

Southern Crop Protection and Food Research Centre

London is home to the Southern Crop Protection and Food Research Centre (SCPFRC)³¹. This centre plays an important role in the area of crop protection. Present research at the Centre is concentrated in the development of alternative and environmentally-acceptable pest management procedures for the protection of tree fruits, vegetables and field crops, which will replace or reduce current pesticide use.

The SCPFRC and its research sites bring a long-term commitment in crop protection and food research to the agri-food industry in southern Ontario. The SCPFRC mandate is to:

1. Develop alternative and environmentally acceptable technologies for the protection of vegetables, tree fruit, and ornamentals from disease and insect pests
2. Determine the impacts of agricultural practices on soil and water quality,
3. Develop alternative crops and sustainable management practices for coarse-textured soils.

Multidisciplinary teams conduct research programs of the SCPFRC at London, Guelph, Vineland and Delhi. The SCPFRC headquarters is located in London and includes 25 hectares of the total land base of 111 hectares.

Full-time equivalent staff totals 191 including 47 scientists. The total operating budget for the centre is \$13 million. SCPFRC has over 70 collaborative projects with industry, universities and the Ontario Ministry of Agriculture and Food.

Ontario Research Stations

The province of Ontario operates several agricultural research stations in the London region through The University of Guelph. These stations focus their research in the areas of field and fruit crop management, variety testing, soil fertility, soil management and water quality. The stations are located around London in the rural communities of Ridgetown, Cedar Springs, Brussels, Centralia and Woodstock, Ontario. Ridgetown College, located in Ridgetown and affiliated with The University of Guelph, focuses its research and training on agriculture, horticulture and veterinary technology³².

The University of Western Ontario, Department of Plant Sciences

The Department of Plant Sciences at The University of Western Ontario (Western) undertakes a wide range of diverse research studies in the areas of ecology, systematics, biochemistry, physiology, molecular biology and genetics. This research is actively pursued by 20 full-time faculty, active professors emeriti, post doctoral fellows, research associates and 40 graduate students supported by 17 administrative and technical staff members. There were approximately 2,000 undergraduates in 2002.

Many of the research staff at Agriculture & Agri-Food Canada's London based Southern Crop Protection and Food Research Centre (SCPFRC) are also adjunct professors at Western's Department of Plant Sciences.

Canadian Food Inspection Agency

London is home to the Regional Office of the Canadian Food Inspection Agency (CFIA). The CFIA delivers 14 inspection programs related to foods, plants and animals across Canada. CFIA enforces the food safety and nutritional quality standards established by Health Canada. In addition, CFIA sets standards and carries out enforcement and inspection for animal health and plant protection.

³¹ SCPFRC; <http://res2.agr.gc.ca/london/index.htm>

³² Ridgetown College; <http://www.ridgetownc.on.ca/>

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The Canadian R&D Centre for Probiotics

London is also home to the Canadian R&D Centre for Probiotics. Located at Lawson Health Research Institute, this internationally recognized research centre examines the use of good bacteria for women's health, newborn health and livestock. Because some lactobacilli occur naturally in dairy products, scientists have used those foods (e.g. cheeses and yogurt) as the main vehicle for introducing probiotics into the human body.

The University of Western Ontario, Centre for Human Nutrition

The University of Western Ontario in London is home to the Centre for Human Nutrition. The primary goal of the Centre is the coordination and promotion of nutrition education and research at the University and affiliated Institutions. It also serves as a source of scientifically-based nutrition information for the community.

National Research Council of Canada

Integrated Manufacturing Technologies Institute

The National Research Council of Canada (NRC) knows that the industries it serves must be competitive. The manufacturing sector is of tremendous importance to the Canadian economy, and NRC has recently revitalized its manufacturing research programs to help manufacturing compete successfully at an international level.

In 1997 the NRC opened the Integrated Manufacturing Technologies Institute (IMTI) in London. The Institute's focus is on the integration of manufacturing technologies as they relate to discrete product manufacturing.

IMTI is a leader and catalyst for the research and development of manufacturing technologies to allow the Canadian manufacturing industry to be competitive. Specifically, IMTI activities are concentrated in two areas:

- ✓ Design - IMTI provides the tools so manufacturers can exchange design, manufacturing data and information in real time with customers, suppliers and others anywhere in the world. IMTI's Virtual Environment Technologies Centre (VETC) is the most advanced centre of its kind in the world. The Centre offers manufacturers the chance to create a virtual reality model of a product to better view any design flaws so that changes can be made without the time and expense of creating a scale model. This technology drastically reduces the time between concept, design and manufacturing.
- ✓ Production - IMTI provides manufacturers with novel production processes to fabricate the products that their clients want. IMTI takes full advantage of material properties and produces shapes that are difficult or impossible to make with conventional processes. IMTI's new Precision and Freeform Technologies Centre (PFTC) provide industries with tools to develop new technologies that can lead to commercialization. It can organize and conduct joint development and application projects that integrate new or hybridized process technologies into machines and systems.

The integration of these two areas to create new machines or systems that users can buy is crucial. To this end, IMTI seeks the collaboration of users and system integrators (machine suppliers, equipment builders) to participate in the R&D and the transfer of technology. For highly competitive companies, these resources can make the difference between success and failure.

Industrial Research Assistance Program

Located at IMTI, the Industrial Research Assistance Program (IRAP) is designed to help small and medium-sized enterprises (SMEs) meet the unique challenges they face in developing new products, processes and services. IRAP offers a range of services designed to help SMEs access key resources, expert advice, new technologies, testing facilities, and financial assistance. Funding for small-scale projects is available for up to 50% of eligible project costs (costs associated with sub-contracting and consultant fees for example) to a maximum of US\$9,450. Funding for large-scale R&D activities is available for up to 50% of eligible project costs from US\$9,450 to US\$220,500 over a period of up to 36 months.

Faculty of Engineering, The University of Western Ontario

The Faculty of Engineering at The University of Western Ontario supports several local manufacturing companies with resources, research facilities and groups.

Advanced Fluid Mechanics Research Group

The Advanced Fluid Mechanics (AFM) Research Group is an interdisciplinary team based in the Faculty of Engineering Science. The group's mandate is to further fundamental and applied research in the general area of fluid and thermal sciences, to promote technology transfer with industry and to provide training for highly qualified personnel.

The fundamental and applied research profile concentrates in the areas of turbulence, bluff body (industrial) aerodynamics, environmental sciences, heat transfer, biomedical flows, single and multi-phase systems. The industrial activities of AFM include the automotive sector, heat exchangers, food manufacturing and processing, electronic cooling, sensor design, particle separators (active filters), turbo-machinery and pipe networks. The group is involved in the transfer of new technologies as well as the training of technical personnel and engineers.

Concurrent Engineering and Agile Manufacturing Research Laboratory

Agile manufacturing integrates people, technology and organization to achieve an interdisciplinary, collaborative approach to the entire product development cycle. Effective cross-functional concurrent engineering teams supported by information technology are a key to agile manufacturing competitiveness.

The mission of the Concurrent Engineering and Agile Manufacturing Research Laboratory is:

- ✓ To pursue leading edge applied research to identify, develop and apply tools and technologies to support world-class Canadian manufacturing in the 21st century.
- ✓ To develop and implement innovative approaches to engineering education to prepare students for successful careers in the new economy, and to provide Canadian companies with the skilled engineers they need to thrive in the global marketplace.

Mechatronics Research Laboratory

The Mechatronics Research Laboratory at Western promotes and supports interdisciplinary research in advanced design of intelligent products and processes. The laboratory conducts research to achieve optimum performance of the electromechanical subsystems by effectively integrating the domain and design knowledge from three overlapping, but clearly distinct engineering disciplines: Mechanical, Electronic and Computing. The Laboratory currently conducts research with the National Research Council of Canada.

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National Sciences and Engineering Research Council General Motors of Canada Chair in Engineering Design and Innovation

This unique program, chaired by Dr. Brian E. Thompson, is designed to prepare engineering graduates to fill Canada's industrial innovation gap. A more holistic approach to design program will be introduced to engineering students to address the need for innovation in a way that builds on the practical combination of knowledge, analysis and experimentation (engineering science) with creativity, imagination and inventiveness (engineering design). Graduates will be able to develop design innovations to improve cost-effective products, processes and technologies that meet commercial needs.

Research and Development Tax Benefits

Canada has a system of tax incentives for Scientific Research and Experimental Development. These are considered to be the most generous for G8 member countries. The Ontario and Canadian governments recognize the importance of food processing to Ontario's economy and have introduced several research and development incentives to support food processors. A brief summary of these tax incentives is discussed below.

- ✓ **Ontario Innovation Tax Credit (OITC):** Canadian controlled private corporations with a permanent establishment in Ontario can receive a tax credit calculated at 10% of qualifying expenditures on research and development carried out in Ontario.
- ✓ **Ontario Business-Research Institute Tax Credit (OBRITC):** Ontario introduced a 20% refundable Ontario Business Research Institute tax credit for research and development expenditures incurred in Ontario as part of an eligible research institute contract.
- ✓ **Ontario Research and Development Super Allowance:** Level of credit varies from 25% to 52.5% of research and development expenditure depending on the ownership structure and profitability of the business.
- ✓ **Ontario New Technology Tax Incentive (ONTTI):** ONTTI provides an immediate 100% income tax deduction of the cost of eligible intellectual property, acquired by a corporation from an unrelated person, for the purpose of implementation in a business of the corporation that is carried on in Ontario.
- ✓ **Retail Sales Tax Exemption:** Equipment used exclusively for R&D, or for a combination of manufacturing and R&D, or primarily for manufacturing is exempt from retail sales tax.
- ✓ **Capital Tax Exemption:** Companies can immediately deduct all R&D expenditures, including intellectual property expenditures, for capital tax purposes.
- ✓ **Federal Deductions and Credits:** Federal tax rules allow a 100% deduction for current R&D expenditures and for capital expenditures on R&D machinery and equipment. In addition, federal tax rules provide a 20% credit on qualifying current and capital expenditures.

We believe that the focus on leading edge research and development in London will allow you to remain competitive and enhance your business profitability. The LEDC will provide further details of these programs on request.

Canada and Ontario have a number of significant research and development incentives that signal our understanding of the importance of research and innovation in the globally competitive agri-food industry.

Matching Investment Initiative

Agriculture and Agri-Food Canada will match industry's R&D contributions to collaborative research projects up to a maximum of one-for-one³³. This will help stretch industry's research dollar and, at the same time, help ensure that the Department's research priorities accurately reflect the sector's real needs. The initiative, by involving industry research investors directly, will also help accelerate the transferring of new technology to the private sector.

Scientific Research and Experimental Development (SR&ED) Program

This program provides tax incentives to Canadian businesses that conduct Scientific Research and Experimental Development (SR&ED) in Canada. This program is intended to encourage businesses -- particularly small and start-up firms -- to conduct SR&ED that will lead to new, improved, or technologically advanced products or processes.

Industrial Research Assistance Program (IRAP)

The Industrial Research Assistance (IRAP) Program is designed to help Canadian small and medium-sized enterprises meet the technological challenges they face delivering new products, processes or services. Support takes the form of field advisory services, financial aid, and pre-commercialization assistance.

Technology Partnerships Canada (TPC)

Technology Partnerships Canada (TPC) is a technology investment fund established to contribute to the achievement of Canada's objectives: increasing economic growth, creating jobs and wealth, and supporting sustainable development.

Materials and Manufacturing Ontario - Industrial Fellowship Program

The purpose of this award is to provide the financial support which will allow a technically trained (MSc. degree or higher, or equivalent through experience) individual work in an Ontario based company to build new links between company personnel (management and technical), and the university community, particularly faculty members. It is expected that the links will be created through the Fellow conducting technical programs within the company and linking the needs of those programs to university resources.

Technology Inflow Program

Technology Inflow Program (TIP) helps companies acquire technology in two ways: First, it offers information and advice on foreign sources, technology licensing and strategic partnerships, and visitor services through its specialized advisory services. Second, it provides modest financial support to primarily small and medium sized Canadian companies for certain eligible activities related to the acquisition of this foreign technology. These services are provided domestically through the NRC IRAP Industrial Advisors (ITAs) and internationally through the Department of Foreign Affairs and International Trade's Technology Development Officers (TDO's) located at posts abroad.

Ontario Research & Development Challenge Fund

This fund provides for state-of the art research equipment and facilities; leading-edge research that benefits industry; and incentives for gifted researchers. The fund has been set up to promote world-class research of interest to the private sector, encourage more collaboration between the private sector, universities and research institutions, and help Ontario universities and other research institutes compete for funding from other research funding programs.

³³ <http://www.avactd.com/pastevents/capitalcd/rpcd.shtml>

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Agri-Food Trade Program³⁴

The Agri-Food Trade Program (AFTP) is a cost-shared contribution program designed to support Canadian agri-food industry activities in areas of market access, market development and investment. The objective of the AFTP program is to maintain or increase sales of agriculture, food and beverage products in domestic and foreign markets and to thereby contribute to maintaining or increasing investment and employment in the industry in Canada.

CanAdapt

CanAdapt provides funding for innovative industry projects to assist Ontario's agriculture and agri-food sector to adapt to a changing world marketplace. CanAdapt funds projects designed to foster increased long-term growth, self-reliance, employment and competitiveness for Ontario's agri-food community and rural communities. Project funding emphasis is on environment, human resource development, rural development, marketing, and applied research projects. Assistance is in the form of grants, loan guarantees and interest rebates to approved projects. CanAdapt encourages partnerships, the contribution of matching funds from clients and a sharing of results and technologies when practical.

Healthy Futures

Healthy Futures helps Ontario's dynamic agri-food industry to continue to generate jobs and economic growth, as well as maintain the environment on which it depends. Project proposals should focus on enhancing the safety and quality of Ontario food products, capitalizing on marketing and export opportunities and improving rural water quality and making efficient use of water resources.

Agriculture Policy Framework

The Government of Canada, along with provincial and territorial governments and the agriculture and agri-food industry, is developing a comprehensive agricultural policy that will increase the profitability of the entire agri-food sector³⁵.

The Agricultural Policy Framework (APF), cost-shared with the provinces, will provide the tools and the choices for producers to strengthen their businesses. It will allow them to meet the demands of consumers in Canada and around the world while responding to increased global competition and keeping up with rapid technological change. Linking the following elements together in a comprehensive approach will ensure that the Canadian agriculture and agri-food sector has a solid platform from which to maximize economic opportunities in the global marketplace. The elements include:

1. Food Safety and Quality
2. Environment
3. Business Risk Management
4. Renewal
5. Science and Innovation
6. Gaining Recognition for Quality and Maximizing International Opportunities.

³⁴ Putting Canada First: An Architecture for Agricultural Policy in the 21st Century http://www.agr.gc.ca/site_e.phtml

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Initial federal funding includes:

- ✓ \$3.4 billion - Federal share of the resources over five years to accelerate and implement the Agricultural Policy Framework, a federal-provincial-territorial initiative to secure profitability for Canadian agriculture in the 21st century.
- ✓ \$1.2 billion - \$600 million in direct assistance over each of the next two years to help farmers make the transition to a new and more effective generation of programs dealing with risks, including drought. Provincial cost-sharing will be in addition to this. The \$1.2 billion is incremental to existing federal income support.
- ✓ \$589.5 million - Federal investment to assist in the transition to the new Agricultural Policy Framework, including:
 - > \$264.5 million - For environmental action, including improving access to newer and more environmentally friendly pesticides, increasing the number of farms with environmental plans, and taking environmentally fragile land out of production.
 - > \$150 million - To improve global market access for Canadian products.
 - > \$80 million - For additional measures to deal with drought, including measures to increase water supplies.
 - > \$75 million - For the development of rural communities and co-operatives.
 - > \$20 million - To encourage investment in agricultural innovation.



The NAFTA superhighways will flow along either the 401 or 402.