_PoultryPro.cfm

A.2. Dissemination Strategies

Dissemination strategies should facilitate the exchange of knowledge, expertise and good practices between the farming and research communities. However, there are often only a small variety of strategies used to communicate agricultural research which creates a gap between research and the adoption of research at the producer level.

Effective dissemination strategies work to explain innovations to all key actors in the research value chain by unpacking the complexity of agricultural research and creating opportunities for cooperation and continuous exchange of expertise throughout the research process.

This section showcases two strategies that have targeted the improvement of researchers' and students' public communication skills. This allows them to frame technical messages appropriately and target the right audience(s) to increase the likelihood of adoption of research results.

Case Study A.2.1. SPARK: Students Promoting Awareness of Research Knowledge · University of Guelph

This program, by providing students with training in journalistic communication of research, has helped mobilize knowledge and assists researchers in telling their stories while keeping stakeholders and the public informed of advancements and solutions to problems that are relevant to society in a way that is comprehensible and accessible to large audiences.

Organization	University of Guelph
Target audience	• Media • Research funders • Researchers • Students (prospective, undergraduate, graduate and PhD students) • Canadian general public
Objective	Students Promoting Awareness of Research Knowledge (SPARK) engages students in mobilizing research conducted at the University of Guelph, through written and visual communication. SPARK participants communicate about research journalistically, in a way that is comprehensible and accessible to large audiences. SPARK helps mobilize knowledge and assists researchers and the University of Guelph to tell their story, while keeping stakeholders and the public informed of new developments and efforts to solve problems that are important to society, as well as pursue new research opportunities.
Coverage	Provincial/National - Located in Ontario with coverage that is provincial, national and beyond.
Description	SPARK offers a unique training opportunity for students to gain experience in interviewing, writing and video editing for a wide range of audiences. SPARK students are hired from a variety of academic programs and through SPARK, they acquire marketable skills and knowledge that they can take into the professional world. Many go on to work in communications and journalism. In the 2014-2015 academic year, SPARK turned 25 years old. Since its inception with two students, to the present where it now involves six participants per semester, SPARK has developed a niche for mobilizing knowledge, making research understandable to the public and helping develop a culture that is supportive of and enthusiastic about research.
Stakeholders and Partners	Sponsors and partners are a key component of the SPARK program. SPARK's sponsors are: • Founding sponsor: Pioneer Hi-Bred Limited • Dairy Farmers of Ontario • Ontario Ministry of Agriculture, Food and Rural Affairs • Grain Farmers of Ontario On campus, SPARK depends significantly on support from administration, faculty and the students themselves for participation. SPARK writers are paid for their work, on an hourly basis.

Case Study A.2.1. SPARK: Students Promoting Awareness of Research Knowledge · University of Guelph

Method

The Director of Research Communications determines research stories to be pursued by SPARK participants, based on strategic priorities determined by the University and the Vice-President, Research. Stories are achievement-oriented, focusing on the researchers' activities and accomplishments. The Senior SPARK Writer acts as the first line of editing for stories, followed by the Director.

First, students conduct background research, and then set up an interview in the researcher's laboratory or office for a personal, detailed glimpse of the project they are writing about, gathering first-hand the "five W's" and the "H" - who, what, where, when, why and how - of the research project. Afterwards, the writer reviews their notes and the news-writing process begins.

Researchers approve drafts of the students' stories or video scripts before they are publicly issued in the U of G's complement of news and research publications.

Keeping relevance in mind, SPARK-generated stories underline the research projects' significance to the world outside the University.

At SPARK, writers learn to:

- Work with highly qualified personnel in a confident, professional manner;
- Ask the right questions to reach the heart of the story and capture the reader's attention with relatable and valuable information;
- Translate research concisely and accurately, with language that reads fluidly for the public and specialized audiences;
- Collaborate with others by working in a news-room setting;
- Produce images to accompany articles through photography as well as video editing;
- Write for diverse publications (from social media posts, video scripts to 800-word features);
- Develop stories in a timely manner, adhering to deadlines and prioritizing work;
- Appreciate and discover research by speaking to a variety of professionals in their respective fields; and
- Improve overall communications, teamwork, conducting interviews, writing, editing and organizational skills.

Success Factors

- **Institutional support:** SPARK's success comes with the University of Guelph's support and drive for effective research communication of ongoing, world-leading research.
- **Sponsor support:** Continued support from sponsors, through funding or offering SPARK an opportunity to publish outside the university, allows SPARK to thrive. Sponsors also benefit from increased media exposure, contacts and public profile.
- **Engaging research:** A dedication to providing insight on the health and well-being of humans, animals, agriculture, the environment, and society, offers SPARK writers the ability to communicate relevant research in an engaging way.

Case Study A.2.1. SPARK: Students Promoting Awareness of Research Knowledge · University of Guelph

Success Factors	• **Strong relationships:** Relationships are at the core of SPARK communication. SPARK writers pursue stories in a transparent and supportive way, working together with researchers, graduate students and others to explain research. • **Student leadership:** Creating engaging stories requires flexible project management and leadership from SPARK writers. The writers meet their various responsibilities with professionalism and competency.
Constraints	Without these five key components SPARK is unable to function: • Sponsors (to help pay SPARK participants) • Media support (to publish SPARK stories) • Student participation (to participate in SPARK) • Senior administrative support (to provide infrastructure such as office space) • Faculty support (for interviews)
Lessons Learned	SPARK is an outside-the-box program. It shows that with adequate guidance, students can be as effective as professionals in producing some types of institutional communications, while simultaneously learning new skills and developing a high level of understanding about research.
Online resources	**Website:** www.uoguelph.ca/research/spark **Youtube:** www.youtube.com/user/sPARKatUofG **Twitter:** www.twitter.com/SPARKUoG

Case Study A.2.2. Beef Researcher Mentorship Program · Beef Cattle Research Council

This industry-led program has helped researchers build the skills necessary to participate in and/or lead applied research and technology transfer efforts, helping to align their research interests with industry needs. By connecting researchers with producers, this initiative gives them the opportunity to share research findings with a practical, solution-based focus and deepen their understanding of industry needs.

Organization	Beef Cattle Research Council (BCRC)
Target audience	Applied researchers
Objective	To facilitate greater engagement of upcoming and new applied researchers with Canada's beef industry.
Coverage	National
Description	Engaging researchers who study cattle, beef, genetics, feed or forage production with the Canadian beef cattle industry is mutually beneficial; it allows researchers to be better informed of industry needs and makes them more likely to share their findings with a practical, solution-based focus. Facilitating and encouraging their attendance at industry events and networking with industry professionals, especially for new beef researchers from non-Canadian agriculture backgrounds, is extremely valuable. The Beef Researcher Mentorship Program provides researchers with the opportunity to deepen their understanding of the needs of the beef industry in a practical and meaningful way. The program is designed to: • Align research interests with those that are practical and beneficial to Canada's beef industry; • Build the skills, network and confidence necessary to participate in or lead applied research and technology transfer efforts that enhance and accelerate innovation in Canada's beef industry; and • Facilitate collaborations that help new Canadian beef researchers establish effective applied research and extension programs.
Stakeholders and Partners	The Beef Cattle Research Council with funding from the second Beef Science Cluster investment under *Growing Forward 2* (GF2). Employers of the mentorship program participants provide social support, as do industry experts who volunteer their time as mentors.

Case Study A.2.2. Beef Researcher Mentorship Program · Beef Cattle Research Council

Method

Participants are given a travel budget and paired with innovative cattle producers or other industry professionals for a one-year mentorship (August 1 - July 31).

Mentors help the researchers build their knowledge, skills and network through ongoing discussions and by initiating various introductions, tours and meetings. Mentors are valuable resources of information about day-to-day cattle and forage production, industry structure and influences, and perspectives on industry challenges and opportunities at regional and national levels.

Mentees are required to develop and continually update a 'road-map' to determine objectives of participating in the program and monitor progress and expenses.

Success Factors

- **Alignment of research priorities:** Scientists develop a better understanding of the industry's needs, and are motivated to produce applicable, solution-based research results and see them through to adoption.
- **Understanding of industry:** This program is an excellent experience for researchers with little background in Canadian beef production to increase their knowledge of the industry through more opportunities to connect with industry stakeholders.
- **Stakeholder support:** Applied researchers' interest in and motivation for mentorship from industry, funding to provide travel budgets (funding bodies seeing the value of researcher mentorship), social support from mentee's employer to approve necessary time and travel, industry experts willing to be mentors, matching mentees and mentors based on knowledge, network and personality, and existing industry events related to mentee's area of interest/ expertise.

Constraints

- **AAFC travel approval processes:** The only constraint BCRC has encountered is with the participation of AAFC employees as mentees because of AAFC's staff travel approval process.

Lessons Learned

Researchers selected to participate in the Beef Researcher Mentorship Program have reported a deepened understanding of and enthusiasm for beef production and industry needs and influences due to their participation in the program, as well as new and stronger relationships with producers and other leaders, and greater skills, network and confidence needed to lead applied research and technology transfer efforts.

Online resources

www.beefresearch.ca/about/mentorship-program.cfm

www.beefresearch.ca/blog/beef-researcher-mentorship-program/

A.3. Social License in the Agriculture Sector

Social license refers to the level of acceptance granted to an organization or sector from stakeholders, including the general public. Those who do not fulfil the conditions for the social license may be exposed to ongoing challenges from the public and the consumer. In this context, public opinion and public trust are playing an increasingly important role in the acceptance of new and emerging technologies, and has become an influential factor in the path to the adoption or rejection of research outcomes.

Consumers have become more interested in and critical of the foods they eat and the manner in which that food is produced, yet they have been increasingly removed from understanding food production. There is a need to bridge this gap between researchers and consumers in order to retain agriculture's social license to operate and produce.

Farming has become an increasingly complex undertaking and the sector must find ways to unpack that complexity and tell stories in clear and uncomplicated ways.

This section presents two international practices that address the challenge of building public trust in the sector, and three Canadian initiatives that aim to help industry communicate to the public and address growing consumer expectations.

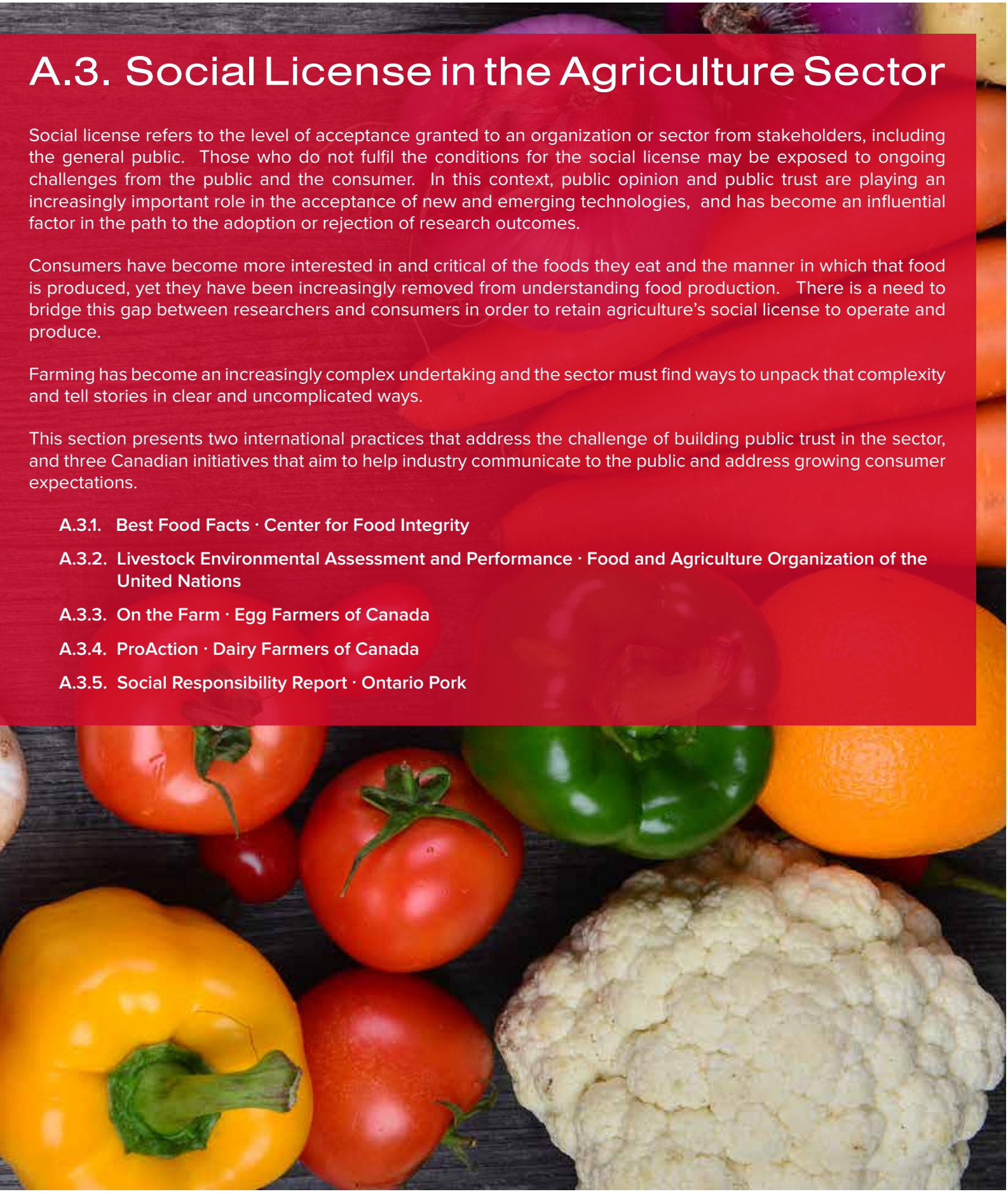
A.3.1. Best Food Facts · Center for Food Integrity

A.3.2. Livestock Environmental Assessment and Performance · Food and Agriculture Organization of the United Nations

A.3.3. On the Farm · Egg Farmers of Canada

A.3.4. ProAction · Dairy Farmers of Canada

A.3.5. Social Responsibility Report · Ontario Pork



Case Study A.3.1. Best Food Facts · Center for Food Integrity

This website capitalizes on increased use of online communications to pursue a more open and engaging dialogue with consumers and help them make informed decisions on food issues. The Best Food Facts website brings together food system experts, ranging from university-based professors to farmers, to provide credible and balanced answers to consumers' questions about food and agriculture.

Organization	Center for Food Integrity (CFI)
Target audience	• Consumers (early adopters, moms, millennials, foodies) • Dietitians • Nutritionists
Objective	To provide answers to the questions consumers are asking about their food.
Coverage	National - US/Canada
Description	Powered by nearly 200 credentialed, third-party, university-based experts, Best Food Facts provides balanced, objective information to help consumers make informed choices – at home, at the grocery store, at their favorite restaurant – and feel confident in their decisions based on an understanding of all sides of the smorgasbord of food issues. Best Food Facts strives to separate fact from fiction about food to allow consumers to weigh decisions based on their individual needs.
Stakeholders and Partners	Best Food Facts is supported by the Center for Food Integrity (CFI), a not-for-profit organization that helps today's food system earn consumer trust. CFI's members and project partners, who represent the diversity of the food system — from farmers, ranchers and food companies to universities, non-governmental organizations, restaurants, retailers and food processors – are committed to providing accurate information and working together to address important issues in food and agriculture.
Method	The Best Food Facts website is the primary content platform to provide fact-based information on food issues that helps balance the conversations taking place around these topics. Social media and online influencers are then leveraged to amplify and increase awareness around this content. Content development is driven by the latest trends about which the primary audience is concerned. Ongoing, consistent monitoring of social media sharing and social conversations around food issues, as well as questions received through the website, all help guide the content calendar. A team is responsible for tracking these trends and questions. They then work directly with one of 200 food system experts to help provide expert advice. Experts range from university-based professors to the Registered Dietitian community to the farmers themselves where the food cycle begins, who understand the science behind what is in consumers' food and why.

Case Study A.3.1. Best Food Facts · Center for Food Integrity

Success Factors

- **Value-based communication:** Real people, not "robots," manage the Best Food Facts website. As consumers themselves, CFI's team strives to provide accurate, objective and trustworthy information.
- **Targeted messaging:** The content on the site aims to be RITE: *Relevant, Informative, Timely and Educational*. CFI's team keeps track of online conversations to know what food issues people are talking about, they monitor news coverage of topics related to food and health, and they welcome questions from their readers.
- **Knowledge translation:** All of Best Food Facts' content and insights are approved by one of their 200 food system experts and, while their experts have full control over the content they provide, it is up to CFI to present that content in a way that's meaningful to consumers.

Constraints

- **Today's media and abundance information:** Consumers are on the receiving end of many conflicting messages and information about food. From news media, entertainment media and social media, information is abundant and rarely tells the entire story. Simply competing in this environment requires a solid content development and Search Engine Optimization (SEO) strategy, capitalizing on trending topics, etc.
- **Today's consumers and scientific interests:** Balancing the content between what consumers engage with (entertainment) and are interested in versus the topics that science tells us should be of importance (education).
- **Time and resource constraints:** There are numerous engagement opportunities, both online and in-person, with the influencers and audiences that are interested in the Best Food Facts content and brand. Allocating the resources to engage in even the most valuable activities is one of CFI's biggest challenges.
- **Evolving digital communication:** Social platforms and apps are constantly evolving creating new opportunities for engagement. Keeping up with this constant media evolution and with where the audience is engaging online can be a challenge.

Lessons Learned

Implementing SEO best practices into your content development process and building your website with these practices in mind are essential from the very beginning if you want to continue to grow website traffic over time.

Having a content development team and process in place and treating this as the central hub to guide all internal and external activities will ensure that you are keeping your audience in mind while making decisions.

Online resources

www.foodintegrity.org/programs/bestfoodfacts/

www.bestfoodfacts.org/

Case Study A.3.2. Livestock Environmental Assessment and Performance · Food and Agriculture Organization of the United Nations

This global initiative has enhanced communication on environmental sustainability in the sector and promoted international multi-stakeholder participation. Special groups made of experts drawn from around the world in academia, the private sector and NGOs guide the development of internationally agreed-upon metrics to evaluate the environmental performance and impact of the agricultural value chain.

Organization	Food and Agriculture Organization of the United Nations (FAO)
Target audience	Stakeholders across the livestock sector, all who share an interest in improving the environmental performance of livestock supply chains.
Objective	To develop comprehensive guidance and methodology for understanding and measuring the environmental performance of livestock supply chains.
Coverage	International
Description	While the livestock sector wants to improve its environmental performance, stakeholders across supply chains, including consumers want to know more information about how products are produced and what their environmental impact is. There is a need for internationally agreed-upon metrics to measure environmental performance in a robust way that leads to real improvement. The aim of the Livestock Environmental Assessment and Performance (LEAP) is to provide that harmonized methodology and guidance for measurement of environmental performance of livestock supply chains.
Stakeholders and Partners	The LEAP Steering Committee provides overall leadership to LEAP and approves the work program. It is currently made up of three stakeholder groups: 1. Private Sectors (*International Meat Secretariat, International Dairy Federation, International Egg Commission* and *Poultry Council, International Feed Industry Federation*), 2. Governments (*New Zealand, France, Ireland, Switzerland, Netherlands*), and 3. Civil Society (*World Alliance of Mobile Indigenous Peoples, International Union for Conservation of Nature, World Wide Fund for Nature, International Planning Committee for Food Sovereignty* and *World Vision*). Decisions are made by consensus and the Chair is rotated annually across the three groups. The FAO is the secretariat and ensures that the work of the LEAP Partnership is based on international best practice.

Case Study A.3.2. Livestock Environmental Assessment and Performance · Food and Agriculture Organization of the United Nations

Method

TAGS (technical advisory groups) are special groups made up of experts drawn from around the world in academia, the private sector and from NGOs. They develop the guidance and methodology for the measurement of environmental performance. These groups meet 2-3 times a year in-person and carry out work on-line between meetings. Over 30 experts from more than 15 countries have contributed to the work so far.

Environmental assessment guidelines are published online. A global database of emissions, emission intensities and life-cycle inventory for five main crops (maize, wheat, barley, soybean and cassava) is also available on LEAP's website.

Success Factors

- **Life-cycle thinking:** A fundamental concept underpinning the work of the LEAP Partnership. This approach to the development of guidance to measure environmental performance calls for the evaluation of all inputs and outputs across the life-cycle stage of investigation . Life-cycle thinking also avoids burden shifting – where impacts could be shifted to other parts of the product life-cycle in order to minimize the impact somewhere else. It also promotes greater efficiency in the use of resources.
- **Scientific accuracy:** Review processes and case studies are built into the program to ensure that the work is scientifically robust and practical for the livestock sector to use and that will improve environmental performance.
- **Multi-stakeholder collaboration:** The Partnership is open to all interested organizations or governments and there is no fee to join. Participants get firsthand information on activities, get a say at the Annual Meeting, as well as the opportunity to nominate experts to technical committees.

Constraints

- **Continuous feedback:** Significant input from various farming and supply systems is needed to develop effective guidelines and databases.
- **Communication with membership:** Communication on progress in environmental performance is crucial to ensure broad use of guidelines and databases.
- **Enlarged membership:** Encouraging more participation from all stakeholders involved in the sector could help increase the overall impact and relevance of the program as well as bring more resources needed for the development and distribution of guidelines and databases.
- **Inclusion of new areas of research:** Biodiversity and water management should be added to existing guidelines given their key role in environmental performance.

Lessons Learned

Transparency and inclusive governance are the cornerstone of multi-stakeholder's projects like LEAP. This structure allows for strengthened coordination, continuous improvement and effective management that balances prescription and consensus in decision-making process.

LEAP also builds on existing frameworks and approaches to measure environmental performance across the sector facilitating adoption and avoiding duplication of research efforts.

Online resources

www.fao.org/partnerships/leap/en/

Case Study A.3.3. On the Farm · Egg Farmers of Canada

This communication initiative has increased consumer engagement and allowed consumers to learn about protocols used by egg farmers to meet the highest quality standards in agri-food production. On the Farm allows consumers to meet farmers from across the country as they tell their story about egg farming.

Organization	Egg Farmers of Canada (EFC)
Target audience	Consumers: Adults 25 - 54 who are concerned about animal welfare and the source of their foods.
Objective	To enhance trust in egg farmers and create awareness surrounding EFC's national on-farm programs.
Coverage	National
Description	Egg farmers in Canada have always made the care and well-being of their hens their top priority. They follow important protocols related to the care, diet and environment to keep hens healthy and ensure Canadian eggs are produced according to some of the highest quality standards in the world. The 'On the Farm' campaign provides awareness and education of two on-farm programs: Start Clean-Stay Clean™ and the Animal Care Program. With this campaign EFC also wants to correct a common misconception that eggs have steroids and/or hormones. It is important that egg farmers themselves deliver these messages directly to consumers.
Stakeholders and Partners	• **Provincial egg boards**: work with EFC to help implement the 'On-the Farm' programs through field inspectors. • **EFC's Advertising Agency:** developed the scripts and produced the on-line videos and radio campaign.
Method	This campaign includes a variety of tactics with the aim of providing information within the consumer's medium of choice, including: • National radio ads in 21 markets for 4 weeks; • A series of 0:15 and 0:30 videos featured on Facebook, YouTube, and www.eggs.ca; and • Digital ads optimized for both desktop and mobile.

Case Study A.3.3. On the Farm · Egg Farmers of Canada

Success Factors	• **Long-term strategy:** EFC started promoting the on-the farm program as described above in late 2015 and it is expected to be a long term strategy. • **Awareness of consumer concerns:** The success of the campaign is based on achieving the goal of reducing consumer's concern about animal care for egg farming and thereby stopping the potential decline of egg sales that might come based on attitudes toward animal care. • **Benchmarking success:** This will be measured through consumer research which will be done year after year as well as by Nielsen egg sales through retail.
Constraints	• **Opposition to animal agriculture:** There will always be people who are opposed to animal agriculture for various reasons and it is likely that no amount of information in the campaign is going to sway their opinion. EFC is careful to avoid targeting 'animal activists' as much as possible with advertising.
Lessons Learned	EFC conducts consumer research throughout the year and analyzes the effectiveness of the programs. While the results of the research for the first national campaign have not yet come in, some pilot tests have shown that the messaging is working. Consumers have expressed that: • Egg farmers are the most credible source of information when it comes to on-farm programs; • Consumers appreciate the opportunity to 'see' what it is like on a farm through video; • The radio campaign is relevant and appealing to consumers; and • The messaging on *No Added Hormones and Steroids in Eggs* is very important to consumers and is a new message that many are not previously aware of.
Online resources	www.eggs.ca/onthefarm/article/15/national-on-farm-programs

Case Study A.3.4. ProAction · Dairy Farmers of Canada

This coordinated, industry-led national quality assurance framework is a means to demonstrate to consumers that farmers are proactive and caring in providing high-quality, safe and sustainable food. Designed by farmers and producers, this science-based initiative explains farming practices in a way that fosters public trust to address societal demands on farming.

Organization	Dairy Farmers of Canada (DFC)
Target audience	• Users: Canadian dairy farmers • Beneficiary: The food industry purchasing the milk
Objective	To demonstrate responsible stewardship of Canadian dairy farmers' animals and the environment, sustainably producing high-quality, safe and nutritious food for consumers.
Coverage	National
Description	Canadian dairy farmers are leaders whose commitment to high quality standards and belief in leadership and transparency will strengthen Canadian dairy brands, and maintain the trust of their customers. The proAction Initiative provides proof that Canadian farmers are producing milk responsibly. The proAction Initiative is an efficient and coordinated national framework that brings various best management practices on farms under one umbrella. This approach will allow the Canadian dairy industry to continue its leadership by assuring customers about farm practices. Canadian dairy farmers have collectively and proactively established terms and timelines for this initiative. Through proAction, dairy farmers: • Implement a single, national, credible, practical on-farm initiative; • Address societal demands on dairy farming; and • Support the marketing and branding of Canadian milk. The objective is to show customers that dairy farmers are proactive and caring in providing high-quality, safe and sustainable food with a single national implementation strategy aimed to simplify administration and infrastructure, and keep costs reasonable for farmers.
Stakeholders and Partners	Dairy farmers of Canada, provincial members and farmers. The DFC has a technical Committee or working group for each of proAction's six modules, chaired by a farmer, and composed of farmers and dairy organization staff, veterinarians, agronomists and other experts in the specific module's sphere. These committees report to the proAction Committee, which is composed of farmers and dairy organization staff from each province, which in turn reports to the DFC Board of Directors who bring recommendations to the DFC General Council, made of multiple farmer delegates from each province. Farmers are involved at every level and everyone has worked diligently to develop practical programs for farmers.

Case Study A.3.4. ProAction · Dairy Farmers of Canada

Stakeholders and Partners

The proAction initiative operates with six key modules. These modules are currently at different stages of development and implementation across the country:

- Milk quality
- Food safety
- Animal Care
- Traceability
- Biosecurity
- Environment

Method

Each module was developed by technical working groups of farmers, scientists, veterinarians, and industry specialists in the matter at hand. Each module is being developed and implemented in the staged approach of testing, training and validation.

Farmers are required to follow these steps to implement the proAction program on their farms:

1. Attend a training session and/or download the materials from the proAction website;
2. Train their farm workers;
3. Develop Standard Operating Procedures (SOPs) and Corrective Action Plans (CAPs), as required by the program;
4. Start keeping the records that are required by the program;
5. Implement the requirements that have not been fully met;
6. Contact their provincial producer Association for assistance;
7. Undergo a validation; and
8. Maintain registration status and the program requirements.

Success Factors

- **Designed for farmers:** Designed by farmers for farmers to be cost-efficient, user-friendly, and valuable to farmers.
- **Timelines:** Provides reasonable time periods to allow farmers to meet the programs' targets.
- **Consistency:** Mandatory for all dairy farms in Canada and maintains the same timelines, obligations, and consequences for all farms.
- **Credibility:** Transparent, and recognized by regulators, stakeholders and society, and uses credible and independent audits.
- **Multi-stakeholder collaboration:** Partners with governments in the program implementation.
- **Use of existing infrastructure and expertise:** Uses existing expertise to minimize the number of on-farm visits as well as the existing *Canadian Quality Milk* framework and infrastructure to facilitate consistent administration.
- **Provision of resources:** Includes the necessary resources to implement the programs, provided by Dairy Farmers of Canada, and member organizations.
- **Sound science:** ProAction's modules are based on science, but also explain farm practices in a way that can foster customers' trust. For example, the demonstration of dairy farmers' ability to improve milk quality over time with research on lowering somatic cell count and udder health.
- **Support for sustainability:** Improves the sustainability of Canadian dairy farms and the environment through sound science.

Case Study A.3.4. ProAction · Dairy Farmers of Canada

Constraints	• **Breadth of the program**: The timelines were built to realistically allow for group and individual training and validation of all farms, building on the existing infrastructure as *Canada Quality Milk* (CQM) program for record-keeping. The initiative is ambitious in that all Canadian dairy farms will be expected to complete the certification, and continue to undergo regular validations and show continuous improvement.
Lessons Learned	Standards adhered to by all dairy farmers strengthens farmers' already solid reputation with consumers; proAction: • Proactively provides proof to dairy customers – processors, retailers, consumers – that dairy farmers produce safe milk, responsibly and sustainably; • Helps dairy farmers maintain respect instead of undue scrutiny from government and stakeholders; • Lets farmers chart their own destiny; • Builds a more cohesive, professional image for dairy farmers, on par with other professionals that have to follow standards (doctors, engineers, accountants and veterinarians); • Creates more value for our Canadian brands; • Allows farmers to have consistent, responsible and credible story to counter claims by opponents of animal agriculture; • Encourages continuous improvement on farms; and • Reinforces the dairy industry's leadership. With supply management, milk prices are based on producer costs and other factors. Extra costs or efficiency gains on farm – due to proAction – should be reflected in the cost of production study.
Online resources	www.dairyfarmers.ca/proaction

Case Study A.3.5. Social Responsibility Report · Ontario Pork

The Social Responsibility Report sets the baseline to monitor and demonstrate Ontario pork producers' commitment to sustainable agriculture. By using various benchmarks, this industry-led assurance scheme measures economic, environmental, social and governance performance based on global standards.

Organization	Ontario Pork
Target audience	• Consumers • Pork producers • Retailers • Policymakers
Objective	To set benchmarks in areas that measure economic, environmental, social and governance performance, based on global measurement standards.
Coverage	Provincial - Ontario
Description	This is an era of change and accountability for Ontario pork producers. Consumers want to better understand where their food comes from and how animals are raised. Retailers are adopting responsible procurement processes. Policymakers want to see adherence to sustainable agricultural practices. And most importantly, Ontario's pork producers are firmly committed to socially responsible practices achieved through education, greater dialogue and increased transparency In 2015, Ontario Pork released its inaugural Social Responsibility Report, making them the first livestock commodity group in the province to commit to setting benchmarks in areas that measure economic, environmental, social and governance performance, based on global measurement standards.
Stakeholders and Partners	Ontario's pork producers
Method	The social responsibility approach of Ontario Pork is based on six dimensions, which define the scope of the report and outline the sector's sustainability journey. These dimensions are: • Farm Management • Economic Performance • Environmental Stewardship • Animal Care and Food Safety • Relationships with the Community • Workers' Well-being The dimensions are based on internationally recognized methodologies and standards, including the Global Reporting Initiative (GRI) and the Food and Agriculture Organization of the United Nations' Sustainability Assessment of Food and Agriculture systems (SAFA) guidelines.

Method

Ontario Pork also identified a series of Key Performance Indicators (KPIs) to monitor and report on their performance over time. These indicators have been selected based on the organization's priorities and commitments, as well as on the importance of the practices and data availability. All commitments are to be achieved by 2018 unless otherwise specified.

The report addresses material issues of the sector and seeks to cover dimensions of sustainability as they relate to the environment, economy and society.

Data and results presented in the report have been collected and measured based on three sources:

- An on-farm survey carried out among the pork producers of Ontario to document their practices in regards to six dimensions, 22 themes and 50 practices related to social responsibility at the farm level. The questions were selected based on the main standards in social responsibility in agriculture, such as SAFA and other socioeconomic studies conducted recently in this sector;
- A simplified environmental Life Cycle Assessment (LCA) carried out to measure the carbon and water footprint of pork production in Ontario encompassing the entire pork production chain from feed production through to final processing at the slaughtering house; retail and consumption phases fall outside the scope; and
- Industry information provided by Ontario Pork based on available data.

Success Factors

- **Meets societal and industry expectations:** In response to the growing expectations of various segments of society (including consumers, retailers and governments), pork suppliers have been increasingly required to support sustainable production by complying with social and environmental specifications – the adoption of which is becoming a prerequisite for market access.
- **Supportive organizational mindset:** Ontario Pork addresses these expectations in its core-business plan, with operating objectives, specific initiatives and reporting mechanisms that will engage the sector in a social responsibility journey to demonstrate pork producers' commitment to sustainable farming.

Constraints

- **Limited influence in some areas:** This first Social Responsibility Report sets the baseline to monitor the sector's improvements over time. Ontario Pork plans to collect further data to continue to refine its approach, while constantly assessing new trends and best practices. While Ontario Pork is committed to improving its social responsibility performance, some areas fall outside its direct influence (e.g. transportation), where the active engagement of its business partners is required. In this context, Ontario Pork is eager to work collaboratively with all members of the value chain and other stakeholders – such as government agencies – to work towards even more sustainable pork production in Ontario.
- **Operational variation across the province:** Ontario Pork recognizes that each pork farm in the province is different and employs different production methods. The association must set its commitments based on what it can achieve.

Case Study A.3.5. Social Responsibility Report · Ontario Pork

Lessons Learned	Developing a social responsibility report requires self reflection, strong metrics and establishing a course of continuous improvement. By measuring progress towards specific targets and goals, the pork industry in Ontario is showing its commitment to doing the right thing and building strong relationships throughout the entire value chain. Since the concept of sustainable agriculture is still evolving, it is critical for farmers to address societal concerns and demonstrate how modern pork production offers innovative and economically viable opportunities for producers, consumers, policymakers and other stakeholders.
Online resources	www.ontariopork.on.ca/Social-Responsibility

SECTION B
Transferring New Knowledge

Agricultural extension and knowledge transfer play a crucial role in facilitating the adoption of research outputs on Canadian farms. Various knowledge transfer strategies, innovative funding models and new extension approaches are needed to meet the challenge of getting new research into growers' hands.

Building strong relationships with different groups of stakeholders, including the private sector, is a key factor to successful knowledge transfer and extension. Nevertheless, the greatest challenge rests in our ability to break down the silos between sectors that prevent stakeholders from working together more closely.

The seven best practices in this section demonstrate how to promote the ongoing exchange of information between key actors in the research value chain, and how to accelerate the adoption of innovation. These practices are grouped in the following thematic areas:

B.1. Extension Models
B.2. Collaborative Knowledge Transfer

B.1. Extension Models

The role of all key actors in the agriculture sector – farmers, producers, commodity organizations, producer advisors, researchers, industry, commercialization organizations and funders – has progressively evolved in response to the diminishing role of the public sector in the delivery of extension services.

Today's agricultural extension requires increased and active intervention from each stakeholder group. Traditional extension – based on one-way communication of information – is no longer of paramount importance.

These structural changes have resulted in the need for new extension models as a way of facilitating knowledge, and cost-sharing between stakeholders.

This section presents three different extension models that have facilitated the sharing of intellectual resources from the lab and practical experiences from the field.

Case Study B.1.1. EIP – AGRI Network · European Innovation Partnership for Agricultural Productivity and Sustainability

This multi-channel cooperation model enhances interactions between innovation actors and helps spread new and existing knowledge on innovations in agriculture. This partnership brings farmers, advisors, agribusinesses, NGOs and other stakeholders from different professional backgrounds together to share ideas and turn existing knowledge into innovative, practical solutions.

Organization	European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI)
Target audience	• Farmers • Advisers • Researchers • Agri-businesses • NGOs • Other agricultural stakeholders
Objective	The EIP-AGRI works to foster competitive and sustainable farming and forestry that '*achieves more and better from less*' and contributes to ensuring a steady supply of food, feed and biomaterials, developing its work in harmony with the essential natural resources on which farming depends. The EIP-AGRI Network provides an online hub to support the formation of partnerships and to link people from different professional backgrounds through different types of activities in support of agricultural innovation.
Coverage	International - European Union
Description	The EIP-AGRI was set up as part of the EU's 'Europe 2020' strategy as a new way of helping the agricultural and forestry sectors become more productive, sustainable and capable of tackling current challenges such as fierce competition, more volatile market prices, climate change and stricter environmental rules. Through its work on the EIP-AGRI Network, and activities like Operational Groups and EIP-AGRI Focus Groups, different actors within innovation and agriculture – farmers, advisers, researchers, agri-businesses, NGOs and other stakeholders – have a mechanism within which they can work together, share ideas and turn existing knowledge into innovative solutions and research results that can be more easily put into practice. By joining forces, everyone involved can achieve results faster and important new and existing knowledge on innovation and agriculture is spread more efficiently throughout the EU. So, when a Romanian expert comes up with a solution that could help a Spanish farmer, the aim is to get this information to him as soon as possible.
Stakeholders and Partners	• **The European Rural Networks' Assembly:** connects the European Network for Rural Development (ENRD) and the EIP-AGRI Network. This assembly forms a platform that aims to prioritise and coordinate the activities of the two EU networks.

Case Study B.1.1. EIP – AGRI Network · European Innovation Partnership for Agricultural Productivity and Sustainability

Stakeholders and Partners

- **Innovation for Agricultural Productivity and Sustainability Subgroup:** a permanent subgroup of the Assembly that pays specific attention to the EIP-AGRI Network and works with the EIP-AGRI Service Point to catalyze innovation.
- **EU member states or regions** through their Rural Development Programmes may provide funding to set up Operational Groups to work on pilot projects, develop new products, involve actors from different regions, promote activities, etc. Rural Development Programmes can also offer project support for knowledge transfer, advisory services, investments, marketing, establishing networks, and funding for Innovation Support Services.

Each member state or region determines support priority areas but all Operational Groups in the EU must contribute to a productive and sustainable agricultural sector.

The size and composition of Operational Groups (local-level) vary depending on the project, but may consist of a variety of actors from different backgrounds including farmers, researchers, advisors, businesses and NGOs.

Method

The EIP-AGRI Network offers a wide range of tools to support agricultural innovation. The EIP-AGRI website is an interactive platform, a 'one-stop-shop', that brings people together from across Europe to share innovation projects and ideas, search for potential partners, projects and funding opportunities, use collaboration workspaces, and follow various themes and key events.

The EIP-AGRI aims to link innovative projects carried out by Operational Groups of farmers, advisors, researchers and others solving practical problems or testing innovative ideas with national Rural Development Programme funding, thematic networks, partners involved in multi-actor projects funded by the *EU Horizon 2020 Research* programme, and other groups working on innovation.

The results and knowledge generated through Operational Groups must be shared via the EIP-AGRI Network so that it can benefit the entire sector.

The EIP-AGRI Service Point acts as a mediator and stimulator of interaction within the EIP-AGRI Network, enhancing communication and cooperation between everyone with a keen interest in innovating agriculture using multiple communication channels. The Service Point provides the following services:

- A helpdesk to answer questions;
- Support for finding project partners;
- Focus groups, addressing specific challenges in agriculture and forestry;
- Organization of EIP-AGRI events, workshops and seminars;
- Collects and shares information, feeding the EIP-AGR network with publications, innovation-related policy measures and initiatives, relevant research activities and results, funding opportunities and lessons learnt in practice-oriented projects; and
- Coordinating the online Meeting Point where knowledge can be shared.

EIP-AGRI Focus Groups, one of the main tools in the EIP-AGRI Network to kick start innovation, bring together 20 experts including researchers, farmers, advisors and other stakeholders who work together to share knowledge and practical experience to boost innovation within a specific field, listing problems as well as opportunities and solutions. Groups meet twice over a period of about one year and their report and results are shared on the EIP-AGRI website to encourage the formation of new Operational Groups or research projects.

Case Study B.1.1. EIP – AGRI Network · European Innovation Partnership for Agricultural Productivity and Sustainability

Method

The EIP-AGRI is also an important vehicle to put farmers' R&D needs on research agendas and ensure challenges are met. The EIP-AGRI Service Point collects research needs from practice, facilitating knowledge sharing and searching for innovative solutions to address key challenges.

Success Factors

- **Connecting stakeholders:** The interaction between stakeholders within the research community and from across the supply chain is essential in order to share ideas and experiences and develop innovative solutions and research results that are ready for application.
- **An '*interactive innovation model*':** This model goes beyond the linear diffusion of information and focuses on forming partnerships using bottom-up approaches and linking farmers, advisors, researchers, businesses and other actors in Operational Groups.

  This interactive model encouraging knowledge exchanges generates new insights and stimulates innovation from all sides, helping to target research agendas and translate knowledge into solutions efficiently. This speed up of technology transfer through the interaction between research, development and practice, helps bridge the gap between the lab and the farm, allowing practical research results to be spread more quickly and results developed that can be more directly implemented in the field, generating a direct impact.

Constraints[2]

- **Governance model:** The existing EIP governance structure is a respectable attempt to combine top-down leadership and bottom-up engagement. It has enabled the Operational Groups to define a range of objectives and initiate a process of stakeholder interaction. However, there are imperfections to be addressed both at the level of overall guidance and leadership and stakeholder engagement.
- **Wide scope:** All existing Operational Groups aim to respond to major societal challenges. However, some of the current Operational Groups' targets aim to address too many aspects of the challenge at the same time.
- **Monitoring Success:** The monitoring and evaluation frameworks for the current Operational Groups are still being developed. This makes it, for the time being, impossible to assess their key strengths and weaknesses.
- **Stakeholder partnerships:** The current Operational Groups have been useful vehicles in bringing partners together with a view to align priorities, leverage investments and form future partnerships. However, some stakeholders with a high potential for innovation may not have the resources, incentives, or awareness to join an EIP. Therefore, the partnership needs to be built in a proactive and deliberate manner to ensure relevance for the future.

Lessons Learned

The EIP-AGRI's efforts to boost the flow of information and foster the exchange of knowledge and experience across projects, sectors and borders, interlinking innovation actors and creating a network of farmers, advisors, agri-businesses, researchers and civil society from across Europe, has streamlined information and made it more easily accessible for stakeholders – leaving more time for and speeding up further research development and knowledge transfer.

Online resources

www.ec.europa.eu/eip/agriculture/en

www.ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_network_2015_en_web.pdf

www.ec.europa.eu/eip/agriculture/sites/agri-eip/files/fact-sheet-service-point_en.pdf

[2] European Commission (2014) Outriders for European Competitiveness: European Innovation Partnerships (EIPs) as a Tool for Systemic

Case Study B.1.2. Hybrid Model for Public-Private Extension · Perennia

This new hybrid (public-private) business model provides stable and long-term funding to guarantee efficient delivery of extension services to help Nova Scotia farmers develop the understanding and skills needed to solve farm problems. Perennia'sbusiness model allows for the generation of additional revenue needed to deliver advice services to farmers and to obtain industry input.

Organization	Perennia
Target audience	Principally farmers, but Perennia also works with pack houses, processors, industry associations, universities and colleges.
Objective	To help Nova Scotia farmers develop the understanding and skills essential to solve farm problems and create new opportunities.
Coverage	Provincial - Nova Scotia but Perennia has also done contracted or applied research projects in other provinces.
Description	Perennia has one of the most comprehensive extension and development teams in Canada. Through an annual grant from the Nova Scotia Department of Agriculture, Perennia provides some subsidized agricultural extension and development services to Nova Scotia producers such as advice, workshops, publications and web-based resources. Extension is offered in dairy, beef, sheep, hog, poultry, eggs, mink, field crops, berry crops, vegetables, greenhouse, ornamentals, maple, organic crops, pest management and soils. Perennia's business model (as a publicly-owned corporation) allows the flexibility to also provide confidential consulting services. Its base grant covers approximately 45 per cent of the company's total annual revenues.
Stakeholders and Partners	Perennia works with a broad cross section of partners and co-operators to support and enhance its extension practice. These include: • Nova Scotia Department of Agriculture • Agriculture and Agri-Food Canada • Universities i.e. Dalhousie University, Acadia University • Nova Scotia Community College • Grower and Producer Associations • Individual producers • Agri-businesses
Method	Extension services include: • Workshops, conferences, field days, tours • Sessions with specialists, on farm, by phone or email • Toll-free Ag Information Line • Fact sheets and publications

Case Study B.1.2. Hybrid Model for Public-Private Extension · Perennia

Method	• Blogs • Social media • Events calendar • Applied research • Work with industry associations
Method	Specialists spend time on farm, at industry events, and with producers to ensure they are aware of issues and able to educate and build skills amongst its clientele. Perennia specialists also partner with industry, grower associations, government and university in research and evaluation trials. Perennia's work is often focused on broader industry growth and can be shared publicly. If, however, a producer or agri-business wishes to contract for confidential work, Perennia has the flexibility to respond under its business model. For example, chemical efficacy trials for chemical companies, dairy nutrition and nutrient management plans.
Success Factors	• **Funding:** Stable, long-term funding agreements. • **Industry participation:** An industry-led board of directors and broad industry support. • **Transparency and accountability:** Specific (as best possible) definition of services and a clear description of the mission and roles. A defined measurement of success or priorities from funders in a standardized annual collaborative process is also essential. • **Use of technology:** A solid commitment to the use of technology to ensure broader impact. • **Supportive business model:** A business model that allows for the generation of additional revenue.
Constraints	• **Sustainable funding:** Perennia generates a great deal of funding to maintain services through industry and government projects as well as individual consulting. • **Time:** Finding the resources to reach clients across the province in new and impactful ways is a challenge with the small size of Perennia's team. • **Succession planning**: Extension programs across the country are shrinking or aging, so replacing experienced senior specialists is becoming a challenge.
Lessons Learned	• The best extension programs are usually collaborative in nature. • Best practices frame solutions in relation to production, environmental, social and economic considerations. • Great extension specialists need time to grow and learn.
Online resources	www.perennia.ca/

Case Study B.1.3. Knowledge Translation and Transfer Program · OMAFRA-UofG Partnership

This information exchange model accelerates the transformation of knowledge into use through the synthesis and sharing of research, active dissemination, continuous dialogue, collaboration and brokering among researchers and research users. It also builds and expands upon long-established practices in extension and technology transfer to meet the needs of an increasingly knowledge-intensive agriculture sector.

Organization	Ontario Ministry of Agriculture, Food, and Rural Affairs and University of Guelph Partnership (OMAFRA-UofG Partnership)
Target audience	• Farmers and producers • Industry organizations • Industry support services and food processers • Rural communities and organizations • Government • Researchers • Canadian general public and consumers • Non-governmental organizations
Objective	To accelerate the transformation of research into action via changes in policy, practice and commercialization.
Coverage	Provincial - Ontario
Description	The Knowledge Translation and Transfer (KTT) component of the 2008 to 2018 OMAFRA - UofG Partnership Agreement is designed to accelerate the transformation of knowledge into use. The KTT program combines knowledge translation and transfer activities with established practices in extension and technology transfer. The OMAFRA-UofG Partnership defines KTT as the transformation of knowledge into use through exchange, dissemination, dialogue, synthesis, collaboration and brokering among researchers and research users. KTT is a knowledge exchange process aimed at linking researchers and research users to magnify the impact of new research knowledge. For more than 100 years, agricultural 'extension' has played a key role in creating the successful and innovative agri-food industry we see today in Ontario. Extension has historically often focused on research dissemination (knowledge push) as a one-way process. KTT (a relatively new term in 2008) builds on the extension model, but is unique in that it encourages research users to participate in the research process and help set research priorities (knowledge pull). The use of both knowledge pull and push provides greater opportunity for knowledge exchange and the more rapid adoption of research in practice.

Case Study B.1.3. Knowledge Translation and Transfer · OMAFRA-UofG Partnership

Description

Agri-Food and Rural Link is the term used to brand the KTT program and related activities under the OMAFRA-UofG Partnership. Branding supports the initiatives of the program by increasing the awareness of KTT practices and creating a community of interested KTT practitioners, researchers and research users. *Agri-Food and Rural Link* is displayed prominently in events, research and communications materials supported by the KTT program.

Stakeholders and Partners

Agri-Food and Rural Link was created as part of the KTT program - a priority within the OMAFRA-UofG Partnership. *Agri-Food and Rural Link* acts as the hub of KTT for the OMAFRA-UofG Partnership and is part of the Office of Research at the University of Guelph. UofG staff collaborate with OMAFRA staff (Research and Innovation Branch and technology transfer staff) to implement *Agri-Food and Rural Link* activities.

Method

KTT is incorporated into the OMAFRA-UofG Partnership via two main mechanisms, demonstrating a commitment to the practices of KTT and an interest in accelerating scholarship in the growing field of KTT in the agri-food space. They are: (1) The allocation of funds to support KTT activities as well as research into KTT theory and practice; and (2) The inclusion of KTT plans in all research projects.

KTT is the dissemination and use of knowledge through processes that accelerate the benefit of research outcomes for the various user groups. These processes include:

- **Exchange and dialogue:** For example, knowledge exchange events, additional material on websites, apps, technology transfer activities, events, webinars, community of practices, etc.;
- **Dissemination:** For example, Twitter, the Buzz Newsletter, plain language posters, one-page research project descriptions, information packages (e.g., Ontario's Bio Advantage), websites, e-newsletters, conferences, workshops and research project search tools;
- **Partnering** with industry and agri-businesses;
- **Brokers:** A knowledge broker helps researchers, technology transfer staff and research users take responsibility for connecting and exchanging knowledge.
- **Synthesis:** For example, stakeholder engagement (ongoing interaction between researchers and end-users), databases to manage research knowledge, and sharing project results with potential users; and
- **Commercialization:** The OMAFRA-UofG Partnership directly supports commercialization through the Gryphon's LAAIR Program that provides financial support for near-market research innovations to help bridge the gap between innovative idea and marketable product and accelerate the adoption of innovative technologies.

Method

The model below (Figure 1) highlights the key concepts of knowledge translation and knowledge transfer and demonstrates the path of knowledge through creation in research to translation, transfer and into use.

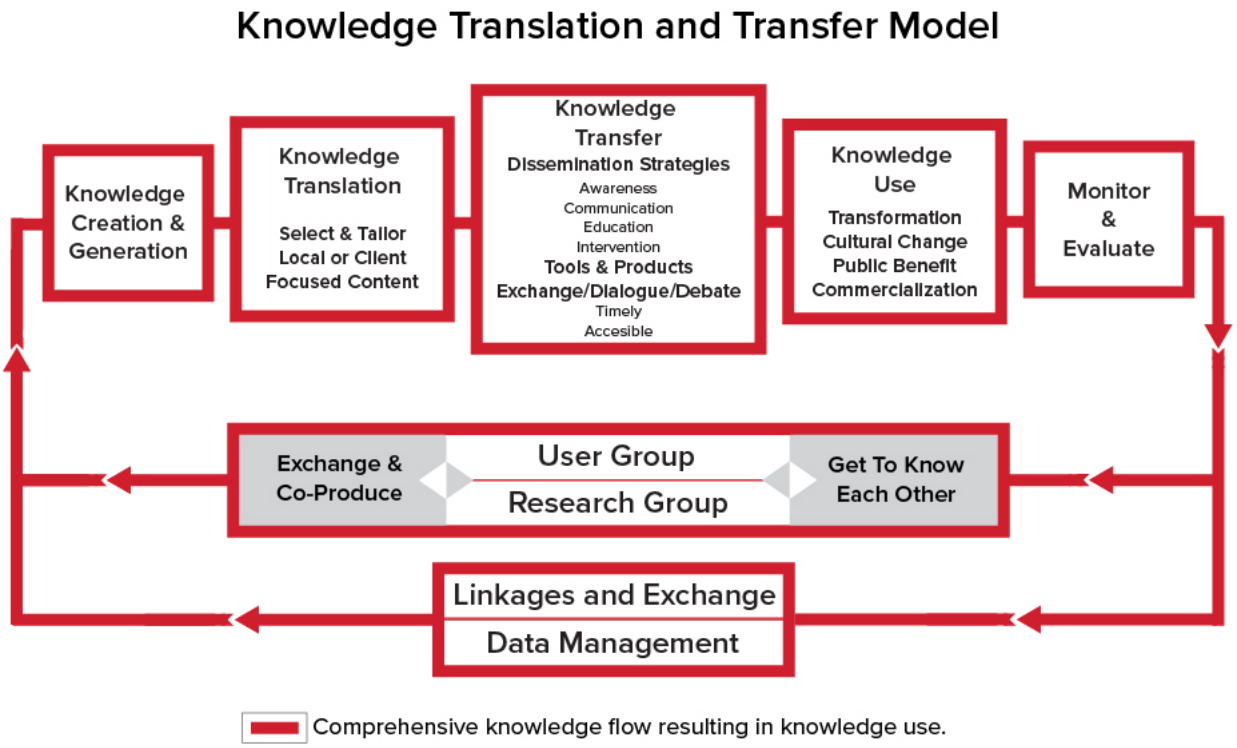


Figure 1. Knowledge Translation and Transfer Model

The synthesis of these concepts with data management (e.g., Research Link – the online search tool for OMAFRA-UofG funded projects and OMAFRA's project search tool), strong linkages (e.g., knowing who is who in the different sectors and communities) and exchange (e.g., providing opportunity for connecting at research knowledge sharing events), generate a flow of knowledge that helps to create successful KTT within a research program and supports the knowledge flow process.

The impact of KTT is considered in one of three streams:

1. **Program –** Research used in traditional agricultural extension and technology transfer processes to alter programs. Includes audiences throughout the entire value chain.
2. **Policy –** Research undertaken to meet gaps in policy and provide results for use by government as part of the policy development process.
3. **Commercialization –** Research that has application in the development or enhancement of a commercially viable product or technology within the value chain. The target audience may include businesses with an interest in licensing or moving the product or technology into the marketplace, as well as, groups or organizations that facilitate linkages between research and the market.

Success Factors

These KTT best practices are the strategies that, once in place, provide the most likely opportunity for meeting the KTT aims of accelerating research into action:

- **Planning:** KTT isn't "*let to happen*" it is "*made to happen*" through a KTT Plan that begins at the research planning stage.
- **Linkages and stakeholder engagement:** Research user groups must be identified, defined and involved in the research process. Understanding research audiences (users) is the first step of KTT strategies. Linkages, associations, partnerships and networks between researchers and research users must be defined and active to allow access to knowledge and knowledge flow.
- **Collaboration:** Researchers and user groups are the core players in the KTT process and must know each other in order to exchange and co-produce knowledge. Researchers and research users work in close proximity and/or together on collaborative teams throughout the research process.
- **Resources for KTT:** Research institutions, knowledge brokers, and knowledge translation and transfer institutions must have the internal capacity and infrastructure necessary to support and engage KTT.
- **Timing and user-focused:** The KTT plan must be implemented through timely, user-targeted transfer activities.
- **Incentives:** There must be incentives, recognition and rewards for KTT.

Constraints

Establishing KTT as a main component of the OMAFRA-UofG Partnership encouraged a shift in the culture of research and collaboration within both institutions. In order to support cultural change in large organizations, several factors must be considered:

- **Conceptual:** Create a conceptual framework that explains terms and clearly communicates expectations.
- **Structural:** Create clear structures that incorporate KTT as part of good research methodology. Consistent follow-up on these requirements is necessary to support long-term change and a culture of collaboration must be created between staff in each institution.
- **Training:** Support researchers in identifying and implementing KTT opportunities.
- **Data management:** Creating structures that allow for the reliable and consistent collection of data.
- **Metrics:** Establishing metrics to help evaluate the impact of a KTT initiative or research project.
- **Networks:** Creating and expanding networks requires time and resources (both staff and financial allocations).
- There is always an awareness that more could be done.

Case Study B.1.3. Knowledge Translation and Transfer · OMAFRA-UofG Partnership

Lessons Learned

- Directly incorporate KTT into the research process, starting with the framing of the research proposal;
- Engage potential users during the research project;
- Create an infrastructure that supports the inclusion of KTT in research (this includes knowledge brokers and KTT analysts who can follow-up on and support KTT in research);
- Encourage collaboration among staff to support knowledge flow and community building in and among organizations; and
- Always keep the overall goal insight: moving research into use faster.

Online resources

- **Knowledge Translation and Transfer Funding Program:** www.uoguelph.ca/omafra_partnership/ktt/en/agrifoodrurallink/kttfundingprogram.asp
- **Knowledge Translation and Transfer Plan: A toolkit for Researchers to Accelerate their Research into Action:** www.uoguelph.ca/omafra_partnership/ktt/en/researchintoaction/resources/buildkttplan.pdf
- **Knowledge Translation and Transfer (KTT) Plan Template:** www.uoguelph.ca/omafra_partnership/ktt/en/agrifoodrurallink/resources/kttplantemplate.pdf
- **Knowledge Translation and Transfer: Nothing New or a New Science?:** www.uoguelph.ca/omafra_partnership/ktt/en/researchintoaction/resources/gfssssymposiumpresentation-ianyoung_approvedtopost.pdf
- **Understanding Knowledge Translation and Transfer (KTT):** www.omafra.gov.on.ca/english/research/ktt/indexktt.html

B.2. Collaborative Knowledge Transfer

The engagement of end-users in the entire research cycle, allows researchers to respond more effectively to farmers' needs and develop technologies that can be adopted more widely. Industry and producers should therefore offer and receive more opportunities to meet and exchange experiences with academia and other research institutions.

Continued dialogue helps identify and evaluate technology options that build upon existing knowledge and resources by responding to current needs identified by key actors in agricultural research.

This section highlights four practices that bring opportunities for collaboration and encourage active communication with research end-users to facilitate increased exchange of information between the various stakeholders involved in the research value chain.

Case Study B.2.1. Research Chairs · Egg Farmers of Canada

This industry-led program enables the creation of new knowledge that serves specific industry-relevant needs and research priorities as well as helps establish specialized centres of research excellence across Canada. Recognized research leaders selected for their commitment to innovation in their field receive annual funding for launching new projects or supporting the hiring of junior researchers.

Organization	Egg Farmers of Canada (EFC)
Target audience	Researchers
Objective	To support research chairs focused on the egg industry.
Coverage	National
Description	Egg Farmers of Canada (EFC) supports research in areas that will shape the future of egg farming in Canada. As part of their commitment, in 2009 EFC launched a research chair program focused specifically on the egg industry. EFC research chairs are thought leaders in their fields and were selected for their commitment to research and innovation. As chairholders, they help establish centres of research excellence at their academic institutions and work with leading national and international experts in the field, as well as top graduate and undergraduate students. The program stimulates high-quality research and international dialogue that, in turn, generates new knowledge to serve the needs of Canadian egg farmers.
Stakeholders and Partners	• Université Laval • University of Guelph • University of Waterloo
Method	EFC's investment provides each chairholder with annual funding for up to seven years. These funds provide resources for launching new projects, and can support the hiring of a junior researcher with relevant and complementary experience. The chairholders also work with top graduate and undergraduate students, fostering the next generation of researchers and leaders in the industry. Additionally, the chairholders continuously engage in knowledge transfer on a variety of fronts, both communicating their research findings to egg industry and taking part in public discourse on important topics related to egg production and trade.

Case Study B.2.1. Research Chairs · Egg Farmers of Canada

Success Factors	• **Addresses industry challenges:** Chairholders develop a research program in areas that relates to the current and future challenges faced by Canadian egg farmers. • **Supports upcoming researchers:** Chairholders mentor the next generation of researchers and industry experts. • **Focus on research dissemination:** Chairholders' research is disseminated across the industry and to the Canadian public.
Constraints	• **IP Agreements:** It is important to establish clear understandings and agreements surrounding intellectual property right from the project outset.
Lessons Learned	Research helps shape the future of our industry. The Research Chairs program is part of a broader suite of research funding programs, all of which help allow EFC to provide up-to-date information to farmers and consumers alike while nurturing the next generation of researchers and industry experts.
Online resources	www.eggfarmers.ca/what-we-do/research-and-development/research-chair-program/

Case Study B.2.2. Quebec-Ontario Cooperation for Agri-Food Research Competition · OMAFRA and MAPAQ

This inter-provincial research competition helps avoid unnecessary duplication of research work by developing common responses to agricultural challenges. Under this joint program, universities and non-profit, non-governmental applied research centres located in different provinces receive support to conduct research projects that address issues of mutual interest for participating provinces (Ontario and Quebec).

Organizations	• Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) • Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ)
Target audience	• Universities and non-profit, non-governmental applied research centres. • Other public or private research institutions and organizations (colleges, government, industry associations and businesses) can contribute to the project as research team members or partners/co-funders.
Objective	To improve the competitive position of the agriculture and agri-processing sectors by developing common responses to the challenges facing these sectors.
Coverage	Provincial - Ontario and Quebec
Description	This one-time joint program offered funding for joint Ontario-Quebec projects supporting water management and integrated pest management research issues of interest to both provinces. MAPAQ and OMAFRA developed a joint research competition on research topics of mutual interest to both provinces with the following objectives: • To develop solutions to agri-food issues shared by Quebec and Ontario; • To encourage partnerships between Quebec and Ontario researchers; and • To enhance graduate student training through internships in the cooperating province. The response exceeded expectations, attracting a large number of applicants from a broad array of institutions and disciplines. Six projects were funded that addressed water and pest management issues of importance to the Ontario and Quebec agri-food sectors.
Stakeholders and Partners	Universities and non-profit, non-governmental applied research centres were invited to apply. Each application was submitted jointly by a research institution based in Quebec and another based in Ontario and awards of up to $250,000 per project were available (to be shared equally between an Ontario and Quebec applicant). Projects could be up to three years in length.

Case Study B.2.2. Quebec-Ontario Cooperation for Agri-Food Research Competition · OMAFRA and MAPAQ

Method	It is expected that the outcomes of joint projects will be greater than can be achieved by projects undertaken independently in each province. It was a requirement that each proposal submitted clearly describe the value of the collaboration between the two provinces including components of data sharing, knowledge transfer, complementary expertise, and expanded networks and partnerships. The program also provided a unique graduate student training opportunity through internships in the cooperating province.
Success Factors	Success for the implementation of this program is due to: • **Common priority areas:** The identified priority areas address agri-food issues and goals common to both partnering provinces. • **Communication and respect:** Good communication between the partnering provinces/ administrators as well as a good understanding and respect from each provincial team regarding each other's business processes. • **High quality personnel (HQP):** Training of HQP is an important component of this program, in particular the opportunity for HQP to spend time working in the cooperating province. Successful projects are ones which demonstrate: • **Meets established priority areas:** The project addressed a published research priority area. • **Complementary skills:** Each institution/partner brought complementary skills to address the research issue. • **HQP development:** Offered HQP opportunities including internships with the partnering province.
Constraints	• **Program timelines:** When establishing program timelines, allow time for the coordination of all parties in terms of processes and cycles which may not be the same. • **Distance:** Differing geographical locations of partners (whether it be program administrators or research team members) could make meeting in person logistically challenging. However engaging technology such as video conferencing, WebEx and teleconferencing can be utilized.
Lessons Learned	This competition has been an excellent example of government, academic and industry collaboration with a goal of addressing issues of mutual interest in two provinces.
Online resources	www.omafra.gov.on.ca/english/research/onqc_research/index.html

Case Study B.2.3. Field School · Farming Smarter

This one-day event encourages greater knowledge of the research that is having an impact on regional agriculture among farmers and other research end-users. Field School brings in experts to research and development sites to give visiting participants the best information currently available on various research topics.

Organization	Farming Smarter
Target audience	• Farmers • Agrologists • Scientists • Media
Objective	To share the projects and results of agricultural scientific exploration in our region with the people working in the field. These include Farming Smarter, Alberta Agriculture & Forestry scientists, Agriculture & Agri-Food Canada scientists and crop commission supported work.
Coverage	Local - Southern Alberta The Field School site is on the east side of Lethbridge just outside city limits. Farming Smarter membership includes all of Alberta south of Hwy 1. However, this event attracts people from all of Alberta, western Saskatchewan and northern Montana.
Description	Each June at the Farming Smarter research and development site in Lethbridge Alberta, Farming Smarter holds its Field School. This one-day event is repeated three days in a row from 8 am to 3:30 pm. The day is filled with information sessions in the fields where research takes place and brings in experts from Farming Smarter members and partners to give participants the best information currently available on various topics important to Alberta agriculture.
Stakeholders and Partners	• Farming Smarter • Alberta Agriculture & Forestry scientists • Agriculture & Agri-Food Canada scientists • Alberta Canola Producers Commission • Alberta Wheat Commission • Alberta Pulse Commission • Alberta Barley Commission
Method	Farming Smarter staff maintain a working relationship with as many active agriculture scientists in the region as possible in order to maintain a knowledge of the work taking place in the region that researchers might have to share with a broad agriculture audience. As the season approaches, Farming Smarter invites researchers to propose projects to present in the information sessions and ensures that there are relevant plots at the Farming Smarter research and development site for them to talk about.

Method

The Board of Directors and staff keep up-to-date as much as possible with the research questions that concern Farming Smarter members. This ensures that Field School topics capture members' interest with relevant, useful information that can be practiced on their own farms.

Field School is advertised widely through many mechanisms and has become a popular event with a reputation for offering quality information relevant to producers in the prairie provinces.

Advertising mechanisms include:

- E-newsletter;
- Save the date postcards and a brochure mailed to members;
- Web presence - events posting and feature window on the Farming Smarter homepage as well as a dedicated Field School webpage;
- News & media - posts based on information relevant to the Field School on Farming Smarter websites and other websites frequented by Farming Smarter members, radio ads and interviews, tweets from the field relevant to #FSFS, and a press release and phone calls to local media; and
- Advertising - roadside magnet signs and print advertisements in The Western Producer and Alberta Farmer Express.

Success Factors

- **Strong linkages:** Build relationships with the local scientific and agricultural community.
- **Communication:** Connect to the target audience through frequent newsletters, popular press articles and other events.
- **Land and resources:** Land, to both conduct the Field School and to do research and extension – cash, land, equipment, human resources.
- **Scientific reputation:** A reputation for doing good scientific work.
- **Attention to event participants:** Be a good host for the people that attend the events. Consider food, drink, bug spray, sunscreen, washrooms, hand sanitizer, transportation for participants at the event (e.g. truck and flatbed trailer with a removable canopy, benches, etc.).

Constraints

- **Funds:** Raising the money needed through sponsorships, grant funds, attendance fees.
- **Time:** Event planning is time intensive, beginning in the fall preceding the event to plant and plan plots. It also takes time to plan and execute meals, transportation, traffic flow during the event, advertising and site safely.
- **Weather:** As on any farm, bad weather can ruin a module's plots, stage of plant growth may not be good for presentation and the fields could be a mess to walk or drive in. However, weather on the day of the event is irrelevant to attendance numbers – attendants come regardless.
- **Linkages with the agricultural community:** Weak relationships with the agricultural community prevent your ability to be relevant to the agricultural community and have relevant researchers to participate in the event. Strong linkages and respect for the community ensure participants want to attend the event.

Case Study B.2.3. Field School · Farming Smarter

Constraints	• **Lack of engaged members:** Without members that will talk to you, sit on your board, talk about you and help make topics relevant and people know to come, you may not succeed. • **Regional population numbers:** A small surrounding population can make it difficult to bring enough people together to support an event. Farming Smarter is centrally located near the largest regional center, Lethbridge, and therefore attracts larger numbers.
Lessons Learned	Strong relationships with both the scientific and farming community are paramount to ensure workshop modules are relevant to the surrounding farming community. Advance planning to facilitate planting demonstration plots is also important.
Online resources	www.farmingsmarter.com/growing-knowledge/the-farming-smarter-field-school/

SECTION C
Commercializing Agricultural Innovation

Commercialization of agricultural innovations is an essential part of the innovation continuum. Intellectual property (IP) is an integral component that must be recognized, affecting nearly every part of the research process from initial development to the sharing of results with end-users. It is also an area of great debate and misunderstanding not only in agricultural research but also in other areas of scientific research.

Nevertheless, intellectual property does provide greater opportunity for dissemination by bringing research to market through the commercialization of new technologies and processes. Patented products also advance basic research by bringing in revenue that can help support the many basic research projects that deserve funding. The agricultural sector can no longer ignore these benefits arising from the business end of innovation.

The four best practices showcased in this section demonstrate that making the most of the opportunities for dissemination arising from the commercialization of research requires knowledgeable and informed decision-making based on a solid understanding, and careful management of intellectual property.

These practices are grouped in the following thematic areas:

C.1. Understanding Intellectual Property
C.2. Accelerating New Technologies

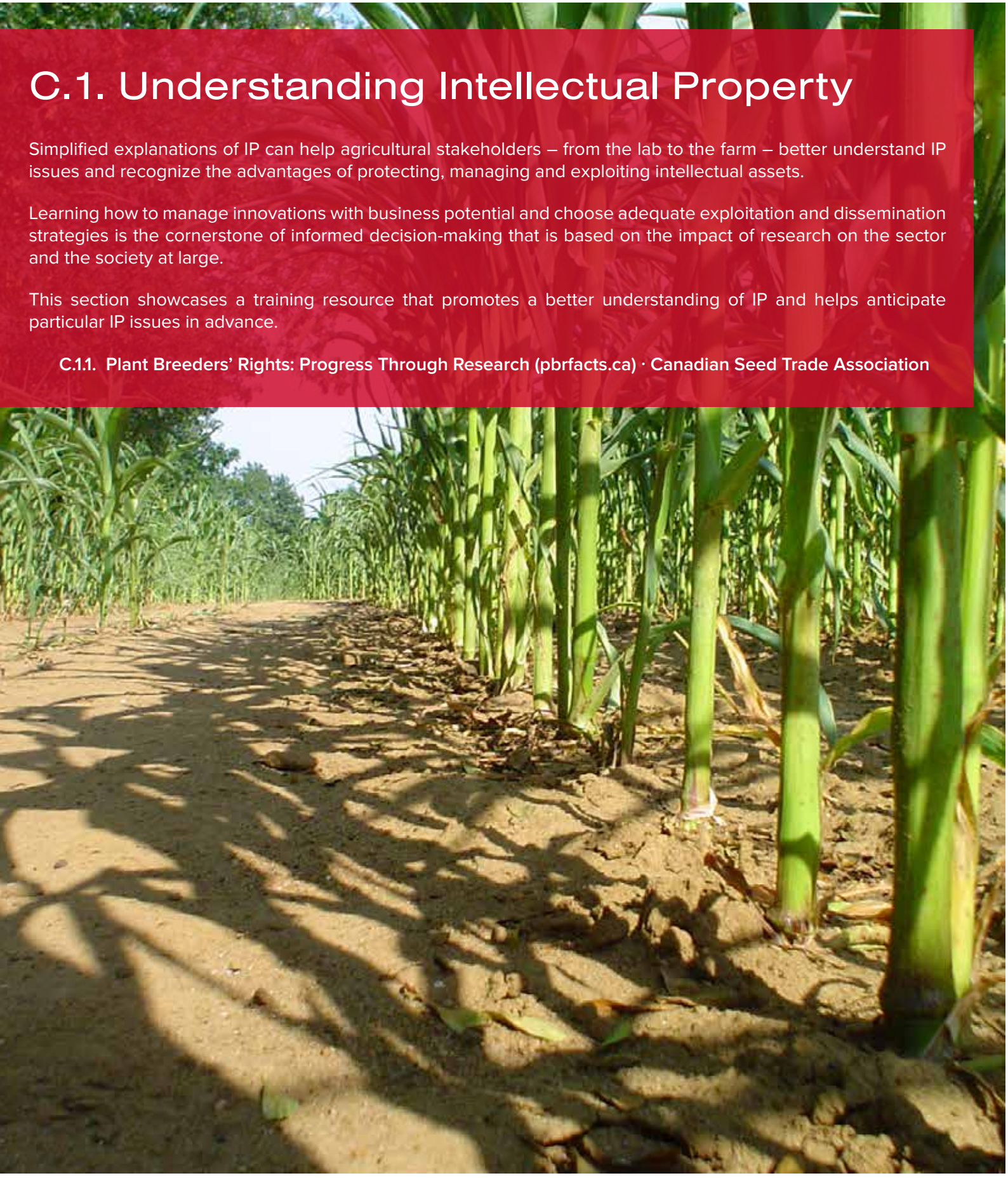
C.1. Understanding Intellectual Property

Simplified explanations of IP can help agricultural stakeholders – from the lab to the farm – better understand IP issues and recognize the advantages of protecting, managing and exploiting intellectual assets.

Learning how to manage innovations with business potential and choose adequate exploitation and dissemination strategies is the cornerstone of informed decision-making that is based on the impact of research on the sector and the society at large.

This section showcases a training resource that promotes a better understanding of IP and helps anticipate particular IP issues in advance.

C.1.1. Plant Breeders' Rights: Progress Through Research (pbrfacts.ca) · Canadian Seed Trade Association



Case Study C.1.1. Plant Breeders' Rights: Progress Through Research (pbrfacts.ca) · Canadian Seed Trade Association

This outreach and education tool helps all crop value chain stakeholders understand the opportunities and obligations that come with expanded Plant Breeders' Rights - a form of intellectual property rights by which plant breeders can protect their new varieties. This one-stop source of information contains specific and focused information, fact sheets, presentations and other educational material designed to inform and build awareness of the new requirements that come with Canada's updated Plant Breeders' Rights (PBR) Act.

Organization	Canadian Seed Trade Association (CSTA)
Target audience	• Farmers • Seed retailers • Seed conditioners • Grain buyers • Crop value chain stakeholders
Objective	Pbrfacts.ca provides a one-stop source of information for the crop value chain on the new Plant Breeders' Rights environment. It aims to help all stakeholders understand the changes and obligations under the new legislation.
Coverage	National
Description	Important changes to Canada's *Plant Breeders' Rights* (PBR) Act came into effect on February 27, 2015, with the passage of the *Agricultural Growth Act*. The updated legislation ensures continued investment in new and improved seed varieties for Canadian farmers. It also puts Canada on equal footing with other countries, keeping Canadian farmers competitive in the global market. Prbrfacts.ca was launched to help all crop value chain stakeholders understand the opportunities and obligations under the new legislation. Starting in March 2015, the Canadian Seed Trade Association (CSTA) reached out with an education campaign to increase awareness of the new obligations that come with expanded Plant Breeders' Rights.
Stakeholders and Partners	PBRfacts.ca was developed by the CSTA with input from the Plant Breeders' Rights Office, the Canadian Food Inspection Agency Variety Registration Office, and intellectual property specialists.

Case Study C.1.1. Plant Breeders' Rights: Progress Through Research (pbrfacts.ca) · Canadian Seed Trade Association

Method

PBRfacts.ca is meant to inform those stakeholders along the value chain who need to be aware of the new requirements created by the expanded breeder's right. The site is built around two certification marks that identify PBR protected varieties by the type of protection they carry, either PBR'78 or PBR'91. The certification marks, paired with the information provided by PBRfacts.ca, clarifies the obligations associated with each type of protection.

The site contains specific and focused information for farmers, seed retailers, seed conditioners and buyers of harvested material (grain). It also has a page dedicated to questions and answers and gives access to fact sheets, presentations and other material designed to inform and build awareness.

Additionally, to help stakeholders more easily identify the PBR status of crop varieties registered in Canada, CSTA created the **Crop Varieties Registered in Canada and Plant Breeders' Rights Status Database** with the assistance of the Canadian Food Inspection's Variety Registration Office and the Plant Breeders' Rights Office. The database can be accessed from pbrfacts.ca or at cdnseed.org/library/crop-kinds-database.

Outreach and education remains one of CSTA's highest priorities. To get the word out, in 2015, CSTA issued industry notices and news releases, engaged media by taking part in interviews and pitching stories, contributed to member blogs and gave presentations.

CSTA also has education tools available including fact sheets, power point presentations and post cards that members can use to educate their staff and customers. For example, more than 12,000 postcards that are sized to fit in a legal envelope for inclusion in mailings to retailers and customers have been distributed. The cards invite value chain stakeholders to visit the website pbrfacts.ca to learn more about the changes and obligations under the new Plant Breeders' Rights legislation.

Success Factors

- **Modern regulatory environment (UPOV'91):** The creation of a modern regulatory environment has enabled Canadian farmers to access new Canadian-developed and international varieties. The adoption of UPOV'91 which aims to "provide and promote an effective system of plant variety protection which will encourage plant breeders to develop new varieties of plants, for the benefits of society" and establishes international conventions agreed to by signatory countries, has helped Canadian farmers remain innovative and competitive.

  Since the *Agricultural Growth Act* became law in 2015, bringing Canada into conformation with UPOV'91, the Plant Breeders' Rights Office (PBRO) as seen an increase in the volume, and the diversity of new applications for agricultural crops.
- **Access to information and knowledge:** Value chain stakeholders have access to the tools they need to learn about the obligations and opportunities under the new Plant Breeders' Rights legislation. One of CSTA's highest priorities continues to be outreach and education activities across the crop value chain to make sure everyone knows about the opportunities and obligations.

Constraints

- **Dissemination of information:** Getting the word out to stakeholders has likely been the largest challenge. CSTA works with Partners in Innovation and other stakeholders such as the Canadian Plant Technology Agency to get the word out. Members also help to spread the information to their customers.

Case Study C.1.1. Plant Breeders' Rights: Progress Through Research (pbrfacts.ca) · Canadian Seed Trade Association

Lessons Learned	CSTA measured their progress in outreach and education with a survey of stakeholders that ran through August and September 2015. The survey showed that it is necessary to keep the new Plant Breeders' Rights top of mind across the value chain and continue to raise awareness with word of mouth and print and digital communications. Additionally, the survey showed that CSTA should increase direct outreach to seed retailer and grain buyer audiences. CSTA has since created specific information for these groups which are being communicated during in-person meetings and targeted communications.
Online resources	www.pbrfacts.ca

C.2. Accelerating New Technologies

Intellectual property rights can be used to enhance the socio-economic impact of agricultural research by accelerating knowledge transfer through multiple exploitation routes. Assessing potential business opportunities for a particular innovation, and choosing the most suitable commercial exploitation strategy, significantly maximizes the value of intellectual assets, accelerates technology transfer and helps guide decisions on how to better communicate new knowledge.

Interdisciplinary and cross-sectoral partnerships also have an important role to play in accelerating the introduction of new innovations to the market, making new technologies and knowledge available to consumers and producers, ensuring broader dissemination. Managing IP agreements within these forms of collaborative research is essential in order to efficiently mobilize resources to achieve the goals of today's complex innovation systems and maximize the benefits derived from agricultural research in Canada.

The two best practices highlighted in this section show how to effectively manage exploitation strategies on a technology-by-technology basis and between partners.

Case Study C.2.1. The Gryphon's LAAIR: Leading to Accelerated Adoption of Innovative Research · University of Guelph

This program supports the product development and market commercialization stages of technological innovation to enable widespread use of applied research in the sector. Academic researchers receive targeted financial assistance for adoption, product development, optimization, and marketing related activities to ensure that commercially viable technologies have the highest probability of getting into the market and positively impacting the economy and competitiveness of the region.

Organization	University of Guelph
Target audience	UofG researchers
Objective	To increase private sector commercialization of technological innovation developed by the University of Guelph for the agri-food and rural sectors.
Coverage	Provincial - Ontario
Description	Current agri-food and rural research discovery programs support the advancement of knowledge and creation of new technologies. However, there is no support for the adoption, product development, optimization, and marketing related activities that are required to enable the widespread use of these innovative technologies by industry. The Gryphon's LAAIR Program supports these activities to ensure that commercially viable technologies have the highest probability of getting to market where they are needed to positively impact the economy and competitiveness of Ontario agriculture. The program provides targeted financial support to UofG researchers to reduce existing barriers and fill knowledge and technology gaps in the industry to help accelerate its adoption of late stage innovative technologies and solutions. The program also funds the identification of risks and opportunities of early stage technologies to help researchers determine if a technology is aligned with the current or future needs of industry and society.
Stakeholders and Partners	The Gryphon's LAAIR Program is funded by *Growing Forward 2*, a federal-provincial-territorial initiative and the OMAFRA-UofG Partnership. The Advisory Council for the Gryphon's LAAIR Funding Program comprises representatives from OMAFRA Research & Innovation Branch, UofG Office of Research – Strategic Partnerships, UofG Catalyst Centre, Agri-Technology Commercialization Centre (OAFT, Soy-20/20, and BioEnterprise), Innovation Guelph, related food and agriculture industry associations, Agricultural Research Institute of Ontario, Vineland Research & Innovation Centre and the Livestock Research and Innovation Corporation. The "*Gryphons*" are a panel of 4-8 representatives from industry nominated by the Advisory Council to evaluate the Commercialization Presentations delivered by applicants at the Gryphon's LAAIR Finale. The Gryphons have extensive experience working, investing and operating in the agri-food sector and they bring a very practical and commercial focus to the evaluation process.

Case Study C.2.1. The Gryphon's LAAIR: Leading to Accelerated Adoption of Innovative Research · University of Guelph

Method

To be eligible for support through the Gryphon's LAAIR Program, proposals must strive to meet the following principles and objectives:

- Demonstrates or supports transformative innovation;
- Addresses a critical knowledge gap or barrier to the development, adoption, or commercialization of a technology;
- Demonstrates or validates a clear commercial need (market pull);
- Addresses the OMAFRA priorities; and
- Its principal investigator has an appropriate and experienced team assembled and is a UofG faculty, CARG researcher or eligible adjunct.

Applicants must submit their Commercialization Project Summary (CPS) using the OMAFRA-UofG Research Management System. The CPS focuses on the "*What, Why, Who, When, Where, and How*" pertaining to the project and technology.

A training seminar is provided to assist applicants to prepare a mandatory "Commercialization Presentation" which must be pitched to a panel of industry stakeholders and investment professionals called the Gryphons.

Applicants with the best scores selected from the written applications for Commercialization Grants are asked to deliver a short public, non-confidential Commercialization Presentation to the Gryphons.

The "*Gryphon's LAAIR Finale*" is one full day of public presentations by all the applicants for Commercialization Grants. Each Applicant/Team will pitch a short (10-15 minutes) presentation to persuade the Gryphons to fund their proposal. These presentations have limited time and should focus on the commercial opportunity and how the proposal will remove barriers impeding industry adoption. Following the presentation, the Gryphons interrogate the presenters for up to 15 minutes to probe the important aspects of the proposal.

Success Factors

- **Attraction of further funding:** Successfully completed proposals should generate results that greatly increase the probability of attracting follow-on funding for further technology development and commercialization.
- **Improvement of commercialization path for early stage technology development:** Proposals focus on improving one critical step in a process or one technical bottleneck that will significantly improve the commercial viability of an early stage technology.
- **Focus on both immediate and long-term success:** The desired outcome is for all projects to speed forward with full adoption of the technology by the Ontario agri-food or rural sectors as soon as possible, making Ontario more competitive. The Gryphon's LAAIR Program recognizes variable research timelines and aims to achieve both immediate and long term success; so many projects of variable maturity are funded simultaneously. Some technologies are expected to be adopted immediately by the proposal's supporting industry partners while others require several more years of additional research, funding and marketing to do the same.
- **Market timing and competitive advantage for the user:** Alignment of the market with the technology potential (value proposition) and a method to protect the technology to allow the first adopter to maintain some form of competitive advantage for enough time to recoup their investment accrued by launching a new product into the local economy are necessary factors to a successful project.

Case Study C.2.1. The Gryphon's LAAIR: Leading to Accelerated Adoption of Innovative Research · University of Guelph

Constraints

- **Recognition of negative research results or 'pivot' points:** Many early stage technologies funded through the Gryphon's LAAIR Program will not immediately advance to commercialization. This is not a failure but instead an important opportunity for course correction – often called a 'Pivot'. These positive and negative research results provide valuable feedback to researchers, funders, and entrepreneurs to determine if and when additional resources should be allocated to a technology or, more importantly, how should the technology be altered to provide a better solution to society that can still attract funding and match industry/sector needs.
- **Lack of funds for 'user' or market research:** The biggest challenge is often the lack of technological development in cooperation with middle and end users. Customer Discovery and understanding is critical to projects, yet funding is not easily acquired for academics to seek out and understand market needs. Consequently, most technologies are created in the absence of a customer's (or product marketer's) perspective. Economically and technically viable technologies that are desired and accepted by industry and consumers require significant grass roots market research.
- **Academic interest:** Product development (late stage optimization) is not as attractive as discovery based research for academics (few publications are generated). It is therefore more difficult to find committed academics to invest their time into this post discovery, de-risking of technologies.

Lessons Learned

Customer or supplier feedback is often overlooked in the academic research process to create novel and innovative solutions to the world's problems. Research by nature is an iterative process of generating and testing the viability of hypotheses (i.e. new technologies). Customer and market feedback is critical to help researchers 'Pivot' their research plans, if they want to adapt to the current and future needs of society.

For example, the result of a market assessment grant may indicate that commercialization of a technology is not feasible due to cost, market size, regulations, changing market drivers, new competitive technologies or even market timing (too late or too early). This is a successful outcome and prudent use of Gryphon's LAAIR resources because it provides a greater understanding of the real opportunity moving forward, before larger investments are made. This process helps everyone make the best use of the limited funding available for industrial applied research.

Likewise, the research results from a late stage technology proposal may demonstrate that a technology is not yet economically attractive given the current market conditions or the reliability/quality of critical inputs needed by the technology. This is useful to researchers to elucidate the real path forward when the timing and market conditions are more supportive.

Online resources

www.uoguelph.ca/omafra_partnership/research/en/themespriorities/Gryphon-s-LAAIR-Program-Info.asp

Case Study C.2.2. Co-development of University Technology · Vineland Research and Innovation Centre

This innovative partnership approach helps post-secondary institutions accelerate research timelines and maximize commercial uptake of research outputs. Through flexible IP agreements and intermediaries from the non-profit sector, stakeholders involved in public-private-producer partnerships set a clear path to the commercialization of innovative university-derived technologies.

Organization	Vineland Research and Innovation Centre
Target audience	• SMEs looking to in-license technology developed in universities and/or the public sector; and/or • Producer groups that support public research programs and need guidance on translating that research to commercially relevant technologies.
Objective	To further develop and validate university-created IP in order to bridge the gap that exists in advancing the scale-up and commercialization of new innovations.
Coverage	Broadly applicable
Description	Universities have strong discovery pipelines (in-house development) that often need partnerships to realize the path to commercialization. Vineland supports university research programs by acting as an intermediary to assist and help accelerate timelines and maximize commercial uptake and delivery of real research results. For example, Dr. Keiko Yoshioka at the University of Toronto identified a novel gene involved in broad disease resistance in plants. Vineland is interested in disease resistance for its greenhouse vegetable breeding program, and has a proprietary reverse genetics platform for developing traits. Vineland is therefore an ideal partner to assist and accelerate the passage of this new gene technology through proof-of-concept and into its breeding programs.
Stakeholders and Partners	• **Universities/Public research organizations** (ex. University of Toronto) – Technology discovery, validation; owner of background intellectual property. • **SMEs or translational research organizations** such as Vineland Research and Innovation Centre – Technology validation; co-development of the trait as a breeding tool; licensee of the gene technology; breeder and commercialization lead. • **Producer groups** (in this case the Ontario Greenhouse Vegetable Growers) – This group will ultimately benefit from the technology (in this case grow greenhouse vegetables with enhanced disease resistance; often also play the role of co-funder). • **Funding agencies** (such as Genome Canada).
Method	*The following is a specific case that illustrates the approach of co-developing a technology developed in a university lab, with the aim of readying the technology for commercialization:* The nature of this best practice is that it is a collaborative project with established agreements to develop university technologies and accelerate their path to commercialization. In this example, UofT and Vineland both play key roles in the development and validation of the plant disease resistant trait technology.

Case Study C.2.2. Co-development of University Technology · Vineland Research and Innovation Centre

Method	UofT remains the owner of all background IP (developed prior to the collaborative project), but Vineland funds 50% of costs associated with protecting related intellectual property (via patents, etc.) in exchange for a sole license option (the exclusive right to commercialize the resulting technology). For jointly developed IP, Vineland has elected to assign its portion back to UofT to keep ownership clean. As part of the assignment arrangement, Vineland maintains a sole license option to all IP associated with the technology, with terms to be negotiated in good faith. Assuming the license option is triggered, Vineland will pay 100% of costs for IP generated as a result of the collaboration. The initiation of this collaboration allowed the parties to attract Genome Canada funding to expand and accelerate the project, and has since generated interest from a major global seed company in the trait.
Success Factors	• **Clear path to commercialization:** A strong vision and path to commercialization is needed to properly lay out the terms of the agreements and the structure of the partnership. • **Collaboration:** The forcing of partnerships rarely works. There must therefore be a mutual interest in collaborating and clear advantages to both parties in doing so. • **Flexibility in IP agreements:** A willingness to compromise and negotiate on IP terms so that each party gets what they need is essential as parties often push for more than is necessary which can lead to a breakdown in negotiations. • **Supportive funding:** Funding mechanisms that support these collaborations can really accelerate the process (e.g. Genome Canada GAPP).
Constraints	• **Variation in IP policies:** Universities have differing IP policies; in some cases inventors have the option of taking personal ownership over the IP. The industry partner needs to understand who owns the IP (ex. researcher, university or both), and ensure they negotiate options or licenses accordingly. • **Variation in administrative structures:** Administrative structures can be difficult to navigate; to mitigate this, it's best to find an internal point person to help you identify the right offices to deal with. • **Publish vs. protect IP:** Conflicting requirements may exist between parties to publish/protect results and the IP that arises from research.
Lessons Learned	It is important to focus on the partnerships and technologies that can truly advance the industry or solve its problems; collaborations of convenience will often take longer to establish and are likely to break down since there's no clear mutual benefit. Talk about intellectual property up front: • What is the background IP? • What is expected to arise? • Who owns the IP developed by each party (the inventor or the institution)? • How is one party or the other going to take this to market? Once those are understood, design the IP terms to enable the commercialization vision.
Online resources	n/a

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