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Innovation Information Resources:

Ontario Food and Beverage Sector

Prepared for:

Food and Beverage Ontario

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Disclaimer: The information included in this report is a consolidated overview of primary and secondary research; the results were not validated in detail by resource providers and therefore may contain inaccuracies. Information current as at March 2015.

FOOD AND BEVERAGE ONTARIO

EXECUTIVE SUMMARY

Ontario's food and beverage industry comprises the largest manufacturing sector in Ontario in terms of employment and second largest in terms of revenue, directly contributing \$12.8 billion to provincial GDP (2012). Key opportunities for the sector include increasing consumer demand for local, healthy food, expanding export markets, and new exciting industries (e.g. craft breweries, ethnic foods).

In order to support the growth of the sector, the establishment of an Ontario Food and Beverage Processing Innovation Centre has been proposed; a central repository of innovation information resources would support the proposed centre and enhance processor access to resources.

MNP was tasked to create an inventory of available innovation resources, and to identify gaps and opportunities. Through primary and secondary research, information and physical asset innovation resources were identified and organized into a database that is sortable by various attributes. The database includes **67 information resources** available through a variety of channels and **54 physical assets**, where services are delivered at a specific location, such as research centres, education institutions and networks. An excerpt of the database is shown below.

	Capabilities																
Bus	iness/ F	inancial	Research	Advisory	Advocacy	Resource	Overview	Organization	Sector	Geographic area	Applicable to	Applicable to	Applicable to	Website Link	Contact info - address	Contact info - Phone number	Contact info - email
Ори	rational	upport								served	Small	Medium Businesses	Large			/ fax	
Info	rmatio -			-		-					Businesses 👻		Businesses -]		
х						Food in Canada	Publishes food and beverage processing	Food in Canada	Publishing	Canada	х	х	х	http://www.foodincanada.com/digital-	N/A	N/A	N/A
						magazine	industry magazines.		-					edition/			
х						Advancing Innovation in	This is a research project with a video link to a	Institute of Food Processing	Education	Canada	x	х	х	http://ifpt.ca/about/innovation-project.php	850 Fountain Street South,	Tel: 519-748-5220 ext 2499	ifpt@conestogac.on.ca
						the Food Processing	workshop that discusses gaps in innovation	Technology (IFPT)							Cambridge Ontario N3H 0A8		
						Industry	practices, the role of academia in innovation										
							panel and a discussion around innovation										
							examples.										
x						Publications on various	Publishes magazines and newsletters on variou	The Canadian Agri-Food Policy	NPO	Canada	x	х	х	http://www.capi-icpa.ca/pubs.html	960 Carling Avenue, CEF	Tel: 613-232-8008 or toll-free	info@capi-icpa.ca
						Agri-food issues	agri-food topics, such as food processing,	Institute							Building 49, Room 318	1-866-534-7593	
							innovation, sustainability.								Ottawa, ON K1A 006		
x						Canadian Manufacturers	Issues publications and reports on the Canadian	Canadian Manufacturers &	Manufacturing	Canada	x	x	x	http://www.cme-	1 Nicholas Street, Suite 1500	Tel: (613) 238-8888	N/A
						& Exporters	manufacturing and export industry.	Exporters						mec.ca/english/publications-reports/cme-	Ottawa ON K1N 787	Fax: (613) 563-9218	
														publications-reports.html			
x	×			×		Agricultural Adaptation	Administers government funding for	Agricultural Adaptation Council	NPO	Ontario	х	х	х	http://www.adaptcouncil.org/our-	381 Elmira Road North, Unit 1	Tel: 519-822-7554	info@adaptcouncil.org
						Council	agricultural businesses.							programs.php	Guelph, ON	Fax: 519-822-6248	
															N1K1H3		
x	×			×		Articles and tools	Publishes articles on business topics, such as	Business Development Bank of	Financial	Canada	x	x	x	http://www.bdc.ca/EN/articles-	5, Place Ville Marie, Suite 400	Toll-free number:	N/A
							financing, technology, entrepreneurial skills.	Canada (BDC)						tools/Pages/default.aspx	Montreal, Quebec H38 5E7	1-877-232-2269	
				1			Provides financial tools (such as rate	1	1	1	1			1	1	Fax: 1-877-329-9232	
				1			calculators), templates and guides, and	1	1	1	1		1	1	1	1	
							technology assessments. BDC also provides										

While there are many different types of information resources available, physical assets such as commercialization centres are extremely limited, making it very challenging for processors to access resources for product development and scale-up.

There are opportunities to centralize access to resources for the sector, and to enhance collaboration and integration of such resources as existing innovation centres with regional business networks.

In order to support the growth of the sector through targeted access for processors to innovation resources, recommendations include:

- Establish a culture of innovation excellence
- Develop a go-to information source for innovation
- Build on existing regional networks
- View innovation from a global perspective

To support the above recommendations, further study is needed through processor engagement, to determine the impact of developing a centralized innovation information database and to conduct a physical asset inventory.

1. INTRODUCTION

The Industry

The food and beverage industry is a significant contributor to the Ontario economy, with nearly 3,000 processors, more than \$40.7 billion in annual revenues, and generating over 130,000 direct jobs. In total, the industry comprises the largest manufacturing sectors in Ontario in terms of employment, second largest in terms of total revenues (14% in 2012, according to StatsCan), and directly contributed \$12.8 billion to provincial GDP (2012). Businesses include a large number of small and medium sized enterprises as well as multinationals.

The food and beverage processing industry is at the center of Ontario's food value chain and food economy. Ontario-based food processors purchase about 65% of food related farm production. This dynamic between farmers and processors has established Ontario as North America's third largest food cluster, and a leading global hub for food processing. The industry as a whole is one of Ontario's economic giants. Both processors and producers are innovative in developing new products and processes and in supporting alternative crops such as ginseng, hazelnuts and hops. The sector is supported by Ontario post-secondary institutions that provide food, technology, agriculture and nutrition research and development, and by small business centers, regional networks, and all levels of government including local economic development offices. Ontario also has commercialization facilities, food clusters and industry networks that support the sector in bringing innovative products to market.

Despite the strength of the industry, there are a number of challenges that threaten its prosperity. High costs of operations in urban centers, retail and distribution consolidation, high entry costs, and low levels of investment in research and development are all key factors that must be addressed by the industry to maintain its competitive positioning. There are also significant opportunities for the sector, including increasing consumer demand for local, healthy food, Export and Import Replacement, burgeoning industries such as craft breweries and the growth of new Canadians' demand for "ethnic" products.

Innovation, both in product research and development and in all areas of operations is key in increasing the competiveness of the food and beverage sector in Ontario.

"Ontario is a strong province with the largest processor presence and strong intellectual capability"



1. INTRODUCTION (continued)

Today's Innovation Landscape

Ontario offers many innovation resources for the food sector through a variety of outstanding channels. Resources include programs, tools, websites, libraries, advisory agencies, funding and investment capital, consulting services, industry and sector associations and initiatives, innovation and commercialization centers, print publications, tax incentives and market reports amongst others. Supported by Ontario's Innovation Agenda, which aims to support a high and sustainable level of prosperity, and healthy communities to provide quality jobs and better lives for Ontarians, there is a wealth of resources across the province.

In order to enhance access to innovation resources, and to support the growth and competitive advantage of the sector, key stakeholders have proposed the establishment of an Ontario Food and Beverage Processing Innovation Centre. A central portal or repository of innovation resources would support the proposed center, and help improve access to assets currently available to the sector. This report describes an inventory of innovation resources currently available to businesses in the food and beverage industry and the applicability and effectiveness of these resources. This report also identifies gaps and opportunities, and proposes next steps.

Defining innovation

Innovation is the act or process of introducing new ideas, devices or methods. For the food and beverage processing sector, there is: 1) research and development innovation, which focuses on new ingredients, products, product line extensions; 2) new or enhanced technology and equipment; and 3) operational or productivity innovation, which includes all aspects of a processor's business such as new ways to finance investment, productivity improvement or innovative means to commercialize, manufacture, market and distribute products.

Innovation can be sector-specific, such as research that specifically impacts and benefits food and beverage processors, or sector-agnostic innovation, that impacts other components of the value chain or business practices and could be considered useful for other sectors.







2. APPROACH

Methodology

In order to determine what innovation resources are currently available for the Ontario food and beverage sector, the following approach was taken:

- 1. Based on industry and stakeholder knowledge, and considering the innovation definitions, conducted targeted secondary research through print publications and web-based information
- 2. Interviewed stakeholders from the following organizations:
 - Northumberland Agri-Food Venture Centre
 - City of Toronto Economic Development (Food and Beverage advisor)
 - George Brown College
 - Institute of Food Processing Technology, Conestoga College
 - Ontario Ministry of Agriculture, Food and Rural Affairs
 - Agriculture and Agri-Food Canada
 - Entrepreneurship and Applied Research, Conestoga College
 - Canadian Agri-Food Policy Institute
 - Agri-food Management Institute
 - GO Productivity
 - Provision Coalition
 - Long Range Planning, Niagara College
 - Canadian Food and Wine Institute Innovation Centre, Niagara College
 - Vineland Research and Innovation Centre
- 3. Through the above sources, identified information and physical asset innovation resources
- 4. Organized findings in a database that can be sorted by various searchable attributes
- 5. Identified key findings, gaps and opportunities
- 6. Summarized and provided recommendations to address gaps, leverage opportunities and next steps.



3. KEY FINDINGS: INFORMATION RESOURCES

Overview

Research cast a wide net to include any resources that may be of use to processors who are interested in innovation in its broadest sense.

Based on the interviews and secondary research conducted, a database was established to consolidate the identified innovation resources, which were divided into two categories. The first category is physical assets, which includes resources where the service is primarily delivered at a physical location. Examples include incubators, accelerators, and post-secondary research or training institutions. The second category is information-based resources, which includes programs and services that are delivered through a variety of channels, including print, online, and in person.

The database is a searchable Excel document created in conjunction with this report. The database is intended to be a work-in-progress that evolves with the sector.

- Innovation information resources are described by their various attributes
- Physical asset resources are described by their name, physical location and general services available

The database includes 67 **innovation information resources** which provide a cross section of those available online, in print, and in-person, as well as funding. Efforts were made to include all of the most important resources, but the database is not exhaustive and will evolve. Each resource in the database is categorized according to its capability, geographical region served, whether it provides business or operational information and its applicability to businesses of various sizes. Resources were classified in these ways to provide a quick understanding of what, who, and where the resource is and to help users narrow down the resources to those that are most useful to them.

The database includes 54 **physical assets**, with some assets having multiple locations throughout Ontario. Physical assets include incubators, research centers, post-secondary research and education institutions, and economic development offices. Some offer programs and services limited to the region in which they are located. Many physical assets, such as research centers and post-secondary institutions extend their reach beyond the regions in which they are located. While research is being conducted at the physical center, its results can be used by businesses from all over Canada. The same can be said for post-secondary programs, where eligible applicants from other provinces can apply to study at Ontario's universities and colleges. Given the ease with which information is shared in today's market, physical assets merely serve as the home base where research and training can be conducted. The resulting technology, knowledge, and findings can be shared as widely as the original source allows. Any asset where the service/program is primarily delivered/conducted at the physical location has been characterized as a physical asset.



3. KEY FINDINGS: INFORMATION RESOURCES

Database Content

Highlights (described in more detail below)

The most common innovation information resources are those for:

- Business and operations
- Financial support
- Advisory, research and advocacy services

The resources identified by % type are show below:



Innovation Information Resources by Type (%)

Information related to business and operations is the most prevalent resource available. Of the 67 resources described in the information assets database, 32 provided general information that could assist processors with business and operations. These resources generally consisted of advisory products and services including publications such as magazines or articles, events, networks, government programs and advocacy groups. Information products and services are offered by a wide range of organizations, such as the Ontario Bioindustrial Innovation Centre, AAFC, OMAFRA and others.



3. KEY FINDINGS: INFORMATION RESOURCES

Database Content

The second most available resource are those related to funding and investment: 28 resources were identified that either provided funding, advisory services that help businesses identify and access funding or programs that provide tax incentives. Examples of these types of resources includes the Agri-Technology Commercialization Centre which assists producers in the agriculture industry to identify capital, the Ontario Innovation Tax Credit which provides a 10% refundable tax credit for qualified R&D expenditures, and the federal Agri-Innovation Program of Growing Forward 2 which provides funding for qualified projects.

Other prevalent types of resource include resources regarding advisory, research and advocacy services. Research resources typically included publications, working groups or programs such as the Business **Innovation** Access Program (BIAP) which provides technical and business services related to research and development. Advocacy resources typically consisted of industry professionals or industry associations such as the Ontario Independent Meat Processors. Lastly, advisory resources came in many different forms such as publications, advisory groups, government programs and through various consulting and advisory firms.

A **significant trend** amongst the resources is that typically, **one resource offers many products and se**rvices. An example of this is the Industry Research and Assistance Program (IRAP) run by the National Research Council of Canada. IRAP provides advisory, funding and networking services for business that are looking to develop and commercialize innovative technologies. This is a positive aspect of the resource landscape as it promotes accessibility by making it easier for manufactures to access the resources they're looking for.

A resource that is notably absent is a guide to what resources are available. An overall integrated resource guide would be very helpful to manufacturers to discern what's available and what could be of use to them. Another notable absent resource is any food and beverage specific publication that focuses on non-core aspects of the business. For example, while there is human resources information provided at a national level by the Food Processing Human Resource Council, local /provincial resources for innovation and HR best practices for food and beverage businesses were not identified. Industry-specific information and aggregated resource guides both present opportunities to better serve the sector.



4. KEY FINDINGS: PHYSICAL ASSETS

Examples

Across the province there are some physical assets available, usually indirectly, to food and beverage manufacturers. These include research centers at post-secondary institutions, i.e. universities, colleges and research centres, that focus on the sector (Conestoga College, Niagara College, George Brown College, Durham College, University of Guelph, Vineland and many others), networks, regional innovation centers, small business centers, incubators, accelerators, contract manufacturers and commercialization centers. Many offer their services in collaboration with other stakeholders, and most are not-for-profit. However, there is a growing niche for private enterprise to offer services for a fee. Examples of some resources are shown, including two processing facilities, an R&D centre, a business resource centre and a network.





The Ontario Agri-Food Venture Centre is a not-for-profit small-batch food processing facility in Northumberland County. The 15,000 ft² center offers a range of fee-based services including wash, cut, quick chill, flash freeze, storage, packaging, and labelling, as well as a fully equipped commercial kitchen, business incubation and training services. The objective of the center is to provide resources to support, facilitate and advance a sustainable regional local food economy. Services support fruit and vegetable farmers with value-adding opportunities to increase farm revenue, help foodies with recipe development and work with food processors for research and development, batch testing and small batch co-packing. The center partners with local agencies and post-secondary institutions to enhance the food economy and serves to create new business opportunities, broaden local healthy product offerings and encourage investment in local agriculture and entrepreneurial endeavors.

Agri-Technology Commercialization Centre: Business resources centre



The Agri-Technology Commercialization Centre is a Guelph-based cluster of agricultural innovation resources, dedicated to enhancing the research, development and commercialization of groundbreaking technologies that advance Canada's leadership position in global markets. The center includes Bioenterprise Corporation, Soy 20/20 and Ontario Agri-Food Technologies, and provides tools, resources and support for launching startups, scaling-up operations or giving established businesses a competitive edge.



4. KEY FINDINGS: PHYSICAL ASSETS

Examples

George Brown College, Food Innovation & Research Studio (FIRSt): R&D centre

FIRSt is a facility specializing in creative recipe design/testing, food product development/ commercialization, sensory evaluation, nutrition/ingredient label creation and food quality system consultation. It is funded by NSERC and offers small and medium-sized food oriented businesses easy access to technical resources, facilities and networking opportunities, enabling them to grow and develop their enterprise.

City of Toronto — Food Business Incubator (*planning stage*): Processing Facility

The City of Toronto is in the planning stage for establishing the *Toronto Food Business Incubator (TFBI)* which would encompass key resources targeted at enhancing success for the sector. TFBI would be dedicated to food and beverage processing innovation, business development and incubation to drive a new level of processor competitiveness both domestically and globally. The proposed scope would include startups, small and medium enterprises that want to innovate and grow from ideas to scale, table to farm with a focus on food processors, and will specifically serve startup bakery and ethnic food sectors with equipment for manufacturing and packing. Also provided will be fee-based accelerator space for growth companies and programs and services offered in conjunction with partners and collaborators.

Southwestern Ontario Food Innovation Collaborative (SOFIT) (launched in 2015): network

This is a newly established group led by Conestoga College and comprised of 25 partnerships (including Universities of Waterloo and Guelph, Wilfred Laurier, Innovation Guelph, industry, associations and government, amongst others). In order to help food processors become more competitive, the collaborative will offer contract applied research and development services aimed at key areas such as equipment and technology, food safety and traceability. Once implemented, the research and development results will enhance the capacity and productivity of the sector. Conestoga's Centre for Smart Manufacturing , and other areas of applied research, will be leveraged for the services.









Many resources are available

There are many types of innovation resources available for food and beverage processors. From physical assets such as research institutions, accelerators and incubators, to funding, information sources, tools, programs, advisory services and courses, Ontario processors have a wealth of relevant resources readily available. The resources are offered through both not-for-profit and for-profit entities. Resources are available at different geographical levels including local, regional, provincial, out-of-province and federal and are delivered by a dynamic range of channels such as in person, on-line and in print. Resources are offered by single organizations or in partnerships with others, and are available at no cost in many instances.

There are different types of resources

Many innovation resources offered are business/operational resources which can apply to various industries, including the food and beverage sector. Resources regarding programs for productivity improvement, sustainability initiatives, employment and training, process improvements, market development and exporting, along with general information about operating a business in Ontario, are relevant for all types of businesses. Such resources are typically provided by Ministries, Federal Government programs, Regions and Municipalities, local small business centers, and regional innovation centers. There are also employment and training-related programs offered by a range of providers, such as post-secondary institutions, economic development offices, financial institutions, chambers of commerce/boards of trade, and industry and sector associations, amongst others.

Some innovation resources are more specifically focused on the food and beverage sector. Such resources include research at various institutions, funding programs offered by all levels of government, information sources targeting the sector and provided by sector-specific associations and industry groups, and innovation and commercialization centers, amongst others. These resources focus on processes, technologies, equipment, and products specific to the food and beverage sector.





Resources include access to funding programs

There are a number of available government funding resources, which evolve and change over time, depending on government priorities. For example, OMAFRA is a large research and innovation funder in Ontario; past and current programs include the Traceability Initiative and Growing Forward 2. The latter program is a federalprovincial initiative that encourages innovation and competitiveness in the agri-food sector. For workforce development, there are various programs including the Youth Employment Strategy component of IRAP, which provides financial assistance for small /medium processors to hire graduates to work on innovation projects. Supporting funding is a range of tax incentives, including Scientific Research and Experimental Development, Ontario Research and Development Tax Credit, Ontario Innovation Tax Credit and the Ontario Research Business Institute Tax Credit.

Many funding programs offered at all levels of government include criteria and objectives around increasing innovation in Ontario. Some programs are regional, such as the Eastern Ontario and Southwestern Ontario Development Funds, the Southern Ontario Prosperity Initiatives and Northern Ontario Heritage Fund (offered to a range of industries including food and beverage), others are provincial (Jobs and Prosperity Fund, FedDev Ontario's Technology Fund and Export Marketing Program), or federal programs (AgriInnovation, Agri-Food Trade Service, Agrimarketing, Business Competitive Program, Industry Canada's FedNor initiative, Specialty Food Business Development Program, Business Planning Program), amongst others.

Resources include information and advisory services

Information is available from many sources and in many formats: industry and business associations, government at all levels, for-profit entities, local small business centers, amongst others. Access to information for processors is through a range of channels, including web sites, publications, seminars, trade shows and individual business advisory support.

There is a wide range of excellent information and numerous sources. Examples include programs and publications provided by OMAFRA and AAFC (including the ATS bulletin, information sessions and round tables from AAFC which supports their program officers), economic development offices, local business support centres and many other sources. In addition, there are free and fee-based services that support processors in submitting grant applications for government program funding, as well as services provided through for-profit entities such as venture capital and private equity. **There is not a gap in information, in fact, it is likely that there is duplication because there are so many sources.**



Applicability and accessibility of resources

According to stakeholder interviews and secondary research, the resources described in the database are most typically accessed by small and medium sized processors, and often by companies in the start-up phase of business. Companies mainly access the resources to gain information that supports establishing or expanding their businesses. Examples are early stage businesses accessing accelerators for information, training or to develop proof of concepts for their products. Businesses will also access various programs to increase their knowledge of and access to export markets, and to access funding for expansion.

More established, family-owned businesses are typically focused on the operations side of the business, placing deliberate searches for resources that support innovation lower on the priority list. Many businesses do not have the time, or resources to identify ways in which they would be able to innovate, or even know that such resources are available.

Large processors typically have internal resources that are dedicated to research and innovation, although will sometimes access external advisory services to support government grant applications in order to update/expand their infrastructure. In some cases, large companies develop partnerships with researchers at universities or colleges to advance their businesses and the outcome can benefit other companies in the sector.

Local resources that are readily accessible are preferred over provincial or federal resources, particularly for small and medium-sized companies. Examples include small business centers, regional innovation centers, business associations and chambers of commerce. Small and medium enterprise seeking support generally need assistance in the areas of talent, technology and trade.

Stakeholders interviewed generally believe that there is a wealth of available resources to support innovation in Ontario and the challenge for the sector is related to lack of awareness of these resources. Processors who know there are such resources available will usually tap into the resources time and time again, as shown by companies who are successful in obtaining support from multiple funding programs. Typically processors that do not access funding programs is because of lack of awareness. Reviewing which processors have been successful in receiving government funding and understanding how the processors learned about the programs would provide insights to increase awareness of resources.

There are specific industry-connected resources such as Niagara College's Canadian Food and Wine Institute Innovation Centre, which was launched in 2014 with the objective to leverage existing research expertise and support its translation into commercial solutions for small and medium enterprises. With plans to expand into the distilling business, this resource will offer significant value of "applied innovation" through its programs and services for the sector.



A strong regional network

The innovation landscape as it currently exists in Ontario is mainly driven by local experts, resources and hubs. This "go local" model is working and is key to furthering innovation as local resources enhance accessibility. As Ontario is a large province, available information and resources is typically more relevant at a local rather than provincial level. Businesses can more easily access the available resources, develop soft connections, construct personal and professional networks than possible with a more centralized model. This in turn drives regional business connections, connects key decision makers to the workforce and drives innovation forward.

Many of the resources have developed a strong presence in the local business landscape. Colleges are bringing in notable local business experts to teach and drive innovation in the field. This enables partnerships between local businesses, local experts, innovation centers and ultimately the sector as a whole to develop. Municipalities are developing entrepreneurship centers and partnering with successful business owners and service providers to mentor new business owners. Industry associations offer many valuable products and services for their members, such as information about funding and business practices. Organizations such as the Ontario Agri-Food Venture Centre will leverage the expertise and experience of many people and programs and will provide both additional revenue for local farmers and enhanced economic impact for the region. These examples of integration within a region provides value-enhancing opportunities for regions to build local talent and focus on competiveness, and illustrate the importance of relationships.

Some business commercialization resources

There are a limited number of specialized resources available to assist entrepreneurs and business owners with start-up, expansion and commercialization. Organizations such as the Sustainable Chemistry Alliance, located at the Ontario Bioindustrial Innovation Centre at the University of Western Ontario Research Park, support the commercialization of green, sustainable technologies/processes/businesses through investment and business advisory services. There are 14 Regional Innovation Centres around the province that provide support connections amongst small and medium sized enterprises (SMEs) and key stakeholders to promote innovation and commercialization. Examples include NORCAT's the *Innovation Mill* in Sudbury, *The Innovation Factory* in Hamilton and *nGen* in Niagara.

Other organizations, such as the Waterloo Accelerator Centre and Foodtech Canada member centers provide onsite incubator/commercialization services for entrepreneurs to grow their businesses, while government funding programs such as the National Research Council Canada's Business Innovation Access Program assist small and medium enterprises with access to business services or technical assistance at research institutions to commercialize innovations more rapidly.



6. KEY FINDINGS: GAPS

Physical Assets - What's missing

There are a number of physical assets, however most conduct research that benefits the sector indirectly rather than services that provide direct, measurable benefits for individual companies. The most prevalent services offered by physical assets are research, education and training, advocacy/advisory and business development. These resources are typically provided through educational centres such as the University of Guelph and Niagara College or various technology centres such as the Craig Richardson Institute of Food Processing Technology.

Physical assets where a manufacturer could either commercialize or scale-up their product are severely lacking. Only two locations were identified, the OAFVC (previously described) and the *Guelph Food Technology Centre*; however the latter organization was acquired by US-based NSF International, which has changed the scope of service offering, and no longer offers commercialization, thereby creating a gap in the market. Resources were identified where commercialization and business scale-up are the main components of their mandate, for example the *Agri-Technology Commercialization Centre* (previously described).

Availability of commercialization/scaling services is a therefore significant gap. In order to launch and achieve sustainability as a product, companies need to take findings developed through research and develop on a commercial scale. Scaling and commercialization are key aspects in continuously creating and innovating food and beverage products or processes. Lacking this key junction in the product development chain limits commercialization of innovation.





6. KEY FINDINGS: GAPS

Challenge- Defining innovation

Across the sector there exists a challenge to agree on the definition of innovation. Innovation resources in Ontario are focused mainly on research and funding that drives research, rather than on a more holistic view of food and beverage processors as operating businesses. For example, a number of the resources identified, particularly funding, are mainly aimed at research and development of new products.

Innovative practices can be developed and applied to every aspect of a business, including improving current processes, policies, or services, which can be as impactful as developing new technologies and products. Viewing innovation from a number of different vantages points will enhance the competitiveness of the sector.

Complexity of resources impedes access

Due to the wide range and multiple channels of the resources offered, processors may find it difficult to access the information or resources they need, and will often find it by chance. While a wealth of information exists for food and beverage manufacturers, accessing relevant and timely information is challenging, particularly due to the sheer amount of resources available. Manufacturers struggle with identifying what services various organizations offer, what is required to access the resources and how much the resources may cost in terms of money, effort or time. Processors may lack the appropriate technological equipment or experience to access online resources, may find funding program requirements too complex or demanding, or may not be wired to look for ways outside their own organizations to innovate. Processors may not know to even search for resources, or if they came across resources, may not make the connection to their own operations. These factors constrain processors in navigating the innovation landscape as it currently exists. More effort is required

to help processors understand the innovation resources at their disposal.









6. KEY FINDINGS: GAPS

Challenge to access capital resources

A significant amount of capital, employee time, and opportunity costs are poured into research and development that a company hopes will improve their business. Unfortunately, a number of manufacturers do not have adequate resources to take the risks associated with innovating their business. As a result, the use of programs offered to food and beverage manufacturers are not always fully subscribed as manufacturers cannot afford the associated resources.

For companies that lack access to capital, innovation-based funding programs do exist. However, small and medium enterprises may lack the resources and capacity to apply for government funding or secure private funding. Furthermore, government funding requirements are often quite restraining. For example, a company is required to be the first user of an innovative technology in Ontario, or else they are not eligible to receive funding to purchase and implement it. These factors make it difficult for companies to take the risk of dedicating resources to apply for funding. Ultimately, many companies choose to forgo applications to available government programs, and do not have the capacity to attract private funding. This in turns constrains their ability to invest in the business, as they do not have the resources to make the necessary capital purchases. The impact on the sector is that equipment and related technology development does not tend to happen in Ontario and companies then continue to have to purchase from abroad and import resources to run the equipment.

Challenge to obtain resources for scale up and incremental improvements

Research is one of the first phases of product development. Once a product has been developed, the next step is to commercialize the product. This involves taking product development steps, including prototyping and mass scale production, and requires significant capital and equipment. There are typically hurdles and challenges. However, few resources exist to help processors with this aspect of the innovative process. While there are some commercialization centers across the province, including incubators and accelerators, these tend to focus on early-stage/startup businesses developing prototypes rather than commercialization support for more established businesses. This means there is a gap for organizations who require support for prototype testing and scale-up. With multi-national companies typically having internal resources for these activities, there is therefore a void of support for small to medium sized enterprises.

The sector generally lacks resources that support businesses with incremental, continuous operational improvements. The current focus of the sector is on creating new products. However, incrementally improving products/processes is often cheaper and more effective than developing new.



7. KEY FINDINGS: OPPORTUNITIES

Centralize Access to Resources

Manufacturers face difficulty finding suitable resources that will help them achieve growth or innovation, despite the existence of such resources. An opportunity exists to create a centralized hub that manufacturers could reference. This hub would make it easy for manufacturers to find what they are looking for and in turn make it easier for them to innovate and grow. Furthermore, a hub with centralised resources has the opportunity to provide coordination amongst the sector's regional innovation centres, reduce resource duplication, and enable the sector to develop one voice akin to the auto sector. It is key to make access to the information simple, to focus on building awareness and to ensure there are appropriate checks and balances in place to ensure the integrity of the resources provided.

The opportunity exists to establish a center dedicated to the business aspects of food and beverage manufacturing companies. Services could include training companies in areas outside of the food aspects of the business (e.g. accounting, human resources, marketing, and business development) and developing innovative process to either tailor these processes to the food and beverage manufacturing sector or improving the processes as they currently exist. This would complement existing resources that focus on product research and development.

Establishing a center or resources dedicated to these business areas would allow businesses to be efficient from top to bottom. This would drive a new level of processor competiveness both domestically and globally and enable further growth and innovation. Building on the database developed in conjunction with this report, FBO could potentially leverage information gathered through recent requests by NRC Concierge to service providers.

Enhance integration with Regional Innovation Network

An opportunity exists to further integrate the innovation centres into existing regional business networks, including resources from IRAP and Ontario Centres for Excellence. The sector could intentionally focus on geographic areas and define important industries within the region and identify key intersects and regional business opportunities. Furthermore, the sector, working with the established regional innovation network could engage or further engage local economic development offices and educational institutions with a focus on competitiveness.

Integrating the sector and regional networks will facilitate connections between manufacturers and the demands, opportunities, and innovative technologies present within their region. This could provide an opportunity for processors to quickly respond to changes in their local market and could provide connections to other organizations that may be of value for processors.



7. KEY FINDINGS: OPPORTUNITIES

Increase Collaboration

Collaboration brings opportunities to achieve synergy in the sector. For example, by increasing awareness of specific technological demands faced by processors, there are opportunities to share resources to develop innovative solutions. This increases the potential to overcome obstacles and avoid duplicative efforts. Taking a collaborative approach to innovation will lead to new developments that processors working independently cannot accomplish.

There are current formal and informal collaborations that can be enhanced. Specific areas to be considered, as suggested through stakeholder interviews, are as follows:

- For processors, opportunities exist across their supply and value chains, both within and outside Ontario
- Establish collaborative agreements between processors and research centers across the province and access fund matching programs to support applied research efforts
- Identify partnerships through joining industry and business associations, and work to ensure coordination of resources and establish unified voice for the sector
- Industry can offer its space and expertise as co-packing and related services for other businessesconnect through small business centers and incubators
- Build on the recent increased visibility of the sector and the collaborations that are developing, e.g. Toronto Cluster, Ontario Food Cluster, and SOFIT
- Work with foodie sites and capitalize on interest in urban gardening/farming, local food movement and look to success such as Louisville Food Hub, a public-private partnership project to develop a commercial agricultural park that that will strengthen the production and distribution of locally grown food
- Coaching model key as although there is lot of information online, processors do best with advocate/ advisor
- Innovation is about social activity and networks
 service provider function as agents of the innovation system
- Further leverage existing advisory councils, encourage resource sharing amongst processors



8. RECOMMENDATIONS

Innovate across the business

When viewing innovation, it is important to consider the business as a whole. The innovation resources in the sector are focused most on research and development. However, significant gains could be made in the sector if an innovative focus is placed on productivity and continuous improvement, e.g., how individual inputs or outputs contributes to the success of the business.

For example, an innovative lens could be applied to how labour is used by a food and beverage manufacturer. Labour is a dynamic, challenging and vital part of the sector. Exploring how access to skilled labour can be improved could yield improvements in productivity and profit. Labour is complicated, and there are a number of areas the sector could study in order to get improvements. The sector could study how to properly train workers for the sector, how to motivate workers, how work flows, aligning workers and company goals, how workforces are designed, amongst other aspects, and share this information across the sector to make the appropriate changes.

Establish a Culture of Innovation Excellence

An extensive network of resources, hubs, centers, economic development offices, and information exist. The next step is to encourage manufactures to use these resources to continuously improve, innovate and drive the sector forward. A culture of innovative excellence demands that processors of all sizes and products make innovation a cornerstone of their business. Adequate resources and support exist for manufacturers and excellence in innovation could be acknowledged and promoted through harnessing existing investment, e.g. Regional Innovation Centres, into Innovation Centres of Excellence. Establishing a culture of innovation excellence could include:

- Prioritize innovation in the sector
- Making an innovation road map/plan, and sticking
 with it
- Get buy-in from food and beverage manufacturers
 of all sizes
- Promote innovation inside and outside the sector

- Align innovation throughout the sector
- Communicate effectively
- Reward excellence
- Reward risks



8. RECOMMENDATIONS

Develop Go-To Information Source

A hub that centralizes the resources for the sector is needed. Currently a lack of centralized information sources makes it challenging for those seeking information to find what they need or determine what information is relevant to their business. A centralised resources hub has the potential for a number of positive outcomes. The hub could hold all the information related to innovation in the sector and be the key channel; as a result metrics could be set up to determine which resources are most accessed by manufacturers, where the gaps exist in resources, and identify new resources. The centralized hub could be used to coordinate and direct innovation efforts amongst the processors through encouraging collaboration and improving outcomes, and providing value-add information regarding innovation support such as change management to assist processors in successfully integrating innovation efforts into their operations.

A centralized hub could be used as a channel to unify and establish "one-voice" for the sector. This centralized hub could be used as means to measure the pulse of the sector, e.g., barriers to growth, how manufacturers are addressing the barriers, what the outlook of the sector is, and what help the sector could use. Creating a unified voice will enable the sector to be better represented and will allow the needs of the sector to fully heard. A central location of information is not enough; what will provide most value is information that is up to date, relevant and that service providers such as EDOs are educated on the content and can rely on it to inform their interactions with processors. In fact, it may be more effective to tailor a centralized hub to service provider requirements, who would then in turn assist processors. Further, because there are already so many resources available, leveraging existing and established portals such as that offered by Provision Coalition is recommended.

Link to other sectors building on Regional Networks

Innovations in the sector are currently achieved through individual efforts, and typically siloed within the sector. In order to enhance the sector's innovative practices, focus should be placed on a collaborative approach both in the sector and across industries as a whole. A collaborative approach will create a network of up to date information, connections, diversity and momentum for processors. This first step in establishing a collaborative approach is building on the established regional network. By further driving these regional networks, industries and regions will be able to link current innovation projects, partners, tools and programs. Taking a collaborative and networked approach to innovation creates a higher probability of success for companies, and reduce risks.

For example, collaborating with the Ministry of Health and Long-Term Care to integrate processors into health food programs would be an innovative approach that would raise the profile of the sector. Linking the food agenda to a health agenda to an advanced manufacturing agenda, i.e. fitting it all together, will best leverage the untapped economic base, and enhance the profile and role of the sector.



8. RECOMMENDATIONS

View innovation from a global perspective

Innovation in the food and beverage processing space is happening on a global level. In order to keep abreast of global trends and advancements, the sector must bring the global, local. Resources should be dedicated to researching emerging technological trends in main food clusters across the globe, determining their relevance to the industry in Ontario, then disseminating the information in a meaningful way.

Global technological information could be used by manufacturers to innovate their businesses. However, the approach to global innovation could be taken even a step further. To further push a global innovative perspective, partnerships could be established between Ontario's food and beverage sector and leading food and beverage clusters around the world for the purposes of innovation. This will enable a mutually beneficial relationship where other food and beverage clusters could learn from the Ontario sector's innovative practices and vice versa.





9. WHERE FURTHER STUDY IS NEEDED

Processor engagement

In order to determine the fulsome needs, gaps and opportunities related to innovation in the food and beverage sector, engagement with food and beverage processors is required. Processers will be able to clearly identify their awareness of the current innovation landscape in the industry, how it relates to their business, and how it can be improved. The study should encompass food and beverage manufacturers of all sizes, and determine the types of innovation in the sector, why or why aren't processors innovating, the future of innovation in the sector, and how best to serve food and beverage manufacturers' innovation needs.

Impact of innovation database

In order to fully realize a one-stop-shop information center, the most effective and efficient way to provide information needs to be determined. A number of stakeholders cited concern about the expense of developing a database and keeping it up-to-date. There are alternatives to databases, including more complex solutions such as content aggregators or simple solutions such as setting news alerts related to food innovation on Google News. Additionally, an understanding regarding the use of the information should be determined through consultations with the industry. An important balance must be struck between the expense of the information aggregator and its use and value by the sector.

Physical asset inventory

A comprehensive study of the sector's physical assets that drive innovation needs to be inventoried. As the innovation landscape currently exists, the physical assets have a key role in driving innovation. A study could be conducted that reviews the physical assets, what services they offer, and how these services fit into the food and beverage manufacturing sector, and leveraging the recent report "Planning for Ontario's Future Agri-Food Workforce" (FBO/OAC, 2014) Furthermore, the study could attempt to identify physical assets leaders by determining the effectiveness of their outputs, how technological advances have improved the sector, and the status of technological advances.



