

**ONTARIO MINISTRY OF AGRICULTURE,
FOOD AND RURAL AFFAIRS**

AND

UNIVERSITY OF GUELPH

AGREEMENT

**CONSOLIDATED ANNUAL REPORT
2010/2011**

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EXECUTIVE SUMMARY

This Annual Report is being submitted to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) in accordance with the terms and commitments under the OMAFRA/University of Guelph (U of G) Agreement. This is the third Annual Report under the current Agreement between the University of Guelph and OMAFRA, which was signed April 1st, 2008, for the period April 1, 2008 to March 31, 2018.

The University has complied with all material provisions of the Agreement and is managing the transfer payment funds provided under the Agreement effectively and efficiently and with due regard to obtaining appropriate value for money expended.

The period covered by this Annual Report is the U of G's 2010/11 fiscal year (May 1, 2010 – April 30, 2011). This report covers the activities, budgets, expenditures and performance measures for each of the four program areas encompassed by the Agreement – Research, Veterinary Clinical Education Program (VCEP), Animal Health Laboratory (AHL) and the Agriculture and Food Laboratory (AFL).

Governance

During negotiations for the current Agreement, OMAFRA and the U of G agreed that effective governance is important to achieve the objectives of the Agreement. An independent consultant reviewed governance from the previous Agreements and made recommendations for improvements, and a new, joint governance model was developed. This model is collaborative, accountable and transparent.

The structure is comprised of a series of committees; the Agreement Leadership Committee (ALC), is responsible for chief oversight of the Agreement; the Executive Committee (EC), is responsible for the parties working together effectively to ensure the Agreement is fully carried out; and four program management committees (PMC) as well as a Joint Intellectual Property (IP) committee, are responsible for delivery of program level responsibilities. The program management committees are: AFL, AHL, VCEP, and Research.

All committees operate under their own terms of reference, membership, and specific responsibilities. These responsibilities and requirements are outlined in the Master Agreement and in the Committees' respective schedules of the Agreement. These documents have been provided to committee members in a program management handbook. As well, all governance documents are posted on a password protected website created for U of G and OMAFRA staff who sit on these committees.

A partnership secretariat was also created to provide administrative oversight for successful partnership implementation. The secretariat works collaboratively with committee co-chairs to address responsibilities and ensure relevance of the performance indicators (PIs). This responsibility lies with OMAFRA, but U of G staff collaborates, where possible, to help ensure all targets and deadlines are met.

Overall Agreement

In order to ensure accountability and direction for the Agreement, a series of 39 Performance Indicators (PIs) were developed, some for the overall Agreement and several for each of the four Programs operated under the Agreement – Research, Agriculture and Food Laboratory (AFL), Animal Health Laboratory (AHL), and the Veterinary Clinical Education Program (VCEP). In 2010/11 the AFL put forward changes to PIs governing their program, to better reflect meaningful measurements of performance. These changes were approved by the Executive Committee and are reported on in this annual report in Appendix B.

Accomplishments

New Programs

Knowledge Translation and Transfer (KTT) and Highly Qualified Personnel (HQP) continued to be successful during the 2010/11 fiscal year. Both programs had overwhelming responses for Calls for applications. Further details on these new programs are provided in the New Initiatives section of this report.

Research

The Research Program has seven research themes – Agricultural and Rural Policy, Bioeconomy – Industrial Uses, Emergency Management, Environmental Sustainability, Food for Health, Product Development and Enhancement through the Value Chains, and Production Systems. Each research theme is led by a Research Program Director (RPD) from the University of Guelph and a Director Champion (DC) from OMAFRA.

Highlights and case studies from each research theme follow later in this report. Achievements from the 2010/11 research program include a study to see if spearmint tea can help with osteoarthritis, dissolvable and edible food packaging, creating technologies for green roofs in northern climates, batteries made from renewable resources, tomatoes that can fend for themselves, and using reclaimed wastewater for sod and turf production.

A Call for Letters of Intent (LOIs) was issued in October, 2010 due in November, 2010. 134 LOIs were received – 44 of them applying across two or more themes. These LOIs were reviewed by research theme committees, chaired by the Research Program Director and consisting of representatives of the research and academic community (U of G, other research institutions and universities), OMAFRA and other government ministries/departments, and industry or sector representatives. Of the LOIs reviewed, 94 (16 applied across themes) full proposals were requested for submission, and 62 (9 across themes) were funded with starting dates as of May 1, 2011 or later. They will be reported on in next year's annual report.

In the OMAFRA - U of G Agreement renewal, communications was identified as key to the initiative's success. This included outreach to the public and consumers, to make them understand the value of the agreement, and internal communications to inform OMAFRA and U of G employees about the agreement's many virtues. Working with the private sector in getting new knowledge from the lab and into the field was seen as crucial, and numerous strategic communications activities further evolved in 2010/11, dedicated to nurturing and refining

projects designed to enhance the understanding and value of the partnership. These projects covered print and broadcast media, as well as internal and external communications.

For example, in 2008/09, an *Agri-Food Yearbook* was developed as a special edition of the University of Guelph's long-established *Research* magazine. Based on its enthusiastic reception, in 2009/10, the yearbook became a regular part of the *Research* magazine's annual publication schedule. Its theme for 2010/11 was better health through Ontario-grown food. A key development in this fiscal year was that for the first time, the *Yearbook* was distributed as an insert in *Ontario Farmer* newspaper. This effective, economical distribution method saw the publication delivered directly to more than 30,000 farmers, the *Ontario Farmer* subscription base, at a fraction of the cost of mailing it directly. The caché of being an insert into one of the leading commercial agricultural publications in Ontario added significant credibility and relevance to the publication.

The Buzz is an electronic newsletter for and about the Partnership. Launched in 2008, during 2009/10 the format was enhanced by adding photos and including a broader collection of contributors. As well as having news about research, research stations and events, each issue now also includes regular contributions from the Business Development Office (BDO) and the KTT program.

Similarly, News@Noon, the noon hour speaker series which features programs and research about the Partnership, is now reaching a broader audience. Invites to the events have been extended to industry and it is now also being offered 'live' over the internet for people who can't attend in person. A review is underway to determine if there is a way to reach even more people through the News@Noon series.

Numerous outreach efforts are documented in Appendix A, but at least one deserves special attention. Through a unique partnership, Rogers Cable featured a breadth of SPARK videos including "Making dessert healthy" (Researcher: Doug Goff), "Saving nitrogen costs" (Researcher: Manish Raizada) and "Making plastic from biodiesel by-products" (Researcher: Amar Mohanty). This partnership opens the door for additional outreach into the local community as well as through the many other Rogers cable stations through Ontario.

As part of the negotiations for the new Agreement, enhanced communications -- both internal (within OMAFRA and the U of G) and external (to the broader community of client groups and Ontario citizens) -- was identified as a high priority. To this end, a joint OMAFRA - U of G Communications Plan for the Partnership became part of the overall responsibilities in Schedule A of the Agreement, and was subsequently developed, outlining the key messages, target audiences and vehicles for reaching those audiences. A draft plan was tabled at the September 30, 2008 Executive Committee meeting and then approved at its next meeting March 4, 2009.

Over the past year, a coordinated effort continued to give profile to the Partnership.. A commitment was made to have ongoing dialogue between Partnership communications staff -- Owen Roberts, Liz Snyder from the Office of Research, U of G and Robyn Meerveld, OMAFRA -- and communications branch staff. This has been particularly effective as the U of G - OMAFRA Yearbook has continued to evolve.

Commercialization and licensing of research outcomes from the OMAFRA - U of G Agreement is reported by the Business Development Office. For 2010/11 they report 160 disclosures, 15 patents filed, 15 licenses granted and 3 patents issued -- with total license revenue for OMAFRA supported research of \$1,592,832. The Technology Transfer Manager dedicated to the

Agreement has also been actively participating in the Knowledge Translation and Transfer (KTT) initiatives.

The BDO initiated an Industry Liaison Program, which began in January 2010, with the goal of increasing the interaction between U of G researchers and external companies. This program has been very successful in its first year, contributing to at least 32 new academic-industry research partnerships.

Three new projects were funded through the Proof-of-Principle program, details can be found on page 157.

Veterinary Clinical Education Program

The Veterinary Clinical Education Program (VCEP) continued to provide funding for the operation of the Veterinary Teaching Hospital, advanced clinical training, an externship for DVM students and a one-year Veterinary Internship Program through the Ontario Veterinary College (OVC). Highlights from the program include OVC achieving continued full accreditation from the AVMA/CVMA at its annual review.

The OVC opened the new Clinical Skills facility this past year which will be used to deliver the large animal clinical laboratories as part of the DVM program. This facility was funded through the VCEP program and was essential in meeting the schools accreditation requirements.

OVC's veterinary students continued the long-standing tradition of achieving a very high success rate on the North American licensing exam resulting in a high rate of post-graduate employment and very high employer satisfaction with new graduates.

The Bovine Education Trust provided financial support for veterinary students to obtain further hands-on clinical practice experience in the dairy and beef industries. Support funding for the trust was provided by the Partnership, through the VCEP program.

The Centre for Public Health and Zoonoses (CPHAZ) is nearing completion of the renovations to the space being vacated by the Pathobiology Department and the Animal Health Laboratory creating much needed new research laboratory facilities. On June 9th 2011, CPHAZ held their second scientific symposium - Human and Animal Health Research: from Molecule to Population. This was a very successful event bringing together about 160 people from all facets of public health activity.

In 2010/11 the Masters in Public Health (MPH) enrolled its third class, increasing enrollment to 20 students due to the very high number of applicants.

In support of preparing students for rural veterinary practice the program also funded the delivery of final year elective rotations in bovine clinical skills and equine primary care.

In partnership with the Ontario Veterinary Medical Association, the Ontario Cattleman's Association, the Dairy Farmers of Ontario and OMAFRA, a study on the future demand for large animal practitioners in Ontario was undertaken in 2009. Results of the study are expected in Fall/Winter 2011/12.

Laboratory Services

Laboratory Services (LS) continues to optimize the leveraging of services offered within the Partnership Agreement to other government, commercial and academic clients while developing new areas of service to maintain its status as a self-sustaining division of the University of Guelph. The Animal Health Laboratory (AHL) and the Agriculture and Food Laboratory (AFL) report separately in the annual report under the Agreement.

Vision:

We will be a laboratory partner of choice for government and universities in Canada, for agriculture, food safety, and animal health testing. We will also be a leader in providing high-value laboratory services to the private sector in selected niche markets.

Mission:

Working together toward a healthier future ... we provide high-value analytical and diagnostic services for the agricultural, food and veterinary sectors.

Agriculture and Food Laboratory

In the final year of the current strategic plan for Laboratory Services, the Agriculture and Food Lab (AFL) continues to strengthen its position as a fee for service laboratory based on strong business processes and targeted marketing activities. As always, the goal is to continue to build external revenues for reinvestment (per Schedule "F" of the Agreement) and leverages the services provided by the AFL to the private sector.

The AFL continues to offer a high level of service to clients in agriculture, food and beverage, corporate and research sectors. In 2010/11 the AFL continued the implementation of innovative test approaches and other initiatives:

1. The AFL continues to develop a multiple residue (multi-residue) methodology, for regulatory testing of drug residues in animal tissues and milk across several species: beef, veal, pork, and will complete validation for its use with sheep and goat tissue in the 2011/12 fiscal year.
2. Expanded the scope of support to the annual Canadian Chemical Residue Determination in Fresh and Processed Fruits and Vegetables.
3. Completed the first year of a five year contract, testing over 800,000 samples and working closely with the Dairy Farmers of Ontario (DFO), the Ontario Dairy Council (ODC) and OMAFRA to manage issues and bring to fruition opportunities for efficiency throughout the value chain.
4. Built important relationships and revenue with the private sector through the bundling of complementary services for the purpose of food contaminant investigations.

Animal Health Laboratory

The AHL moved into the new Pathobiology-Animal Health Laboratory building on the corner of Gordon and McGilvray Streets of the Guelph campus in October/November, 2010.

The AHL Animal Health Strategic Investment (AHSI), new initiative funding, continued to support the three key pillars of the initiative, which are new tests for emerging diseases, baseline surveillance for the early detection of emerging hazards, and the development and testing of emergency and business continuity plans for the AHL. As well, AHSI provided funding for the purchase of new testing equipment needed by the AHL.

Yearly, the AHL surveys its clients to determine their satisfaction, by commodity, with key parameters of AHL service (as described in performance indicators #4, 7 and 9). In 2010/11 OMAFRA provided new input to the survey questions, and the LimeSurvey (an open source on-line survey system) was expanded to over 500 clients, both large and small. Survey results showed very high client satisfaction in all categories, and identified several areas where further improvement could be made.

The annual update to the American Association of Veterinary Laboratory Diagnosticians (AAVLD) resulted in continued accreditation within the five-year accreditation granted in April 2010.

Program Highlights and Case Studies

Agriculture and Food Laboratory

Multiple Residue Methodology

Development of the Multiple Residue Methodology for Detection and Quantitation of Veterinary Drugs

As of November 2010, the Multi-Residue Drug test method has been validated for 8 classes of veterinary drugs for multiple individual compounds within each drug class.

In 2010, numerous experiments contributed to validations and implementations of seven tissue matrices for the use of this method quantitatively, to complement the qualitative approach developed previously. Because of the novel nature of this testing, and the likelihood of encountering unanticipated analytical challenges, it was originally estimated that this work may require up to 84 weeks to complete.

These 24 validations were conducted from February 1, 2010 to August 1, 2010, over a total of 27 weeks by using our resources for extended hours, often seven days a week; throughout this time period. The AFL placed this as the highest priority in order to meet the needs of OMAFRA for accurate and timely analysis of drug residues in Ontario.

Successful implementation of quantitation method to determine 35 drug compounds tested simultaneously.

This multi-residue method in meat, allows simultaneous detection and identification of 35 drugs, and has now been successfully implemented for *qualitative* screening as well as quantitative results in three of the largest meat survey projects performed by OMAFRA. This method allows regulators a more accurate and rapid response to violative levels of drug residues in the Ontario meat industry while ensuring that valuable product is not withheld unnecessarily.

Positive Contribution to the Reputation for Excellence of both OMAFRA and AFL

The introduction of this successful methodology positioned OMAFRA and the AFL as national leaders in the multi-residue detection field for veterinary drugs.

The method was described this year, in a published article in a peer-reviewed journal, allowing for important knowledge-transfer in this field. (See Martos, P., Jayasundara F., Dolbeer J., Jin W., Spilsbury L., Mitchell M., Varilla C., Shurmer B. Multiclass, Multiresidue Drug Analysis, Including Aminoglycosides, in Animal Tissue Using Liquid Chromatography Coupled to Tandem Mass Spectrometry. J. Agric. Food Chem. 2010, 58, 5932–5944.)

The AFL continues to work closely with members of OMAFRA's Meat Inspection Program and Food Safety Science Unit to ensure that the on-going development of this scientific approach targets the appropriate program priorities in a timely fashion.

Mycotoxin testing

Further development of mass spectrometry techniques has led to a multi-residue method for mycotoxins in grain. This method is currently being applied to a research baseline study for OMAFRA. This method will continue to be developed in 2011/12 as an important tool in the delivery of food safety testing in Ontario.

Advancements in Molecular Biology and Microbiology

AFL has been leading a concerted effort to develop a simple, rapid, accurate and standardized DNA fingerprinting methodology (MLVA) and database that facilitates tracking contamination sources of *Listeria monocytogenes* in the farm to fork continuum. The initial work has been published in *International Journal of Food Microbiology*. This initiative has been pursued in collaboration with OMAFRA and an additional five government institutions (The Ontario Agency for Health Protection and Promotion (OAHPP), the Listeriosis Reference Service, Health Canada (LRS, HC), the Canadian Food Inspection Agency (CFIA), the Public Health Agency of Canada (PHAC) and the Ontario Ministry of Environment (MOE), which will facilitate successful inter-lab validation and implementation of the method for OMAFRA programs in future to enhance Ontario's food safety.

AFL has also been awarded research funds from Ontario Centre of Excellence (OCE) and MITACS with an overall funding of \$300,000 to develop the nanoparticle-based technology for pathogen detection.

AFL has introduced the first automated system (TEMPO) for direct enumeration of *E. coli*, coliforms, *Staphylococcus aureus* and viable aerobic mesophilic organisms in foods. The methods have been validated/verified and are to be accredited for their implementation in OMAFRA's programs.

Scientific Education and Expertise

AFL scientists have trained four Post Doctoral Fellows under OMAFRA, OCE and MITACS research grants and two MSc students under the FSQA program of the Department of Food Science, University of Guelph.

AFL scientists have participated in various national committees and workgroups, such as Microbiology Method Committee, Listeria Work Group, various AOAC committees and Ontario Dairy Management Technical Subcommittee.

Plum Pox Virus Eradication Program

As stated in previous annual reports, the Agriculture and Food Laboratory has served as the analytical test facility in support of the federal program to eradicate Plum Pox Virus (PPV) in the

Niagara region of Ontario since 2001. This program has uniquely combined the collective resources and support from the University of Guelph, Agricorp, and OMAFRA in delivering this high-value service to the Canadian Food Inspection Agency.

In May 2011, it was determined that the CFIA has reduced its testing requirement for this program and at this time does not require this testing to be provided by the AFL.

The PPV project allowed the laboratory to showcase its ability to scale up for the huge testing volumes associated with an eradication program of this nature - a significant advantage to the Ministry and private clients. The laboratory will take the significant learning opportunities of this program forward to apply to prospective projects. This experience strongly positions the AFL for the delivery of similar programs concerning plant disease, and threats to the welfare of animal and agricultural products.

As with the end of any project limited in lifespan, Lab Services' strategic plan has and continues to identify revenue opportunities that can replace the revenues from Plum Pox Virus testing at the AFL.

Raw Milk Testing Contract

The Agriculture and Food Laboratory has worked successfully with the Dairy Farmers of Ontario, the Ontario Dairy Council and OMAFRA in completing the first of a five year, renewable contract to provide both analytical and program management support for the collection, testing and reporting of results for raw milk composition and quality program samples in Ontario.

With changes anticipated to the veterinary drug residue detection program in fluid milk, the AFL is once again working collaboratively with all parties and seeking the most efficient, effective and scientifically sound approach to address these changes in the coming years.

The AFL completed a major project, Assessment of the BactoScan™ FC for the enumeration of total bacteria in raw goat milk (accepted for publication in the *Journal of Dairy Science* in 2011). The Dairy Analysis Laboratory supervisor, Mr. Looknauth Ramsahoi, spear-headed this project, while concurrently capitalizing on the completion of his Master's thesis project. The use of this flow-cell technology can reduce the cost of microbial enumeration for the goat milk industry, and align goat milk testing with that of cow milk producers in Ontario. It will be investigated for use with additional types of milk in future.

Communication Strategy

Communication continues to be the cornerstone of successfully delivering both regulatory and commercial analytical programs for our clients. The AFL continues to review communication protocols with a mind to continuous improvement wherever possible. The AFL continues to support strong communication with OMAFRA through the Manager, Regulatory Programs and the recent hire of an Assistant Manager in this area. This team continues to act as a single point of communication, a conduit, to and from the Ministry to the AFL Management team, while still encouraging open dialogue between OMAFRA and the AFL's scientific staff.

Information exchange events are scheduled two to three times per year, whereby Ministry and laboratory staff meet to discuss topical issues and share information. This interaction is a valuable tool in reviewing the demands of the regulatory environment of OMAFRA and highlighting areas that the AFL may be able to offer innovative solutions, keeping all staff abreast of emerging food safety and agricultural information, sustaining the positive relationship between the University and the Ministry, and discussing new technologies.

Leverage Laboratory Capacity for Reinvestment

Various large on-going and one-time projects have provided significant reinvestment funds over the years, but these sources of external revenue, such as the Plum Pox Virus testing program, have finite life-spans and as such need to be replaced. Laboratory Services continues to modify and improve its approach to securing new business opportunities and increasing external revenues for reinvestment (per Schedule "F" of the Agreement). The Division requires a reinvestment of approximately \$1.5M to \$2.0M into equipment, building infrastructure and new capabilities each and every year.

The AFL returned to its roots, making the most of its regulatory testing experience. The lab successfully acquired contracts from the Canadian Food Inspection Agency, Agriculture and Agri-Food Canada, the Public Health Agency of Canada and others. The AFL is looking to expand on some of its private sector programs and branch out in niche markets such as food contaminant investigations and allergen testing.

Balancing laboratory capability and capacity with the need for new and/or improved methods, thereby expanding the scope of testing, will continue to be one of the AFL's top priorities. The AFL is committed to providing timely support for urgent/emergency response initiatives as required, as well as ongoing scheduled testing programs for OMAFRA.

Animal Health Laboratory

Infrastructure

- The AHL moved into the new Pathobiology-Animal Health Laboratory (building 89), on the corner of Gordon and McGilvray Streets, in October/November, 2010. The official opening was October 7, 2010.
- Correction of building deficiencies and building commissioning continued through the rest of fiscal 2010/11.
- Progressive Recovery Inc. (PRI) was the successful bidder, in early 2011, for the tender of an alkaline tissue digester, this will provide on-site disposal of animal anatomical waste for the necropsy suite.
- The contract was awarded in early April 2011 for construction of a pneumatic tube system between building 89 and the OVC Health Sciences Center (HSC) to expedite delivery of specimens from the HSC to the AHL.
- Significant new testing equipment was added to the inventory of the AHL, through funding from the Animal Health Strategic Investment (AHSI) (~\$1.2M), the OMAFRA vaccine project (\$400K), and the Canadian Food Inspection Agency (CFIA) (~\$100K).

Operations

- AHL continued to offer a wide spectrum of tests, with addition/replacement of improved tests over time as enhanced through the AHSI, e.g., continue to replace gel-based PCR with real-time polymerase chain reaction (PCR). The following is a list of new tests offered by the AHL in 2010/11:

Test Name
<i>Mycobacterium paratuberculosis</i> , ruminant - IDEXX ELISA
<i>Mycobacterium paratuberculosis</i> , ruminant - Prionics ELISA
<i>Avian paramyxovirus 1</i> , matrix - rt-RT-PCR
<i>Avian paramyxovirus 1</i> , fusion - rt-RT-PCR

<i>Chicken anemia virus</i> – PCR
<i>Elephant herpesvirus 1-7</i> – PCR
<i>Leporid herpesvirus 4</i> – VN
Rotavirus group A/C - rtRT-PCR
Rotavirus group B - RT-PCR
PRRSV, North American strain - IgG/IgM indirect FA
<i>Porcine coronavirus</i> (TGEV/PRCV) - differentiating ab ELISA
<i>Giardia duodenalis</i> - genotyping
Mycotoxin-Ochratoxin - immunoaffinity column cleanup/HPLC
Mycotoxin-Aflatoxin - immunoaffinity column cleanup/HPLC
Mycotoxin-Zearalenone - immunoaffinity column cleanup/HPLC
<i>Mycoplasma gallisepticum</i> - PCR
<i>Mycoplasma gallisepticum/synoviae</i> - combo ELISA, turkey
<i>Mycoplasma gallisepticum/synoviae</i> - combo ELISA, chicken
<i>Mycoplasma synoviae</i> - PCR
<i>Mycoplasma</i> species - MIC
Bovine rotavirus - IHC
Papillomavirus - IHC

- The AHL performed approximately 55,491 cases and 729,787 procedures in 2010/11 in support of disease surveillance.
- The annual AHL client satisfaction survey was conducted electronically in November 2010, via LimeSurvey (an open-source, on-line survey system), with input on questions from OMAFRA, and results demonstrated an overall satisfaction rating of 97%.
- The AHL published 30 scientific articles in the AHL quarterly newsletters in 2010/11. As well, AHL veterinarians were involved in 20 oral or poster presentations and 21 peer-reviewed publications in calendar year 2010.
- The AHL informed OMAFRA of 39 reportable or notifiable disease events that were suspected and /or confirmed by the AHL in Ontario in 2010/11, ranging from Eastern equine encephalitis through swine influenza and salmonellosis, and participated in the subsequent investigation of these outbreaks. The AHL also forwarded samples from 87 cases to CFIA laboratories for rule-out of reportable diseases, primarily rabies, but also including classical swine fever, BSE, and other diseases.
- The American Association of Veterinary Laboratory Diagnosticians (AAVLD) audited the AHL in April 2009; as a result of this audit, the AHL received full AAVLD accreditation for 5 years. The annual update provided in January 2011 was acceptable to the Accreditation Committee.
- The Animal Health Strategic Investment (\$1.5M/yr for 5 yrs) has funded 53 projects targeted to support the three key pillars of the initiative:
 - new tests for emerging diseases;
 - baseline surveillance for the early detection of emerging hazards; and
 - development and testing of emergency and business continuity plans for the Animal Health Laboratory.
 For details of new initiatives see pages 148-151.
- The AHL participated in steering committee meetings beginning in December, 2009, for a planned poultry disease simulation exercise led by the Feather Board Command

Center (FBCC), and contracted to eBiz professionals, with the on-farm exercise conducted in June 2010.

Research

Agricultural and Rural Policy

The OMAFRA/University of Guelph Partnership supports research in this theme so that government can provide support to Ontario's agri-food industry and rural communities. Agricultural policy research encompasses many issues related to farming, including agricultural trade and marketing, business and finance, and innovation in economic development. Rural policy research focuses on the challenges and opportunities facing rural Ontario, including current government policies and programs, the impact of climate change, regional development, rural infrastructure, transportation and rural labour markets. Together, agricultural and rural policy research provides up-to-date, factual information on which to base sound policy decision.

Highlights from the program this year include:

- A Ridgetown Campus researcher in Production Economics and Agribusiness, has compared trends in the Ontario pork industry with Manitoba and Iowa, to determine which factors – such as feed costs, industry infrastructure (e.g. access to capital, research, etc), or government policy - have the greatest effect on competitiveness and profitability. In the past five years, increasing land costs caused by high prices for commodities such as corn have made production in Iowa more expensive. Good news for us - he found that while Iowa has traditionally been a leader in the market, its hold has weakened recently in favour of Ontario and Manitoba. (#26951/200265, McEwan)
- Deciding how and when to market corn and soybean crops remains one of producers' most difficult decisions. So many variables exist – such as crop prices, yields and demand. As it turns out, some common marketing strategies can be more profitable than others. An agricultural economist from the U of G's Ridgetown Campus, has created a simulation model to compare the financial returns and risks associated with the most common marketing strategies used by Ontario corn and soybean producers. So far, findings show that for corn sales, pre-harvest futures or forward contracts tended to net producers the highest profits. However, for soybeans, strategies involving cash sales in the post-harvest period tended to generate higher prices for producers. (#26690/200049, Vyn)
- Turfgrass is one of the most common ground covers in urban environments and it provides many benefits including soil stabilization, erosion control, cooling, filtering of runoff water, and most importantly an area for recreation and sport. A sustainable turfgrass management system is essential in providing green space and areas for outdoor activities that promote a healthier society in both urban and rural communities. Current restrictions on agronomic tools such as pesticides have created a need for new comprehensive methods of management that allow turfgrass areas to continue to be an important part of our communities. Researchers at the U of G are researching management methods that will add to the knowledge about the comprehensive

management plans used by turfgrass managers. The goal is to maximize the environmental benefits of turfgrass systems and minimize negative impact to the environment and human health. One of the most important aspects of the research will be getting the word out to homeowners, municipalities and golf courses alike. (#27017/200329, Lyons – also funded through Environmental Sustainability and Production Systems, Plants themes)

Case Study

Wayne Caldwell, School of Environmental Design & Rural Development

#26799/200112 Regional Development planning for resiliency in the 21st century - a methodology and approach for communities dealing with climate change and rising oil prices

May 1, 2010 – April 30, 2013

(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$39,250
Faculty/CARG FTE	\$19,068
Research Station Use	None
Tech/Admin Support and Indirect Costs	\$11,927
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$70,245
Partner/In Kind Contributions	\$22,500 cash
Collaborators	Caldwell, W. , School of Environmental Design and Rural Development; Chan, Y. , Queen's University; Tousaw, S. , Huron County Department of Planning and Development

Ontario's rural communities are undergoing significant change. Two forces – increasing energy prices and climate change – are fundamentally challenging traditional agricultural methods and the rural lifestyle.

To help them deal with change, U of G Prof. Wayne Caldwell, School of Environmental Design and Rural Development is partnering with OMAFRA to create a publicly available manual that's full of innovative suggestions that will help communities adapt to climate change and increasing energy prices.

"Our best guesses about the extent of these changes might never be correct," says Caldwell. "But our project is saying that the magnitude of these issues is so great that we have to consider what the implications may be."

Indeed, rural communities are already feeling the impact. Higher input costs and more extreme weather conditions are testing farmers' crop yields and, in some cases, incomes. Meanwhile, expensive fuel has families thinking twice about commuting for employment and social activities. That can lead to feelings of vulnerability and isolation.

With these imminent changes, there needs to be immediate action, says Caldwell. To that end, his team sent 400 surveys across Ontario, asking rural communities what kind of adaptive innovations they had created.

He's optimistic about the responses. Early results show that in many instances, innovations – such as farmers markets, the local food movement, community gardens and bicycle trails – may not have been devised to address issues related to climate change or increasing energy prices, but still remain relevant. Others are extremely targeted -- Eden Mills, for example, has set the ambitious goal to be the first village in North America to become carbon neutral, meaning it wants to re-absorb all the carbon it emits.

Farmers are looking for ways to conduct less-energy-intensive forms of agriculture and cut fossil fuel consumption. One such initiative is community supported agriculture, which is when many people buy farm shares to absorb the financial risk associated with farming. Also, fossil fuel consumption is reduced because share-owners work their land sections using human labour – rather than fuel-reliant machines.

Caldwell is now evaluating the many innovations he's learned about through the survey to make them applicable to as many rural areas, villages, towns and municipalities as possible. He hopes to compile the different processes and approaches in a manual, which communities across Canada can consider.

"It has been suggested that with climate change, much of the world will lose productivity, while Southern Canada will gain productivity," says Caldwell. "We must consider our responsibility and ethic to sustainably contribute to food production, as millions will be adversely affected by climate change."

Bioeconomy – Industrial Uses

Plant and animal products in agriculture have long been used primarily for food and feed. The terms "bioeconomy" and "industrial uses" refer to the incorporation of renewable biomass resources — in whole or in part — into non-food and non-feed manufactured products, or energy systems. Often biomass is used to replace petrochemicals, with the benefit of making production more environmentally sustainable. This research theme focuses on three major product categories — biomaterials (e.g., textiles, carpets and panels), biochemicals (e.g., lubricants, sealants and oil) and bioenergy (e.g., ethanol, methanol and biodiesel) — all of which involve the use of agriculturally derived biomass to reduce dependency on petroleum-based materials.

Highlights from the program this year include:

- The automotive industry has the potential to go greener, thanks to work being done by researchers at the U of G who are looking at plant genetics to breed crops with stronger

fibre which can make better biocomposites. Bio-based materials are good for the industry not just because they are greener, but they also have excellent sound absorption, are shatter resistant and are lighter than inorganic based composites. This research is good for the economy too -- the manufacture of industrial materials from crop residues could have profound positive effects on rural Ontario, creating additional markets for field crops and reducing the environmental footprint of Ontario's manufacturing sector. Preliminary results from this research have already been shared with the Ford Motor Company in Michigan. (#26887/200199, Pauls)

- A truly sustainable society will ultimately have to shift its carbon resource base from fossil to renewable sources. A researcher in the Department of Chemistry is developing new technology to convert sugars from crops like corn and beets, into products that can be used to make rubber and plastics as well as gasoline grade fuels. This technology will create new markets for corn and beet producers and as well, the local production of renewable fuels supports truly sustainable agriculture in which the production of food is not dependent on the use of fossil-carbon based gasoline or diesel. (#26801/200114, Schlaf)
- Bio-composite storage bins, or "bio-bins" – which can be used to hold anything from small parts in a garage to stationary supplies in the office - arrived this year at Home Hardware stores across Ontario, and will appear later this year in Canadian Tire outlets. These devices have roots in a U of G laboratory (Bioproducts Discovery and Development Centre, BDDC) where a research team has joined a novel partnership benefiting farmers, consumers and the environment. By making these products from post-consumer plastics and natural fibres such as switchgrass, miscanthus, oat hulls, soy hulls or wheat straw or combination of these agricultural resources, the researchers hope to reduce the carbon footprint, lessen dependence on fossil fuels and open new markets for Ontario farmers and manufacturers. (#26746/200004, Mohanty)

Case Study

John Dutcher, Physics

#26851/200163 Evaluation of the feasibility of SuperStarch™ technology for the production of polysaccharide nanoparticles with existing bioethanol facilities

May 1, 2010 – April 30, 2012

(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$117,000
Faculty/CARG FTE	\$31,781
Research Station Use	None
Tech/Admin Support and Indirect Costs	\$19,879

Total OMAFRA / U of G Project Value (up to and including 10/11)	\$168,660
Partner/In Kind Contributions	\$116,000 cash
Collaborators	Dutcher, J. , Dept. of Physics; Stukalove, O. , Mirexus Biotechnologies; Stewart, G. , OMAFRA

A Guelph-based start-up company, called Mirexus Biotechnologies, is producing a new type of polysaccharide-based sub-micron particles with a wide array of applications, including cosmetics, food, coatings and drug delivery. The particles are derived from agricultural materials, making them accessible, affordable, and environmentally sustainable, as well as providing an alternative market for the agri-food sector. The technology to produce these particles was created by a research team in the Department of Physics led by Prof. John Dutcher.

SuperStarch, now called PHYTOSPHERIX™, particle solutions are efficient at scattering light and, when dried on surfaces, form stable, transparent films. The uniform surface properties of the particles make them ideal for several processing methods – further broadening their uses. As a result, the discovery of PHYTOSPHERIX™ particles has provided a platform for the development of functional PHYTOSPHERIX™ materials to meet key challenges in personal care, food processing, biomedical and industrial applications. These new particles are non-toxic and biodegradable easily dispersed in water and are stable.

The company is sending their products for testing as ingredients to a wide variety of companies including both small, local companies and large, multinational corporations. The feedback has been positive with both types of organizations who have requested more products for testing. In particular, Mirexus has had great success with another Guelph-based natural cosmetics company called OnlyGreen, and is currently working with them to develop a new line of natural cosmetics that incorporates PHYTOSPHERIX™ particles.

None of this would be possible without OMAFRA-U of G Partnership funding, which is providing Dutcher and his team with crucial funding to develop the commercialization of this technology.

Before the PHYTOSPHERIX™ technology could be adapted by manufacturers, three aspects had to be investigated and validated says Dutcher. “The OMAFRA-U of G Partnership funding has allowed us to pursue these key steps,” he says.

First is feedstock development. Now in their second growing season, the team is identifying specialized feedstocks that produce a greater yield of PHYTOSPHERIX™ particles. Next, process development, and this work has led to a pilot scale trial that has yielded tens of kilograms of PHYTOSPHERIX™ particles, and much new knowledge of how to further improve the process.

As well, the funding supports the new product development the company is pursuing through partnerships with various companies.

This technology is not only beneficial to researchers, manufacturers and the general public, it also provides opportunities to Ontario producers -- significantly improving the sustainability of

the corn industry in Ontario. One type of promising feedstock for PHYTOSPHERIX™ particles is special varieties of corn. This could provide a new, value-added use for Ontario corn.

Mirexus has plans to scale PHYTOSPHERIX™ manufacturing to at least 100,000 tons per year within five years, generating at least \$300 million in revenues. To achieve this, 16 million bushels of corn will have to be grown – enough to serve two to three major customers in the coatings, printing and construction markets. If only one medium size paper manufacturer decides to use PHYTOSPHERIX™ these figures will have to be tripled – meaning a lucrative opportunity for Ontario producers.

Emergency Management

The goal of Emergency Management research under the OMAFRA – U of G Partnership is to provide a proactive, co-ordinated and comprehensive approach to managing agri-food emergencies in Ontario. Events such as SARS, BSE, swine and avian influenza and invasive plant pests have shown Canadians the profound impact that outbreaks can have on agriculture, the environment, human health and the economy. Emergency Management research encompasses issues related to zoonoses and public health, foreign animal disease, plant pests, and food safety. The focus is on disease agents and pests whose sudden emergence or re-emergence in Ontario requires an immediate and comprehensive response.

Highlights from the program this year include:

- Modern greenhouses create the perfect conditions for many plant varieties – and a whole host of harmful pests and pathogens. A researcher from the Biodiversity Institute of Ontario is modifying the DNA Barcode of Life Data System (BOLD) database so that it can be used as a bio-surveillance tool for the Ontario greenhouse industry. Producers will be able to identify and manage pest threats through the BOLD database, which will provide timely pest information forecasts and analysis. (#26998/200312, Hanner)
- Population density and control of infectious diseases are two important factors that can affect the spread of an infectious disease. Population Medicine Prof. Zvonimir Poljak found that Ontario producers with swine herds in close proximity to each other were likely to have more measures in place to control disease outbreaks than those with few neighbouring herds. Poljak has created a series of maps that can be used for disease surveillance by identifying the proximity of Ontario herds to each other and the herds that have the tightest disease controls in place. (#26660/200015, Poljak)
- Working with six poultry processing plants in Ontario and 240 chicken farmers, researchers at the U of G are looking to see if there are certain management practices that either increase or decrease the risk of a particular pathogen being present, and then hope to be able to suggest interventions that could have a highly beneficial outcome to individual farmers and the broiler chicken population in general. This surveillance for viral and bacterial pathogens in commercial broiler chickens in Ontario will give the sector a better understanding of baseline levels of pathogens in the province, what factors are associated with the presence of those pathogens, and how they impact chicken producers. (#26923/200236, Guerin)

Case Study

Art Schaafsma, Ridgetown Campus

#26956/200270 Western Bean Cutworm monitoring and management strategies for Ontario and the Great Lakes region: A proactive and coordinated approach to prepare and respond to a newly emerging corn and dry bean pest in Ontario (also funded under Production Systems, Plants)

May 1, 2010 – March 31, 2013

(up to and including 10/11)

OMAFRA - U of G Research Project Operating	\$43,528
Faculty/CARG FTE	\$193,903
Research Station Use	Ridgetown station value \$690; Huron station value \$690
Tech/Admin Support and Indirect Costs	\$82,451
Total OMAFRA - U of G Project Value (up to and including 10/11)	\$321,262
Partner/In Kind Contributions	\$45,625 cash and \$1,000 in kind
Collaborators	Schaafsma, A. , Ridgetown Campus; Trueman, C. , Ridgetown Campus; Gillard, C. , Dept. of Plant Agriculture; Hallett, R. , School of Environmental Sciences; Baute, T. , OMAFRA; Roddy, E. , OMAFRA

A new pest has arrived in Ontario. The destructive western bean cutworm that has plagued the Great Plains and Corn Belt fields of the United States for decades is migrating into the Great Lakes region. Since making its Canadian debut in 2008, the pest has already appeared in Ontario and south-central Quebec and farmers are concerned.

Prof. Art Schaafsma, from the Department of Plant Agriculture and Director at the University of Guelph Ridgetown Campus, and his team are studying the biology of the invasive field crop pest to develop successful management strategies and practices for Ontario producers. Schaafsma's team includes Profs. Rebecca Hallett, Chris Gillard and Cheryl Trueman, research associate Jocelyn Smith (Grain Farmers of Ontario) and entomologist Tracey Baute of the Ontario Ministry of Agriculture, Food and Rural Affairs.

The partnership between OMAFRA and the University of Guelph has helped to strengthen collaborations with other universities and institutions, bringing more crop pest specialists onto the project, such as Dr. Chris DiFonzo of Michigan State University and Dr. Jeremy McNeil of the University of Western Ontario.

“The team approach speeds up knowledge acquisition, interpretation, and transfer, allowing a quick reaction to an emerging problem,” says Schaafsma.

Despite its name, Western Bean Cutworm (WBC) is also a corn pest. The cutworm’s larvae feed directly on the fruit of the plant (corn ears and edible bean pods), reducing yield and quality as well as increasing crop exposure to secondary pests, such as moulds. The WBC has one generation per year and overwinters as full-grown larvae (pupating in the spring).

“WBC has the potential to be a significant pest for corn, dry beans, and possibly vegetable crops. “This research will determine just how great the risk is under Ontario production conditions,” says research associate Smith.

Before developing successful management strategies and practices, the researchers must investigate the biology and behavior of the newly arrived pest in a northern climate. They are now identifying the distribution and overwintering success of the WBC as well as determining its ideal growing conditions and preferred host plants. They’re using weekly pheromone traps to determine the distribution of WBC across Ontario and southern Quebec. The traps are scented with the female pheromone and the number of male moths caught is counted. The traps are monitored from June to September and moth catches typically peak in mid-July. Over the last few years the number of moths has significantly increased, suggesting that the pest has expanded further into the Great Lakes region. The most northern and eastern sites in North America to have ever captured WBC moths are Thornlea, Ontario and Montmagny, Quebec.

Field experiments were conducted to examine the overwintering success of the WBC larvae in different soil types. Larvae were collected from the field and inserted into silt loam, sandy clay loam and loam soils and the number of surviving larvae or moths were measured at different times throughout the winter and spring.

Researchers found that WBC successfully overwinters in some regions of Ontario. Upcoming studies will investigate the success of exposing overwintering larvae to different temperatures and amount of snow cover while they are in the soil.

Ontario’s varied agricultural landscape often has vegetable and field crops growing in close proximity of each other. Schaafsma and his team are investigating the threat WBC will have on Ontario’s vegetable crop production, in addition to its effect on corn, dry beans and common weeds.

The researchers’ next step is to investigate the effectiveness of various foliar insecticides for corn and dry beans, as well as feeding damage of WBC on transgenic corn. After completing these studies, best management practices and grower recommendations can be developed to help Ontario’s producers manage this new pest.

“Studying the biology of the WBC will help Ontario producers manage the pest in the short and long term as well as develop sustainable insect resistance management practices for transgenic corn,” says Smith.

Environmental Sustainability

OMAFRA and the University of Guelph's Environmental Sustainability research theme focuses on maintaining the ability of natural resources — soil, air, water and biodiversity — to support and strengthen the agriculture, food and bioproduct sectors, and rural communities. To protect Ontario's diverse environment, researchers provide science-based direction for government policies and legislation. Population growth presents opportunities for new markets and challenges for agriculture and the environment.

The OMAFRA - U of G Partnership aims to balance the needs of people and the agri-food industry with environmental priorities in order to achieve sustainable agriculture and food production.

Highlights from the program this year include:

- Many sod farms are considering the option of using reclaimed water for irrigation because of potential water shortages in local watersheds. But not a lot is known about how reclaimed water affects both sod and the soil ecosystem, so to help determine the potential for this type of irrigation system, researchers at the U of G are studying the effects of various forms of reclaimed water on turfgrass growth, the functioning of microbial organisms and soil health. (#26599, Jordan)
- Biosolids are used by many municipalities as a way to improve soil and help establish crops. Because they contain high amounts of organic matter and nutrients, they are considered a great alternative to inorganic fertilizers and potentially as a way to improve soil loss associated with commercial sod production. Researchers at the U of G are developing Best Management Practices for this use by looking at the effects of different biosolids types on the health and growth of turf, on water quality due to the transport of microbial pathogens and heavy metals and on the potential for soil loss from sod production. (#26931/200244, Habash)
- Researchers at the U of G are contributing to the new 'green' economy by creating technology to reduce the output of ammonia, a by-product of livestock and crop production, and convert it into a useable and/or benign end product. The goal is to create a product that reduces the heating and cooling energy requirements of livestock production, reduces the environmental burden associated with livestock and compost production by reducing pollutant emissions, generates a useful bio-product from waste and generates new jobs and tax revenue in the province through commercialization of the developed technologies. (#26669/200027, Dixon)

Case Study

Ramesh Rudra, School of Engineering

#26603 Impact of Climate Change on efficiency of management practices for improved water quality in agro-ecosystem (May 1, 2008 – April 30, 2010)

Tier II project, now a Tier I project

#26970/200284 Mapping of variable sources for nutrient management and environmental sustainability (May 1, 2010 – April 30, 2013)

May 1, 2008 – April 30, 2013

(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$75,000
Faculty/CARG FTE	\$367,315
Research Station Use	Guelph Turfgrass Institute value \$66; Elora Crop Science research value \$4,140
Tech/Admin Support and Indirect Costs	\$388,419
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$834,940
Partner/In Kind Contributions	\$738,218
Collaborators	Rudra, R. , School of Engineering; Gharabaghi, B. , School of Engineering; McBean, E. , School of Engineering; Gregori, S. , School of Engineering; Goss, M. , Kemptville Campus; Fox, G. , Food Agricultural and Resource Economics; Filson, G. , School of Environmental Design and Rural Development; Dickson, T. , School of Engineering; Wakk, G.J. , School of Engineering; Sweeney, S. , OMAFRA; McKague, K. , OMAFRA; Goel, P. , OMOE; Kenny, F. , OMNR; Cooke, S. , Grand River Conservation Authority; Peakcoke, M. , Ganaraska Conservation Authority

The effect of climate change on soil and water quality in agricultural ecosystems is not yet clear. Runoff from agricultural fields is a major pathway of stream pollution, meaning there is a need to identify source fields in a watershed to develop a framework to track contaminants movement from the source to the stream to evaluate any change in water quality due to climate change.

Researchers in the School of Engineering at the U of G are developing technology and methodologies to help OMAFRA, MOE, MNR, conservation authorities and consultants involved in watershed management with best management practices and extension activities.

Starting as a Tier II funded project (with access to OMAFRA research stations but no operating funding), Prof. Ramesh Rudra and his team developed an innovative and cost-effective wireless sensor network (WSN) system which includes runoff sensors and a wireless monitoring system, to identify and map areas generating runoff.

The WSN tool has the ability to formulate options for managing soil productivity and water quality in fields and the impact these will have on water quality and aquatic organisms downstream. The WSN can also suggest methodology for economic evaluation of management options including nutrient trading within an agricultural watershed.

Now a Tier I project with operating dollar funding and access to OMAFRA research stations, the team is improving and evaluating the WSN's ability to identify and map runoff hot spots of associated pollutants in fields and small watersheds with variable soil, topography and land use. The tool can also take into account climatic variability and variables within the same area like time of year, rainfall, temperature, topology and vegetation.

Rudra says with this information, policy makers will be able to create best management practices (BMPs) for a more efficient approach for pollution management. "We're developing an approach to explain the connection between surface runoff from the field to the stream to help improve the Phosphorus Index and nitrogen management in our groundwater," he says adding, "both are needed for a healthier, more sustainable environment for all Ontarians."

Food for Health

Today's consumers are more interested in food and nutrition than ever before. OMAFRA and the University of Guelph's research into consumer trends, and food production and formulation has the potential to improve the health of Ontarians. It also provides competitive opportunities for producers and agri-food companies. The OMAFRA - U of G Partnership is committed to supporting research to provide consumers with functional foods — foods that have been shown to have health benefits, such as reducing heart disease and the incidence of diabetes. The scope of this research theme is large and complex, but the social and economic benefits can be enormous. Consumers' purchasing decisions, dietary patterns and increased knowledge about the relationship between food and health will drive this research theme forward.

Highlights from the program this year include:

- Tea, the world's most widely consumed prepared beverage, might be gaining a whole new set of fans – namely those with osteoarthritis – a disease affecting one in 10 Canadians in an aging population. Researchers at the U of G are researching the effects of high rosmarinic acid spearmint tea on symptoms of osteoarthritis. (#26808/200121, Kott)
- One in every 160 Canadians suffers from inflammatory bowel disease (IBD), a chronic, debilitating disease that affects the digestive system and causes symptoms including inflammation, abdominal pain, cramping and fatigue. Now, a simulated human intestinal tract called Roboguts has been developed by U of G researchers to mimic gut conditions in people who suffer from IBD. The researchers' goal is to profile gut bacterial communities and better understand the relationship between gut bacteria and IBD. (#26904/200216, Khursigara)
- Researchers at the U of G, in collaboration with colleagues at the University of Toronto, are looking at genetic differences between ethnic groups to help researchers better understand differences in fat metabolism that could have a role in altering an individual's risk for chronic health conditions such as cardiovascular disease. Specifically if they are

looking at differences between a gene that's involved in fat metabolism called fatty acid desaturase 1 (FADS1), and the amount of polyunsaturated fatty acids – such as omega-3 and omega-6 – within the blood plasma. These findings may help researchers better understand differences in fat metabolism between ethnic groups that could have a role in altering an individual's risk for chronic health conditions such as cardiovascular disease. (#26666/200032, Mutch)

Case Study

Dave Wolyn, Plant Agriculture

#26863/200175 Improving profitability in asparagus production through enhanced breeding, management and human health (also funded under Productions Systems, Plants)

May 1, 2010 – April 30, 2013

(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$70,500
Faculty/CARG FTE	\$79,452
Research Station Use	Simcoe Station value \$49,266
Tech/Admin Support and Indirect Costs	\$89,379
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$288,597
Partner/In Kind Contributions	\$234,163 cash and \$56,625 in kind
Collaborators	Wolyn, D. , Depart. of Plant Agriculture Drots, D. , Utah State University Brainard, D. , Michigan State University Cao, R. , Agriculture and Agri-food Canada Power, K. , Agriculture and Agri-food Canada

Foods high in antioxidants such as rutin have become a major component of consumers' diets, because they contribute to good health. Guelph Millennium, an asparagus breed high in rutin, was developed from an ongoing breeding program at the U of G.

This program is now looking at not only increasing rutin concentration, but also improving winter hardiness and re-plant resistance. "This project is designed to develop traits that will help enhance asparagus cultivars," says Prof. Wolyn.

Guelph Millennium was developed by a team led by Prof. David Wolyn, Department of Plant Agriculture at the University of Guelph. Studies have shown that Guelph Millennium contains higher rutin levels than any other asparagus breed.

First, Woyln and his team compared rutin levels of asparagus from five different farms in Ontario. Across a two-year study, the asparagus at each of the farms showed relatively similar results in their rutin concentration levels.

The implication is that rutin would be high in most asparagus farms across southern Ontario, making it easily available to consumers. If the concentration varied significantly among farms then it would be difficult to provide consumers with a reliable product high in rutin, says Woyln. Now, he's looking for specific parents that are high in rutin so the research team can breed improved hybrids.

At the same time, Rong Cao of Agriculture and Agri-Food Canada is investigating the best cooking method for asparagus in order to optimize the amount of rutin consumed. Woyln's team is experimenting with baking, boiling, steaming, microwaving and pan-frying asparagus.

The next trait the team is trying to improve is winter hardiness. They're studying how asparagus' physiology changes during dormancy and how it adapts to survive during Canadian winters. They're looking for ways to identify those that should be selected for winter hardiness.

Finally, Woyln is trying to improve asparagus re-plant resistance. Asparagus is a perennial; once the crop is planted it's cultivated for more than a decade. So if root-borne diseases exist, they can carry over from year to year. Asparagus' roots also have the tendency to release compounds into the soil that negatively affect the plant's growth.

"Farmers may get 60 per cent of their yield on replant soil compared to if they planted the same variety on soil never having grown asparagus. It's important to realize that farmers can have difficulty going back on old asparagus land and one has to buy new virgin land or accept a yield penalty when replanting," says Woyln.

Product Development and Enhancement through the Value Chains

This research theme focuses on strengthening agri-food value chains in Ontario, through research to provide innovation in product development and enhancement. Businesses operating along a value chain can combine their resources and capabilities to achieve commercial success that might not otherwise have been possible. Agri-food value chains are not limited to primary production and processing. The OMAFRA - U of G Partnership supports research into other important components, including market analysis, consumer behaviour, commercialization and quality assurance. By improving any or all aspects of product development, overall productivity, profitability and sustainability can be increased.

Highlights from the program this year include:

- University of Guelph researchers are helping Canadian cities adopt green roofs by making them suitable to a northern climate. Right now, the researchers are evaluating different plants – from sedum to perennial flowers to juniper – to find the most stress-resistant species that can withstand little shelter and more extreme weather conditions than on the ground. These plants must also be low-maintenance in order to save energy, labour and

water and fertilizer costs, as well as to strike a balance between productivity and energy conservation. (#26861/200173 Zheng, also funded through Environmental Sustainability)

- Getting omega-3 fatty acids into Canadian's diets isn't easy –eicosapentaenoic (EPA) and docosahexaenoic (DHA) are inherently unstable when exposed to oxygen, light, and other food components and also can have a 'fishy' odour which puts people off. Researchers at the U of G are finding novel ways to benefit both consumers and producers by taking advantage of the current trend to use corn for a renewable fuel source. A by-product of ethanol production is corn protein which can be used to encapsulate DHA and EPA, enhancing the stability and reducing the odour of omega-3 fatty acids. (#26881/200193, Lim - also in Food for Health)
- The safe and economical management of animal manure in Ontario is a perennial issue for producers and their neighbours. In the School of Environmental Sciences, a team of researchers is looking at fly larvae as a solution. They've found that fly larvae effectively turn chicken manure into organic fertilizer in less than two weeks and that they might also be a good source of food for poultry and fish. (#26680/200057, Zheng)

Case Study

Koushik Seetharaman, Food Science

#026587: Understanding the behaviour of oil-in-water monoglyceride nanostructures in baked food matrices and evaluating human health following consumption

May 1, 2008 – April 30, 2011

(up to and including 10/11)

	#026587	#26754/200062 – Novel Use of organogels to replace traditional animal fat in meat products
OMAFRA / U of G Research Project Operating	\$226,500	\$70,000
Faculty/CARG FTE	\$180,143	\$61,730
Research Station Use	none	none
Tech/Admin Support and Indirect Costs	\$107,921	\$47,542
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$514,564	\$179,272
Partner/In Kind Contributions	\$20,000 cash and \$114,750 in-kind	\$54,000 cash and \$25,000 in-kind
Collaborators	Seetharaman, K. , Dept. of Food Science; Marangoni, A. , Dept. of Food Science;	Marangoni, A. , Dept. of Food Science Barbut, S. , Dept. of Food Science;

	Wright, A. , Human Health and Nutritional Science; Huschka, B. , Coagel Corp.; O'Hare, L. , Kraft Canada	
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Researchers at the University of Guelph are finding ways to not only create healthier baked goods, but also help lower the incidence of cardiovascular disease and type II diabetes by finding ways to replace shortening in baked goods with a novel gel, created at the University of Guelph.

Prof. Koushik Seetharaman and his team are finding out how to use a novel structured gel, in food. The creation of this product was pioneered at the University of Guelph through an OMAFRA-U of G Partnership funded project led by Prof. Alejandro Marangoni (see table above), and it's the most recent advance in the development of alternate shortenings that are low in saturated fats and free of trans fatty acids. Several companies are in the process of trying to use this new shortening. However, because the gel contains about forty percent water, its use is limited in industrial settings to achieve good quality products that are similar to existing products - essentially the dough tends to be too sticky.

The baking industry, worth \$4.7 billion in Ontario and \$8.3 billion across Canada, is facing the challenge of having to reformulate and develop products with zero trans fat and low saturated fat content to comply with regulations.

So Prof. Seetharamin is finding out how to adapt the formulation and processes for existing products or modify the new shortening to improve its functionality for specific types of products. They are doing extensive studies to understand the molecular structure of structured gels and how this product interacts with other food components like starch, gluten and flour. With slight process modifications, it has been possible to replace shortening in commercial products with this structured gel.

Structured gels have been shown to result in a controlled release of lipids and sugar into the blood stream, modulating serum insulin levels -- so the team is researching blood lipid and insulin levels following processing.

This research has great significance to the agri-food sector and the cereals industry because of the potential to develop healthful products for consumers and for the potential to alleviate issues related to obesity and type II diabetes.

Production Systems

This research theme seeks to enhance the profitability of agricultural production. It encompasses other areas of the OMAFRA-U of G Partnership research program that may play a significant role in productivity or profitability, including environmental sustainability, consumer demand, bioproduct opportunities, and agricultural and rural policy. Government support of Production Systems research is critical for a number of reasons; all associated with sustainable food production systems. Animal and plant health and the impact of agriculture on the environment are closely tied to important priorities like safe food and clean water. Legislative requirements, Ontario's changing demographics, international competitiveness, and market opportunities, and the enormous significance of agricultural production to the Ontario economy all point to the importance of this research theme.

Highlights from the program this year include:

Livestock:

- With the Canadian pork industry, an important contributor to the economy, it's important to continually improve on pork production practices. Liquid feeding systems are one of the new and promising technologies. In Ontario, more than twenty percent of market pigs are being fed liquid-feed because it is a more cost-effective and environmentally sustainable feeding practice. Researchers in the department of Animal and Poultry Science are improving on liquid feeding technology to ensure pork quality, while improving gut health and animal productivity, as well as ensuring reduced environmental impact. (#026988/200302, de Lange)
- Studies have shown that dairy cows between three weeks prior and three weeks after calving are susceptible to metabolic health issues associated with a negative body energy balance during this time of rapid transition. Traditional approaches that are used in the dairy industry to manage these health issues have not been scientifically evaluated. Researchers in the Department of Population Medicine are conducting a series of clinical trials to evaluate a potential new diagnostic test for early detection of subclinical cows and to rigorously evaluate various treatment modalities to greatly improve health and production of dairy cows in Ontario, Canada, and throughout the world. (#26837/200149, Duffield)
- Consumers demand tender meat, and given the ever-rising costs of beef production, farmers need to produce it as efficiently as possible. That means assembling and managing herds that are the best at using feed for growth, particularly during the later stages of growth (finishing phase), when cattle are typically least efficient at turning feed into muscle. Researchers in the Department of Animal and Poultry Science are using new technology to evaluate feed-efficiency in cattle and to use genetic markers for selecting cattle with superior performance and meat quality traits. (#26892/200204, Mandell)

Plants:

- Soon, tomato plants may be able to fend for themselves - without the need of pesticides to control diseases. Plant Agriculture and School of Environmental Sciences researchers are using plant defense activators as a way of spurring the plant's own natural defense mechanisms into action. From this, the team plans to develop new approaches for disease control to safely maintain the health of the plants. (#26815/200217, Goodwin)
- With millions of acres of canola production in western Canada, many new spring canola varieties are introduced to that region each year. However, the growing environment in Ontario differs so markedly from that of the West, varieties that top the performance charts in the prairie provinces may not have what it takes to perform well in Ontario. To help reduce the risks associated with canola production in Ontario, researchers in the Department of Plant Agriculture are testing canola varieties to find out which ones are a good fit for Ontario's warmer climate, and also have more consistent qualities in terms of grading. (#26780/200089, Earl)

- Potato processors and consumers are constantly demanding new and higher quality standards for potato varieties while producers require varieties with good yield and agronomic performance. The public is also increasingly interested in purchasing local food items that also provide health benefits. In the Department of Plant Agriculture, researchers are testing new potato varieties from North American public breeding programs and the AAFC National Potato Breeding program in Fredericton and Lethbridge to increase local potato crops and make the potato an even healthier food. They're looking for varieties with low glycemic index and longer storage capabilities which also provide more profitability to producers. (26843/200155, Sullivan)

Case Study (Livestock)

Bonnie Mallard, Pathobiology

#026672: Dairy health and high-low immune responders

June 1, 2009 – June 30, 2012

(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$33,334
Faculty/CARG FTE	\$123,004
Research Station Use	Ponsonby General Animal Facility value \$9,908 Elora/Ponsonby Dairy value \$3,974
Tech/Admin Support and Indirect Costs	\$118,854
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$289,074
Partner/In Kind Contributions	\$148,375 cash
Collaborators	Mallard, B. , Dept. of Pathobiology; Karrow, N. , Dept. of Animal and Poultry Science; Quinton, M. , Dept. of Animal and Poultry Science

A University of Guelph research team has developed a safe, accurate way to help identify cows with the strongest, most disease-resistant immune systems. This technology would let you realize substantial herd health savings—mastitis can cost \$100 or more per infection plus lost production, for example—and other benefits.

Prof. Bonnie Mallard, an immunogeneticist from the university's Department of Pathobiology, PhD candidate Lauraine Wagter-Lesperance and a team of researchers have developed and patented a test called High Immune Response (HIR).

"This is a sustainable, environmentally friendly technology," Mallard says. "Just as you would breed for milk production, you would breed for optimum immune response using the HIR technology."

The technology identifies cattle as high, average or low immune responders. High responders have more balanced immune responses and are capable of defending against the large number of diverse pathogens that infect dairy cattle.

Identifying these animals for a breeding program could lower disease occurrence, greatly reducing veterinary treatment costs and increasing a herd's response to vaccinations. HIR testing and analysis have to be done only once at any stage in an animal's life from two months of age onward. The procedure is done during three short on-farm visits over a 15-day period.

First, the animal is immunized with a patented test antigen system, similar to a vaccine, to spur its immune system into action. Next, blood or milk samples are taken and analyzed to determine speed and strength of its immune responses to this test antigen.

Researchers then rank each animal according to its ability to pass along its valuable immune genes based on estimated breeding values for immune responsiveness.

Results would let you make decisions to cull cattle with a low-immune response profile and select the appropriate bull for breeding, based on the immune profiles of both the sire and the dam. It would also allow tailoring each animal's vaccinations and management according to its indicated immune response status.

As well, colostrum enriched with higher amounts of protective antibodies from HIR cows could supplement calves during their vulnerable first few days after birth.

HIR's benefits could also translate to the supermarket. Consumers could enjoy milk products from healthier animals that require far fewer antibiotics and disease treatments over their lifetimes.

"HIR is about animal health," says Mallard. "But it also has a lot of benefit further on down the line, as it relates to milk and dairy products. It's a total farm-to-fork concept."

Mallard and her team are now looking to apply the HIR test system to sires in addition to cows, heifers and calves. Another crucial part of their work will involve forming partnerships to bring HIR into the wider dairy community.

Case Study (Plants)

Gary Ablett, Ridgetown Campus
Istvan Rajcan, Plant Agriculture

26696/200067 Understanding the genetic and biochemical control of tocopherols and luteins in soybeans leading to the development of soybean cultivars and germplasm with enhanced levels of nutraceuticals, (also funded under Food for Health)

May 1, 2009 – April 30, 2011
(up to and including 10/11)

OMAFRA / U of G Research Project Operating	\$60,000
Faculty/CARG FTE	\$9,168
Research Station Use	Ridgetown Campus \$4,320 Elora Research Station \$3,542 Woodstock Research Station \$8,855 Total Value \$16,717
Tech/Admin Support and Indirect Costs	\$15,383
Total OMAFRA / U of G Project Value (up to and including 10/11)	\$101,268
Partner/In Kind Contributions	\$155,000 cash
Collaborators	Ablett, G. , Ridgetown Campus; Rajcan, I. , Dept. of Plant Agriculture; Seguin, P. , McGill University

Soybean is the largest oilseed crop in the world and the most valuable agricultural commodity in Ontario with on farm cash receipts in excess of \$1 billion annually. Grown primarily for the protein and oil components, soybean also contains numerous other health-promoting compounds including lutein and tocopherols, or vitamin E – a vitamin greatly lacking in the typical North American diet.

Canadian soybeans only contain modest amounts of tocopherols, so Prof. Gary Ablett and his team began testing international soybean lines with higher levels of the vitamin to create a local industry. Since Prof. Ablett's passing in April, 2010, Prof. Istvan Rajcan has continued on with this research project.

This research focuses on developing technology to allow for the efficient and effective breeding of nutraceutically enhanced soybean lines. The majority of the study focuses on tocopherols, however, Rajcan is also looking at lutein.

To do this, field studies are being done at several different research stations with several different soybean lines. Rajcan says they are looking to see how the varieties perform in Ontario. "We're determining what conditions are optimal to increase levels of vitamin E in soybean, as well as how we can help this along the way genetically," he says.

Breeding efforts in this project have resulted in the development of several hundred breeding lines of soybean with high level of vitamin E in the seed. As well, 21 molecular markers linked to tocopherol concentration have been developed to be used by soybean breeders in the Canadian soybean industry. Rajcan says these markers will contribute to the efficient development of high yielding soybean varieties with enhanced vitamin E.

Rajcan says there's another benefit for producers as well. "With the potential value of these compounds and the ability to extract them from soybeans, it is also possible that this research could help producers break into the nutraceutical industry," he says.

Both tocopherols and lutein have been shown to have human health benefits such a reduction of symptoms associated with various cancers, inflammatory diseases, neurological disorders and cardiovascular diseases – and since soy is in a multitude of products, increasing the levels of these compounds by two to three times should have beneficial effects for soybean consumers across North America.

Business Development Office

The Business Development Office (BDO) is committed to maximizing the potential economic, social and environmental benefits of inventions and ideas that have emerged from the OMAFRA - U of G Partnership.

As the University's technology transfer and industrial liaison office, the BDO oversees all aspects of the University's intellectual property (IP) management and technology commercialization activities. The BDO help faculty, staff and students protect their IP, and evaluate and maximize its commercial potential. Through the Industrial Liaison Program, we help businesses access the University's intellectual capital and state-of-the-art labs and research facilities to create strategic partnerships that drive innovation. In delivering these services, the BDO contributes to the financial vitality and the environmental and social impact of the OMAFRA - U of G Partnership.

- OMAFRA – U of G (BDO) disclosure meetings have been re-established at regular intervals. The increased communication has provided an opportunity for the BDO to share new disclosures, as well as to update OMAFRA about progress with existing files.
- The process to determine royalty splits between OMAFRA and U of G has been reviewed by the Joint IP Committee and is being streamlined to achieve simplicity, efficiency and overall fairness. The new process being recommended will be based on standard splits between the parties (consistent with a review of the past 5 years). The new process dramatically saves time and energy for both teams, maintains fair recognition of the inventor and funder contributions and encourages use of the disclosure process.
- Although Tyler Whale has been officially appointed as the OMAFRA Technology Transfer Manager, the entire Technology Transfer team has contributed to targeting outreach to U of G faculty who are participants in the Partnership Agreement. This team includes Stephen Bowley, Steve DeBrabandere, Haridoss Sarma, David Hobson and Catherine Geci. Each has contributed his/her area of expertise to ensure the best service & expertise is available to evaluate new technologies and successfully market inventions.
- Tyler Whale has been an active participant in the Partnership's Knowledge Translation and Transfer (KTT) initiatives in terms of offering guidance to prospective projects, in reviewing applications, as well as participating in a number of KTT funded programs (poster presentation of industry-academia partnerships at Quebec St. Mall and clear writing project to produce 144+ research reviews in plain language).
- The BDO has initiated an Industry Liaison Program starting January 2010, with the goal of increasing the interaction between researchers on campus and external companies. The program was very successful in its initial year, contributing to at least 32 new academic-industry research partnerships. New resources were added to the Industry Liaison efforts

this past year with the goal of impacting a minimum of \$1.35M in industry-academia research endeavours. This service will benefit Ontario-based small and medium sized companies by facilitating their access to University faculty who are best able to help with research needs. The program will benefit the University-OMAFRA program by connecting industry requiring R&D with research partners capable of delivering.

- The BDO has supported the HQP program by delivering lectures to the class about IP, technology transfer, licensing technology and commercialization. Two HQP interns have also worked with the BDO during the Winter & Summer semesters.
- BDO staff attended several industry-attended events and conferences in 2010/11, enabling strong interaction with decision-makers at large companies. These interactions may lead to greater research collaboration in the future. The events included Canadian Restaurant & Food Association Tradeshow (CFRA), and International Food Technology (IFT) Expo, an event that brings together professionals involved in both the science and the business of food - experts from around the world from industry, academia, and government. OMAFRA funded technologies were marketed with event specific collateral. Several potential industry connections were identified at each show and continue to be pursued. Some of the companies contacted include:

- Richardson (oilseed)	- Tate & Lyle
- Glanbia Nutritionals	- Batory Foods
- Weetabix	- Symrise
- Sara Lee Foods	- EMD Chemicals Inc.
- Croda Consumer Care	- Columbus Vegetable Oils
- Spicetec Flavors & Seasonings	- Keystone Grain Ltd.
- AmeliaBay	- Pepsi
- BASF	- Ocean Spray
- BDO staff continues to manage the Proof of Principle (POP) Fund. Details of POP technologies are found on pages 157.

Case Study #1: Dividend VL Orchardgrass

Technology: ZZ Orchard 2002-101

Title: *Dividend VL Orchardgrass*

Disclosure Date: March 26, 2002

OMAFRA split: 40.33%

Themes: Production systems, Plant

Technology Summary: Dividend VL is a very late maturing orchardgrass variety developed by Stephen Bowley and Donna Hancock, Department of Plant Agriculture. Their vision for the creation of this variety was to develop an orchardgrass variety that was better suited to grow in mixture with alfalfa for production of livestock feed. The yield potential and regrowth attributes of orchardgrass are desired features for a grass to grow in mixture with alfalfa. However, varieties that were available to farmers matured much earlier than when alfalfa is best suited to harvest for feed. As a consequence, forage from orchardgrass-alfalfa mixtures were lower in feeding quality due to the overly mature grass present in the feed. Through their breeding efforts,

Bowley and Hancock were able to develop a variety that matured at a much slower rate during the first growth each season. Dividend VL flowers approximately ten days later than the next latest maturing variety in Ontario Forage Crops Committee variety trials. Its later maturity, higher feeding quality, and less competitive growth attributes facilitates its use in mixture with alfalfa. It also provides for a wider window for harvest timing.

License: The variety was licensed to Quality Seeds Ltd., a company that recognized the role this later maturing orchardgrass variety would have in forage production systems. Due to its much later flowering pattern, the seed production system for Dividend VL required alteration. The company has also incorporated seed coating technologies to facilitate seeding an alfalfa-Dividend VL blend without the requirement for a specialized seeder with an additional seed box. Through its national and international relationships, Quality Seeds Ltd. has successfully brought the variety to market in commercial volumes in 2010. Dividend VL is one of the six finalists for Seed of the Year 2011; the winning variety to be announced this coming November at the Royal Winter Fair in Toronto.

Timeframe: This technology illustrates the timeframe associated with creating innovative technology and having it available in commercial channels. The breeding project resulting in Dividend VL spanned twenty years and its commercialization an additional five. The selection process began in the mid 1980's, testing of the experimental variety began in 1996, the variety was licensed in 2005, and seed quantities of the variety were available on a commercial scale by 2010. Creation of Dividend VL was only possible through stable long-term financial support of the breeding program by the Ontario Ministry of Agriculture Food and Rural Affairs.

Case Study #2: Avian viruses and cell lines

Technology: Nagy 20110721, Nagy 20110227, Nagy 20090723

Title: *FAdV 9 vectored vaccines, non-pathogenic FAdV4 serotype, avian hepatoma line*

Disclosure Date: Various

OMAFRA split: Various

Theme: Production Systems - Animal

Technology Summary: This research group has consistently worked to develop new vaccine candidates for poultry diseases, using live adenoviruses such as FAdV9 and FAdV4. The FAdV9 technology is a virus with a large deleted region at the left end of the genome, useful for inserting foreign antigens to produce a wide variety of vaccines. The FAdV4 technology is a non-pathogenic virus that could represent a possible treatment for hydropericardium/hepatitis syndrome (HPS) in chickens, which is a disease that affects flocks in South America and Latin America.

Company Relationship: This group has had a strong relationship with Mexican company Laboratorio Avimex for several years. Avimex is putting time and resources into developing vaccines based on the candidates. In addition, Avimex has provided funding to the Nagy line to develop a hepatoma line capable of propagating the viruses. A license to the FAdV9 vector was completed in November of 2010. Transfer of the cell line and FAdV4 material is occurring late this summer. It is hoped that Avimex will be able to develop marketable vaccine products from this material.

Patent Status: A provisional patent application was filed for the FAdV4 material in March 2011.

Case Study #3: Agribiocomposites

Technology: Mohanty 20100923

Title: *Biofibre reinforced recycled composite resins*

Disclosure Date: September 23, 2010

OMAFRA split: 33.3%

Themes: Product Development; Bioeconomy

Technology Summary: The technology is a series of resin formulations made from recycled plastics and agricultural material.

License: A provisional patent application was filed in March 2010, and licensed to Evolution Biopolymers Inc, a Cambridge company that is dedicated to producing resins that can be sold for a wide variety of applications. The goal of Evolution Biopolymers is to achieve volumes of 50 million pounds of resin per year, within the next three years. Some minor royalties have already been received based on the preliminary parts bin product.

Published Story Excerpt:

Formulated in U of G's Bioproducts Discovery and Development Centre (BDDC), the bio-bin arrived in Home Hardware stores in early 2011 and will appear this year in Canadian Tire outlets. Now Dr. Amar Mohanty, plant agriculture professor and his partners, both at U of G and off campus, plan to explore other products and applications such as flowerpots, bird feeders and blue boxes for municipal recycling programs.

By making these products from post-consumer plastics and natural fibres such as switchgrass, oat hulls or wheat straw, Mohanty hopes to reduce their carbon footprint, lessen dependence on fossil fuels, and open new markets for Ontario farmers and manufacturers.

The project, which has been funded by the Ontario Ministry of Agriculture, Food and Rural Affairs, also benefits U of G, which earns royalties from licensing the bio-bin formulations developed by the Guelph team.

BDDC scientists are now studying new ways to combine post-consumer plastic and farm biomass and new uses for modified recipes. Prof. Manju Misra, cross-appointed between the School of Engineering and the Department of Plant Agriculture, is looking at biodegradable resins. "We're doing world-leading work at the BDDC to make Ontario a centre of excellence in bioproducts," says Misra, a nanotechnology expert.

Veterinary Clinical Education Program

Vision

A veterinary clinical educational program that is fundamental to supporting the health and well-being of the province and its citizens.

Mission

To support the economy of Ontario by training professionals skilled in maintaining the health and welfare of animals and their interrelationships with people and the environment.

Capacity and Outreach

The Ontario Veterinary College (OVC) and its VCEP program aim to be internationally renowned, accredited and respected as a leader in training veterinarians who are skilled in maintaining the health and welfare of animals and knowledgeable about their interrelationship with people and the environment.

OVC is at an exciting juncture as it moves towards its 150th anniversary in 2012. It continues to advance towards our goal of being a defining voice that integrates animal, human and environmental health.

Although OVC was granted renewal of full accreditation in March 2009, based on a formal site visit, an annual update report is required to the AVMA/CVMA Council on Education (COE). On March 17, 2011 a letter was received from the COE indicating continued full accreditation. These two organizations represent the highest standard of achievement for veterinary medical education in the world. In the accreditation process, a veterinary college is reviewed to determine whether it meets 11 accepted standards of quality. The accreditation process focuses on the Doctor of Veterinary Medicine program and the institutional resources, infrastructure and personnel that support it. Graduation from a fully accredited institution permits graduates to take the national licensure examination for professional practice in Canada and the USA.

Clinical Training Programs

- Graduate competent veterinary professionals with skills in maintaining the health and welfare of animals who will meet the needs of Ontario's animal populations at the people-animal-environmental interface.

OVC's veterinary students continued the long-standing tradition of achieving a very high success rate on the licensing exam resulting in a high rate of post-graduate employment and very high employer satisfaction with our new graduates. The North American Veterinary Licensing Exam (NAVLE) is a requirement for obtaining licensure in order to practice veterinary medicine. Successful completion ensures portability of licensure to essentially anywhere in the world. Graduates are highly sought after by employers and virtually all of those seeking positions found jobs within a few months of graduation. Annual employer surveys of new graduates showed a continued trend of high satisfaction with these new veterinarians.

To further support the training of future food animal veterinarians the OVC opened the new Clinical Skills facility which will be used to deliver the large animal clinical laboratories as part of the DVM program. The building was also used as part of student run "College Royal" open house held in March every year. This allowed the public to see large animals and gain a better understanding of their role in agriculture. Construction of the facility was funded through the VCEP program and was essential in meeting the schools accreditation requirements.

The Bovine Education Trust, a charitable endowment fund established by the Ontario Association of Bovine Practitioners (OABP) and the Ontario Veterinary College (OVC), provided funding to several final year DVM students. The objective is to provide financial support for veterinary students to obtain more real-life learning opportunities and on-the-job experiences that they need to develop successful careers serving the dairy and beef industries. Support

funds are being provided by the Ontario Ministry of Agriculture, Food and Rural Affairs through the Veterinary Clinical Education Program.

Post-Graduate Training Programs

- Highly respected post-graduate training and continuing education programs raising the standard of veterinary health care and related public health in Ontario.

The Master of Public Health (MPH) program is a 5-semester professional degree with concentration in epidemiology, environmental public health, infectious diseases, and zoonotic, foodborne and waterborne diseases. The MPH program prepares public health students and professionals for careers in which they will address the present and future needs of public health in Ontario, Canada, and internationally. Graduates will emerge as influential local, national, and international leaders committed to improving quality of life by protecting and promoting the health of their communities and by anticipating and preventing disease from both a policy and a science perspective.

This graduate program has been developed to expand the pool of highly-educated personnel in this field - the first class started in September 2008. The fall 2010 cohort was comprised of 19 full-time and 1 part-time students of which 2 were veterinarians. For the fall 2011 cohort, there were 179 applicants with the same enrollment target of 20 students. There are 4 veterinarians in this upcoming class (3 full-time and 1 part-time). To date, the program has graduated 23 students.

The University of Guelph Centre for Public Health and Zoonoses (CPHAZ) will soon complete renovations of the space vacated by the Pathobiology department and the Animal Health Laboratory. These renovations will provide the much needed research infrastructure for the work being conducted by the various faculty associated with the Centre. The construction was funded by a \$1 million grant from the Canada Foundation for Innovation (CFI). The initiative brings together a consortium of researchers from the University of Guelph, the Public Health Agency of Canada, the Canadian Cooperative Wildlife Health Centre, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the National Laboratory for Zoonotic Diseases and Special Pathogens and others. The Centre supports the advanced education of students, veterinarians and scientists to help meet the growing need for expertise in public health and zoonoses and in sound policy and decision-making in the public health sector.

THE OMAFRA - U OF G PARTNERSHIP FINANCIAL REPORT

The financial reporting included in this Annual Report 2010/11 for the OMAFRA / U of G Partnership consists of two sections, as follows:

1. The “Audited Statement of Revenues and Expenses For the fiscal year May 1, 2010 to April 30, 2011”, as submitted to OMAFRA on September 28, 2011 and included here in its entirety. (Appendix C)
2. Summary of Revenues and Expenses (Fully Allocated)

This summary shows the **actual revenues and expenses (fully allocated) for fiscal 2010/11 (May 1, 2010 to April 30, 2011) for each of the four programs** (Research, VCEP, AFL and AHL) as well as for the ARIO Minor Capital Fund (see note *) funded, as applicable, through:

- the renewed Agreement,
- the New Initiatives fund (the special one-time funding of \$56 million received in March 2008, which the University will spend over five years in support of specific new initiatives in the overall partnership), and
- the Total Partnership (Agreement + New Initiatives).

“Fully allocated” refers to the fact that **‘indirect costs’** (such as providing program support services, administrative services such as budget management and human resources functions, and physical plant infrastructure) have been allocated to each individual program using a consistent methodology. This ‘fully allocated’ presentation of costs has been utilized beginning in the 2004/05 Annual Report, at the request of OMAFRA. This format provides a much more informative arrangement of the financial data, and is not subject to the same problems in interpretation of program costs as presented in the years previous to 2004/05. Nevertheless, it is not advisable to use these data for making decisions about incremental allocations/reductions in budget, since such decisions may have variable impact on the direct versus indirect cost bases. For example, reducing ‘Production Systems Research Theme’ expenditures may have less impact than intended, unless the continuing cost of operating the research stations on which the PS Program is built is also part of the decision process.

The second page of this summary shows the **revenues and expenses for the Research Program** itemized for each of seven Themes, as well as for the Research Stations (broken down by “Operations” and “Utilities, Repairs and Maintenance” see note *) and the HQP (Highly Qualified Personnel) and KTT (Knowledge Translation and Transfer) programs. This summary also shows the Research Stations costs allocated across the seven Research Themes, thus providing fully allocated totals for expenses by Theme.

Note *: Financial support for upkeep and maintenance of the ARIO-owned lands and facilities (referred to in the Agreement as ARIO-Locations, and consisting of the three regional campuses and 14 other research stations, all 17 of which are managed and operated by the University) is provided for the “Utilities, Repairs and Maintenance” program (generally referred to as O&M, funded within the Agreement) and the “ARIO Capital Fund” (funded outside of the Agreement). This O&M and Capital funding is in addition to the normal day-to-day operation of the livestock and crops research stations (station staffing, inputs such as feed, bedding, fertilizer, seed, etc.) at these 17 locations, which is termed Research Station “Operations” (funded within the Agreement, as shown in the broken out costs within the Research Program summary).

The OMAFRA - U of G Partnership Financial Report - Row Definitions

Revenue	
OMAFRA Agreement	That portion of the total Agreement funding recognized for eligible expenses in the reported fiscal year (May 1, 2010 - April 30, 2011).
OMAFRA - Other	These revenues include OMAFRA funding designated for specific activities as well as the "ARIO Minor Capital" funds received.
Sales of Goods and Services	Sales of services or goods from the Agreement operations and provided to external organizations and clients. This category records revenues for testing services provided to external clients by the two Lab Services divisions, as well as sales of milk, eggs, crops and other farm products from the research stations.
Other Revenue and Interest	Includes interest earned on the net cash flow in accordance with section 14.6 of the Agreement as well as miscellaneous revenues generated within the Agreement operations. The major component of this category is facility rental income for space managed within the O and M budget. Other Revenue may also include sponsorship revenues, recoveries from the disposal of surplus equipment or other miscellaneous program revenues.
Expenses	
Personnel	All salary and employee benefit costs excluding transfers for Research and VCEP faculty costs. (refer to Faculty Pool Costs definition)
Faculty Pool Costs	Agreement funds transferred to the University in support of the salary and benefits costs of University faculty effort toward Agreement priorities. Two "pools" have been established for the Research and VCEP Programs.
Operating	Expenses for all costs other than salary and benefit costs.
Internal Sales & Recoveries	Sales of goods and services or recovery of costs between units <u>within the University</u> , such as Lab Testing performed by Lab Services or research station recoveries for researchers or departments. In addition, the agreement recovers costs where OMAFRA funded operations provide shared support for other activities such as MTCU-funded Diploma Teaching. The charges for these recoveries are normally approved as 'invoices' for services between the specific unit requisitioners and providers within the University. Internal Charges are recorded under "Operating".
Indirect Costs	Includes costs of program support services, administrative services such as budget management and human resources functions, and physical plant infrastructure, which support the overall Agreement or New Initiatives programs, but cannot be attributed as direct costs to specific programs.

Summary 10/11 Actuals - Revenue & Expenses of Entire Agreement by Program (in thousands of dollars)

Renewed Agreement: All Programs							
	Object Category	Research	Vet Clinical Education	Agri-Food Lab	Animal Health Lab	ARIO Minor Capital	Total Agreement
Revenue	OMAFRA Agreement	(39,129)	(5,283)	(3,447)	(7,393)	-	(55,252)
	OMAFRA Other	(96)	-	(505)	(505)	(6,040)	(7,146)
	Sales Goods & Services	(4,064)	-	(11,504)	(3,766)	-	(19,334)
	Other Revenue & Interest	(1,893)	-	(7)	(2)	(11)	(1,913)
Total Revenue		(45,181)	(5,283)	(15,463)	(11,666)	(6,051)	(83,644)
Expenses	Personnel	18,750	195	9,294	7,641	17	35,897
	Faculty Pool Costs	9,915	1,900	-	-	-	11,815
	Operating	10,939	3,083	6,415	5,532	6,034	32,003
	Internal Sales & Recoveries	(3,832)	-	(533)	(1,706)	-	(6,071)
	Indirect Costs	9,409	105	287	199	-	10,000
	Total Expense	45,181	5,283	15,463	11,666	6,051	83,644
Net Expense (Revenue)		-	-	-	-	-	-

New Initiatives: All Programs							
	Object Category	Total Research	Vet Clinical Education	Agri-Food Lab	Animal Health Lab	ARIO Minor Capital	Total New Init.
Revenue	OMAFRA Agreement	(7,123)	(2,651)	-	(2,289)	-	(12,063)
	OMAFRA Other	-	-	-	-	-	-
	Sales Goods & Services	-	-	-	-	-	-
	Other Revenue & Interest	(6)	-	-	4	-	(2)
Total Revenue		(7,129)	(2,651)	-	(2,285)	-	(12,065)
Expenses	Personnel	3,455	465	-	871	-	4,791
	Faculty Pool Costs	-	-	-	-	-	-
	Operating	2,755	2,202	-	1,351	-	6,307
	Internal Sales & Recoveries	(2)	(30)	-	-	-	(33)
	Indirect Costs	921	15	-	64	-	1,000
	Total Expense	7,129	2,651	-	2,285	-	12,065
Net Expense (Revenue)		-	-	-	-	-	-

Con't-SUMMARY 10/11 Actuals-Revenue and Expenses of Entire Agreement by Program(in thousands of dollars)

Total Partnership (Renewed Agreement & New Initiatives): All Programs							
	Object Category	Total Research ¹	Vet Clinical Education	Agri-Food Lab	Animal Health Lab	ARIO Minor Capital	Total Partnership
Revenue	OMAFRA Agreement	(46,251)	(7,934)	(3,447)	(9,682)	-	(67,315)
	OMAFRA Other	(96)	-	(505)	(505)	(6,040)	(7,146)
	Sales Goods & Services	(4,064)	-	(11,504)	(3,766)	-	(19,334)
	Other Revenue & Interest	(1,898)	-	(7)	2	(11)	(1,915)
Total Revenue		(52,309)	(7,934)	(15,463)	(13,951)	(6,051)	(95,709)
Expenses	Personnel	22,205	660	9,294	8,512	17	40,687
	Faculty Pool Costs	9,915	1,900	-	-	-	11,815
	Operating	13,694	5,285	6,415	6,883	6,034	38,312
	Internal Sales & Recoveries	(3,834)	(30)	(533)	(1,706)	-	(6,104)
	Indirect Costs	10,330	120	287	263	-	11,000
	Total Expense	52,309	7,934	15,463	13,951	6,051	95,709
Net Expense (Revenue)		-	-	-	-	-	-

1. See the following pages; 42 and 43, for the breakout of Research Program by Theme / Sub-program.

Summary 10/11 Actuals – Revenue and Expenses by Research Sub- Program (in thousands of dollars)													
Renewed Agreement: Research													
		Research							ARIO Research Stations		Research		Total
	Object Category	Prod Sys	Prod Dev	Food for Health	Env Sust	Bio-economy	Ag Rural Policy	Emg Mgmt	Operations	Utilities / R&M	HQP	KTT	Research
Revenue	OMAFRA Agreement	(20,679)	(713)	(1,411)	(2,785)	(286)	(433)	(12)	(5,728)	(7,082)	-	-	(39,129)
	OMAFRA Other	(6)	-	-	-	-	-	-	(82)	(8)	-	-	(96)
	Sales Goods & Services	(127)	-	-	(3)	-	-	-	(3,820)	(114)	-	-	(4,064)
	Other Revenue & Interest	(496)	(15)	(30)	(56)	(5)	(10)	-	(451)	(830)	-	-	(1,893)
Total Revenue		(21,308)	(728)	(1,441)	(2,844)	(291)	(443)	(12)	(10,081)	(8,033)	-	-	(45,181)
Expenses	Personnel	6,728	118	339	544	23	136	7	7,892	2,693	-	-	18,750
	Faculty Pool Costs	7,509	315	579	1,211	158	143	-	-	-	-	-	9,915
	Operating	939	35	6	223	5	(1)	1	3,415	6,316	-	-	10,939
	Internal Sales & Recoveries	(606)	(2)	(4)	(119)	-	(1)	-	(1,693)	(1,407)	-	-	(3,832)
	Indirect Costs	6,738	262	521	985	105	166	4	467	161	-	-	9,409
	Total Expense	21,308	728	1,441	2,844	291	443	12	10,081	8,033	-	-	45,181
Net Expense (Revenue)		-	-	-	-	-	-	-	-	-	-	-	-

New Initiatives: Research													
		Research							ARIO Research Stations		Research		Total
	Object Category	Prod Sys	Prod Dev	Food & Health	Env Sust	Bio-economy	Ag Rural Policy	Emg Mgmt	Operations	Utilities / R&M	HQP	KTT	Research
Revenue	OMAFRA Agreement	(1,748)	(649)	(799)	(517)	(520)	(593)	(364)	-	-	(1,123)	(810)	(7,123)
	OMAFRA Other	-	-	-	-	-	-	-	-	-	-	-	-
	Sales Goods & Services	-	-	-	-	-	-	-	-	-	-	-	-
	Other Revenue & Interest	-	(3)	-	-	(3)	-	-	-	-	-	-	(6)
Total Revenue		(1,748)	(652)	(799)	(517)	(523)	(593)	(364)	-	-	(1,123)	(810)	(7,129)
Expenses	Personnel	1,054	357	430	315	275	388	214	-	-	19	403	3,455
	Faculty Pool Costs	-	-	-	-	-	-	-	-	-	-	-	-
	Operating	485	208	262	135	180	127	102	-	-	954	302	2,755
	Internal Sales & Recoveries	-	-	-	-	-	-	-	-	-	-	(2)	(2)
	Indirect Costs	209	87	107	67	68	78	48	-	-	150	107	921
	Total Expense	1,748	652	799	517	523	593	364	-	-	1,123	810	7,129
Net Expense (Revenue)		-	-	-	-	-	-	-	-	-	-	-	-

Continued: Summary 10/11 Actuals Revenue and Expenses by Research Sub (*in thousands of dollars*)

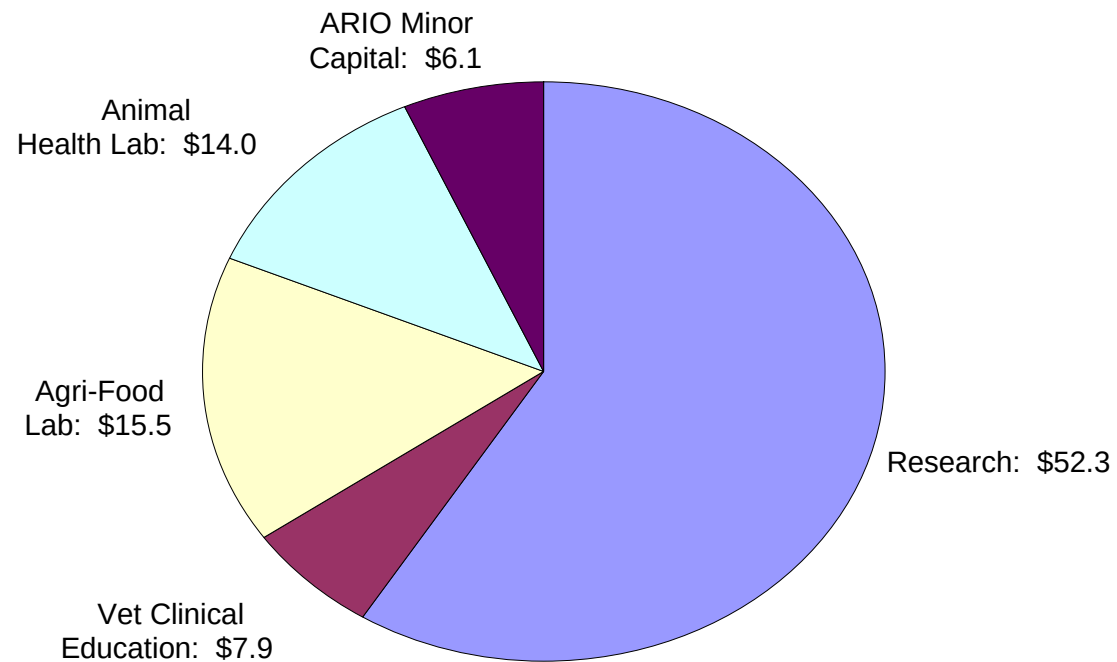
Total Partnership (Renewed Agreement & New Initiatives): Research

		Research							ARIO Research Stations		Research		Total
	Object Category	Prod Sys	Prod Dev	Food for Health	Env Sust	Bio-economy	Ag Rural Policy	Emg Mgmt	Operations	Utilities / R&M	HQP	KTT	Research
Revenue	OMAFRA Agreement	(22,427)	(1,362)	(2,210)	(3,302)	(806)	(1,026)	(376)	(5,728)	(7,082)	(1,123)	(810)	(46,251)
	OMAFRA Other	(6)	-	-	-	-	-	-	(82)	(8)	-	-	(96)
	Sales Goods & Services	(127)	-	-	(3)	-	-	-	(3,820)	(114)	-	-	(4,064)
	Other Revenue & Interest	(496)	(18)	(30)	(56)	(8)	(10)	-	(451)	(830)	-	-	(1,898)
Total Revenue		(23,056)	(1,380)	(2,240)	(3,361)	(814)	(1,036)	(376)	(10,081)	(8,033)	(1,123)	(810)	(52,309)
Expenses	Personnel	7,782	475	769	859	298	524	221	7,892	2,963	19	403	22,205
	Faculty Pool Costs	7,509	315	579	1,211	158	143	-	-	-	-	-	9,915
	Operating	1,424	243	268	358	185	126	103	3,415	6,316	954	302	13,694
	Internal Sales & Recoveries	(606)	(2)	(4)	(119)	-	(1)	-	(1,693)	(1,407)	-	(2)	(3,834)
	Indirect Costs	6,947	349	628	1,052	173	244	52	467	161	150	107	10,330
	Total Expense	23,056	1,380	2,240	3,361	814	1,036	376	10,081	8,033	1,123	810	52,309
Net Expense (Revenue)		-	-	-	-	-	-	-	-	-	-	-	-

Summary 10/11 Actuals - Fully Allocated Research Program Expenses by Research Sub- Program (*in thousands of dollars*)

	Research							ARIO Research Stations		Research		Total
	Prod Sys	Prod Dev	Food for Health	Env Sust	Bio-economy	Ag Rural Policy	Emg Mgmt	Operations	Utilities/R&M	HQP	KTT	Research
Total Theme Expenses as above:	23,056	1,380	2,240	3,361	814	1,036	376	10,081	8,033	1,123	810	52,309
Allocation of ARIO Research Station Costs	16,579	-	-	1,475	30	-	30	(10,081)	(8,033)	-	-	-
Fully Allocated Theme Expenses	39,635	1,380	2,240	4,836	844	1,036	406	-	-	1,123	810	52,309

Summary 10/11 Actuals – Revenue and Expenses of Entire Agreement by Program (\$million's)



PERFORMANCE REPORTS

Performance Indicators for the OMAFRA – U of G Agreement (2010/11)

Thirty nine performance indicators (PIs) were jointly developed by OMAFRA and the U of G at the outset of the current Agreement, to provide better accountability and transparency of funding under the new Agreement. The over arching objective of the PIs was to help ensure maximum return on provincial investment according to OMAFRA core business priorities.

PIs were assigned to the overall agreement and to each of the four program areas: agriculture and food laboratory, animal health laboratory, research and veterinary clinical education and two PIs were also later developed for joint management of intellectual properties.

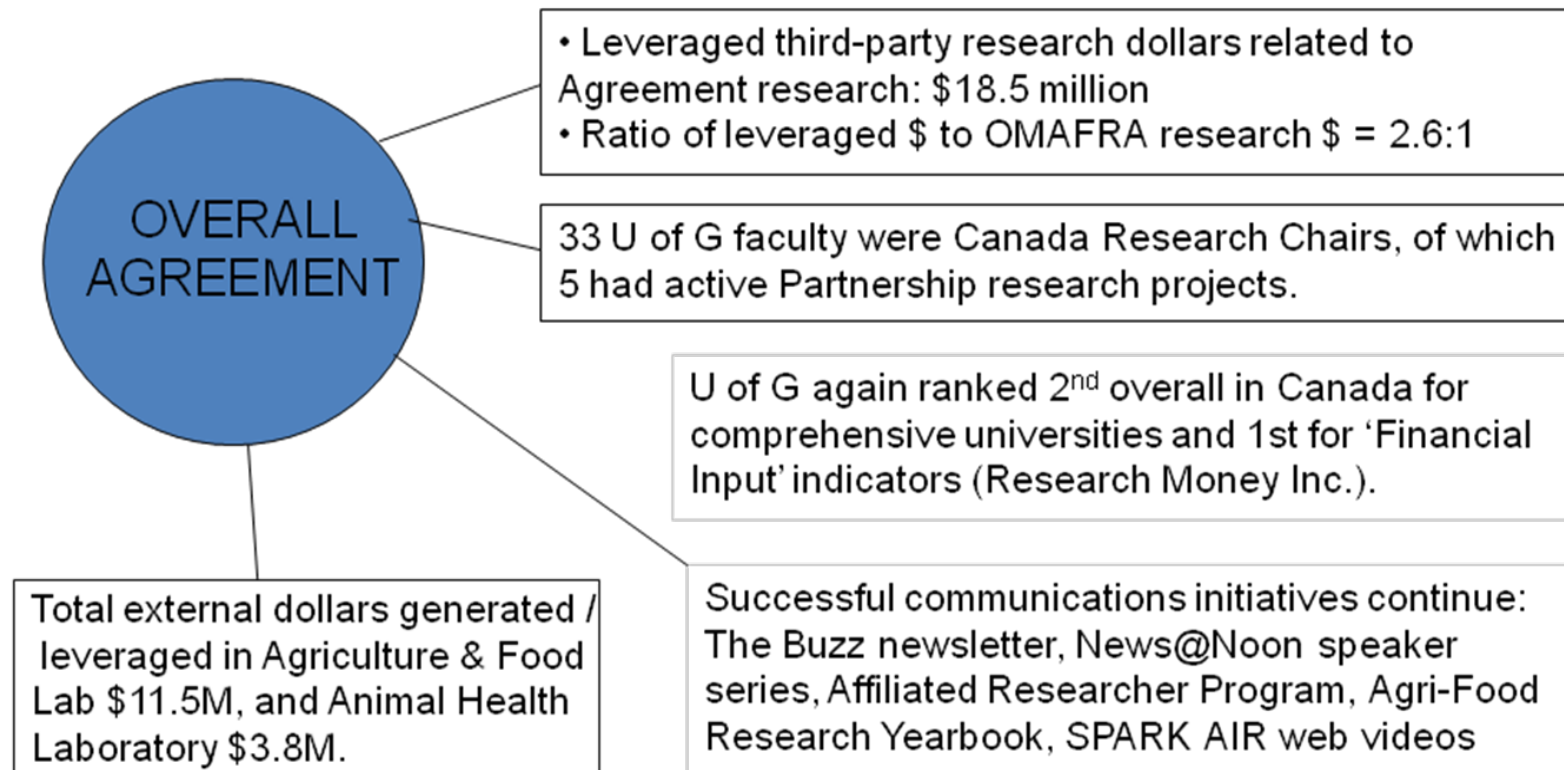
In 2010/11 the AFL program management committees of the Agreement reviewed and made recommendations to the Executive Committee for revisions to their performance indicators.(The other program management committees had done so in 2009/10) The objective of the revisions was to better reflect program outputs that were meaningful in their contribution to the Agreement's overall objectives. The PIs reported on the following pages of this 2010/11 Annual Report reflect those revisions approved by the Agreement Executive Committee.

PIs for each of the program management committees are reported on the following pages. PIs for Joint Intellectual Property management are included in Research PI #8 and Proof of Principle Fund under 'Other Reporting' on page 157.

OVERALL AGREEMENT

Selected Performance Indicators and Accomplishments

Overall Objective: A world renowned model of government-university collaboration that is instrumental to the success of Ontario's agriculture, food and bioproducts sectors, to the vibrancy of its rural communities, and to the health and well-being of the province, its environment and its citizens.



Overall Agreement Performance Report

Performance Indicators

Data collection and establishment of baselines for each Performance Indicator (PI) was completed with the assistance of OMAFRA. The table below summarizes the Overall Agreement performance according to the six PIs in the Agreement.

Key Outcome	A world class cluster of agriculture, food, bioproduct and rural community resources including academic, government, industry and supplier organizations.	
Performance Indicator OA1	Recognition of the University as a world leader in agri-food, veterinary and associated sciences.	
	Metric (a)	Overall University ranking. Same as R3, metric b)
	Baseline:	Ranking as per 2008 results. U of G ranked 2 nd in the 'comprehensive university category.
	Target:	2010-13: Maintenance or improvement of university standing according to the Research Money Inc. ranking of Canadian universities.
	Results (2010/11):	The most current (2010) Research Money Inc. report of Canadian universities' standings ranks U of G 2 nd in the 'comprehensive university category.
	Metric (b)	Total number of scientific and technical FTEs, and faculty supported or leveraged by the Partnership.
	Baseline:	Scientific and technical FTEs as per 2008/09 results. Research: 171.9 VCEP: 45.9 AFL: 53.0 AHL: 71.0
	Target:	2010-13: Maintain total number of scientific and technical FTEs and faculty supported or leveraged by the Partnership at 2008/09 levels. May decline due to inflation.

	Results (2010/11):	Number of faculty, scientific and technical FTEs supported or leveraged by the Partnership research projects: Research: 244.74 Number of faculty FTEs engaged in projects supportive of OMAFRA priorities (but not allocated to approved OMAFRA Partnership projects) is estimated at 204 'Research' FTEs. When these 'Research FTEs' are 'converted' to full faculty FTEs, it is clear that this represents over 100 full faculty FTEs devoted to research related to Theme priorities (see Research PI 2, metric a). VCEP: 45.9 AFL: 53.0 AHL: 71.0
	Metric (c)	Number of faculty/researchers/staff related to the research theme areas, recognized by their peers, for example through research chairs, awards of recognition, appointment to prestigious positions (international panels) and leadership of national and international research initiatives etc.. (Same as R3, metric a).
	Baseline:	2008/09 results are the baseline. 25 faculty members were Canada Research Chairs, of which 10 had active Partnership research projects.
	Target:	2010-13: Number of faculty/researchers/staff recognized by their peers, and significance of awards, appointments etc. to be $\geq$ baseline.
	Results (2010/11):	33 faculty members in 2010/11 were Canada Research Chairs, of which five had active Partnership research projects.

Key Outcome	Broader stakeholder community contributing research funding to building capacity for developing solutions to relevant issues and opportunities	
Performance Indicator OA2	Contribution of the Partnership towards leveraging industry and other government funding and collaboration for building capacity to address sector needs, opportunities and issues.	
	Metric (a)	Total dollars invested/generated from third-party sources, by program i.e., AFL, AHL (Same as R1, metric b).
	Baseline:	For 2008/09, total dollars invested from third-party sources were reported below as: • Research: 9.2 million (excluding all Provincial government funding). This is funding secured for research projects from third-party sources. • AHL: 3.6 million • AFL: 9.8 million • VCEP: no revenue generation
	Target:	2010-13: total dollars invested/generated from third-party sources ≥ 2008/09 baselines.
	Results (2010/11):	Research: 18.5 million – see R1b AHL: 3.8 million – see Financial Table on page 40 AFL: 11.5 million – see Financial Table on page 40 VCEP: no revenue generation
	Metric (b)	Total non-OMAFRA program revenue
	Baseline:	2008/09, total non-OMAFRA program revenue Research: 6.4 million AHL: 3.7 million AFL: 9.5 million, 0.3 from OMAFRA not related to Agreement VCEP: no revenue generation
	Target:	2010-13: total non-OMAFRA revenue ≥ 2008/09 baselines.

	Results (2010/11):	Research: 6.0 million AHL: 3.8 million AFL: 11.5 million VCEP: no revenue generation (Sales of services or goods from the Agreement operations and provided to external organizations and clients. This category records revenues for testing services provided to external clients by the two Lab Services divisions, as well as sales of milk, eggs, crops and other farm products from the research stations.)
Key Outcome	Partnership seen as integrative and collaborative	
Performance Indicator OA3	OMAFRA and University staff engagement with OMAFRA/University partnership	
	Metric	Level of overall OMAFRA - U of G staff engagement/satisfaction with overall Partnership
	Baseline:	Joint staff engagement survey distributed to all OMAFRA and U of G personnel involved with the partnership.
	Target:	2010-13: maintenance or improvement of 2008/09 survey results.
	Results (2010/11):	Survey will be conducted every 2 years.
Key Outcome	Leading edge solutions to agriculture, food, bioproduct, animal health and rural community issues and opportunities	
Performance Indicator OA4	Revenue generated from solutions, products and services developed through the Partnership	
	Metric	Outcomes and PIs outlined for OA4, 5 and 6 will be assessed as part of the overall 5-year evaluation of the Partnership, to be conducted by an external third party.
	Baseline:	PIs OA4, 5 and 6 will be achieved through a study similar to the Deloitte report of 2007 (U of G / OMAFRA Impact Study), to be conducted in 2012. In the interim, the Deloitte study serves as the baseline.

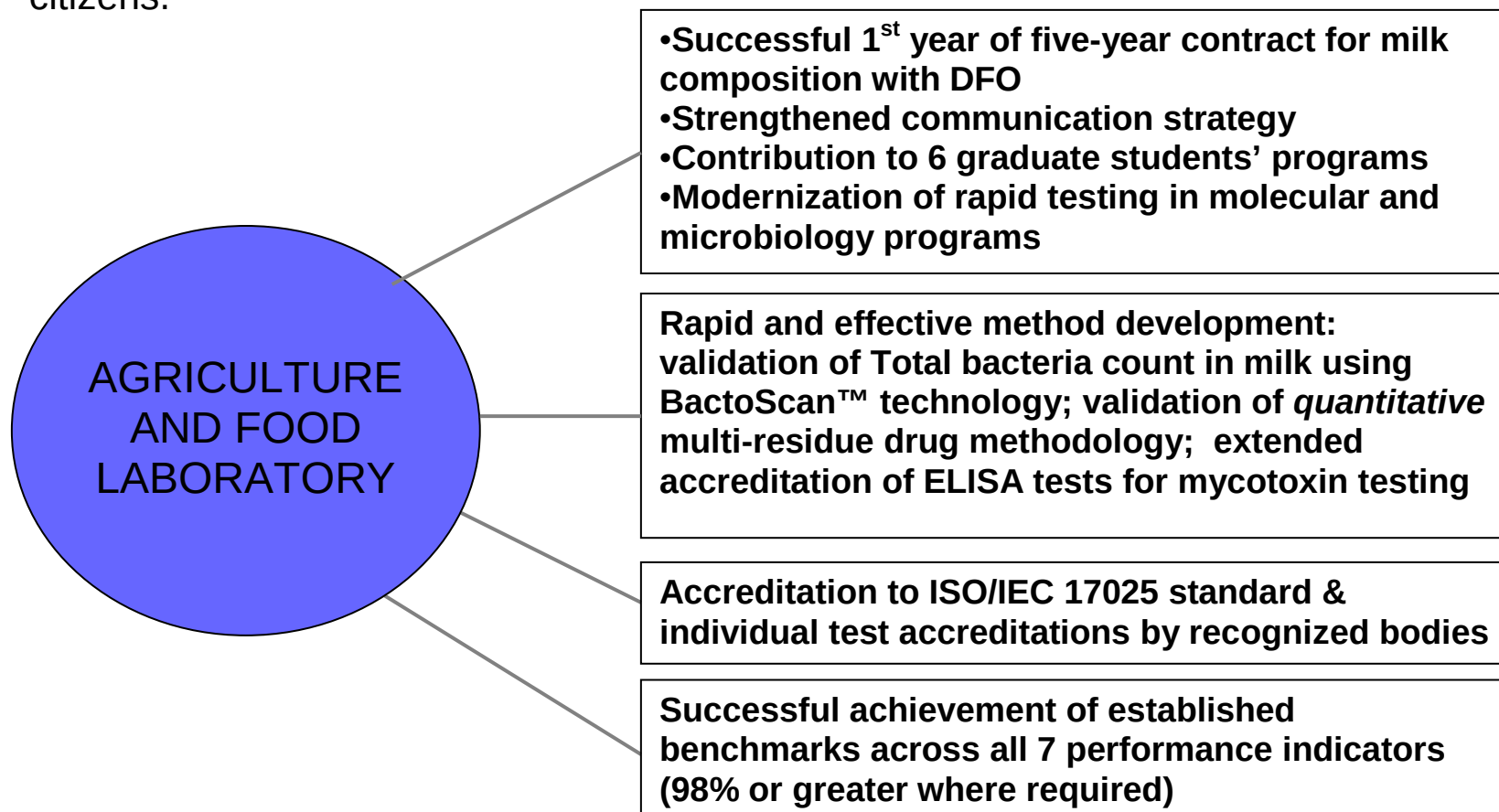
	Target:	2010-13: Evaluation plan for year five to be undertaken and approved in 2009-10, describing content and format of 2012-13 report.
	Results (2010/11):	Examples of 2009/10 results that will contribute to OA4: • R8e data to measure the revenue, innovation and commercial benefits generated • Joint IP case studies: Proof of Principle fund investment
Key Outcome	Economic and health benefits generated from adoption, utilization and commercialization of knowledge and capacity	
Performance Indicator OA5	Economic and health benefits from solutions, products and services developed through the Partnership	
	Metric	Outcomes and PIs outlined for OA4, 5 and 6, will be assessed as part of the overall 5-year evaluation of the Partnership, to be conducted by an external third party.
	Baseline:	PIs OA4, 5 and 6 will be achieved through a study similar to the Deloitte Study – 2007 (U of G / OMAFRA Impact Study), to be conducted in 2012. In the interim, the Deloitte study serves as the baseline.
	Target:	2010-13: Evaluation plan for year five to be undertaken and approved in 2009/10, describing content and format of 2012-13 report. Note: OMAFRA-UofG evaluation plan was developed in 2010-11.
	Results (2010/11):	Examples of 2010/11 results that will contribute to OA5: • R5 case studies - one from each of the seven research theme areas - concerning benefits to the economy, environment and health ...generated from the research program • AHL5 case studies: effective and timely diagnosis and reporting of significant animal health events • AHL8 case studies: emergency response plans implemented. • AFL 3 data: track and review incident reports (LabTrack) and report all non-conformances, resolution and continuous improvement initiatives. • AFL5 case studies: scientific application of existing or new methods to meet unanticipated urgent incidents in reasonable time.

Key Outcome	Key stakeholders aware of economic and social benefits of solutions led by the Partnership	
Performance Indicator OA6	External stakeholder satisfaction with benefits and accomplishments of the OMAFRA - U of G Partnership	
	Metric	Outcomes and PIs outlined for OA4, 5 and 6 will be assessed as part of the overall 5-year evaluation of the Partnership, to be conducted by an external third party.
	Baseline:	PIs OA4, 5 and 6 will be achieved through a study similar to the Deloitte Study – 2007 (U of G / OMAFRA Impact Study), to be conducted in 2012. In the interim, the Deloitte study serves as the baseline.
	Target:	2010-13: Evaluation plan for year five to be undertaken and approved in 2009/10, describing content and format of 2012-13 report. Note: OMAFRA-UofG evaluation plan was developed in 2010-11.
	Results (2010/11):	Examples of 2010/11 results that will contribute to OA6: • R10 data: number of media clippings and key stakeholder communications • R9 case study: stakeholder assessment of research outcomes on the industry (to be assessed in 2012-13. • R7a & b data: number of knowledge transfer events and examples of utilization of new knowledge by stakeholders • AHL PIs: Client Satisfaction Survey results • Case studies completed for research, AFL, AHL and Joint IP programs.

AGRICULTURE AND FOOD LABORATORY

Selected Performance Indicators and Accomplishments

Program Objective: Scientific, diagnostic and analytical capacity to detect risks and enable effective response to support the health and well being of the province and its citizens.



Program Performance Reports

Agriculture and Food Laboratory

Performance Indicators

Data collection and establishment of baselines for each Performance Indicator (PI) was completed with the assistance of OMAFRA. The table below summarizes AFL's performance according to the seven PIs in the Agreement. Review and revision of the AFL PIs in 2010/11 resulted in two of the original eight PIs being consolidated. See details in Appendix B)

Key Outcome	Highly qualified & skilled lab personnel & equipment supported by required accreditation. Improved lab and food safety technology & practices.	
Performance Indicator AFL1	Maintain required accreditations, proficiency testing and ISO registration to ensure a continuous quality improvement program is applied to laboratory operations.	
	Metric	Summary reports of accreditation and proficiency reports
	Baseline:	Accreditation to by the ISO/IEC 17025 standard. Individual test method accreditation by recognized bodies e.g. Standards Council of Canada (SCC), Canadian Association for Laboratory Accreditation (CALA). Maintenance of proficiency for individual test methods per program availability.
	Target:	2010 – 2013: Maintenance of accreditation
	Results (2010/11):	LS, including AFL, is accredited by both of Canada's internationally recognized accrediting bodies, Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA) to the ISO/IEC 17025 standard. LS/AFL is accredited by SCC in two program specialty areas, Agriculture Inputs, Food, Animal Health and Plant Protection (PSA-AFAP) and Test Method Development, Evaluation and Non-routine Testing (TMDENRT). In January 2011, University of Guelph, Laboratory Services (LS), including the Agriculture and Food Laboratory (AFL), successfully passed the surveillance audit and maintained our registration to the ISO 9001:2008 standard. No major or minor non-conformances were detected. The 2011 assessment report is available for on-site review.

	As of April 30, 2011. LS has 142 listings on the SCC scope of accreditation, including the 3 listings in TMDENRT. In January 2011, SCC minor scope extension (Oct 10, 2010 application), six tests were added to LS/AFL's SCC scope of accreditation: - CHEM-004 Quantitative detections of soy protein by an enzyme linked immunosorbent assay (ELISA) - CHEM-015 Quantitative detection of hazelnut protein by an enzyme linked immunosorbent assay (ELISA) - CHEM-241 Quantitative detection of sesame protein by an enzyme linked immunosorbent assay (ELISA) - CHEM-002 A multiple approach using LC-MS/MS technology for the quantitation of sulfonamide compounds in raw bovine milk - CHEM-016 A multiple residue approach using LC-MS/MS technology for the quantitation of tetracycline compounds in raw bovine milk - CHEM-003 Quantitative determination of aminoglycosides in tissue using LC-MS/MS In 2010/2011 fiscal year, LS/AFL withdrew accreditation from fourteen inactive tests: - DRUGS-110 PARRALLUX™ Beta-lactam assay; - DRUGS-229 Aminoglycosides in animal tissue by LC-MS/MS - TOXI-068 VICAM AOZ HPLC (Aflatoxin, ochratoxin, zearalenone) – AHL test - FC-CT-302 Moisture in meat and meat products – air oven method - FC-CT-304 Moisture and total solids analysis in foods - FC-CT-306 Total carbohydrate and proximate determination in foods - FC-CT-311 Total vitamin C by HPLC with fluorescence detection - FC-LP-315 Sugar in foods by HPLC - FC-LP-203 Fat in meat and meat products by soxhlet - FC-LP-211 Ash in foods - FC-LP-221 Determination of cholesterol in foods - FC-LP-222 Fat (total, saturated and unsaturated) in foods - FC-PR-109 Crude protein in food and feed products - MID-155 Detection of Listeria in environmental samples using the Soleris instrument LS/AFL is accredited by the Canadian Association for Laboratory Accreditation (CALA) for environmental tests. The CALA scope of accreditation did not change in the 2010/2011 fiscal year. As of April 30, 2011, LS/AFL is accredited by CALA for 16 tests, including 4 licensed tests under the Ontario Safe
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		Drinking Water Act. The accrediting bodies require a biennial assessment of the quality system and tests listed on the scope of accreditation. The next SCC and CALA biennial assessment is scheduled for September 2011. Proficiency Testing In the Food Safety Testing program at the AFL, 110 Proficiency Test (PT) panels were performed. A total of 394 PT results were reported, 98% of which were satisfactory. In the Horticultural and Agricultural Land Use and Environmental Management programs 117 PT results were reported, 95% of which were satisfactory. When a PT result is identified as questionable or unsatisfactory, the problem is investigated, corrective action applied and documented. The goal of the corrective action is to regain satisfactory status.
Key Outcome	Scientific & statistical integrity of routine analytical test data to ensure quality, reliable results.	
Performance Indicator AFL2	Proportion of completed tests that meet quality, sample integrity and service level standards.	
	Metric	Percentage / Level of compliance with service level standards, reported by program, related to: • Turnaround times for screenings and confirmation • Corrected reports • Non conforming samples
	Baseline:	98% compliance met.
	Target:	2010 – 2013: maintain 98% compliance with service level standard
	Results (2010/11):	The Agriculture and Food Laboratory has met or exceeded the requirement: • Turn-around time for test results 99% of the time over the full fiscal year 2010-2011. • Corrected reports - 99 % compliance met (99.9%) • Non-conforming samples – 99% compliance met

Key Outcome	Strong linkages built to ensure effective, timely sharing of information and to communicate violative / actionable test results to stakeholders in a timely manner.	
Performance Indicator AFL3	Tests completed and communicated within specified timeframes required for actionable response.	
	Metric	a) Documented LabTrack reports associated with all non-conformances. b) Level of customer satisfaction with services provided by AFL.
	Baseline:	Service level standard is to continually improve through the process of documenting an reviewing incident report (LabTrack) and associated follow-up and resolution initiatives
	Target:	2010 – 2013: To manage the incidents every year with demonstration of continuous improvements.
	Results (2010/11):	a) 114 Non-Conformance reports were filed during the processing/ testing/ reporting of 25,513 sample sets, excluding the raw milk testing program. Eighty-six (86) of these non-conformance results were attributed to the AFL thereby affecting 0.3% of sample sets submitted. 10/114 incidents resulted from OMAFRA non-conformance, 4/114 incidents were non-conformances resulting from third parties. A total of 74,354 test parameters (excluding raw milk testing program) were performed for OMAFRA in the Schedule F programs. Over 99% of these test parameters reported, met the performance standards of the agreement. Improvements installed over the past year are aimed at eliminating recurrence of specific non-conformances and preventing future ones. Specifically: • IT improvement – providing colour coding of sample status allows lab staff to recognize any sample that requires further work or reporting quickly and easily. This will result in more consistent reporting. • New barcode scanner purchased to mitigate issues with wrinkled labels causing errors in sample identification number sequences. • Institution of “Project Map” document to accompany the IT documents provides a record of the shared understanding of methods and any modifications put in place for OMAFRA

		projects. • Ongoing vigilance to detect human data entry errors prior to reporting. • Revised billing procedure for complex multi-parameter projects for easier tracking of expenses by OMAFRA.
Key Outcome	Ability and capacity to detect and confirm positive test results to provide effective response to food contamination incidents and other serious plant and environmental hazards with severe human health or economic consequence.	
Performance Indicator AFL4	Level of compliance with communication requirements in the lab testing and sampling protocols.	
	Metric	LabTrack reporting of all non-conformances.
	Baseline:	Baseline is service level standard of 98%.
	Target:	2010 – 2013: maintain 98% compliance with service level standard
	Results (2010/11):	Over 99.9% compliance: 9 incidents of non-compliance with the communication requirements established in the lab testing and sampling protocols. 9 incidents affecting 14 of 25,513 sample sets (0.05%). (Excludes raw milk testing samples)
Key Outcome	Capacity and capability to support coordinated and effective emergency management, and the ability and capacity to detect and confirm positive test results to provide effective response to unanticipated / urgent testing requirements and food safety, environmental health and plant health / pest emergencies.	
Performance Indicator AFL5	Effective response to food safety, environmental health and plant health/pest emergencies & unanticipated urgent incidents / requirements in a reasonable timeframe using existing or new methodologies / tests.	
	Metric	Evaluation / case study of AFL's response to, and management of significant / unanticipated / urgent situations / events of environmental, health and plant / pest emergencies including any requirement for the development of new AFL tests / methodologies.
	Baseline:	Case study approach.

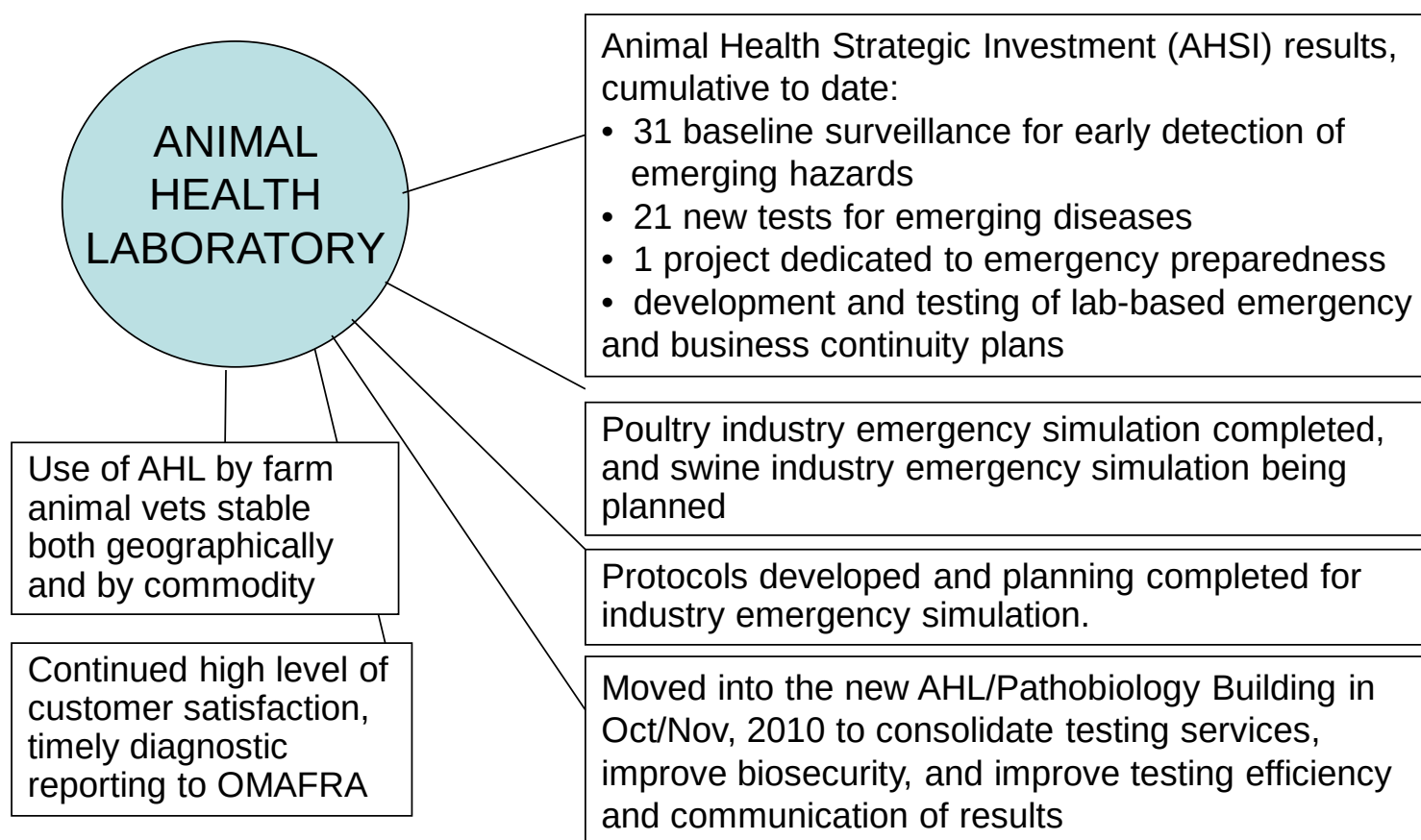
	Target:	Completion of case study.
	Results (2010/11):	There has been no incident in 2010/11 requiring a case study
Key Outcome	Ability to detect contamination of the food supply and other testing projects through the implementation of statistically valid sampling plans and ensure the cost effective use of available resources.	
Performance Indicator AFL6	Level of compliance with sampling schedule as described in the annual sampling and testing plan agreements and documented in year changes.	
	Metric	Percentage compliance with annual Testing and Sampling plans, by program (Schedule F).
	Baseline:	Baseline is service level standard of 98%.
	Target:	2010 – 2013: maintain 98% compliance with service level standard
	Results (2010/11):	The AFL tested 99.9% of all samples for the full list of requested parameters. The total sampling plan for Schedule F (excluding raw milk testing program contract) required testing of 24,562 test samples: Meat Program – 12,975 individual analytical samples Foods of Plant Origin – 3,850 individual analytical samples Dairy Food Safety Program – 7,107 individual analytical samples excluding raw milk testing program contract samples Agriculture Development and Environment Management Programs – 630 individual analytical samples. As indicated in the OMAFRA Sample Reconciliation Report for 2010-2011 fiscal year, the AFL received and tested 25,513 samples, exceeding OMAFRA's original requirement by 951 samples.

Key Outcome	Improved U of G research through laboratory-based expertise.	
Performance Indicator AFL7	Contribution of AFL or University personnel or students to articles and final project reports presented or published.	
	Metric (a)	Total number of publications in peer reviewed journals and/or final project reports presented, related to OMAFRA strategic research themes.
	Baseline:	There is no existing baseline. Producing more publications year over year does not provide an accurate measure of performance. Continuous improvement and measuring beneficial impacts of contributions is more in line with the intent of this measure
	Target:	Demonstration of continued contribution by the AFL; year-to-year fluctuation expected.
	Results (2010/11):	Nine (9) publications in peer reviewed journals and seven (7) research grant awards, one (1) final report, one (1) annual report and one (1) popular press article for two (2) of the research projects were submitted to OMAFRA. Post Doctoral Fellows trained under OMAFRA, OCE and MITACS research grants: 4 Masters students trained under FSQA program of Department of Food Science, University of Guelph: 2
	Metric (b)	Summary of knowledge transfer events re new practices, including number of attendees.
	Baseline:	There is no existing baseline. Conducting more events year over year does not provide an accurate measure of performance. Continuous improvement and measuring beneficial impacts of contributions is more in line with the intent of this measure.
	Target:	Demonstration of continued contribution by the AFL to knowledge transfer.
	Results (2010/11):	Sixteen (16) knowledge transfer events: twelve (12) oral presentations (50 – 150 attendees), four (4) poster presentations at scientific conferences (100-1,000 attendees)

ANIMAL HEALTH LABORATORY

Selected Performance Indicators and Accomplishments

Program Objective: Surveillance, method development and emergency response and surge capacity in place to support Ontario's animal health system and the health and well being of the province and its citizens



Animal Health Laboratory

Performance Indicators

Data collection and establishment of baselines for each PI was completed by the end of August, 2009, with the assistance of OMAFRA. The table below summarizes AHL's 2010/11 performance according to the 9 PIs in the Agreement. To the extent possible, data collection and analysis was used to develop numeric performance metrics. While most of these PIs have supporting documentation, some include narratives, which provide additional information and perspective on the PI results. This supporting documentation is available upon request.

Key Outcome	Contributes effectively to developing and implementing an animal health strategy for Ontario/Canada	
Performance Indicator AHL1	Participation in and contribution of surveillance information to relevant national and provincial bodies or committees that inform Federal/Provincial animal health strategies	
	Metric:	a) The number of faculty and/or staff participating on federal/provincial animal health strategy committees (Note: this metric was reported but no target was generated for it, as new metric c) was felt to be more meaningful.) b) Level of customer satisfaction with services provided by AHL Program, by commodity (Note: this portion of the metric was consolidated into AHL4, which addresses customer satisfaction.) c) Percentage of available working time spent participating on federal/provincial animal health strategy committees (Note: this metric was added, as it was felt that it was a more meaningful measure than strictly the number of staff participating.)
	Baseline:	All 17 AHL vets/supervisors participated on federal and/or provincial animal health strategy committees and 13 attended meetings or conferences for these committees in 2008/09. *Average per staff member = 2.4% of available working time
	Target:	2010-2013: 1.5% – 3.0 % of available working time
	Results (2010/11):	11 of 17 AHL vets/supervisors participated in 79 meetings of 14 international and national organizations (total 421 hrs). 12 of 17 AHL vets/supervisors participated in 111 meetings of 18 provincial organizations (total 418 hrs).

		In total, all 17 AHL vets/supervisors participated on federal and/or provincial animal health strategy committees and 14 attended meetings or conferences for these committees in 2010/11. Average per staff member: 49 meeting hours per year spent on relevant committees, equivalent to 2.8% of available working time. * The baseline value presented this year is 2.4% vs. 2.3% as in previous years. This is a result of revising the total possible working hours to include 50 weeks/year vs. 52 weeks/year, to account for at least 2 weeks vacation.
		This PI is supported by a table (compiled annually) of AHL staff participation in national and provincial committees and scientific meetings. The table also includes information regarding AHL staff holding officer roles in these organizations. One international organization is included (AAVLD, staff with committee roles ONLY), as participating in this capacity contributes to international and thus, national policy. As requested, this tabulation has otherwise been limited to national and provincial bodies or committees to which AHL veterinary staff members belong. Many AHL staff are also members of various international organizations and local organizations, which have not been included. Participation in the large number of provincial and national veterinary organizations provides an opportunity to interact with both private practitioner colleagues as well as industry, and brings a laboratory perspective on issues of the day that impact or informs policy development. Participation in the Canadian Animal Health Surveillance Network (CAHSN) has been most useful in helping to train and equip the AHL staff to deal with a foreign animal disease at an enhanced level of preparedness – also a key feature of the new OMAFRA - U of G Agreement. As core members of the Ontario Animal Health Surveillance Network (OAHSN), the AHL and OMAFRA exchange and integrate information from many sources so that OAHSN serves as a cornerstone of the larger Ontario Animal Health System and related public health. The U of G (AHL and Pathobiology) is hosting the 10th annual meeting of the Canadian Animal Health Laboratorians Network (CAHLN), June 5-8, 2011, with cross-Canada representation from provincial, university and federal laboratories – chair of the organizing committee, Grant Maxie. Other annual meetings being held concurrently will be those of the Canadian Association of Veterinary Pathologists (CAVP), the Canadian Association of Poultry Veterinarians (CAPV), CAHSN (see above), and the TSE Lab Network.

Key Outcome	Acts as a critical resource effectively contributing to animal health policy development and in ongoing program delivery for OMAFRA	
Performance Indicator AHL2	Case mix reflects the diversity of endemic disease by animal species and geographic distribution of farms across the province	
	Metric:	a) Occurrence of specific endemic diseases identified through laboratory testing, reported by geographic area & commodity b) Occurrence of specific endemic diseases (by geographic area & commodity) identified through laboratory testing compared to targeted studies.
	Baseline:	Establishment of baseline is dependent on new capabilities potentially supported under the Animal Health Act, 2009.
	Target:	Establishment of target dependent on Animal Health Act, 2009.
	Results (2010/11):	Dependent on new capabilities potentially supported under the Animal Health Act, 2009.
Key Outcome	Acts as a critical resource effectively contributing to animal health policy development and in ongoing program delivery for OMAFRA	
Performance Indicator AHL3	Proportion of farm animal veterinary practices using AHL services by geographic area across the province	
	Metric:	Percentage of veterinarians accessing/utilizing laboratory services, by commodity and geographic area.
	Baseline:	<u>By Commodity:</u> Equine (EQ): 70% Food Animal (FA): 73% <u>By Geographic Area:</u> North Area Code 705: 69% Area Code 807: 17% East Area Code 613: 78% Average: 64%

		Central Area Code 416: 60% Area Code 905: 58% } Average: 59% West Area Code 519: 66%
	Target:	2010-2013: ≥ 65% for each commodity; ≥ 60% for each region
	Results (2010/11):	<u>By Commodity</u> Equine: Proportion of EQ accredited facilities submitting EQ samples to the AHL = 181/266 (68%) Numerator: total number of accredited facilities with EQ submissions (whether or not they are identified as EQ accredited facilities in the CVO database) Denominator: total number of Ontario accredited facilities identified as EQ in the CVO database + all other accredited facilities which have submitted EQ samples to the AHL Food Animal (FA): Proportion of FA accredited facilities submitting FA samples to the AHL = 173/252 (69%) Numerator: total number of accredited facilities with FA submissions (whether or not they are identified as FA accredited facilities in the CVO database) Denominator: total number of Ontario accredited facilities identified as FA in the CVO database + all other accredited facilities which have submitted FA samples to the AHL <u>By Geographic Area (Area Code)</u> Proportion of EQ & FA accredited facilities in each area submitting EQ and/or FA samples to the AHL: Numerator: total number of accredited facilities with EQ and/or FA submissions (whether or not they are identified as EQ or FA accredited facilities in the CVO database) Denominator: total number of Ontario accredited facilities identified as EQ or FA in the CVO database + all other accredited facilities which have submitted EQ and/or FA samples to the AHL North Area Code 705 = 38/55 (69%) Area Code 807 = 1/6 (17%) } (Average: 64%)

		East Area Code 613 = 43/60 (72%) Central Area Code 416 = 3/10 (30%) Area Code 905 = 50/90 (56%) } (Average: 53%) West Area Code 519 = 123/187 (66%)
		Commodity (Equine and Food Animal) analysis is based on all Ontario accredited facilities identified as EQ or FA (respectively) in the CVO database, plus all other clinics which have submitted EQ or FA samples (respectively) to the AHL. Note: On the surface, the commodity analysis is misleading, as in actual fact, the AHL services a much higher percentage of FA practices in Ontario than is reported here, i.e., should be close to 100%. The root of the difference between the reported percentage and the actual percentage is a result of the fact that many companion animal clinics hold food animal certifications for the purposes of dispensing medication but do little to no actual work with food animals. As a result, the denominator is artificially large with a resulting lower percentage. Note: This data will be analyzed in detail during the 2011/12 fiscal year to establish a method of calculation that will more accurately reflect the actual FA clinic usage of the AHL. Geographic analysis is based on all Ontario accredited facilities identified as EQ and/or FA in the CVO database, plus all other clinics which have submitted EQ or FA samples to the AHL, and is presented by region, using telephone area code.
Key Outcome	A key node within a formal network of animal health professionals, providing a critical link to the North American flow of diagnostic information for surveillance and risk assessment	
Performance Indicator AHL4	Timely communication of relevant changes in the patterns of existing disease or the appearance of new disease to veterinary practices, producers and industry groups	
	Metric:	Level of customer satisfaction with services provided by AHL program, by commodity.
	Baseline:	Client Satisfaction: 93% satisfaction rating

	Target:	2010-2013: ≥ 90 % satisfaction rating
	Results (2010/11):	<i>Question 12: Communication of relevant changes in disease occurrences is timely.</i> 94% clients responding to this survey question were satisfied with the timeliness of communication of relevant changes in disease occurrences. Analysis of results from yearly AHL client satisfaction survey question 12. Based on the above question, clients were asked to rate the AHL numerically between 5 (for Always) to 1 (for Never). Satisfaction rating compares the favourable responses (3, 4, 5) to the total number of clients responding. According to the 2010 AHL Client Survey responses it is evident that most clients are satisfied.

Key Outcome	Early detection and effective response to foreign animal diseases and other serious diseases with human/animal health or economic consequences	
Performance Indicator AHL5	Effective and timely diagnosis, support and reporting of diagnostic results to OMAFRA, in the investigation and response to suspected foreign animal and other serious human/animal diseases	
	Metric:	a) Evaluation/case study of AHL response to “*significant animal health events” such as suspected foreign animal and other serious human/animal disease (*) as defined by OMAFRA b) Utilization of AHL lab by third-party sources (Note: reporting on this metric will be very general to ensure client confidentiality and market competitiveness and no target will be set.)
	Baseline:	OMAFRA satisfaction of AHL detection and response in case studies.
	Target:	2010-2013: satisfactory handling of all cases by AHL
	Results (2010/11):	The AHL selected three cases from their 2010/11 case work, with potential significance to animal health. The three cases were: 1) Infectious laryngotracheitis (ILT) virus in small exhibition flock. 2) Suspected bovine tuberculosis. 3) H3N2 Influenza A virus in a turkey farm. Evaluation of the three AHL case studies found that each had been handled effectively according to the established criteria. The AHL was used by approximately 78 third-party sources (excluding OMAFRA and Ontario veterinary clinics), including 1 federal ministry, 1 Ontario ministry, and approximately 76 other private organizations including other diagnostic laboratories, large FA producers, genetic and cell line companies, feed companies, shipping companies, Canadian universities, Canadian hospitals and more. OMAFRA experts evaluated the case studies to assess AHL performance vs. standard criteria: timeliness, effective diagnosis, efficient communication and reporting of test results to the client and OMAFRA, follow-up actions required and final resolution of the case. This may highlight deviations which once identified will support continuous improvement at the AHL.

The OMAFRA evaluations are excerpted below:

Case 1 - infectious laryngotracheitis (ILT):

“This case was handled very professionally and all necessary communications went very well. The owner of the birds was very cooperative and eager to get information. AHL did a reasonably good job to communicate results to OMAFRA on a timely manner and also to get the owner of birds connected to the OMAFRA poultry veterinarian. This mainly depends on the level of cooperation we tend to receive from the owners which varies from one case to another. In this instance all stages went as it should happen in all circumstances.”

Case 2 - suspected bovine tuberculosis:

For the presumptive bovine tuberculosis the OMAFRA reviewer had the following specific comments:

“As requested, I have checked AHL case # 10-102587 concerning suspected bovine tuberculosis from a sample submitted through OMAFRA meat inspection. To check the case I retrieved the case-record in WEBI, and I spoke directly with Dr. Ab Rehmtulla of OMAFRA meat inspection about the case.

AHL’s laboratory work-up, personal follow-up, case-coordination and e-mail communications were timely and thorough with OMAFRA Meat Inspection, Animal Health, and the Canadian Food Inspection Agency (CFIA).

This was an unusual case in a calf that ultimately proved to involve *Mycobacterium non-chromogenicium* and *M. szulgai*. It was important to rule out *M. bovis* and *M. tuberculosis* which are of zoonotic concern and *M. paratuberculosis* which would be of animal health concern to the owner.

In short, both OMAFRA Meat Inspection and Animal Health & Welfare are completely satisfied with the way AHL handled this unusual case.”

Case 3 - H3N2 in turkeys:

“In a timely manner (same day that samples were submitted) the AHL tested the samples and established that the samples were positive for AIV, but negative for both the H5 or H7 subtypes. By the next day the samples were identified as the H3 subtype. This same day or next day turnaround in testing provides the greatest chance of early detection and control of an outbreak of disease.

	The ultimate diagnosis for this case was H3N2 even though the N2 subtype was not able to be determined. Further, the virus could not be isolated from embryonated eggs. Without confirmation of the N2 subtype, the reporting of the diagnosis for this case should have remained at AIV positive -H3 subtype. Statement 3.7 indicates that whole genome sequencing was performed at NCFAD however no results or date for these results were provided. The final resolution from the AHL was this case was link to the transmission of the H3N2 virus from pigs to the turkeys. While biologically plausible, no factors (eg proximity to swine, case history, etc.) were included in this case study to warrant this statement. In a potential serious disease outbreak and without proper justification, these types of statements can be misconstrued and have a detrimental impact on an industry. The AHL followed the appropriate protocols and received client authorization before release of the results to relevant agencies. CFIA and OMAFRA were informed quickly of the positive AIV results (same day of sample submission). In the event of a significant animal health event this timely notification would assist the early implementation of control measures. No data was provided in this case study to allow for comment on the monitoring or surveillance for AIV or other poultry diseases by the AHL.” The three cases reported and reviewed serve their purpose as Performance Indicators and are accurate and complete descriptions. Each complete case description and narrative prepared by the AHL (along with the case evaluations by OMAFRA staff) is available upon request.
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Key Outcome	Diagnostics/tests meet best practice standards	
Performance Indicator AHL6	The University maintains appropriate accreditations at the Animal Health Laboratory, but not limited to AAVLD, CFIA and ISO registration	
	Metric:	a) Review of accreditation reports in order to assess performance and maintenance of accreditation b) Review of client satisfaction survey in order to assess performance c) Review of actual adherence to published turnaround times (TATs) d) Review of proficiency testing results to assess performance (Note: metrics b, c and d were added since client satisfaction, adherence to published TATs, and proficiency testing results are taken into consideration during accreditation and have a bearing on best practices)
	Baseline(a):	2008-2009 AHL accreditations & certifications
	Target:	2010-2013: Maintenance of accreditations & certifications
	Results (2010/11):	The University maintains appropriate accreditations at the Animal Health Laboratory (AHL), including the American Association of Veterinary Laboratory Diagnosticians (AAVLD), CFIA, and ISO 9001 registration. ISO 9001 registration The ISO 9001 quality management system assessment follows a three year cycle. Every three years, there is a recertification audit covering all components of the ISO 9001 standard. In the intervening years, there are ongoing surveillance audits covering selected sections of the standard. In January 2011, University of Guelph, Laboratory Services Division (LSD), including the Animal Health Laboratory (AHL), successfully passed the surveillance audit and maintained our registration to the ISO 9001:2008 standard. No major or minor non-conformances were detected. The 2011 assessment report is available for on-site review. The next recertification audit is scheduled for January 2012. BSI Management Systems is Laboratory Services' ISO 9001 assessor. American Association of Veterinary Laboratory Diagnosticians (AAVLD) accreditation AHL is accredited by AAVLD, meeting AAVLD accreditation requirements for full accreditation, all species. For 2010/11 the AHL maintained AAVLD accreditation. The AAVLD accreditation follows

	a five year cycle; the last AAVLD accreditation audit was in 2009 and the next AAVLD site visit will be in 2014. The January 2011 update to the Accreditation Committee on the move to the new building was accepted. ISO/IEC 17025 accreditation LSD, including AHL, is accredited by both of Canada's internationally recognized accrediting bodies, the Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA) to the ISO/IEC 17025 standard, for specific tests listed on our scopes of accreditation. LSD /AHL is accredited by SCC in the program specialty area (PSA): Agriculture Inputs, Food, Animal Health and Plant Protection (AFAP). In May 2010, LS had 147 tests in AFAP PSA including 11 tests performed by AHL. In the 2010/11 fiscal year, there were several changes to the SCC scope of accreditation. AHL withdrew accreditation from one inactive test, TOXI-068 VICAM AOZ HPLC (Aflatoxin, ochratoxin, zearalenone), and applied for accreditation of seven virology tests: 1. MOL-196 PRRSV Tetracore NA-EU real-time RT-PCR 2. MOL-206 Swine influenza virus matrix real-time RT-PCR 3. MMV-214 Bovine viral diarrhea virus antigen ELISA 4. MMV-310 TGEV-Ab and & PRCV-Ab ELISA differentiating test kit 5. MMV-334 Indirect fluorescent antibody assay (IFA) for the detection of IgM or IgG antibodies against <i>Porcine reproductive and respiratory syndrome virus</i> (PRRSV) 6. MMV-342 General procedure for hemagglutination inhibition (nested method – appendix 16.3, 16.4, 16.8 and 16.10) a. MMV-342 A16.8 Swine influenza virus – A/H3N2/swine/Texas/4199-2/98 HI (si3t) b. MMV-342 A16.10 Swine influenza virus – A/H1N1/swine/Ontario/81 HI (sif) or A/H3N2/human/Colorado/77/HI (si3) 7. MMV-345 PRRSV X3 & SIV (H1N1 and H3N2) antibody ELISA test kit. The AHL virology was audited by the SCC technical assessor in February 2011. All assessment findings have been resolved. We are waiting for official confirmation of test accreditation. LSD/AHL is accredited by CALA for environmental testing. As of April 30, 2011, LSD had 16 environmental listings on the CALA scope of accreditation including 4 tests performed by AHL (SNL/TOXI). The accrediting bodies require a biennial assessment of the quality system and tests listed on the
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		scope of accreditation. The next SCC and CALA biennial assessment is scheduled for September 2011.						
		Canadian Food Inspection Agency (CFIA) accreditation AHL is accredited by the CFIA – Retrovirology Centre for Expertise for, Equine Infectious Anemia (EIA). In 2010/11 AHL maintained EIA accreditation; the next EIA assessment will be in 2012.						
	Baseline / Target / Results(b/c)	<table border="1"> <thead> <tr> <th>Target 2010-2013</th><th>Baseline 2008/09</th><th>Results 2009/10</th></tr> </thead> <tbody> <tr> <td>≥ 90% satisfaction rating</td><td>96% satisfaction rating</td><td>99% satisfaction rating</td></tr> </tbody> </table>	Target 2010-2013	Baseline 2008/09	Results 2009/10	≥ 90% satisfaction rating	96% satisfaction rating	99% satisfaction rating
Target 2010-2013	Baseline 2008/09	Results 2009/10						
≥ 90% satisfaction rating	96% satisfaction rating	99% satisfaction rating						
	Results (2010/11):	<i>Question 1:</i> Employees respond in a timely manner <i>Question 4:</i> Published turn-around times are met 96 of 99 (97%) clients responding to the 2010 survey were satisfied with the timeliness of employee response, and 93 of 97 (96%) clients responding to the 2010 survey were satisfied that published turn-around times were met. The actual adherence to published turnaround times was 97.1%, excluding the Avian Immunology and Virology (AIV) lab section (including the AIV Lab, the result drops to 58.2%). Turnaround time is one of the most critical measures of a laboratory's effectiveness and efficiency. Customer loyalty is often based on this one aspect of service. Given that there are a large number of tests and services provided, it is often a challenge to maintain TAT and manage clients' expectations. The AHL has done this by proactively measuring and analyzing their TAT performance to identify areas needing continuous improvement. A component of the AHL's AAVLD accreditation is an analysis of the adherence to quoted TAT expectations as published in the AHL User's Guide and Fee Schedule. Based on reporting of test results, data and TATs, clients were asked to rate the comments above numerically between 5 (for Always) to 1 (for Never). Satisfaction rating compares the favourable responses (3, 4, 5) to the total number of clients responding to the relevant survey question. Several people indicated overall satisfaction with the AHL based on the 2010 AHL Client Survey (e.g., <i>"Excellent Service, excellent communication, prices reasonable for most of tests. Please</i>						

		<i>continue with your excellent service in the future.”)</i> Some clients did, however, bring forward specific concerns and requests for service improvements, (e.g., <i>“The main concerns expressed from clinicians in the Small Animal Clinic concern: 1) No histo processing of samples on Friday afternoons/week-ends -- this is a major concern; 2) Delay of transfer time from specimen reception to appropriate lab - perhaps this will improve in new building; 3) timely reading of cytology samples.”</i> and <i>“(Daily specimen pickup rather than relying on Purolator overnight courier. Great lab results - very happy.)</i> The actual adherence to published turnaround times (TAT) for 2010/11 was reported excluding the Avian Immunology and Virology (AIV) lab section. This lab section was excluded as there were several factors causing the TAT statistics to be artificially low (45.4%). In turn, since AIV constitutes the vast majority of all procedures conducted at AHL (496,471 of 660,580 procedures run), the poor TAT statistics for AIV was causing the overall AHL TAT to be low. There were 2 main factors causing poor TAT statistics in AIV: 1) a reporting delay for 2 procedures (not an actual testing delay), accounting for 102,256 of 145,208 individual procedures not meeting TAT. The process has now been changed to ensure results are reported as soon as they are available. 2) 3 procedures which had to suddenly be switched from a plate test to an ELISA test, causing significant backlogs as the new procedures were introduced (total of 6 procedures affected; 3 old and 3 new), and accounting for 156,311 of 225,231 individual procedures not meeting TAT. These new tests are now running smoothly. Without these 8 procedures, the Overall TAT compliance for AIV is 90%, and the overall AHL TAT compliance is 94%. A detailed explanation of the AIV TAT statistics is available upon request.
	Baseline(d):	Performance on Proficiency Test Panels : Biological Panels: 98% pass rate Chemistry Panels: 95% satisfactory 3% questionable 2% unsatisfactory
	Target:	<u>Biological Panels:</u> 2009-2013: ≥ 95% pass rate <u>Chemistry Panels:</u>

		2009-2013: ≥ 95% satisfactory rating
	Results (2010/11):	In 2010/11 the biological sections of AHL (Avian Virology and Immunology, Bacteriology, Parasitology, Histology, and Mammalian Virology), participated in 22 PT programs. The AHL reported 154 biological PT results or panels and the results are summarized below: 1. Acceptable – 95% 2. Questionable – 4.5% 3. Unacceptable – 0.5% Pass Rate: 99.5% In 2010/2011 the chemical sections of AHL, Clinical Pathology and Toxicology/ Soil & Nutrient, participated in 25 PT programs. The AHL reported 2047 chemical PT results and the results are summarized below: 1. Acceptable - 89% 2. Questionable - 6% 3. Unacceptable - 5% Satisfaction Rating: 95% AHL participated in a total of 47 proficiency test programs in 2010/11. PT programs can be divided into 2 main categories: 1. Biological programs – a panel of samples are tested, or identification agrees with consensus ID and results are usually pass/fail. 2. Chemical programs which produce numerical results and the results are usually categorized as satisfactory, questionable and unsatisfactory. Satisfaction rating is calculated based on acceptable and questionable results compared to the total results reported. When a PT result is identified as questionable or unacceptable, the problem was investigated, corrective action applied and documented. Summaries of biological and chemical PT results are available for onsite review.
Key Outcome	Capacity and capability in place to provide coordinated and effective emergency management	
Performance	The University maintains an appropriate range of diagnostic specialties, anatomic pathology services and other	

Indicator AHL7	technologies						
	<table border="1"> <tr> <td data-bbox="411 269 590 326">Metric:</td><td data-bbox="590 269 1896 326">Level of customer satisfaction with services provided by AHL program, by commodity</td></tr> <tr> <td data-bbox="411 326 590 383">Baseline:</td><td data-bbox="590 326 1896 383">AHL Client Satisfaction: 98% satisfaction rating</td></tr> <tr> <td data-bbox="411 383 590 435">Target:</td><td data-bbox="590 383 1896 435">2010-2013: ≥ 90% satisfaction rating</td></tr> </table>	Metric:	Level of customer satisfaction with services provided by AHL program, by commodity	Baseline:	AHL Client Satisfaction: 98% satisfaction rating	Target:	2010-2013: ≥ 90% satisfaction rating
Metric:	Level of customer satisfaction with services provided by AHL program, by commodity						
Baseline:	AHL Client Satisfaction: 98% satisfaction rating						
Target:	2010-2013: ≥ 90% satisfaction rating						
	Results (2010/11): <i>Question 5: Telephone enquiries are handled well.</i> 87% of respondents were delighted or pleased with this category while another 9% described it as adequate (overall satisfaction rating of 96%). <i>Question 6: Email enquiries are handled well.</i> 89% of respondents were delighted or pleased with this category while another 8% described it as adequate (overall satisfaction rating of 97%). <i>Question 8: Test results assist in problem solving.</i> 89% of respondents were delighted or pleased with this category while another 8% described it as adequate (overall satisfaction rating of 97%). <i>Question 13: The services provided by AHL meet my organization's needs</i> 86% of clients were delighted or pleased with the services while 10% described them as adequate (overall satisfaction rating of 96%). <i>Question 15: What has been your average overall level of satisfaction with service from the AHL?</i> 88% of clients were delighted or pleased with the services while 11% described them as adequate (overall satisfaction rating of 99%). <i>Question 17: Will you continue to use the services of the AHL?</i> <i>Question 18: Would you recommend the AHL to others?</i> 97% of clients responded YES to the above two questions. Overall, the average satisfaction rating for the above questions was 97%. Client responses (as above) show an across-the-board high level of satisfaction with AHL services; however, there are still some areas for improvement, some of which were identified by clients in Question 29. For example, the following comment contains suggestions for improvement:						

		<i>"1) Ensure that animal ID's appear clearly on reports (often owner name appears where animal ID should be, even when animal ID was submitted) 2) Ensure that quarter ID appears clearly on mastitis reports (often lost on faxed reports) 3) E-mail PDF results directly to submitting veterinarian 4) Volume discounts > 10% for research submissions run at the lab's convenience."</i>
Key Outcome	Impacts associated with animal health incidents minimized	
Performance Indicator AHL8	Emergency response plans are effectively implemented in response to emergency animal health incidents	
	Metric:	a) Evaluation /case study of all AHL responses to significant emergency animal health incidents (Note: As AHL5 is exclusively based on evaluation of 3 case studies regarding AHL response to significant animal health incidents, it was felt that this metric was addressed in AHL5) b) Adherence to the milestones in Schedule G of the OMAFRA - U of G Agreement (Note: it was felt that this PI would be better served by using this new metric.)
	Baseline:	Year 3 Milestone as defined in Schedule G of the Agreement was achieved
	Target:	2010-2013: As defined in Article 4.3 (years 2 to 5 milestones for AHL program) Schedule G of the Agreement
	Results (2010/11):	Several activities involving the AHL occurred in 2010/11 related to emergency preparedness. <u>Poultry Industry Disease Simulation:</u> A Poultry Industry Disease Simulation was commissioned by the Feather Board Command Center (FBCC) in order to test the Ontario poultry industry preparedness and response efficiency in case of a serious disease outbreak. This simulation exercise tested the industry's existing emergency preparedness protocols as well as the inter-organizational coordination and communication effectiveness crucial in case of a serious disease outbreak. The exercise was also designed to test the effectiveness of ARMMI (Agricultural Response Materials Management Inc.) in distributing personal protective equipment (PPE) to farms. A "Lessons learned" report was shared with poultry industry leaders for educational and continuous improvement purposes. The Animal Health Laboratory (AHL) played a significant role in this exercise by coordinating the training sessions on PPE donning/doffing procedures, by training participants on sample collection

		and submission of field samples to the AHL, by testing specimen submission and by reporting diagnostic results. On May 5, 2010, the AHL organized the first PPE donning/doffing and sample collection training sessions led by CFIA officials/trainers for five Ontario private poultry veterinarians and staff from the four feather boards. An additional practice session for PPE donning/doffing was held on June 1, 2010. During the week of June 7-11, 2010, 120 oropharyngeal and cloacal swabs were collected on each of 8 farms following CFIA sampling procedures. These mock samples were placed in 15 mL conical tubes and pooled samples were transferred to pre-scanned vials. These samples were delivered to the AHL on June 11, 14 and 15 and the initial reports diagnosing the mock outbreak were issued on June 14, 15 and 16 respectively. Based on the experience gained from this exercise, the laboratory found a number of areas in which improvements can be made as follows: 1) The AHL submission forms accompanying samples must contain as many details as possible, with particular emphasis on veterinarian/owner information, billing address, breed and farm population. 2) Detailed hands-on training should take place with respect to sample collection and pooling procedures. 3) All tubes received should be entered into the Laboratory Information Management System (LIMS) individually rather than as a group of samples. 4) Swabs should be provided in bulk to the samplers and not be individually wrapped. 5) Three people are needed for smooth sample collection in a barn. 6) Tables should be available for placing the birds and vials during sampling. 7) A detailed explanation of the entire sampling process will be given to all samplers to ensure that they understand the proper procedure. 8) Logistical details of the sampling process (e.g., completed labels) must be carried out prior to entry into the animal housing area. 9) Proper labelling of all samples must be carried out.
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		<u>Notification Drill:</u> On Tuesday, August 31, 2010, AHL and OMAFRA conducted an Emergency Response Planning (ERP) Notification Exercise in University of Guelph Building 49. The requirement for this exercise is outlined in the OMAFRA - U of G Agreement for the period of April 1, 2008 - March 31, 2018. This exercise tested the response capabilities that included rapid and accurate notification/communication, command and control responsibilities. Although AHL senior management was informed that an ERP exercise would be conducted, they did not know when it would occur or who would initiate it, to ensure as realistic a scenario as possible. The drill did not include summer students or part-time personnel. The exercise plot was as follows: A sample was shipped in error to the AHL for testing. The sample arrived at the AHL Specimen Reception on Monday, August 30, 2010, was logged into the LIMS and forwarded for testing. As of August 31, 2010, the sample resided within an AHL lab to await testing. Before the sample was tested, an AHL employee received an emergency communication from the Public Health Agency of Canada explaining the following details: this sample has been shipped to AHL in error and should have been shipped to the National Microbiology Lab in Winnipeg; the sample was collected under the Human Pathogens and Toxins Act by authorities working within the antiterrorism unit of Health Canada; the sample was suspected to qualify as a Risk Group 4 human pathogen. No actual evacuation of the facility would be required. A representative from OMAFRA initiated the notification drill at 10 am on August 31, 2010. The AHL's Client Services Technician was informed about the nature of the "emergency"; the technician then informed her supervisor (the Client Services Veterinarian) about the emergency exercise. The Client Services Veterinarian informed the AHL director, administration and lab supervisors who in turn informed the remaining AHL personnel throughout buildings 46 and 49 at the University of Guelph. The lab supervisors reported back to the AHL Director and the Client Services Veterinarian. The AHL completed the notification exercise in 57 minutes. Of the staff on duty, 70% reported back immediately (1-15 min), 29% responded within 15-30 min from the start of the notification and 1% of the staff needed more than 30 minutes to confirm the notification. The only comment coming out of the exercise was that the lack of a defined scenario caused confusion among some AHL employees.
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		<u>Swine Disease Outbreak Simulation, 2011:</u> Planning began in January, 2011 for an OSHAB-coordinated swine disease outbreak simulation. a. Swine Disease Outbreak Tabletop Exercise: On April 11, 2011, the AHL Director and the Client Services Veterinarian attended the Ontario Pork Industry Council (OPIC) annual meeting at which a tabletop exercise was conducted to simulate a foreign animal disease (FAD) outbreak. The facilitator divided the participants into groups, each responsible for a different area or business within the swine industry. Groups represented included a sow barn, a nursery barn, a finishing barn, a veterinary clinic, a trucking business, a meat packing plant, OPIC, the OPIC Swine Health Advisory Board (OSHAB) and Ontario Pork. The exercise involved an outbreak of a fatal disease in a sow barn, the two farms that received pigs from the sow barn, and the two trucking companies that transported the pigs from the sow barn as well as to the meat packing plant. The various groups had to determine what course of action they would take at various stages of the outbreak and were encouraged to consult with the other groups throughout the exercise. In effect, the tabletop exercise intended to compress approximately 7 weeks of activities into 2 hours of discussion. The intent of the exercise was to provide the participants with a better idea of how a disease outbreak might happen over time and to envisage how each group would need to react in such a situation. b. Planning for Swine Disease Outbreak Simulation: The actual swine disease outbreak simulation will occur in September 2011. The purpose of the exercise is to establish and communicate zones (using maps as the zones change as new farms are found), and communication of what producers and service providers need to do, depending on which zone they are in. This will include the development and communication of the zones associated with an Foreign Animal Disease (FAD) event including developing consistent messages to be shared between CFIA, OMAFRA and industry; providing a methodology for partners to have current information about zones; and the required actions including a link to “real-time” maps delineating the zones. This simulation will also target the disease outbreak to a few farms to test the functionality of the farm planner and assess the communication path to service providers and required actions. Participants include CFIA, OMAFRA, OPIC, OLPC and the AHL, as well as several observer groups.
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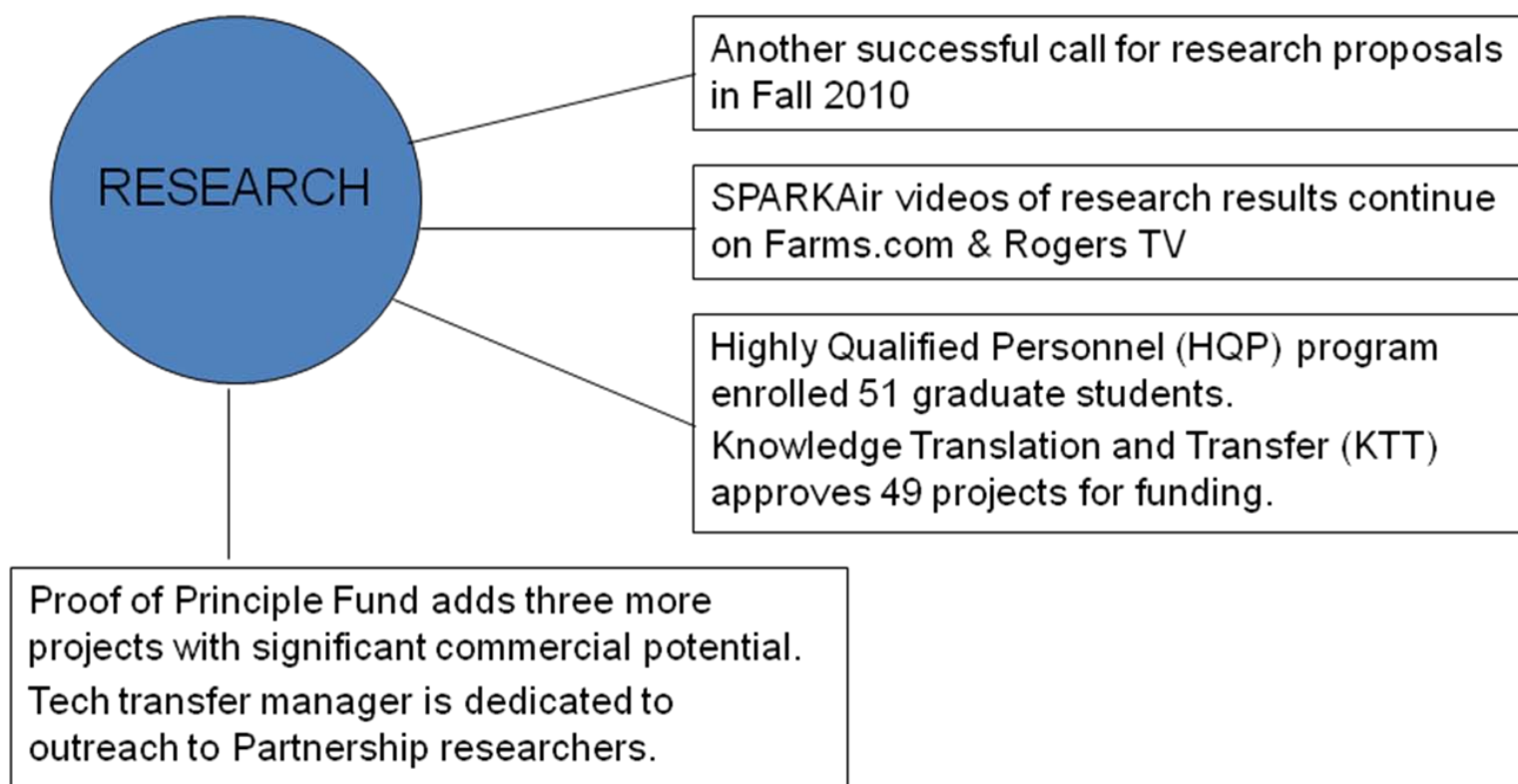
		The AHL will play a role in initiating the exercise with a lab diagnosis of a FAD and will simulate decontamination of the necropsy suite and all contact individuals involved during the simulation. <u>Production of Lab Services Division Essential Level Continuity Plan:</u> Considerable work was done on the Lab Services Division (LSD) Essential Level Continuity Plan (ELCP). An extension was granted for the production of the ELCP into Q1 2011/12. With the conduct of the notification drill and the participation in a full disease outbreak simulation as well as a tabletop exercise of a disease outbreak, the Year 3 Milestones as defined in Schedule G of the Agreement were achieved (with the exception of the completed enhanced ELCP).
Key Outcome	Laboratory expertise and advice on animal health issues available to veterinary and stakeholder organizations	
Performance Indicator AHL9	Effectiveness of knowledge transfer and consultations provided to veterinary practices and other stakeholders	
	Metric:	Level of customer satisfaction with services provided by AHL program, by commodity
	Baseline:	AHL Client Satisfaction: 90% satisfaction rating
	Target:	2010-2013: ≥ 85 % satisfaction rating
	Results (2010/11):	<i>Question 14: Animal Health Lab uses AHL Newsletters, LabNotes and our website as well as meeting updates, scientific publications, and personal email and telephone consultation for knowledge transfer to veterinarians.</i> These were ranked in their effectiveness: 5=very effective, 1=not effective. Many clients (55% of survey respondents) are aware of and use the AHL Newsletter, LabNotes and/or the AHL website, with 93% of those respondents finding them effective. Awareness of meeting updates and use of scientific publications was somewhat less (38%), but of those, 95% found them effective. Of all survey respondents, 73% were aware of and make use of personal email and telephone consultation with 95% of those finding these consultations effective. Overall, the satisfaction rating for this question was 94%.

	<i>Question 20: Do you receive sufficient information on testing services that are available from the AHL?</i> 91% of respondents said YES and 9% said NO. Overall, the satisfaction rating for this PI was 92%. Knowledge transfer from the AHL to clients and partners occurs via in-person discussions, newsletters, contributions of scientific articles, and peer-reviewed publications. The 17 veterinarians/supervisors in the AHL are typically involved in numerous conversations with private practitioners daily, concerning individual case details, test selection, test interpretation, and technology updates. AHL staff members also attend practitioner meetings on a regular basis. For example, Dr. Jim Fairles (the AHL Client Services Veterinarian) provides frequent updates to the Ontario Association of Swine Veterinarians (OASV). More broadly, the AHL provides a wealth of information with emphasis on disease trend updates in the quarterly AHL Newsletter, which is distributed widely as well as being posted on the AHL website, and is well regarded. As well, AHL staff occasionally submit contributions to OMAFRA's newsletter, "Ceptor". AHL staff are regular participants at numerous conferences, e.g., the OVMA annual conference, both as exhibitors, and as guest speakers or expert panel members. Dr. Fairles (supported by Ms. Josie Given), actively markets the services of the AHL, and is in regular contact with AHL clients. As a matter of course, the AHL has added many new testing methodologies and tests such as polymerase chain reaction (PCR), gene sequencing, immunohistochemistry (IHC), which are presented in the AHL Newsletter. The AHL also produces a series of "LabNotes" for more in-depth analysis of current topics, e.g., understanding and selecting tests for BVDV. Finally, AHL staff contributes to a number of peer-reviewed scientific publications every year. From the analysis of survey questions related to knowledge transfer effectiveness, there are some areas for potential improvement which should be considered. While in general client responses show a good level of satisfaction in the area of AHL knowledge provision, there remains a significant gap in accessing and using this information by a large proportion of clients. Graphed results provided by the AHL point to the significant opportunity to improve access to scientific information and knowledge transfer.
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RESEARCH PROGRAM

Selected Performance Indicators & Accomplishments

Program Objective: High quality, high impact research results that strengthen Ontario's agriculture, food and bioproducts sectors, and rural communities



Research

Performance Indicators

Data collection and establishment of baselines for each Performance Indicator (PI) was completed by mid September, 2009, with the assistance of OMAFRA. The following table summarizes the Research Program's performance according to the 10 PIs in the Agreement. The majority of the data within this table was collected and summarized from annual and final project reports submitted each year by lead researchers of OMAFRA funded projects. Other information has been provided by OMAFRA, the U of G's Business Development Office and Budget Office.

Key Outcome	Research programs reflect OMAFRA strategic needs, coordinate U of G's capacity and mobilize the province's unique competitive strengths.	
Performance Indicator R1 a)	Comparison of actual versus planned OMAFRA - U of G Research Program spending, in total, and in each of the research theme areas.	
	Metric (a-i)	Annual actual dollars in the OMAFRA - U of G partnership research program spent on research versus planned, in total by research theme.
	Baseline:	Baseline is the allocation of project planned \$ for 2008/09 by theme,
	Target:	2010-13: Ratio of actual to planned dollars spent of 1:1.
	Results (2010/11):	See table below.

Projects Active in 2010/2011

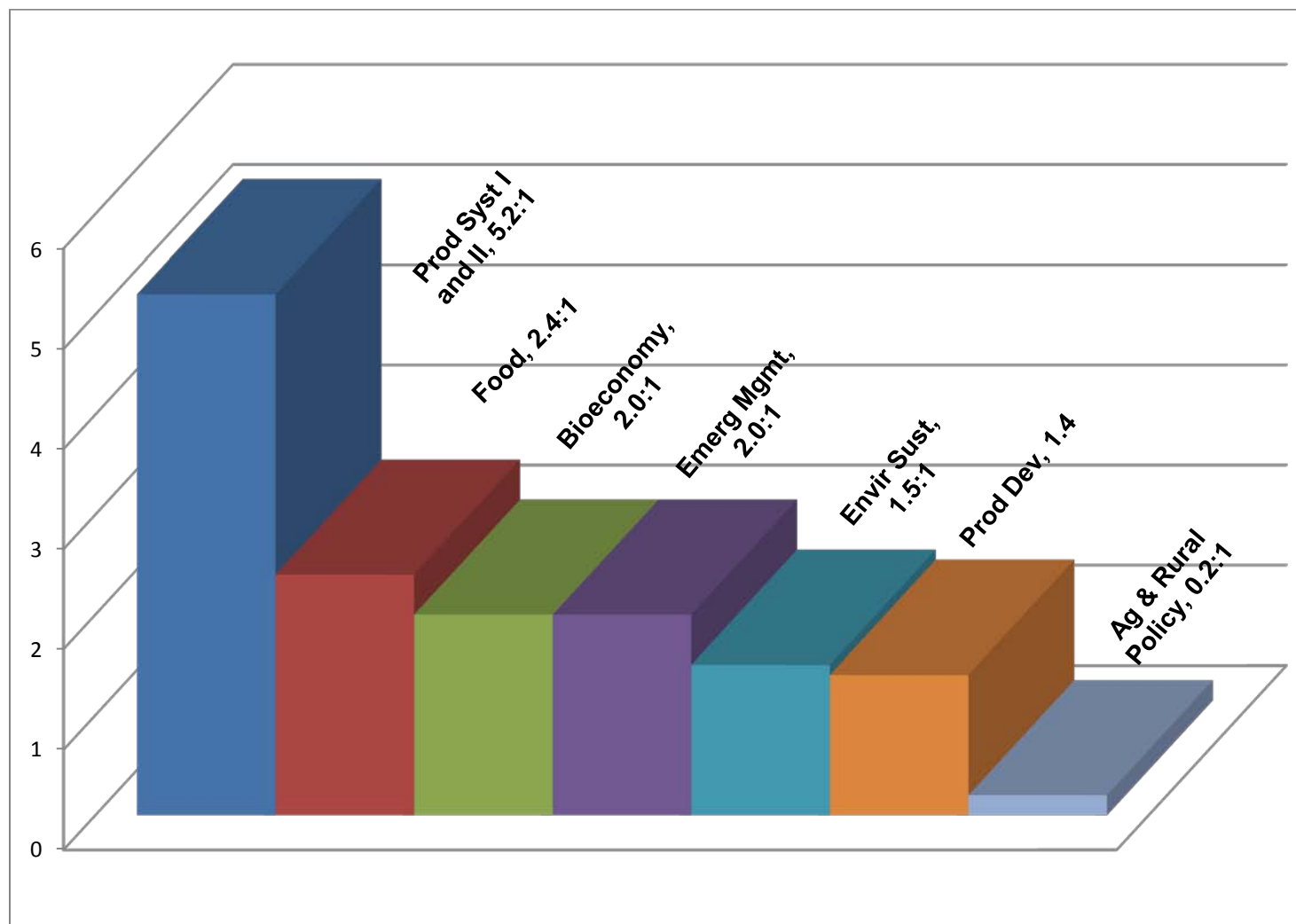
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I and II	Total
Active Projects Commitments: Operating in 10/11	727,911	1,060,506	420,449	1,039,239	1,083,311	666,199	1,987,817	6,985,432
Committed for Future years (11/12; 12/13)	1,108,974	1,379,763	495,192	1,031,869	1,579,417	803,681	2,313,742	8,712,638
Total Committed	1,836,885	2,440,269	915,641	2,071,108	2,662,728	1,469,880	4,301,559	15,698,070
Total Value Projects Funded 08/09 & 09/10	990,790	1,166,341	279,250	1,332,265	925,370	1,192,708	3,903,118	9,789,842
Total Committed to date (May 1/08 – April 30/13)	2,827,675	3,606,610	1,194,891	3,403,373	3,588,098	2,662,588	8,204,677	25,487,912
Planned Dollars 08/09, 09/10 & 10/11	3,200,000	4,000,000	2,000,000	3,000,000	4,000,000	2,700,000	7,200,000	26,100,000
Uncommitted Dollars (< > overcommitted)	372,325	393,390	805,109	<403,373>	411,902	37,412	<1,004,677>	612,088
Faculty Value	684,876	454,465	511,671	1,488,934	1,048,766	467,178	5,353,476	10,009,366
Research technician value	107,139	75,394	83,353	407,127	107,139	134,915	2,486,808	3,401,875
Projects Active in 2011/2012								
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I	Total
Project Commitments: Operating in 11/12	966,365	1,328,460	493,828	954,642	1,565,458	788,670	2,393,174	8,490,597
Committed for Future years (12/13; 13/14)	945,019	1,098,464	514,365	973,004	1,218,873	480,266	2,033,573	7,263,564
Total Committed	1,911,384	2,426,924	1,008,193	1,927,646	2,784,331	1,268,936	4,426,747	15,754,161
Total Committed to date (May 1/08 – April 30/13)	3,630,085	4,653,771	1,707,892	4,299,150	4,793,012	3,127,843	10,317,682	32,529,435
Total Planned Dollars (May 1/08 – April 30/13)	4,000,000	5,000,000	2,500,000	5,000,000	5,000,000	4,500,000	12,000,000	38,000,000
Current Uncommitted Dollars	369,915	346,229	792,108	700,850	206,988	1,372,157	1,682,318	5,470,565

	Metric (a-ii)	Total number of projects funded in each theme area through peer review and advisory committee, compared to the number of letters of intent and proposals received (i.e., level of demand for funding) in each theme area.							
	Baseline:	The number of letters of intent (LOIs) and projects submitted, and projects funded for each of the seven research theme areas in the call of 2008/09.							
	Target:	2010-13: An adequate number of quality research proposals submitted in each research theme area, from which to select projects to be funded in each call for proposals.							
	Results (2010/11):	See table below.							
2010/2011									
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I	Prod Syst II	Total
Number of active projects	21	17	15	30	24	15	51	78	208**
Number of LOIs*	25	20	14	34	36	29	106	0	203*
Number of Proposals*	16	9	9	17	16	14	56	53	190*
Number of Proposals funded**	13	9	9	12	11	7	23	52	125**
* Some LOIs and proposals were reviewed under more than one theme									
** Some proposals were funded under more than one theme									
2011/2012 (Results from Call 2010 for projects to begin May 1, 2011)									
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I	Prod Syst II	Total
Number of active projects	20	15	10	23	20	13	44	60	306**
Number of LOIs*	13	16	20	30	24	18	57	0	178*
Number of Proposals*	7	7	14	19	14	6	30	11	108*
Number of proposals funded**	5	7	12	10	9	4	23	11	81**
* Some LOIs and proposals were reviewed under more than one theme									
** Some proposals were funded under more than one theme									
2009/2010									
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I	Prod Syst Tier II	Total
Number of active projects (incl. continuing from previous Agreement)	19	10	12	19	10	10	38	51	160***
Number of LOIs*	0	0	0	0	0	0	0	0	0
Number of Proposals **	23	13	15	22	18	20	53	17	130**

Number of Proposal funded ***	12	5	11	8	6	6	26	17	65***
* The LOI process was skipped in this call and only proposals were reviewed ** Some proposals were reviewed under more than one theme *** Some proposals were funded under more than one theme									
2008/2009									
Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I	Prod Syst Tier II	Total
Number of active projects (incl. continuing from previous Agreement)	14*	5	2	15	9	5	13	43	92
Number of LOIs** (Last Call)	0	5	Note 1	20	10	Note 1	Note 2		35
Number of Proposals **	10	3		12	6				31
Number of Proposal funded	4	1		10	6				21
* One project was funded by the RPD discretionary fund ** LOIs and proposals that were not funded were re-mapped as follows: RME to Environmental Sustainability, Food to Food for Health, Bioeconomy to Bioeconomy and SRC to Ag and Rural Policy. Note: for SRC only proposals were submitted ie the LOI process was skipped									
Note 1: Emergency Management & Product Development Themes did not exist at the time of the "Last Call" for LOIs.									
Note 2: No Calls for LOIs were issued under Production Systems in 2008/2009.									
Performance Indicator R1 b)	Total external research funding to the University related to OMAFRA's Research Program in aggregate.								
	Metric (b)	Ratio of third-party investment (cash and in-kind) operating funds, leveraged by OMAFRA research program, in total and for each theme area.							
	Baseline:	2008/09: Baselines are shown in the table below.							
	Target:	2010-13: leveraged dollars to OMAFRA funding (in total, and by theme) to be ≥ 2008/09 baselines.							
	Results (2010/11):	Ratio of 2.6:1 third party investment to Agreement funding (ranging from 0.2:1 in Ag & Rural Policy to 5.2:1 in Production Systems). Total amount of third party investment - \$18.5m. Ratio is based on Actual Project Funding of \$6,985,432 from R1(a-i)							
2010/2011 Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I and II		Total
Cash and in-kind	158,640	2,084,502	785,209	1,529,965	2,604,688	901,011	10,387,414		18,451,429
Ratio of Third Party-	0.2:1	2.0:1	2.0:1	1.5:1	2.4:1	1.4:1	5.2:1		2.6:1

Investment to OMAFRA									
2009/2010 Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I and II		Total
Cash and in-kind	466,379	1,103,453	406,720	1,304,577	1,217,062	559,929	13,527,734		18,585,854
Ratio of Third Party-Investment to OMAFRA	0.6:1	2.3:1	1.5:1	1.7:1	2.1:1	1:1	5.7:1		3.2:1
2008/2009 Theme	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I and II		Total
Cash and in-kind	283,900	323,626	500	1,037,475	782,324	734,324	5,990,994		9,153,412
Ratio of Third Party-Investment to OMAFRA	1:1	0.7:1	0.1:1	1.8:1	2.2:1	1.1:1	4:1		2.3:1

Ratio of Third Party Investment to OMAFRA Operating Funds, by Research Program Theme in 2010/11



	Metric (c)	Total external research dollars attracted each year by the University related to the research program areas in total.
	Baseline:	The baseline for 2008/09 of leveraged dollars to OMAFRA funding is \$54.6 million of external research dollars relative to \$51.4 million OMAFRA – UofG Agreement Research expenditures, or a ratio of approx. 1.1:1. This was determined by recalculating the actual leverage of “total external research dollars related to the OMAFRA research programs” in 2007/08 relative to the new \$7.6 million base of project operating funding.
	Target:	2010-13: Total external dollars leveraged is to be ≥ 2008/09 baseline of \$54.6 million.
	Results (2010/11):	2010/11 results: \$49.5 million.

Fiscal Yer	Total U of G Research Funding (‘ 000) (Note 1)	Total OMAFRA Partnership Research Funding (‘000) see Financial Table pg 43	Funding Leveraged from OMAFRA Agreement					<i>Ratio</i>
			Total Funding from All Sources (Est. ‘ 000)	Breakdown by Source (Note 2)				
				Federal	OMAFRA	Other Provincial	Business / Industry / Private / Other	
2010/2011	139,904	52,309	49,525	23,206	1,668	7,783	16,868	(49.5:52.3) 0.9:1
2009/2010	158,954	50,604	59,326	27,765	3,354	10,190	18,018	(59.3:50.6) 1.2:1
2008/2009	159,093	51,388	54,651	35,400	3,428	3,007	12,816	(54.6 : 51.4) 1.1:1

Note 1: **"Funding Leveraged from OMAFRA Contract"** (thousands of \$) is the total of all individual research project awards from all sources other than the OMAFRA - U of G Agreement for projects (across all U of G Departments/researchers) which support the objectives of OMAFRA's research priorities. **"Total U of G Research Funding"** is the total of all research projects (including OMAFRA - U of G Agreement projects), regardless of whether or not they support OMAFRA's priorities.

Note 2: **"Breakdown by Source"** shows the **"Funding Leveraged from the OMAFRA Agreement"** by the source of the funding (**"Federal"** includes NSERC, SSHRC, CIHR, CFI, all federal departments, etc.; **"OMAFRA"** includes OMAFRA's 'competitive research programs' such as New Directions, etc.; **"Other Provincial"** includes funding from all other provincial ministries or agencies; and **"Business/Industry/Private/Other"** includes all other sources.

	Metric (d)	Number and list of active research projects funded, by program area.			
	Baseline:	Number of active research projects established as per a-i and a-ii, above.			
	Target:	2010-13: Targets for number of projects funded in each area to be $\geq$ 2008/09 levels.			
	Results (2010/11):	Number of Active Projects by Theme Agricultural and Rural Policy: Bioeconomy – Industrial Uses: Emergency Management: Environmental Sustainability: Food for Health: Product Development: Production Systems I: Production Systems II: Total number of Active Projects: * one project funded by RPD discretionary fund **9 projects are funded in more than one theme *** 28 projects are funded in more than one theme See Table R1 (d-ii) page 112 for a complete listing of projects	2010/11 27 17 16 30 24 16 51 77 230***	2009/10 19 10 12 19 10 10 38 51 160**	2008/09 14* 5 2 15 9 5 13 43 92
	Metric (e)	Level of utilization of research stations.			
	Baseline:	Established based on 2008/09 data. Utilization to be reported in three ways – i) # of projects using each station, ii) percentage of utilization and iii) \$ value of research station usage			
	Target:	2010-13: Research station utilization to be $\geq$ 2008/09 levels.			
	Results (2010/11):	Explanatory Note: Although 'Percentage Utilization' rates for most of the livestock stations (including Alma Aquaculture) may appear low, this is in large part attributable to the fact that most of these are based on a breeding herd/flock, and thus it is necessary to 'carry' an inventory of animals covering the full age span (neonates to fully mature production animals). As a consequence, a much smaller percentage of the total animal population are utilized in research projects, but those that are may be used relatively intensively/extensively.			

For the crops-based stations, the percent utilization values can vary from very high (where acreage dedicated to research is relatively small, and the balance of the station acreage is used for feed production for nearby livestock stations, i.e., Arkell, Alfred, NLARS, Kemptville) to much lower by comparison (where 'excess acreage' has limited utility for alternative use, i.e., Vineland, Woodstock.) Most crops sites fall between these extremes, reflecting the relatively efficient use of crop acreage in research (allowing for generally a 3 or 4 year crop rotation, which results in 'utilization rates' of approximately 33% or 25% respectively.

Animal Research Station	Number of Projects OMAFRA / U of G Projects			Percentage of utilization- (note this includes all research not just OMAFRA / U of G projects)			\$ value of research station usage		
	2010/11	2009/10	2008/09	2010/11	2009/10	2008/09	2010/11	2009/10	2008/09
Arkell Poultry	12	11	13	15	30.3	10.2	306,105	387,836	530,671
Arkell Swine	11	9	8	31	4.6	7.0	629,701	127,012	176,591
Arkell Equine	4	4	7	64	16.0	34.5	135,300	99,000	180,000
Elora/Ponsonby Dairy	10	12	8	16	5.2	8.6	349,144	47,571	134,103
Elora Beef	3	4	3	43	85.0	76.5	441,988	1,146,634	1,115,761
Ponsonby Sheep	3	4	4	2	11.3	36.4	7,928	77,260	140,746
Ponsonby General * Sheep	5	4	11	46	100	100	69,496	73,507	143,692
*Note this research station does not maintain a resident herd/flock so all animals are used for research									
Cattle	3	4	0	7	100	100	5,196	66,117	59,707
Swine	0	0	0	0	0	100			
Alma Aquaculture									
(in tank days) Tanks	5	5	4	17	22.0	19.5	88,200	96,635	34,499
Alfred Dairy	0	0	2	0	18.0	16.1	0	21,835	23,742
Kemptville Dairy	2	3	3	17	51.9	43.3	70,547	88,954	126,684
New Liskeard Beef **	3	Not available		8	Not available			Not available	
** NLARS Beef is the source of calves for Elora Beef so nearly all animals are used for research at Elora									
Ridgetown Swine	2	3	2	3	60.0	Not	16,191	229,457	Not

						available			available
Crop Research Station	Number of OMAFRA - U of G Projects			Percentage of utilization- note this includes all research not just OMAFRA - U of G projects			\$ value of research station usage		
	2010/11	2009/10	2008/09	2010/11	2009/10	2008/09	2010/11	2009/10	2008/09
Arkell Crops	2	3	2	100	100	100	1,908	3,046	2,566
Elora Crops	27	17	18	42	38.5	37.7	344,100	242,137	168,100
Alfred Crops	0	1	4	0	66.0	100	0	31,680	28,800
NLARS Crops	5	1	3	100	100	100	35,163	41,015	11,319
Emo Crops	3	3	1	100	100	100	92,500	81,067	81,000
Ridgetown Crops	22	12	13	39	81.0	29.4	317,390	238,495	103,407
Kemptville Crops	8	3	4	80	100	92.6	156,000	101,710	103,500
Simcoe	14	7	7	23	36.4	29.1	50,800	187,945	176,591
Vineland	7	6	6	19	14.0	14.0	0	109,788	117,641
Guelph Turfgrass	10	10	7	77	52.4	39.4	42,765	61,848	66,560
Bradford Muck Crops	9	2	2	25	100	26.3	44,718	131,524	56,008
Woodstock Crops	9	6	4	12	11.5	12.6	76,400	61,563	57,256
Total (all crops and livestock stations)	179	134	136				3,281,540	3,753,636	\$3,638,944

Key Outcome	A critical mass of world class faculty, technical staff and graduate students addressing OMAFRA critical challenges and opportunities.		
Performance Indicator R2	Total faculty and research personnel employed by the University related to OMAFRA research themes, and the proportion funded through the OMAFRA - U of G Research Program.		
	Metric (a)	Total number of faculty FTEs and list of faculty and CARG researchers showing area of expertise, employed at the university related to theme areas.	
	Baseline:	Established at 128 Faculty Research FTEs	
	Target:	2010-13: Number of FTEs to be ≥ 2008/09 baseline.	
	Results (2010/11):	2010/11 Results: 204 Faculty Research FTEs	
	Research / Researcher Awards supportive of OMAFRA priorities		
	No. of Researchers engaged in research supportive of OMAFRA priorities	"Faculty Research FTEs" focused on OMAFRA-related priorities (Note 1)	No. of OMAFRA-Supportive Research Awards (outside the OMAFRA - U of G Partnership)
2010/11 Total:	224	102	654
2009/10 Total:	265	115	737
2008/09 Total	280	128	852
"Research FTE" (Research Full Time Equivalent) should not be confused with faculty FTE. Each faculty member has a defined "Distribution of Effort (DOE)" apportioning their full FTE to 'research', 'teaching' and 'service'. In some departments (i.e., CA, CSAHS) the majority of faculty may have a relatively low 'Research DOE' (therefore low Research FTE, say 0.25), whereas in some other Colleges/Departments (i.e., OAC, OVC) a greater number of faculty may have a much higher 'Research DOE' (therefore a higher Research FTE, perhaps 0.5 or 0.6).			
Note 1: 'Portion of "Research FTE" focused on OMAFRA-related priorities' is estimated for each researcher based on the value of their OMAFRA-supportive research awards received as a portion of their total research awards received. These individual research FTE portions were averaged across those faculty with some portion of their research time engaged on OMAFRA Supportive Research project(s).			
Explanation of Results: (For Research Performance Indicator R#2a) Total number of U of G Faculty FTEs and list of faculty and CARG researchers showing area of expertise related to Theme areas).			
It is estimated that in 2010/11 the "total number of Faculty FTEs showing expertise related to Theme areas" (i.e., engaged in research supportive			

of OMAFRA priorities) is approximately 204 'Research FTEs. Note that a 'research FTE' is only a portion of a faculty member's full FTE (generally ranging from about 0.25 to about 0.6, depending on their College and Department), and the balance of a faculty member's FTE is assigned to 'teaching' or 'service' activities. Therefore, if one were to assume, probably reasonably, that on average (across all U of G faculty) a 'research FTE' represented 0.5 of each faculty member's full FTE, the 204 'Research FTEs' noted above would equate to approximately 102 full person FTEs of time devoted to research.

For added context, in 2010/11 a total of 224 researchers across all U of G Colleges received funding awards for research supportive of OMAFRA priorities (out of total number of 545 research receiving awards for any research). There was a broad diversity between departments, with 110 out of 126 researchers in OAC receiving funding for research related to OMAFRA priorities (for 378 out of 432 projects), whereas only 0 out of 45 researchers in the College of Arts and 1 out of 28 researchers in the College of Management and Economics received funding for research related to OMAFRA priorities (for a total of 2 out of 107 projects combined across these two Colleges).

A listing of faculty engaged in research supportive of OMAFRA priorities, along with their area of expertise and relation to the OMAFRA Themes has been compiled (based on 2008/09 projects) and provided to OMAFRA.

Metric (b-i)	Number of faculty FTEs funded by OMAFRA partnership			
Baseline:	65 faculty FTEs as of 2008/09, compared to ~52 faculty FTEs as of 2007/08			
Target:	2010-13: to retain the number of faculty FTEs to the 2008/09 level as possible, but may erode due to inflation & other financial pressures.			
Results (2010/11):	Number of faculty FTEs specifically allocated to OMAFRA Partnership research projects: Total: 63.29 . This number includes HQP Director at 0.30 (this is not included below).			
	<u>By theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>
	Agricultural and Rural Policy:	4.31	3.31	2.10
	Bioeconomy – Industrial Uses:	2.86	1.79	1.20
	Emergency Management:	3.22	2.32	0.80
	Environmental Sustainability:	9.37	5.20	5.10
	Food for Health:	6.60	3.69	2.20
	Product Development:	2.94	3.37	2.50
	Production Systems I:	17.87	22.81	25.20
	Production Systems II:	15.82	12.38	13.00
	Totals	62.99	54.87	52.10
	Number of faculty FTEs engaged in projects supportive of OMAFRA priorities (but not allocated to approved OMAFRA Partnership projects) is estimated at 102 FTEs (see Metric R2a).			

	Metric (b-ii)	Total number of research personnel FTEs (i.e. post-doctoral students, graduate students, research associates), that are funded through the OMAFRA / UG Partnership, in total and by research theme area.																																								
	Baseline:	113 research personnel (post-doctoral students, graduate students, research associates) funded through OMAFRA approved projects.																																								
	Target:	2009-13: to retain the number of research personnel FTEs to the 2008/09 level as possible, but may erode due to inflation & other financial pressures.																																								
	Results (2010/11):	Total number of research personnel FTEs: 173.88 <table><tr><td><u>Research Personnel FTEs by theme:</u></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr><tr><td>Agricultural and Rural Policy:</td><td>14.20</td><td>14.13</td><td>4.00</td></tr><tr><td>Bioeconomy – Industrial Uses:</td><td>15.46</td><td>5.00</td><td>0.09</td></tr><tr><td>Emergency Management:</td><td>23.06</td><td>7.50</td><td>1.90</td></tr><tr><td>Environmental Sustainability:</td><td>12.85</td><td>10.01</td><td>11.80</td></tr><tr><td>Food for Health:</td><td>23.46</td><td>15.85</td><td>5.14</td></tr><tr><td>Product Development:</td><td>13.21</td><td>7.38</td><td>0.29</td></tr><tr><td>Production Systems I:</td><td>40.87</td><td>18.18</td><td>57.18</td></tr><tr><td>Production Systems II:</td><td>30.77</td><td>42.70</td><td>32.44</td></tr><tr><td>Totals</td><td>173.88</td><td>120.75</td><td>112.84</td></tr></table>	<u>Research Personnel FTEs by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	14.20	14.13	4.00	Bioeconomy – Industrial Uses:	15.46	5.00	0.09	Emergency Management:	23.06	7.50	1.90	Environmental Sustainability:	12.85	10.01	11.80	Food for Health:	23.46	15.85	5.14	Product Development:	13.21	7.38	0.29	Production Systems I:	40.87	18.18	57.18	Production Systems II:	30.77	42.70	32.44	Totals	173.88	120.75	112.84
<u>Research Personnel FTEs by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>																																							
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Totals	173.88	120.75	112.84																																							
	Metric(b-iii)	Number of faculty, CARG researchers and research personnel FTEs that are funded through the OMAFRA - U of G Partnership in total and by research theme area.																																								
	Baseline:	Established at 172 faculty and CARG researchers funded through the partnership in total.																																								
	Target:	2010-13: to retain the number of FTEs to the 2008/09 level as possible, but may erode due to inflation & other financial pressures.																																								
	Results (2010/11):	Total number of Faculty, CARG & Research Personnel FTEs: 244.74 <table><tr><td><u>Total FTEs by theme:</u></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr><tr><td>Agricultural and Rural Policy:</td><td>18.86</td><td>20.89</td><td>6.24</td></tr><tr><td>Bioeconomy – Industrial Uses:</td><td>19.04</td><td>7.69</td><td>2.10</td></tr></table>	<u>Total FTEs by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	18.86	20.89	6.24	Bioeconomy – Industrial Uses:	19.04	7.69	2.10																												
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Agricultural and Rural Policy:	18.86	20.89	6.24																																							
Bioeconomy – Industrial Uses:	19.04	7.69	2.10																																							

	Emergency Management:	26.61	9.82	2.65
	Environmental Sustainability:	24.61	18.65	19.59
	Food for Health:	30.41	19.54	7.34
	Product Development:	16.15	10.75	2.79
	Production Systems I:	60.87	44.93	84.74
	Production Systems II:	48.19	56.71	46.52
	Totals	244.74	181.98	171.97

Key Outcome	A critical mass of world class faculty, technical staff and graduate students addressing OMAFRA critical challenges and opportunities	
Performance Indicator R3	Level of recognition of faculty and students by their peers.	
	Metric (a)	Examples of faculty/researchers/staff related to the research theme areas, recognized by their peers for example through research chairs, awards of recognition, appointment to prestigious positions (international panels) and leadership of national and international research initiatives
	Baseline:	2008/09 results to be the baseline. Same as OA1 metric c) 2008/09, 25 U of G faculty members were Canada Research Chair holders, of which 10 had active OMAFRA Research projects.
	Target:	2010-13: Recognition as indicated by awards, appointments etc. to be $\geq$ 2008/09.
	Results (2010/11):	During 2010/11, 33 faculty members at the U of G were Canada Research Chair holders, of which 5 had active OMAFRA Research projects.
	Metric (b)	U of G's position compared to other Canadian universities, and their ranking in the previous year in the comprehensive category as published annually by Research Money Inc.
	Baseline:	Research Money Inc.'s most current (2009) rankings put U of G in second place among Canadian 'comprehensive' universities. Same as OA1 metric a)
	Target:	2010-13: U of G's ranking to be second or better among comprehensive universities in Canada.
	Results (2010/11):	Research Money Inc.'s most current (2010) rankings put U of G in second place among Canadian 'comprehensive' universities. The 2011 results will be available October 2011 and will be reported in the 2011/12 Annual Report.
	Metric (c)	Number of faculty who publish in high impact journals.
	Baseline:	91 faculty published in high impact journals in 2008/09. 'High impact' journals were identified by OMAFRA - U of G research program directors.
	Target:	2010-13: Number of faculty publishing in high impact journals to be $\geq$ 2008/09 baseline.

	Results (2010/11):	Total number of faculty published in high impact journals: 62 Faculty by theme: <table><tr><td></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr><tr><td>Agricultural and Rural Policy:</td><td>3</td><td>2</td><td>3</td></tr><tr><td>Bioeconomy – Industrial Uses:</td><td>1</td><td>3</td><td>3</td></tr><tr><td>Emergency Management:</td><td>0</td><td>2</td><td>0</td></tr><tr><td>Environmental Sustainability:</td><td>8</td><td>5</td><td>5</td></tr><tr><td>Food for Health:</td><td>2</td><td>1</td><td>7</td></tr><tr><td>Product Development:</td><td>4</td><td>0</td><td>6</td></tr><tr><td>Production Systems I & II:</td><td>44</td><td>75</td><td>67</td></tr><tr><td>Totals</td><td>62</td><td>88</td><td>91</td></tr></table>																	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	3	2	3	Bioeconomy – Industrial Uses:	1	3	3	Emergency Management:	0	2	0	Environmental Sustainability:	8	5	5	Food for Health:	2	1	7	Product Development:	4	0	6	Production Systems I & II:	44	75	67	Totals	62	88	91
	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>																																																		
Agricultural and Rural Policy:	3	2	3																																																		
Bioeconomy – Industrial Uses:	1	3	3																																																		
Emergency Management:	0	2	0																																																		
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Food for Health:	2	1	7																																																		
Product Development:	4	0	6																																																		
Production Systems I & II:	44	75	67																																																		
Totals	62	88	91																																																		
Key Outcome	High quality research focused on OMAFRA priorities																																																				
Performance Indicator R4	Scientific merit and relevance of research projects in each research theme area supported through the Agreement.																																																				
	Metric (a)	Report how composition of advisory committee is representative of stakeholders in each theme																																																			
	Baseline:	2008/09 baseline for stakeholder representation in Theme Research Proposal Review.																																																			
	Target:	2010-13: adequate representation of stakeholders on advisory committees, as achieved in 2008/09.																																																			
	Results (2010/11):																																																				
Theme	Ag & Rural Policy		Bioeconomy		Emerg Mgmt		Env Sust		Food		Prod Dev		Prod Syst - Livestock		Prod Syst - Plants																																						
	LOI	FP	LOI	FP	LOI	FP	LOI	FP	LOI	FP	LOI	FP	LOI	FP	LOI	FP																																					
Research /Scientific	4	3	3	3***	4	4	4	3	4	4	2	2	5	4	4	4																																					
OMAFRA / Gov't	4	4	2	2	2*	3	3	3	4	4	4	4	4	3	3	3																																					
User Community / Industry / Non-Gov't	1**	3	3	3	2	1	2	2	3	2	3	3	2	3	3	2*																																					
Total	9	10	8	8	7	8	9	8	11	10	9	9	11	10	10	9																																					
LOI – Letters of Intent FP – Full Proposals * 3 Accepted; however, only 2 participated: **3 Accepted; however, only 1 participated																																																					

*** 4 Accepted; however, only 3 participated

	Metric (b)	Total number of publications in peer reviewed journals and % of those appearing in high impact journals (as tracked).			
	Baseline:	2008/09 baseline of 265 publications, 57% of which were in 'high impact' journals.			
	Target:	2010-13: Number of publications and % in high impact journals to be ≥ 2008/09 baselines.			
	Results (2010/11):	Total number published in peer reviewed journals: 96. Total percentage in high impact journals: 65%			
		<u>Peer Reviewed Journals by Theme & Ratio in High Impact</u>			
			<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>
		Agricultural and Rural Policy:	3 – 100%	3 – 66%	8 – 50%
		Bioeconomy – Industrial Uses:	6 – 17%	3 – 66%	8 – 75%
		Emergency Management:	0 – 0%	2 – 50%	0 – 0%
		Environmental Sustainability:	8 – 100%	9 – 89%	6 – 67%
		Food for Health:	7 – 29%	5 – 20%	17 – 35%
		Product Development:	10 – 40%	14 – 0%	10 – 10%
		Production Systems I & II:	62 – 71%	144 – 59%	216 – 58%
		Totals	96 – 65%	180 – 49%	265 – 57%
	Metric (c)	Number of collaborations and/or partnerships with external institutions.			
	Baseline:	Number of collaborators in 2008/09 will be the baseline			
	Target:	2010-13: Number and significance of collaborations and/or partnerships targeted to be ≥ 2008/09 baseline.			
	Results (2010/11):	i) Total number of collaborators for continuing projects in 2010/11: 168 ii) Total number of collaborators for new projects approved for 2010/11: 269			
		<u>Collaborators by theme: i)</u>		<u>Collaborators by theme: ii)</u>	
		Agricultural and Rural Policy:	11 (includes 3 OMAFRA staff)	28 (includes 13 OMAFRA staff)	
		Bioeconomy – Industrial Uses:	25 (includes 4 OMAFRA staff)	29 (includes 3 OMAFRA staff)	
		Emergency Management:	1 (includes 1 OMAFRA staff)	24 (includes 6 OMAFRA staff)	
		Environmental Sustainability:	43 (includes 11 OMAFRA staff)	33 (includes 11 OMAFRA staff)	
		Food for Health:	16 (includes 4 OMAFRA staff)	38 (includes 3 OMAFRA staff)	
		Product Development:	8	20 (includes 1 OMAFRA staff)	
		Production Systems I & II:	64 (includes 19 OMAFRA staff)	97 (includes 36 OMAFRA staff)	

Results (2009/10)	i) Total number of collaborators for continuing projects in 2009/10: 203 ii) Total number of collaborators for new projects approved for 2009/10:167
Results (2008/09)	i) Total number of collaborators for continuing projects in 2008/09: 230 ii) Total number of collaborators for new projects approved for 2008/09: 47

Key Outcome	High quality research focused on OMAFRA priorities																		
Performance Indicator R5	Benefits to the economy, the environment and the health and well-being of the province, generated from the Research Program.																		
	Metric	One case study completed annually of initiatives undertaken related to each research theme that impacted Ontario This outcome would also be assessed by the Expert Review of each research theme area scheduled at the end of five years.																	
	Baseline:	One case study provided from the 2008/09 research of each research theme.																	
	Target:	2010-13: a case study to be provided annually from each research theme, for use by the Expert Review at year five.																	
	Results (2010/11):	One case study is provided for each theme (two for Production Systems – livestock and crops) and included in the Program Highlight Section – pages 13-31.																	
Key Outcome	Highly skilled U of G graduates meet changing workforce demands																		
Performance Indicator R6	Level of engagement of University graduate students in OMAFRA - U of G research projects.																		
	Metric (a)	Total number of graduate students working on research projects related to each theme areas, under the Partnership.																	
	Baseline:	140 grad students in 2008/09.																	
	Target:	2010-13: Number of grad students to be maintained at 2008/09 level, but may decline due to inflation.																	
	Results (2010/11):	Total number of Graduate Students: 117.67																	
		<table><tr><td><u>Graduate Students by theme:</u></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr><tr><td>Agricultural and Rural Policy:</td><td>12.60</td><td>21.00</td><td>4.00</td></tr><tr><td>Bioeconomy – Industrial Uses:</td><td>8.45</td><td>0.50</td><td>5.00</td></tr><tr><td>Emergency Management:</td><td>9.00</td><td>5.00</td><td>3.00</td></tr></table>			<u>Graduate Students by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	12.60	21.00	4.00	Bioeconomy – Industrial Uses:	8.45	0.50	5.00	Emergency Management:	9.00	5.00
<u>Graduate Students by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>																
Agricultural and Rural Policy:	12.60	21.00	4.00																
Bioeconomy – Industrial Uses:	8.45	0.50	5.00																
Emergency Management:	9.00	5.00	3.00																

		Environmental Sustainability:	11.05	4.50	8.00
		Food for Health:	15.87	8.00	4.00
		Product Development:	9.50	5.00	4.00
		Production Systems I & II:	51.20	57.00	112.00
		Totals	117.67	101.00	140.00
	Metric (b)	Total number of graduate students enrolled in the HQP program funded under the Partnership.			
	Baseline:	HQP program scheduled to be implemented in summer 2009.			
	Target:	Target to be based on 2009-2010 student enrolment which was 32.			
	Results (2010/11):	51 graduate students were enrolled in the HQP program during 2010/11. 32 students from the first year (2009/10) and 19 from the second year (2010/11) of the HQP program.			
	Metric (c)	Percentage of HQP graduates that are employed in sectors or fields related to the theme areas.			
	Baseline:	Results for this PI will not be available until after first HQP program students graduate (likely 2012 for MSc 'HQP' graduate students).			
	Target:	2012-2013 will be baseline year.			
	Results (2010/11):	Not available for 2010/11; first HQP grads in 2012.			

Key Outcome	Industry and other stakeholders adopt state of the art practices and systems	
Performance Indicator R7	Transfer of new knowledge and utilization by industry and other stakeholders, related to OMAFRA research theme areas.	
	Metric (a)	Total number of knowledge transfer events related to new practices and technologies in each theme area.
	Baseline:	Established (for overall total for Research Program) See table below for 2008/09 baseline.
	Target:	2010-13: Number of knowledge transfer events $\geq$ 2008/09 baseline.
	Results (2010/11):	

	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I & II	Total
	2010/2011	2010/2011	2010/2011	2010/2011	2010/2011	2010/2011	2010/2011	2010/2011
Peer-reviewed journal publications	3	6	0	8	7	10	62	96
Presentations at scientific conferences,	40	30	4	22	6	4	48	95
Articles published in the public press	9	2	5	5	0	1	45	62
New presentations posted on the internet	6	47	9	47	26	14	117	292
Presentations to stakeholder or industry	32	6	11	52	30	12	134	309
	Ag & Rural Policy	Bioeconomy	Emerg Mgmt	Env Sust	Food	Prod Dev	Prod Syst I & II	Total
	09/10 08/09	09/10 08/09	09/10 08/09	09/10 08/09	09/10 08/09	09/10 08/09	09/10 08/09	09/10 08/09
Peer-reviewed journal	3 6	3 8	2 0	9 6	5 17	14 10	144 215	180 265

publications																	
Presentations at scientific conferences,	11	5	23	3	4	2	37	13	11	6	8	8	288	78	382	115	
Articles published in the public press	12	34	7	42	16	0	10	6	1	3	2	2	100	205	148	291	
New presentations posted on the internet	6	4	4	1	8	0	1	0	0	1	0	4	24	5	43	11	
Presentations to stakeholder or industry	14	41	30	25	18	5	65	5	11	16	3	0	239	236	380	378	

	Metric (b)	Examples of utilization of new knowledge by stakeholders.
	Baseline:	Anecdotal reports of utilization of new knowledge by stakeholders
	Target:	2010-13: Annual reports of utilization of new knowledge by stakeholders
	Results (2010/11):	Example of 2010/11 research yielding new knowledge being used by stakeholders: • Prof. Mohanty's Project: Bio-composite storage bins or "bio-bins" are now being sold in Home Hardware Stores across Ontario and will soon be available in Canadian Tire outlets.
	Metric (c)	Total number of licenses and patents and those applied for (See R8).
	Baseline:	See R8, metric b) and c)
	Target:	See R8, metric b) and c)
	Results (2010/11):	See R8, metric b) and c)
	Metric (d)	Ratio of third-party investment leveraged by OMAFRA research funding, by each theme area. (See R1, metric b).
	Baseline:	See R1, metric b)
	Target:	See R1, metric b)
	Results (2010/11):	See R1, metric b)

Key Outcome	Research results commercialized																																										
Performance Indicator R8	Patents, products (<i>technologies, software, germplasm, registered trademarks, copyright</i>), licenses to existing or start-up companies, existing businesses spun out and community-based service businesses created, and the economic impact. R8 is also a PI for the Joint Intellectual Property Committee.																																										
	Metric (a)	Number of disclosures and technology assessments, by theme																																									
	Baseline:	364 total disclosures and technology assessments in 2008/09																																									
	Target:	2010-13: number of disclosures and technology assessments ≥ 2008/09 baseline.																																									
	Results (2010/11):	Total number of OMAFRA related disclosures: 160 <table> <tr> <td><u>Disclosures by theme:</u></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr> <tr> <td>Agricultural and Rural Policy:</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Bioeconomy – Industrial Uses:</td><td>3</td><td>1</td><td>0</td></tr> <tr> <td>Emergency Management:</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Environmental Sustainability:</td><td>0</td><td>1</td><td>0</td></tr> <tr> <td>Food for Health:</td><td>0</td><td>2</td><td>0</td></tr> <tr> <td>Product Development:</td><td>2</td><td>1</td><td>2</td></tr> <tr> <td>Production Systems (Animals):</td><td>4</td><td>16</td><td>3</td></tr> <tr> <td>Production Systems (Crops):</td><td>151</td><td>100</td><td>359</td></tr> <tr> <td>Totals</td><td>160</td><td>121</td><td>364</td></tr> </table> Note: Fluctuation in disclosure numbers is due primarily to fluctuation in the number of seed varieties that have been disclosed. For example, in the 2008/09 fiscal year, there was a disclosure of 176 tomato varieties. A similar event did not occur in 2010/11, leading to an apparent large drop in the number of disclosures.		<u>Disclosures by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	0	0	0	Bioeconomy – Industrial Uses:	3	1	0	Emergency Management:	0	0	0	Environmental Sustainability:	0	1	0	Food for Health:	0	2	0	Product Development:	2	1	2	Production Systems (Animals):	4	16	3	Production Systems (Crops):	151	100	359	Totals	160	121	364
<u>Disclosures by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>																																								
Agricultural and Rural Policy:	0	0	0																																								
Bioeconomy – Industrial Uses:	3	1	0																																								
Emergency Management:	0	0	0																																								
Environmental Sustainability:	0	1	0																																								
Food for Health:	0	2	0																																								
Product Development:	2	1	2																																								
Production Systems (Animals):	4	16	3																																								
Production Systems (Crops):	151	100	359																																								
Totals	160	121	364																																								
	Metric (b)	Number of patent applications filed, by theme																																									
	Baseline:	9 patents filed in 2008/09																																									
	Target:	2010-13: Number of patent applications to be ≥ 2008/09 baseline.																																									
	Results (2010/11):	Total number of OMAFRA related patents filed: 15 <table> <tr> <td><u>Patents filed by theme:</u></td><td><u>2010/11</u></td><td><u>2009/10</u></td><td><u>2008/09</u></td></tr> <tr> <td>Agricultural and Rural Policy:</td><td>0</td><td>0</td><td>0</td></tr> </table>		<u>Patents filed by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>	Agricultural and Rural Policy:	0	0	0																																
<u>Patents filed by theme:</u>	<u>2010/11</u>	<u>2009/10</u>	<u>2008/09</u>																																								
Agricultural and Rural Policy:	0	0	0																																								

		Bioeconomy – Industrial Uses: 4 5 0 Emergency Management: 0 0 0 Environmental Sustainability: 0 0 0 Food for Health: 2 1 0 Product Development: 1 0 2 Production Systems (Animals): 4 3 7 Production Systems (Crops): 4 1 0 Totals 15 10 9
	Metric (c)	Number of licenses granted by theme
	Baseline:	17 licenses granted in 2008/09
	Target:	2010-13: Number of licenses granted to be ≥ 2008/09 baseline.
	Results (2010/11):	Total number of OMAFRA related licenses granted: 15 <u>License & amending agreements by theme:</u> <u>2010/11</u> <u>2009/10</u> <u>2008/09</u> Agricultural and Rural Policy: 0 0 0 Bioeconomy – Industrial Uses: 0 1 0 Emergency Management: 0 0 0 Environmental Sustainability: 0 0 0 Food for Health: 0 0 0 Product Development: 1 0 1 Production Systems (Animals): 1 1 0 Production Systems (Crops): 13 18 16 Totals 15 20 17
	Metric (d)	Patents issued
	Baseline:	Five patents as per 2008/09
	Target:	2010-13: Number of patents issued to be ≥ 2008/09 baseline.
	Results (2010/11):	Total number of OMAFRA related patents issued: 3

		<u>Patents issued by theme:</u> Agricultural and Rural Policy: 0 Bioeconomy – Industrial Uses: 0 Emergency Management: 0 Environmental Sustainability: 0 Food for Health: 0 Product Development: 1 Production Systems (Animals): 2 Production Systems (Crops): 0 Totals 3	<u>2010/11</u> 0 0 0 0 1 2 0 3	<u>2009/10</u> 0 0 0 0 0 0 0 0	<u>2008/09</u> 0 1 0 0 0 0 0 4 5
	Metric (e)	Total dollar value of revenue generated from licenses associated with OMAFRA-supported research			
	Baseline:	\$1.3 million revenue generated as per 2008/09.			
	Target:	2010-13: Total dollar value to be ≥ 2008/09 baseline.			
	Results (2010/11):	Total dollar value of revenue generated from licenses associated with OMAFRA-supported research: \$1,592,832.21 Revenue from OMAFRA-supported non-seed research from fiscal year end April 30, 2010: \$893,551.35 Revenue from OMAFRA-supported seed research fiscal year-end March 31, 2010: \$699,280.86 Notes: Seed revenues increased by ~14.5% vs. 2009/2010. 29 new accounts were opened representing new revenue generating varieties; as well there was a significant increase in royalty revenues in cereal and soybean varieties. Non-seed revenue increased by 89% due to collection of back-royalties that were identified in an audit of the Presponse™ Vaccine technology (accounts for ~\$270K). This payment is an anomaly and will not be repeated in coming years.			
	Metric (f)	Three brief case studies of individual files from different themes and initiatives taken to advance commercialization			
	Baseline:	Three case studies as per 2008/09.			
	Target:	2010-13: Three case studies to be presented annually.			

	Results (2010/11):	Three case studies are provided in the Program Highlights Section - pages 33-35
Key Outcome	Awareness of research outcomes and impacts among decision makers, staff and stakeholders	
Performance Indicator R9	Stakeholder assessment of OMAFRA/ University research outcomes on industry, the economy and the health and well-being of Ontario citizens.	
	Metric	This outcome would also be assessed by the Expert Review of each theme area schedule at the end of five years.
	Baseline:	This PI will be achieved through an assessment similar to the Deloitte Study – 2007 (U of G / OMAFRA Impact Study), to be conducted in 2012/13 and planned in 2009/10. In the interim, the Deloitte Study serves as the baseline.
	Target:	2013: Expert Review of awareness of research outcomes and impacts among decision makers.
	Results (2010/11):	2010/11 results for all performance indicators and those of remaining years will provide the information for the stakeholder assessment in year five.
Key Outcome	Awareness of research outcomes and impacts among decision makers, staff and stakeholders	
Performance Indicator R10	Media citations related to research in OMAFRA research theme areas.	
	Metric (a)	Total number of media citations
	Baseline:	A total of 190 media citations were identified by researchers in their 2009 U of G annual and final reports. Additionally, 135 media articles were picked up by clipping services. This 2008/09 baseline is likely a significant underestimate of media pick-up but it represents the best available measure.
	Target:	2010-13: Number of media citations to be $\geq$ 2008/09 baseline.
	Results	From researchers' 2011 annual and final research reports, number of media citations: 98

	(2010/11):	Ag and rural policy:	21
		Bioeconomy:	5
		Emergency Management:	0
		Environmental Sustainability:	7
		Food for Health:	7
		Product Development and Enhancement:	4
		Production Systems:	54

Research Performance Indicator R1 (Metric d)

Listing of Active Research Projects

OMAFRA - U of G Research Program Projects – 2010/2011

Agricultural and Rural Policy Theme

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
200049	01-Jun-09	31-Jul-10	Ag & Rural Policy	Comparing Returns and Volatility from a Range of Marketing Strategies for Grains and Oilseeds in Ontario: A Simulation Approach.	Vyn, R.
026594	1-Sep-08	30-Dec-12	Ag & Rural Policy	Economic and Community Capacity Analysis of the Alternative Land Use Services (ALUS) - Norfolk County Pilot Project	Fox, G.
026528	01-May-07	31-May-12	Ag & Rural Policy	Evaluating the Effects of National and International Agrifood Policies on Canada	Meilke, K.
200047	01-Sep-09	31-Aug-12	Ag & Rural Policy	Environmental Sustainability Policy Compliance Costs, Comparative Advantage, and Competitiveness of Ontario Livestock Industry	Fox, G.
200048	01-Jun-09	30-Jun-12	Ag & Rural Policy	Industrial Composition and Economic Performance in Rural Ontario	Deaton, B.
200050	01-Sep-09	30-Sep-11	Ag & Rural Policy	Local Food Initiatives in Ontario from the Farmer's Perspective	Devlin, J.
200051	01-Jul-09	01-May-12	Ag & Rural Policy	Prospering with a Stable or Declining Population: Best Community Economic Development and Planning Practices for Rural Communities	Caldwell, W.
200221	1-Jun-10	30-Jun-13	Ag & Rural Policy	Innovations in Managing Risk and Stochastic Simulation Modeling for Ontario Farming Sector	Hailu, G.
200222	1-Jun-10	30-Jun-13	Ag & Rural Policy	Productive Efficiency and Competitiveness of Ontario Farms	Hailu, G.
200242	1-Apr-10	20-Aug-10	Ag & Rural Policy	Building capacity to support collaborative research examining the economic and social consequences of current First Nations land tenure systems in Ontario	Deaton, B.
200265	1-Apr-10	31-Mar-13	Ag & Rural Policy	Competitiveness and Profitability of Ontario Swine Farms – Farm Size, and Production Type versus Profitability	McEwan, K.
200287	1-Jun-10	30-Jun-12	Ag & Rural Policy	Investigating the Effect of Climate Change on Crop Yields: Implications for Policy and Programs and Identifying Opportunities for Ontario's Agrifood Sector	Ker, A.
200289	1-Apr-10	31-Mar-13	Ag & Rural Policy and Env	Land Use, Climate Change and Policy Impacts of the Transition to a Green Economy	Weersink, A.

			Sust		
200290	1-Sep-10	30-Aug-13	Ag & Rural Policy	The Agricultural and Rural Policy Implications of a Changing Agricultural Sector	Weersink, A.
200304	1-Jun-10	30-Jun-13	Ag & Rural Policy	Young Workers in Ontario's Rural Labour Market: An exploration of job quality and training/skills requirements & choices	Mann, S.
200112	1-May-10	30-Apr-13	Ag & Rural Policy	Regional Development: Planning for Resiliency In the 21 st Century - A Methodology and Approach for Communities Dealing with Climate Change and Rising Oil Prices	Caldwell, W.
200243	1-Apr-10	30-May-11	Ag & Rural Policy	Examining non-farmer ownership of farmland in southern Ontario: Implications for policy and competitiveness	Deaton, B.
200243	1-Apr-10	30-May-11	Ag & Rural Policy	Examining non-farmer ownership of farmland in southern Ontario: Implications for policy and competitiveness	Deaton, B.
200183	1-Jun-10	31-May-13	Ag & Rural Policy	An Economic Analysis of Profitability, Income Variability and Competitiveness of Farms under Different Size Categories in Ontario	Sarker, R.
200195	1-Apr-10	30-Apr-12	ARP and Bio Ag & Rural Policy and Env Sust and Prod Syst	Identifying successful business models, strategies and policies for promoting the Canadian bioeconomy	Cranfield, J.
200329	1-May-10	30-Apr-13	Ag & Rural Policy	Management and physiology of turfgrass systems with an emphasis on reduced inputs, environmentally sustainable production and human health	Lyons, E.
200357	15-Nov-10	31-Oct-13	Ag & Rural Policy	Economic Models for Policy Analysis in the Ontario Agri-Food Sector	Ker, A.
200053	01-Jun-09	31-May-10	Ag & Rural Policy	Effects of Farm Safety Net Programs on Income and Competitiveness of Farms under Different Size Categories in Ontario	Sarker, R.
200054	01-Jul-09	31-Jul-10	Ag & Rural Policy	Identifying Rural Research Priorities Through Community Engagement	Caldwell, W.
200055	01-Jul-09	01-Jul-10	Ag & Rural Policy	Human Resource Management: Best Practices in the Ontario Agriculture Industry	Mann, S.
200056	15-Jul-09	31-Jul-10	Ag & Rural Policy and Env Sust	Evaluation of agri-environmental program performance: Lessons learned from the Environmental Farm Plan and two Ontario watershed programs	Cummings, H.
200046	1-Jul-09	30-Jun-10	Ag & Rural Policy	Assessment of Availability of Agricultural Biomass for Electricity and Heat Generation in Ontario	Deen, B.

Bioeconomy - Industrial Uses Theme

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
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026607	1-May-08	31-Dec-10	Bioeconomy	Engineered Biocomposites from Natural Fibers and Biodegradable Polymers for Transportation Industries	Mohanty, A.
026384	1-Sep-06	31-Aug-10	Bioeconomy	Evaluating protein sources from natural and transgenic plant sources for manufacturing industrial fibres and films.	Pauls, K.P.
026547	1-Jul-07	30-Apr-12	Bioeconomy Bio and Prod Sys	Economic Effects of Bioproduct Efforts on Ontario Agriculture.	Weersink, A.
200094	15-Jun-09	31-Mar-12		Evaluation of Perennial Grass Biomass Systems in Ontario	Deen, B.
200001	1-Jul-09	30-Jun-12	Bioeconomy	Design and Engineering of Nano-enhanced Biopolyurethanes for Green Manufacturing	Misra, M.
200004	1-Jun-09	30-May-12	Bioeconomy	Renewable, Recyclable and Lightweight Hybrid Green Composites from Lignin, Switch grass, Miscanthus and Bioplastics for Sustainable Manufacturing	Mohanty, A.
200007	1-Jul-09	30-Jun-12	Bioeconomy	Evaluation of biomass production, nutrient cycling, harvesting, and end-use of biofuel crops in Eastern and Northern Ontario.	Rennie, T.
200013	1-Sep-09	31-Aug-12	Bio and Env Sus	Life Cycle Analysis Framework and Model for Assessing Life Cycle Impacts and Environmental Sustainability of Ontario Agricultural Feedstocks for Bioenergy	Wagner-Riddle, C.
200114	1-May-10	30-Apr-14	Bioeconomy	Acid-, Water-, and High-temperature Stable Homogeneous and Heterogeneous Catalysts for the Deoxygenation of C4-C6 Sugars to Alcohols, Alkenes and Alkanes	Schlaf, M.
200199	1-May-10	30-Apr-13	Bioeconomy	New Generation Traits for Field Crops – Defining Genes for Fibre Quality in Crop Residues for Biocomposite Manufacture for the Auto Industry	Pauls, K.P
200245	1-Jul-10	30-Jun-13	Bioeconomy	Light Weight and Recyclable Sustainable Green Composites from Engineered Soy Hull and BioABS for Transportation Applications	Misra, M.
200172	1-May-10	30-Apr-13	Bioeconomy	Production of Novel Starches for the Biopolymer Industry	Tetlow, I.
200283	1-Jul-10	31-Jul-13	Bioeconomy	Eco-Composites from Corn Cob Derived Thermoset Resin and Biofibre Mats for Housing Panel Applications	Misra, M.
200163	1-May-10	30-Apr-12	Bioeconomy	Evaluation of the Feasibility of Integrating SuperStarch™ Technology for the Production of Polysaccharide Nanoparticles with Existing Bioethanol Facilities	Dutcher, J.
200195	1-Apr-10	31-Mar-13	Bio and ARP	Identifying successful business models, strategies and policies for promoting the Canadian bioeconomy	Cranfield, J.
200165	15-May-10	15-May-13	Bio and Env Sust	Life Cycle Analysis (LCA) and Economic Assessment of Short Rotation Willow (Salix) Crops for Bioenergy	Gordon, A.

200144	1-May-10	30-Apr-13	Bio and Prod Dev	Cost-Effective Processing Technologies to Improve the Value to Aquaculture Species of Products and By-Products from the Agricultural, Food and Bio-Fuel Sectors in Ontario	Bureau, C.
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Emergency Management Theme

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
200024	1-Aug-09	31-Jul-10	Emerg Mgmt	Advancement of Poultry Disease Spread Modelling	Stacey, D.
200015	1-Jun-09	1-Sep-11	Emerg Mgmt	Biosecurity assessment as a tool to develop a risk-based surveillance in the Ontario swine industry	Poljak, Z.
200016	1-Sep-09	31-Aug-12	Emerg Mgmt	Spatial and Network Individual-level Models of Infectious Disease Spread within a Bayesian Statistical Framework via Markov Chain Monte Carlo (MCMC)	Deardon, R.
200017	1-Sep-09	30-Aug-10	Emerg Mgmt	Evaluation of spatial surveillance methods under imperfect diagnostic test systems with emphasize on emerging zoonoses	Berke, O.
200018	1-Sep-09	31-Aug-11	Emerg Mgmt	Extraction and Detection of Human Pathogens using Antibody Modified Electrospun Conducting Polymer Fibers	Warriner, K.
200020	1-Jun-09	31-Dec-10	Emerg Mgmt	Disease Surveillance of Swine Using Farm-Based Mortality Data	Friendship, R.
200270	1-Apr-10	31-Mar-13	Emerg Mgmt and Prod Syst	Western Bean Cutworm Monitoring and Management Strategies for Ontario and the Great Lakes Region. A Proactive and Coordinated Approach to Prepare and Respond to a Newly Emerging Corn and Dry Bean Pest in Ontario	Schaafsma, A.
200154	1-May-10	30-Apr-12	Emerg Mgmt	On-Site Detection of Viral Pathogens and Chemical Toxic Agents using Novel Sensors Based on Quantum Dot Modified Molecular Imprinted Polymers	Warriner, K.
200159	1-May-10	30-Apr-12	Emerg Mgmt	Rapid Diagnostic techniques and susceptibility of commercially important fish species for the surveillance of spring viremia	Lumsden, J.
200236	1-May-10	30-Apr-13	Emerg Mgmt	Enhanced surveillance for viral and bacterial pathogens in commercial broiler chicken flocks in Ontario	Guerin, M.
200272	1-May-10	30-Apr-13	Emerg Mgmt	Johne's Disease in Ontario's Small Ruminant Dairy Industries: Prevalence, potential risk factors, and performance comparison of serum, milk and fecal diagnostic methods	Jones, A.
200312	1-Apr-10	31-Mar-13	Emerg Mgmt	Barcode of Life Data System Support for Emergency Management I: OMAFRA and Greenhouse Industry Stakeholders	Hanner, R.
200117	1-May-10	1-May-13	Emerg Mgmt and Prod Syst	Immunity against avian influenza virus (AIV) in chickens and development of rational vaccines for control of avian influenza	Sharif, S.
200189	1-May-10	30-Apr-11	Emerg Mgmt and Prod Syst	Appropriate welfare considerations for sheep subject to the recto-anal mucosa associated lymphoid tissue (RAMALT) biopsy for detection of scrapie infection	Menzies, P.
200331	1-May-10	30-Apr-13	Emerg Mgmt and Prod Syst	Development of novel methods for the diagnosis and control of poultry coccidiosis	Barta, J.
026614	1-Jan-08	31-May-10	Emerg Mgmt	Development of an avian cell line	Nagy, E.

Environmental Sustainability Theme

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
026577	1-May-08	31-Mar-11	Env Sust	Environmental Sustainability of On-farm Manure Anaerobic Digestion	Crolla, A.
026599	1-May-08	31-Dec-11	Env Sust	Use of reclaimed wastewater on soil chemical and microbial properties and growth of turfgrass for sod production and maintained turfgrass systems.	Jordan, K.
026579	1-May-08	31-Mar-11	Env Sust	Environmental impact of crop residue removal under conventional and zero-tillage scenarios.	Warland, J.
026580	1-May-08	30-Apr-11	Env Sust	Filling in the knowledge gaps of N dynamics in horticultural-cover crop systems: Utilizing lysimeters to characterize potential N losses over the winter and in the subsequent growing season.	Van Eerd, L.
026598	1-May-08	30-Apr-11	Env Sust	Carbon, nutrient and economic impacts of Miscanthus production under Ontario conditions	Deen, B.
026533	01-Apr-07	31-Mar-11	Env Sust	Manure and Organic Waste Treatment Technologies	Kinsley, C.
026545	01-May-07	30-Apr-12	Env Sust	Evaluating the Cost Effectiveness of Multiple Best Management Practices in Agricultural Watersheds.	Yang, W.
026597	1-May-08	30-Apr-11	Env Sust	Integrated assessment of atmospheric emissions of ammonia, greenhouse gases and size fractionated particulate matter across farming systems.	Van Heyst, B.
200027	02-Sep-09	31-Aug-12	Env Sust	Abatement of Agricultural Ammonia Emissions via Sequestration and Conversion to Nutrient and Bio-energy Feedstocks	Dixon, M.
200029	01-Jul-09	30-Apr-12	Env Sust	Life-Cycle Assessment of Greenhouse Gas Emissions and Economics of On-Farm Anaerobic Digesters	Wagner-Riddle, C.
200013	1-Sep-09	31-Aug-12	Env Sust and Bioeconomy	Life Cycle Analysis Framework and Model for Assessing Life Cycle Impacts and Environmental Sustainability of Ontario Agricultural Feedstocks for Bioenergy	Wagner-Riddle, C.
200031	1-May-09	30-Apr-12	Env Sust	Toward ecologically sustainable choices for turfgrass applications in Ontario	Newman, J.
200081	1-May-09	30-Apr-12	Env Sus and Prod Sys.	Long term field trials to examine yield, soil productivity and environmental impacts of Ontario corn, soybean and wheat production systems	Deen, B.
200057	1-Jun-09	30-May-12	Env Sus and Prod Dev	Conversion of Poultry Manure into Value-added Products Using Fly Larvae	Zheng, Y.
026592	1-May-08	31-Aug-11	Env Sust	Developing Environmental, Production and Marketing Best Management Practices for Ontario Agriculture	Bredahl, M.
200119	1-May-10	30-Apr-12	Env Sust	Development of a Behavioral Decision Model for adoption of BMPs for Environmental Stewardship: Implications for policy and program design	Fitzgibbon, J.
200239	1-May-10	30-Apr-12	Env Sust	Impact of manure application timing on temporal changes in runoff losses of N, P and fecal bacteria as assessed through controlled runoff and microbial source tracking technologies	O'Halloran, I.
200227	1-May-10	30-Apr-12	Env Sust	Combining Field Data and Modeling to Improve Groundwater Recharge Estimates at the Watershed Scale in Ontario: The First Step	Parkin, G.

200284	1-May-10	30-Apr-13	Env Sust	Mapping of Variable Source Areas for Nutrient Management and Environmental Sustainability	Rudra, R.
200148	1-May-10	30-Apr-13	Env Sust	Impacts of biofuel production systems on soil health, microbial biodiversity and nutrient cycling	Dunfield, K.
200188	1-Apr-10	30-Mar-12	Env Sust	An Evaluation of Manure Nitrogen (N) Credit Calculations Using Data from Ontario Field Research	Lauzon, J.
200244	1-May-10	30-Apr-13	Env Sust	Municipal Biosolids as a Soil Amendment to Improve Quality and Growth for Sod Production	Habash, M.
200299	1-May-10	30-Apr-13	Env Sust	Development of a Complimentary Energy Decision Support Tool (CEDST) for Objective Selection of Green Energy Systems in Intensive Farming Operations	Van Heyst, B.
200280	1-Sep-10	30-Apr-12	Env Sust	The effect of land use practices and the subsurface environment on the distribution of non-point source pollution at depth	Arnaud, E.
200165	15-May-10	15-May-13	Env Sust and Bio	Life Cycle Analysis (LCA) and Economic Assessment of Short Rotation Willow (Salix) Crops for Bioenergy	Gordon, A.
200173	1-May-10	30-Apr-13	Env Sust and Prod Dev	Green Roof Technologies for Northern Climates	Zheng, Y
200289	1-Apr-10	31-Mar-13	Env Sust and ARP	Land Use, Climate Change and Policy Impacts of the Transition to a Green Economy	Weersink, A.
200128	1-May-10	30-Apr-13	Env Sust and Prod Syst	Development of New Energy Efficient Lighting Systems for Poultry Farming using Light Emitting Diodes (LEDs)	Bedecarrats, G.
200329	1-May-10	30-Apr-13	Env Sust and Prod Syst and ARP	Management and physiology of turfgrass systems with an emphasis on reduced inputs, environmentally sustainable production and human health	Lyons, E.
200056	15-Jul-09	31-Jul-10	Env Sust and ARP	Evaluation of agri-environmental program performance: Lessons learned from the Environmental Farm Plan and two Ontario watershed programs	Cummings, H.

Food for Health Theme

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
200110	19-Nov-09	18-Nov-10	Food for Health	Development of Functional 1,3 Diacylglycerol Fats	Lencki, R.
026578	01-May-08	30-Apr-11	Food for Health	The potential impact of low temperature sweetening in potatoes on process quality, nutrition and food safety	Yada, R.Y.
200067	01-May-09	30-Apr-11	Food and Prod Sys	Understanding the Genetic and Biochemical Control of Tocopherols and Luteins in Soybeans Leading to the Development of Soybean Cultivars and Germplasm with Enhanced Levels of Nutraceuticals	Rajcan, I

200107	1-Oct-09	30-Sep-11	Food for Health Tier II	Evaluation of Nutrifen Plus in lactating dairy cows: effect on feed intake, milk yield and milk organoleptic properties.	Kott, L.
200035	1-Jun-09	30-Apr-12	Food for Health	Bio-accessibility, Bio-availability and Anti-inflammatory Action of Nutraceutical Components from Ontario Berry Fruits, Tender Fruits and their Products	Paliyath, G.
200040	01-Jul-09	31-Jul-12	Food for Health	Encapsulation of bioactive peptides using protein based nanostructures	Corredig, M.
200032	01-Sep-09	31-Aug-12	Food for Health	The regulation of adipocyte differentiation and insulin signalling by dietary monounsaturated fatty acids	Mutch, D.
200064	01-Sep-09	31-Aug-12	Food for Health and Prod Dev	Characterizing the sensory attributes of whole grain wheat-based products and the phenolics associated with these attributes	Duizer, L.
200043	01-Jun-09	31-May-13	Food for Health and Prod Syst	Bean (<i>Phaseolus vulgaris</i>) Improvement for Health and Consumer Acceptance	Pauls, K. P.
200333	1-May-10	30-Apr-13	Food for Health and Prod Syst	Development of disease and insect resistant soybean varieties for food grade, functional food and specialty oil markets in Ontario	Rajcan, I.
200193	01-May-10	30-Apr-12	Food for Health and Prod Dev	Nanoencapsulation of omega-3 fatty acids in edible carriers using electrostatic forming technologies	Lim, L-T.
200121	1-May-10	30-Apr-12	Food for Health	Human clinical trial to investigate the effects of high rosmarinic acid spearmint tea on measures of disease activity and cartilage degradation in rheumatoid arthritis	Kott, L.
200124	1-May-10	30-Apr-13	Food for Health	Role of mechanostimulation of gut epithelial cells and gut content viscosity in human health and gastrointestinal responses to functional foods	Purslow, P.
200177	1-May-10	30-Apr-13	Food for Health	Consumers' perceptions, purchasing, and consumption of vegetables in Ontario	Yi, S.
200201	1-Jul-10	30-Jun-13	Food for Health	Alleviation of the metabolic syndrome through betaine and choline enriched functional food diets	Bakovic, M.
200218	1-May-10	30-Apr-13	Food for Health	Exploring the Feasibility and Benefits of Incorporating Local Foods into Ontario's Healthcare System	Padanyi, P.
200216	1-Jun-10	31-May-13	Food for Health	Sticking it to the gut: Steps towards establishing probiotics in the distal colon	Khursigara, C.
200130	1-May-10	30-Apr-12	Food for Health	Impact of prebiotics on the intestinal microbiome: a multidisciplinary approach based on predictive modeling and experimentation	Eberl, H.
200293	1-Jun-10	31-May-12	Food for Health	Functionality of Novel Potato Clones Selected for Promoting Human Gut and Heart Health in Studies with a Pig Model	Fan, M.
200133	1-Jun-10	31-May-13	Food for Health	Development, sensory evaluation and consumer acceptance of 'Golden Prunes' from novel Yellow European Plum [YEP] selections	Subramanian, J.
200207	1-Sep-10	30-Aug-13	Food for Health	Matching expectation to reality for modified texture foods: Comparison of in-house to commercial pureed products	Duizer, L.
200175	1-May-10	30-Apr-13	Food for Health and Prod Syst	Improving profitability in asparagus production through enhanced breeding, management and human health.	Wolyn, D.
200342	1-Sep-10	30-Aug-12	Food for Health and Prod Dev	Characterizing starch structure and digestibility of millet flour when incorporated into baked products.	Marccone, M.

026573	01-May-08	31-Aug-10	Food for Health	Fibre-fortified dairy products: Effects on nutritional and functional properties	Goff, H.D.
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Product Development and Enhancement through Value Chains

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
026606	01-May-08	31-Dec-10	Prod Dev	Decontamination of Raw Milk using a Novel Ultraviolet Light Reactor to Ensure Pathogen Inactivation and Retention of Protein Functionality	Warriner, K.
026587	01-May-08	30-Apr-11	Prod Dev	Understanding the behaviour of oil-water-monoglyceride nanostructures in baked food matrices and evaluating human health benefits following consumption	Seetharaman K.
200059	01-Sep-09	31-Aug-12	Prod Dev	Development of high performance edible soy protein nanocomposite films and coatings for co-extrusion applications	Lim, L.-T
200062	01-Sep-09	31-Aug-12	Prod Dev	Novel use of organogels to replace traditional animal fat in meat products	Barbut, S.
200064	01-Sep-09	31-Aug-12	Prod Dev and Food for Health	Characterizing the sensory attributes of whole grain wheat-based products and the phenolics associated with these attributes	Duizer, L.
200071	01-Jul-09	30-Jun-12	Prod Dev and Prod Sys	Product enhancement and cost reduction in greenhouses through application of advanced robotics systems	Moussa, M.
200057	1-Jun-09	30-May-12	Prod Dev and Env Sust	Conversion of Poultry Manure into Value-added Products Using Fly Larvae	Zheng, Y.
200173	1-May-10	30-Apr-13	Prod Dev and Env Sust	Green Roof Technologies for Northern Climates	Zheng, Y
200261	02-Jul-10	30-Jun-13	Prod Dev	Improving Icewine Innovation through Evaluating Innovative Clusters and Consumer Trends & Demands in Ontario's Icewine Industry	Teng, L
200317	01-Jul-10	30-Apr-12	Prod Dev	Product Development of a Therapeutic Antibody in Tobacco through Production, Purification and Analytical Value Chains in Ontario	Hall, J.C.
200193	01-May-10	30-Apr-12	Prod Dev and Food for Health	Nanoencapsulation of omega-3 fatty acids in edible carriers using electrostatic forming technologies	Lim, L.-T.
200118	01-May-10	01-May-13	Prod Dev	Vaccination of chickens for control of Campylobacter jejuni	Sharif, S.
200190	01-Jun-10	31-May-12	Prod Dev	A Novel Prebiotic for Improving Weanling Pig Gut Health and Growth without Using Antibiotics	Fan, M.
200144	1-May-10	30-Apr-13	Prod Dev and Bio	Cost-Effective Processing Technologies to Improve the Value to Aquaculture Species of Products and By-Products from the Agricultural, Food and Bio-Fuel Sectors in Ontario	Bureau, C.
200342	1-Sep-10	30-Aug-12	Prod Dev and Food for Health	Characterizing starch structure and digestibility of millet flour when incorporated into baked products.	Marcone, M.

200058	01-Jul-09	30-Jun-10	Prod Dev	Product Development of a Therapeutic Antibody in Tobacco through Production, Purification and Analytical Value Chains in Ontario	Hall, J. C.
Production Systems Theme Tier I					
Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
026480	1-May-07	30-Apr-11	Prod Systems Tier I	From Vineyard to Vintage: the Ontario Grape Research Program	Fisher, H.
026481	1-May-07	30-Apr-11	Prod Systems Tier I	Innovative Research to Contribute to the Prosperity and Sustainability of the Tree Fruit Industry.	Cline, J.
200076	1-Jul-09	30-Jun-12	Prod Systems Tier I	Risk Assessment and Management of Invasive Pests of Field Crops in Current and Future Climates	Hallett, R.
200100	1-Oct-09	30-Sep-12	Prod Systems Tier I	EGF expressing <i>Lactococcus lactis</i> (<i>L. lactis</i>) for enhancing intestine development, health, and productivity of early-weaned pigs	Li, J.
200069	1-Jun-09	30-Jun-12	Prod Systems Tier I	The pathogenesis and control of necrotic enteritis in broiler chickens	Prescott, J.
200070	31-Dec-11	3-Jul-12	Prod Systems Tier I	Pathogenesis of <i>Clostridium perfringens</i> Type A diarrhea in neonatal pigs and its epidemiology on Ontario swine farms	Prescott, J.
200071	01-Jul-09	30-Jun-12	Prod Systems Tier I and Prod Dev	Product enhancement and cost reduction in greenhouses through application of advanced robotics systems	Moussa, M.
200072	1-Jun-09	31-May-12	Prod Systems Tier I	Biology and Management of Diseases of Turfgrasses and Woody Plants	Hsiang, T.
200073	15-Jun-09	30-Jun-11	Prod Systems Tier I	Investigation of automated activity monitoring for health and reproduction in dairy cattle	LeBlanc, S.
200074	1-Sep-09	31-Aug-11	Prod Systems Tier I	Limit-feeding dairy heifers: Maintaining health and welfare while improving feed efficiency and reducing feed costs and nutrient excretion	DeVries, T.
200075	1-Jul-09	1-Jul-12	Prod Systems Tier I	Biomarkers to relate management of piglets post-weaning to subsequent growth performance, carcass and meat quality	deLange, C.
200077	1-Jun-09	31-May-11	Prod Systems Tier I	Evaluation of the Entomopathogenic Fungi, <i>Beauveria bassiana</i> , <i>Clonostachys rosea</i> , and <i>Metarhizium anisopliae</i> , as Biocontrol Agents Against the Honey Bee Parasitic Mite, <i>Varroa destructor</i>	Guzman, E.
200079	15-May-09	30-Apr-12	Prod Systems Tier I	The impact and management of pain in dairy cattle on health, performance and well-being	Duffield, T.

200080	1-Jun-09	30-Apr-12	Prod Systems Tier I	The use of behavioural monitoring for the prediction of impending health and welfare problems in dairy cattle	Leslie, K.
200081	1-May-09	30-Apr-12	Prod Systems Tier I and Env Sust	Long term field trials to examine yield, soil productivity and environmental impacts of Ontario corn, soybean and wheat production systems	Deen, B.
200083	1-Jun-09	31-May-12	Prod Systems Tier I	Understanding the spatial and temporal spread and clinical signs associated with various genotypes of the Porcine Reproductive and Respiratory Syndrome (PRRS) in Ontario	Dewey, C.
200085	1-Sep-09	31-Aug-10	Prod Systems Tier I	Investigation into methods of quantifying, relieving and preventing lameness in sows	Luimes, P.
200086	1-Sep-09	1-Sep-12	Prod Systems Tier I	Nutritional Strategies and monitoring of the peri-parturient sow.	Luimes, P.
200087	1-Jun-09	31-May-12	Prod Systems Tier I	Development of an integrated mycotoxin management system in Ontario grains	Schaafsma, A.
200088	1-Jan-10	31-Dec-11	Prod Systems Tier I	Mycotoxins and the developing neuroendocrine-immune system	Karrow, N.
200089	1-May-09	30-Apr-12	Prod Systems Tier I	Stabilizing Ontario canola yields for enhanced profitability and reduced risk.	Earl, H.
200091	1-Jun-09	30-May-12	Prod Systems Tier I	Mutation technology for production of new products and added value for greenhouse ornamental species	Somers, D.
200093	1-Jun-09	30-Jun-12	Prod Systems Tier I	Dairy Health and High-Low Immune Responders	Mallard, B.
200043	01-Jun-09	31-May-13	Prod Systems Tier I and Food for Health	Bean (<i>Phaseolus vulgaris</i>) Improvement for Health and Consumer Acceptance	Pauls, K. P.
200067	01-May-09	30-Apr-11	Prod Systems Tier I and Food for Health	Understanding the Genetic and Biochemical Control of Tocopherols and Luteins in Soybeans Leading to the Development of Soybean Cultivars and Germplasm with Enhanced Levels of Nutraceuticals	Rajcan, I.
200101	01-Aug-09	31-Dec-12	Prod Systems Tier I	Natural enrichment of milk with functional bioactive compounds	Cant, J.
200103	01-Jun-09	31-Dec-12	Prod Systems Tier I	Healthy animals produce healthful products; an integration from animal health to human health	McBride, B.
200094	15-Jun-09	31-Mar-12	Prod Systems Tier I and Bio	Evaluation of Perennial Grass Biomass Systems in Ontario	Deen, B.
200131	1-May-10	30-Apr-13	Prod Systems Tier I	Impact of 1-MCP and controlled atmosphere conditions on physiological injury of apple fruit during storage: a mechanistic study of γ -aminobutyrate and polyamine metabolism	Shelp, B.

200132	1-May-10	30-Apr-13	Prod Systems Tier I	Enhancing the persistence of underseeded forage legumes under drought stress	Bowley, S.
200155	1-May-10	30-Apr-13	Prod Systems Tier I	Healthy Potatoes to Benefit the Ontario Producer and Consumer	Sullivan, A.
200246	1-Jun-10	31-May-13	Prod Systems Tier I	Optimizing Biological Control Strategies in Greenhouse Floriculture: Interactions, Integration and Implementation	Scott-Dupree, C.
200268	1-Apr-10	31-Mar-13	Prod Systems Tier I	Maintaining Plant Health with Effective Integrated Weed Management Strategies	Tardif, F.
200275	1-May-10	30-Apr-13	Prod Systems Tier I	Integrating new technologies for improved management of soil-borne plant diseases: Biological controls, disease forecasting, and pathogen interactions	McDonald, M.R.
200127	1-May-10	30-Apr-13	Prod Systems Tier I	Stimulating Host defenses as an alternative to pesticides for controlling plant diseases	Goodwin, P.
200122	1-May-10	31-Mar-13	Prod Systems Tier I	Management of foliar disease and insect pests in vegetable crops and sugar beet	Trueman, C.
200270	1-Apr-10	31-Mar-13	Prod Systems Tier I and Emerg Mgmt	Western Bean Cutworm Monitoring and Management Strategies for Ontario and the Great Lakes Region. A Proactive and Coordinated Approach to Prepare and Respond to a Newly Emerging Corn and Dry Bean Pest in Ontario	Schaafsma, A.
200189	1-May-10	30-Apr-11	Prod Systems Tier I and Emerg Mgmt	Appropriate welfare considerations for sheep subject to the recto-anal mucosa associated lymphoid tissue (RAMALT) biopsy for detection of scrapie infection	Menzies, P
200189	1-May-10	30-Apr-11	Prod Systems Tier I and Emerg Mgmt	Appropriate welfare considerations for sheep subject to the recto-anal mucosa associated lymphoid tissue (RAMALT) biopsy for detection of scrapie infection	Menzies, P
200117	1-May-10	1-May-13	Prod Systems Tier I and Emerg Mgmt	Immunity against avian influenza virus (AIV) in chickens and development of rational vaccines for control of avian influenza	Sharif, S.
200175	1-May-10	30-Apr-13	Prod Systems Tier I and Food for Health	Improving profitability in asparagus production through enhanced breeding, management and human health.	Wolyn, D.
200160	1-May-10	30-Apr-13	Prod Systems Tier I	Development of a complete solution for boar taint	Squires, J.
200181	1-Jun-10	31-May-12	Prod Systems Tier I	Modulation of Optimal Dietary True Digestible Calcium (Ca) to True Digestible Phosphorus (P) Ratio for Improving Growth and Nutrient Utilization in Pigs	Fan, M.
200203	1-May-10	30-Apr-12	Prod Systems Tier I	Effects of Gender, Season of the Year, and Management Regimen on Determining Saleable Meat Yield in Lamb Carcasses Using Ultrasound and Electronic Probe Technologies	Mandell, I.

200204	1-Sep-10	31-Aug-13	Prod Systems Tier I	The Impact of Residual Feed Intake Classification and Management Regimen on Feedlot Growth Performance, Carcass Traits, and Beef Quality	Mandell, I.
200302	1-May-10	1-May-13	Prod Systems Tier I	Swine Liquid Feeding Research II: Increase co-product usage, reduce energy input costs, impact on meat quality, gut health and the environment	de Lange, C.
200313	1-May-10	30-Apr-13	Prod Systems Tier I	Genetic evaluation and selection tools for profitability improvement in Canadian sheep production	Miller, S.
200116	1-Jun-10	31-May-13	Prod Systems Tier I	On-farm practical environmental enrichments for mink, to improve welfare and productivity	Mason, G.
200149	1-May-10	30-Apr-13	Prod Systems Tier I	New and Innovative Diagnostic, Prevention, and Treatment strategies for Poor Adaptive Responses to Negative Energy Balance in Transition Dairy Cows	Duffield, T.
200223	1-May-10	30-Apr-13	Prod Systems Tier I	Development of Immune Strategies for control of viral diseases of poultry	Nagy, E.
200128	1-May-10	30-Apr-13	Prod Systems Tier I and Env Sust	Development of New Energy Efficient Lighting Systems for Poultry Farming using Light Emitting Diodes (LEDs)	Bedecarrats, G.

Production Systems Theme Tier II

Project #	Start Date	Approved End Date	Approved Program	Title	Project Leader
026638	1-May-08	30-Apr-11	Prod Systems Tier II	Functions of Equine Clara Cell Secretory Protein	Bienzle, D.
200338	22-Jun-10	24-Sep-10	Prod Systems Tier II	Evaluation of diagnostic methods for uterine disease in postpartum dairy cattle	LeBlanc, S.
026630	1-May-07	30-Nov-10	Prod Systems Tier II	Recombinant Bovine C3d as an Adjuvant to Facilitate Early Calthood Vaccination	Shewen, P.
026553	1-Nov-07	31-Dec-10	Prod Systems Tier II	Nutrient content and feeding value of corn distillers grains produced by ethanol plants in Ontario.	Leeson, S.
200139	1-Dec-09	31-Dec-10	Prod Systems Tier II	Seasonal variance of the fecal microbiota in horses.	Arroyo, L.
200140	4-Jan-10	31-Dec-10	Prod Systems Tier II	Anti-inflammatory evaluation of High Rosmarinic Acid Mint (HRAM) in horses with LPS-induced articular inflammation	Kott, L.

200327	1-Jan-09	31-Dec-10	Prod Systems Tier II	Prevalence of Clostridium difficile and MRSA and Infecting bacteriophage in the pork processing	Warriner, K.
200108	1-Oct-09	31-Dec-10	Prod Systems Tier II	Characterizing the adaptive response of the rumen epithelium during dramatic shifts in rapidly fermentable carbohydrates in lactating dairy cattle	McBride, B.
200322	1-May-10	1-Dec-10	Prod Systems Tier II	Antemortem Management of Ontario Lambs at the Packing Plant	Mandell, I.
026552	1-Apr-07	31-Mar-11	Prod Systems Tier II	The impact of omega-3 and -6 fatty acids on inflammation during ruminant pregnancy, lactation, and fetal development. SR1106-35	Karrow, N.
026551	1-May-07	30-Apr-11	Prod Systems Tier II	A strategy to improve wheat yield and quality through integrated mangement of fusarium head blight.	Schaafsma, A.
026786	15-Jun-09	30-Apr-11	Prod Systems Tier II	An Evaluation of the Effect of Systemic Supplementation of Selenium on Dairy Calf Health from Birth to Weaning	Leslie, K.
026787	22-Jun-09	30-Apr-11	Prod Systems Tier III	Improving Outcomes after Microfracture Repair of Cartilage Defects by High Resolution Imaging and Presurgival Planning	Hurtig, M.
200321	1-May-10	30-Apr-11	Prod Systems Tier II	The effect of pain management therapy with Metacam for experimentally-induced and naturally-occurring mastitis on behaviour, physiological measures, production, and survival in dairy cattle	Leslie, K.
026640	25-Aug-08	30-Apr-11	Prod Systems Tier II	A comparison of the extent of frost tolerance in facultative winter annual weeds	Van Acker, R.
026548	1-Jul-07	30-Apr-11	Prod Systems Tier II	Mitigating ammonia release from caged layer facilities.	Leeson, S.
200349	13-Aug-10	30-Apr-11	Prod Systems Tier II	Optimization of Production and Resource-Use Efficiencies in Greenhouse Vegetable Cropping Systems	Micallef, B.
200323	1-May-10	1-May-11	Prod Systems Tier II	Postnatal Development of the Male Germline in Sheep	Hahnel, A.
200330	1-Jun-11	30-Jun-12	Prod Systems Tier II	Susceptibility of domestic poultry to infection with avian bornavirus	Smith, D.

200318	1-Jun-10	2-Jun-12	Prod Systems Tier II	Maintenance of Enviropigs at Arkell Swine Research for Research to Support Regulatory Submissions in the United States and Canada, and for Commercialization	Forsberg, C.
026790	1-May-09	31-Aug-11	Prod Systems Tier II	Effect of local anesthetic deposition into structures of the foot on subsequent magnetic resonance images.	Cribb, N.
026644	1-Nov-08	31-Oct-11	Prod Systems Tier II	The application of genomic approaches to rainbow trout aquaculture	Danzmann, R.
026645	1-Nov-08	31-Oct-11	Prod Systems Tier II	Hazelnuts, a potential industry for Ontario	Dale, A.
200347	1-Sep-10	30-Nov-11	Prod Systems Tier II	Controlling Contagious Nasal Cancer in Sheep	Wootton, S.
026646	1-May-09	31-Dec-11	Prod Systems Tier II	Evaluation of Two Sedation/Analgesia Protocols to Assist Ventilatory Support in the Critically Ill Equine Neonate	Kerr, C.
026650	13-Feb-09	31-Dec-11	Prod Systems Tier II	Elixir Milk: Evaluation of Mechanisms of Phytochemical Transfer to Milk	Osborne, V.
026791	1-May-09	31-Dec-11	Prod Systems Tier II	Laryngeal Ultrasound as Novel Diagnostic Technique	Chalmers, H.
026789	1-May-09	30-Apr-12	Prod Systems Tier II	Improving udder health in automatic milking systems through feed bunk management and design	DeVries, T.
026621	1-May-08	30-Apr-13	Prod Systems Tier II	Genetics of disease resistance in ruminants: Interaction between the HP-adrenal axis and the immune system.	Karrow, N.
200334	1-May-10	1-May-12	Prod Systems Tier II	The influence of biotic stress on yield potential of corn	Swanton , C.
200109	1-Sep-09	1-Sep-12	Prod Systems Tier II	Assessing the behaviour and welfare of broiler breeders using alternative feeding strategies	Torrey, S.
200332	1-Jan-10	1-Jan-13	Prod Systems Tier II	Breed-specific gene expression profiles and DNA methylation patterns in calves infected with Mycobacterium avium subsp. paratuberculosis (MAP)	Karrow, N.

200339	1-Apr-10	31-Mar-13	Prod Systems Tier II	Native species for novel applications for greenhouse and landscape culture.	Sullivan, A.
200328	1-May-10	30-Apr-13	Prod Systems Tier II	Maize breeding and genetics-field and lab capacity	Lee, E.
200329	1-May-10	30-Apr-13	Prod Systems and Env Sust Tier II	Management and physiology of turfgrass systems with an emphasis on reduced inputs, environmentally sustainable production and human health	Lyons, E.
200331	1-May-10	30-Apr-13	Prod Systems and Emerg Mgmt Tier II	Development of novel methods for the diagnosis and control of poultry coccidiosis	Barta, J.
200333	1-May-10	30-Apr-13	Prod Systems Tier II	Development of disease and insect resistant soybean varieties for food grade, functional food and specialty oil markets in Ontario	Rajcan, I.
200335	1-Jul-10	30-Apr-13	Prod Systems Tier II	A longitudinal study of a select group of animals at Arkell Swine in order to produce a data base of accurate production and disease records as a framework for multiple research studies	Friendship, B.
200336	1-Jul-10	30-Apr-13	Prod Systems Tier II	Adapting cultivars and production systems of dayneutral strawberries to the changing and diverse climate of Ontario.	Dale, A.
200178	1-Jul-10	30-Apr-13	Prod Systems Tier II	Alternative methods to control swine enteric bacterial disease	Friendship, B
200340	13-Jul-10	30-Apr-13	Prod Systems Tier II	High-carotenoid corn: enriching lutein and zeaxanthin concentrations in eggs produced by laying hens, and evaluating their bioavailability following consumption by humans to establish the potential for prevention of age-related macular degeneration	Shelp, B.
200319	1-May-10	30-Apr-13	Prod Systems Tier II	Effects of stressor hormones on reproductive success, and early embryo development of rainbow trout	Leatherland, J.
200346	3-Aug-10	30-Apr-13	Prod Systems Tier II	Vegetable crop management strategies and variety development for improved product quality and farm profitability	Zandstra, J.
27032	13-Aug-10	30-Apr-13	Prod Systems Tier II	Tunnel-growing Systems for raspberries	Dale, A.
200324	1-May-10	1-May-13	Prod Systems Tier II	Video imaging for real-time performance monitoring of growing-finishing pigs	de Lange, C.

200325	1-Jun-10	31-May-13	Prod Systems Tier II	Effects of Method of Forage Finishing and Cattle Breed on Growth Performance, Carcass Characteristics, Eating Quality, and Nutrient Composition of Forage Finished Beef Relative to a Grain Finished Product	Mandell, I.
200320	19-Mar-10	30-Apr-13	Prod Systems Tier II	Over-Wintering of Gastrointestinal Parasites in Organic Sheep Production	Menzies, P.
027035	1-Oct-10	1-Oct-13	Prod Systems Tier II	The impact of nutrition and RFI on tissue and molecular characterization of maintenance energy costs, and fetal growth and programming in wintering pregnant beef cows	Swanson, K.
027036	8-Sep-10	30-Apr-13	Prod Systems Tier II	Vegetable fertility management and new crops development	McKeown, A.
027037	9-Sep-10	31-Aug-12	Prod Systems Tier II	Effect of direct-fed microbials on health and performance of dairy cattle.	McBride, B.
027038	13-Sep-10	31-Mar-12	Prod Systems Tier II	Recruitment biology and ecology of large [<i>Digitaria sanguinalis</i> L. (Scop.)] and small [<i>Digitaria ischaemum</i> (Schreb.) ex Muhl.] crabgrass in turf, with implications for management under municipal pesticide bans	Van Acker, R.
027039	22-Sep-10	31-Dec-11	Prod Systems Tier II	A laboratory challenge study to assess the efficacy and safety of a single dose New formula Porcilis PCV, and compare it to two-dose Circumvent PCV and another 1-dose vaccine against porcine circovirus type 2	Dewey, C.
027044	4-Oct-10	30-Apr-13	Prod Systems Tier II	Improving Dry Bean (<i>Phaseolus vulgaris</i>) Production through Breeding, Genetics, Pest Management and Agronomy	Pauls, K.P.
027045	15-Nov-10	30-Sep-11	Prod Systems Tier II	Associative Effects of Mixing Whole Barley and Whole Corn for Finishing Lambs in Ontario	Mandell, I.
200316	15-Feb-10	26-Feb-10	Prod Systems Tier II	The exploration of the pharmacokinetic/pharmacodynamic properties of Florfenicol-like substance in the bronchoalveolar lavage fluid and pulmonary tissue of calves.	Viel
027046	1-Nov-10	31-Aug-11	Prod Systems Tier II	Insulin resistance, immune function, and uterine health in dairy cows	LeBlanc, S.
027049	1-Sep-09	28-Feb-10	Prod Systems Tier II	Evaluating the substitution of high quality vegetable oils for fish oil in rainbow trout feed.	Moccia, R.
027050	1-Feb-10	1-Jul-10	Prod Systems Tier II	Physical Characteristics of Feed and Fecal Waste from Trout Aquaculture.	Moccia, R.

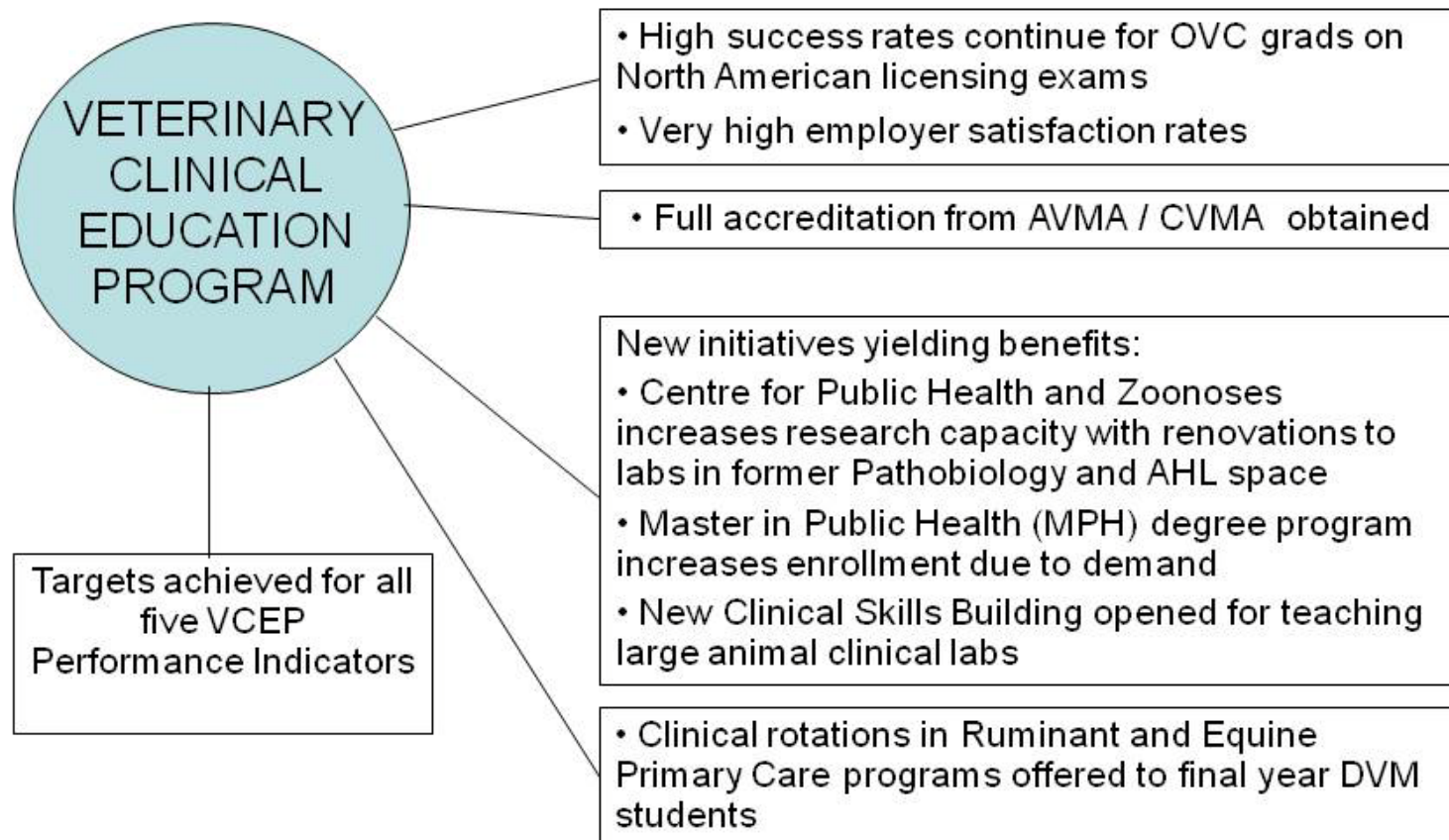
027185	1-Dec-10	31-Oct-13	Prod Systems Tier II	Regulation of Immune Response in Pigs	Wilkie, B.
027186	1-Dec-10	30-Apr-11	Prod Systems Tier II	An evaluation of the effect of Sometribove administered pre-calving for the prevention of subclinical ketosis in dairy cattle.	Duffield, T.
027188	1-May-10	30-Apr-13	Prod Systems Tier II	Cover crops preceding 2nd year soybeans	Deen, B.
027189	1-May-10	30-Apr-13	Prod Systems Tier II	Long-term effect of nitrogen rates on corn	Deen, B.
027190	1-May-10	30-Apr-13	Prod Systems Tier II	Cover crops preceding corn in a corn/soybean rotation where corn silage/residue is harvested for bioenergy biomass	Deen, B.
027191	1-May-10	30-Apr-13	Prod Systems Tier II	Evaluation of Miscanthus and Switchgrass, for bioenergy potential, adaptation and yield under Ontario conditions	Deen, B.
027192	1-Apr-11	1-Dec-11	Prod Systems Tier II	The Effects of Stocking Density on Broiler Growth Performance and Meat Quality	Mandell, I.
027193	1-Apr-11	1-Aug-14	Prod Systems Tier II	Equine Stem Cells – in vivo assessment and in vitro isolation optimization and characterization	Koch, T.
027194	23-Mar-11	23-Mar-12	Prod Systems Tier II	Development of Russian Dandelion as a source of natural rubber.	Wolyn, D.
027195	1-May-11	1-May-13	Prod Systems Tier II	Promotion of litter size in commercial swine using an immune-stimulant	Tayade, C.
027196	25-Mar-11	25-Mar-12	Prod Systems Tier II	Reducing intramammary infection in free-stall housed dairy cows: Interaction of post-milking standing time with cow cleanliness, lameness, and social status	deVries, T.
027197	25-Mar-11	25-Mar-13	Prod Systems Tier II	Improving efficiency of feed use through reduced variability in nutrient consumption in lactating dairy cows	deVries, T.
027198	1-Jun-11	1-Jun-13	Prod Systems Tier II	Sow Housing: risk factors and assessment techniques for lameness, productivity and longevity in group and individually housed gestating sows.	Friendship, R.
027199	2-May-11	1-Aug-13	Prod Systems Tier II	The effect of Fusarium mycotoxins on the frequency and severity of equine gastric ulcer syndrome	Smith, T.K.
027201	1-Apr-10	31-Mar-12	Prod Systems Tier II	Developing new, improved cultivars of barley and wheat for Ontario and Easter Canada	Falk, D.
027202	1-May-11	1-Dec-13	Prod Systems Tier II	Reducing the Impact of Soil Water Deficits on Soybean Yields in Ontario	Earl, H.
027203	1-May-11	31-Oct-12	Prod Systems Tier II	An Investigation of Alternative Methods of Dehydration and Cryoprotectant Addition for Equine Embryos	Chenier, T.

027212	1-Jan-11	1-Jan-14	Prod Systems Tier II	Investigations on the practicality and safety of neuroprosthesis induced bronchodilation for the treatment of Recurrent Airway Obstruction in the horse.	Viel, L.
200106	4-Aug-09	31-Jul-10	Prod Systems Tier II	Improving the innate resistance of beef cattle to bacterial pneumonia	Caswell, J.

VETERINARY CLINICAL EDUCATION PROGRAM

Selected Performance Indicators and Accomplishments

Program Objective: Support the Ontario economy by training professionals skilled in maintaining the health and welfare of animals and their interrelationships with people and the environment



Veterinary Clinical Education Program

Performance Indicators

Data collection and establishment of baselines for each Performance Indicator (PI) was completed with the assistance of OMAFRA. The following table summarizes the VCEP Program's performance according to the five (5) PIs in the Agreement.

Key Outcome		Maintain AVMA/CVMA accreditation.
Performance Indicator VCEP1	Level of accreditation achieved - Maintain AVMA/CVMA accreditation	
	Metric	Review of accreditation reports in order to assess performance and maintenance of accreditation.
	Baseline:	AVMA/CVMA Full Accreditation
	Target:	2010-2013: maintain AVMA/CVMA Accreditation
	Results (2010/11):	On March 17, 2011, OVC was granted a continuation of its full accreditation based on a vote by the AVMA/CVMA Council on Education. OVC is required to submit an annual update report documenting any changes the College has made that would impact any of the 11 accreditation standards. These two organizations represent the highest standard of achievement for veterinary medical education in the world. The accreditation process focuses on the Doctor of Veterinary Medicine program and the institutional resources, infrastructure and personnel that support it. Graduation from a fully accredited institution permits graduates to take the national licensure examination for professional practice in Canada and the USA.

Key Outcome	Attracts and retains highly qualified clinical faculty from around the world as a source of new knowledge.	
Performance Indicator VCEP2	An appropriate number of high quality faculty.	
	Metric	Number of faculty provided by U of G OMAFRA Partnership Funding
	Baseline:	Baseline established as the number of faculty positions supported through the Agreement in 2009/10, at 12.4 faculty FTEs.
	Target:	2009-2010: maintain 2008 level 2010-2013: baseline level likely to decline due to flatlined budget.
	Results (2010/11):	VCEP funding of \$1.9M contributed to the support of 12.4 faculty which is 11% of the total OVC 110.25 faculty FTE (see table below for details).

OVC Faculty FTE ¹ (Base funded in 2010-2011)

Department	Discipline		Assistant Professor	Associate Professor	Professor	Total
Pathobiology	Anatomic Pathology		2.00	1.00	3.00	6.00
	Avian Pathology		0.00	0.00	1.00	1.00
	Bacteriology		0.00	2.00	2.00	4.00
	Clinical Pathology		0.00	1.00	2.00	3.00
	Comparative Pathology		1.00	0.00	1.00	2.00
	Immunology		0.00	0.00	2.00	2.00
	Laboratory Animal Science		0.00	0.00	1.00	1.00
	Parasitology		0.00	1.00	1.00	2.00
	Virology		1.00	0.00	1.00	2.00
	Wildlife/Zoo Pathology		0.00	0.00	1.00	1.00
		Sub-total	4.00	5.00	15.00	24.00
Clinical Studies	Anesthesiology		0.00	3.00	0.00	3.00
	Cardiology		0.00	1.00	0.00	1.00
	Companion Animal Medicine		2.00	1.00	0.00	3.00
	Companion Animal Surgery ²		3.00	2.00	0.00	5.00
	Dermatology		0.00	1.00	0.00	1.00
	Emergency and Critical Care		1.00	1.00	0.00	2.00
	Large Animal Medicine		2.00	0.00	2.00	4.00
	Large Animal Surgery		2.00	2.00	1.00	5.00
	Neurology		2.00	0.50	0.00	2.50
	Oncology		0.00	0.00	1.00	1.00
	Ophthalmology		1.00	1.00	0.00	2.00
	Radiology		2.00	1.00	1.00	4.00
		Sub-total	15.00	13.5	5.00	33.5
Population Medicine	Communications		2.00	0.00	0.00	2.00
	Epidemiology		3.00	2.00	3.00	8.00
	Equine Health Management		0.00	1.00	0.00	1.00
	Farm Health Ethology		2.00	0.00	0.00	2.00
	Public Health (incl. CPHAZ)		1.00	2.00	2.00	5.00

	Ruminant Health Management		1.00	3.00	3.00	7.00
	Swine Health Management		1.00	0.00	2.00	3.00
	Theriogenology		2.00	0.00	0.00	2.00
	Statistician		0.00	1.00	0.00	1.00
	Poultry Health Management		1.00	0.00	0.00	1.00
		Sub-total	13.00	9.00	10.00	32.00
Biomedical Sciences	Anatomy		1.00	0.75	2.00	3.75
	Cellular/Molecular Biology		1.00	2.00	2.00	5.00
	Neurology		0.00	1.00	1.00	2.00
	Pharmacology/Toxicology		0.00	3.00	1.00	4.00
	Reproductive Biology		0.00	0.00	1.00	1.00
	Physiology		2.00	2.00	1.00	5.00
		Sub-total	4.00	8.75	8.00	20.75
	TOTAL		36.00	36.25	38.00	110.25
Notes						
1. In 2010-11 VCEP funding contributed \$1,900,000 which provided support equivalent to 12.40 faculty which is 11% of the total OVC 110.25 faculty FTE. 2. Includes position of Dean of the College Vacancies: Biomedical Sciences (2) Clinical Studies (5) Pathobiology (2) Population Medicine (1)						

Key Outcome	Provide a comprehensive training program for undergraduate veterinary students.	
Performance Indicator VCEP3	Readiness of graduates for employment (Provide a comprehensive training program for undergraduate veterinary students)	
	Metric	% level of students and employers satisfaction regarding readiness for employment.
	Baseline:	Baseline for agreement will be the results for the 2007/08 graduating class (2008/09 data were not used due to technical collection errors.)
	Target:	2010-2013: maintain percentages from 2007/08 annual student and employer surveys
	Results (2010/11):	Of graduates who responded (n = 65), 100% were satisfied (i.e. rated their performance as Superior, Very Good, or Good) with their overall performance/competence to do the job for which they were hired. Of the employers who responded (n = 39), 95% were satisfied (i.e. rated the new graduate as Superior, Very Good, or Good) with their employee's overall performance/competence to do the job for which they were hired. 2009/10 Results: Of graduates who responded 98% were satisfied Of the employers who responded 92% were satisfied 2007/08 Results: Of graduates who responded, 97% were satisfied Of the employers who responded 95% were satisfied
Key Outcome	Provide a comprehensive training program for undergraduate veterinary students.	
Performance Indicator VCEP4	Graduating students' performance in the North American Veterinary Licensing Exam (NAVLE).	
	Metric	% of VCEP students who pass the North American Veterinary Licensing Exam (NAVLE), compared to the % average of other North American institutions.
	Baseline:	Baseline is the 2008/09 pass rate for NAVLE students.

	Target:	2010-2013: That OVC students continue to meet or exceed the mean pass rate for all students writing the NAVLE exam.																																															
	Results (2010/11):	<table><tr><td></td><td colspan="2">Dec 10 & Apr 11</td><td colspan="2">Dec 10 & Apr 11</td><td colspan="2">Dec 08 & Apr 09</td></tr><tr><td></td><td>OVC</td><td>ALL</td><td>OVC</td><td>All</td><td>OVC</td><td>All</td></tr><tr><td>Number Taking Exam</td><td>108</td><td>3239</td><td>114</td><td>3061</td><td>106</td><td>3009</td></tr><tr><td>Number Passing</td><td>108</td><td>3161</td><td>114</td><td>3002</td><td>104</td><td>2908</td></tr><tr><td>Percent Passing</td><td>100</td><td>98</td><td>100</td><td>98</td><td>98</td><td>97</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>							Dec 10 & Apr 11		Dec 10 & Apr 11		Dec 08 & Apr 09			OVC	ALL	OVC	All	OVC	All	Number Taking Exam	108	3239	114	3061	106	3009	Number Passing	108	3161	114	3002	104	2908	Percent Passing	100	98	100	98	98	97							
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		Number Passing	108	3161	114	3002	104	2908																																									
		Percent Passing	100	98	100	98	98	97																																									
Key Outcome	Graduate individuals highly qualified in relevant post-graduate specialties.																																																
Performance Indicator VCEP5	Number of students starting and completing post-graduate studies each year by area related to OMAFRA priorities.																																																
	Metric	Number of VCEP funded and non-VCEP funded students working on projects related to OMAFRA priorities. The metric would include both students beginning and completing post-graduate studies.																																															
	Baseline:	Baseline is 15.1 DVSc students.																																															
	Target:	2010-2013: maintain funding for 15.1 DVSc students working in areas of priority to OMAFRA.																																															
	Results (2010/11):	See DVSc enrolment Table below																																															

TOTAL ENROLMENT NUMBER OF DVSC STUDENTS

WITH SUPPORT FROM VCEP FUNDING ¹

May 1, 2010 to April 30, 2011

		Total Number of Students Enrolled in 2010-11 (Headcount) ²			
Department	Discipline	In Program	New	Graduating	Total # Enrolled
Pathobiology	Anatomic Pathology	4	1	1	6
	Clinical Pathology	2	0	0	2
	Avian Exotic	0	0	0	0
	Laboratory Animal Science	1	0	0	1
	Oncology	0	0	0	0
	Sub-total	7	1	1	9
Clinical Studies	Anesthesiology	2	1	0	3
	Companion Animal Surgery	2	0	0	2
	Companion Animal Medicine	1	2	1	4
	Large Animal Medicine	2	1	1	4
	Large Animal Surgery	2	1	1	4
	Emergency and Critical Care	1	0	0	1
	Neurology	1	0	1	2
	Cardiology	1	0	0	1
	Radiology	0	0	0	0
	Sub-total	12	5	4	21
Population Medicine	Health Management	1	2	2	5
	Theriogenology	1	1	1	3
	Sub-total	2	3	3	8
Biomedical Sciences	N/A	0	0	0	0
	OVC Total	21	9	8	38

Notes

1. VCEP funding is \$506k, which is 54% of the \$928k base budget which supports the College funded DVSc positions.

2. The enrolment numbers are based on headcount not FTE. "In-program" students are enrolled for the full fiscal year. Students entering and exiting the program are enrolled for part of the year

3. The total number of base funded positions = 29 of which VCEP supports the equivalent of 15.12

NEW INITIATIVES

Knowledge Translation and Transfer (KTT) Program and Partnership Communications

Communications

Through the negotiation of the renewed OMAFRA - U of G Agreement, the Ministry and University agreed that there needed to be a new focus on Knowledge Translation and Transfer (KTT) to improve the dissemination and commercialization of research advances to the broad diversity of client groups (direct users of the research results). It was also agreed that an enhanced emphasis on communications to the other stakeholders and the public at large (general beneficiaries of the application of research results) was needed to help ensure that Ontario taxpayers hear about the value of the research funded by the provincial government under the Partnership.

KTT Program

The KTT initiative established under the OMAFRA - U of G Partnership Agreement in 2008 is designed to accelerate the transformation of knowledge into use. This program includes long-established practices in extension and technology transfer, building and expanding on them. Over the past year, significant progress has been made in the continued development and delivery of the program. Achievements made during the 2010/11 fiscal year are described below.

The **U of G Knowledge Mobilization Program Managers** continued to provide for the delivery of the KTT program throughout the 2010/11 time period, however, the positions were re-focused to match the research themes instead of dividing responsibilities between program and policy areas of emphasis. This shift in focus allows both program managers to be engaged in efforts on the 'science-policy' interface as well as the program application.

The **'Agri-Food and Rural Link'** brand name was further developed and implemented in terms of branding the KTT program. A logo that indicated the program is part of the OMAFRA - U of G Partnership was created along with a fact sheet template. The **Agri-Food and Rural Link** name and logo are also being used as a Twitter feed which currently has over 370 followers.

U of G KTT staff are also leading the redevelopment of the **OMAFRA - U of G Partnership Website** to create a more interactive and effective site that will meet the needs of both internal and external stakeholders. An RFP competition recruited a web developer with a successful history of audience-centered web development. Four websites are being redeveloped including HQP, Research Program, Agri-Food and Rural Link, and general Partnership homepage. The redevelopment process has a strong focus on innovation, reaching our target audiences and incorporating web 2.0 functions. The new sites will be launched mid-fall 2011 with a promotional strategy positioning the Partnership website as the repository for agri-food information in Ontario.

The Agri-Food and Rural Link **KTT Funding Program** was launched in May 2010. Three calls for funding were held in May 2010, September 2010, and January 2011. These calls were well received across the OMAFRA - U of G community with over 85 proposals submitted in total. Of the submitted proposals, 53 projects were funded with a value of approximately \$2.9million

allocated. The funded KTT projects span across the research themes and priorities of OMAFRA. See page 144 for a complete listing of KTT projects.

To support the **KTT Funding Program**, Town Hall meetings were held for all 3 of the calls. Both OMAFRA and U of G KTT staff have been devoting time towards assisting applicants with the development of their KTT proposals. OMAFRA and U of G KTT staff were also involved in the formal review process for the selection of the funded projects along with Management and Senior Executives from both OMAFRA and U of G. Overall administration for the project funding program was provided by the U of G KTT staff.

As part of the administration of the KTT Funding Program, the first annual reports were submitted in May, 2011. Plain language summaries of these reports are being consolidated into a **KTT Casebook** for further dissemination of the program results and successes.

Agri-Food and Rural Link has developed and enhanced **networks and exchange of knowledge** between a variety of internal and external stakeholders through individual networking and by co-hosting and organizing research highlight days and events including:

- **Food for Health Plain Language Poster Display at the Royal Winter Fair (November, 2010)**
 - o Provide the opportunity for graduate students working on OMAFRA-funded research to learn plain language writing skills and to network with 'Food for Health' professionals at the Journey to your Good Health event.
 - o Provide plain language examples of current 'Food for Health' research being conducted at the U of G to visitors attending the Royal Winter Fair.
- **Environmental Sustainability Research Forums (June, 2010 and April 2011)**
 - o Provide an opportunity for networking, collaboration, learning and sharing new ideas and innovations in the area of agri-environmental sustainability.
 - o Highlight research funded under the Environmental Sustainability research theme.
 - o Provide an opportunity for input in OMAFRA research priorities.
- **Partnership Practices Poster Showcase (February 2011)**
 - o This event was a funded KTT project directed by Linda Hawkins from the Institute for Community Engaged Scholarship
 - o Provide the opportunity for a wide range of University-Community-Industry-Government partnerships to be highlighted at one event held downtown Guelph.
- **Knowledge Exchange Day: KTT in Action (February 2011)**
 - o Provide the opportunity for principal investigators from multiple KTT projects to present their work to date and to share lessons learned
 - o Provide a networking opportunity for OMAFRA staff and researchers from U of G to share knowledge and expertise
 - o Provide an opportunity for HQP students to highlight their work through a Poster Competition
- **Using Evidence to Inform Policy: A Collaborative Workshop (March 2011)**
 - o A collaborative effort between U of G KTT staff, Health Canada, and the Public Health Agency of Canada

- o Provide an opportunity to learn about successful initiatives to incorporate evidence into the policy development process
- o Provide an opportunity for networking between various ministries and researchers working in the health and agri-food health topics
- **KTT Community of Practice**
 - o This is a monthly meeting of interested people in Guelph around the principles of KTT
 - o Provide an opportunity to interact with researchers and staff from a variety of departments at U of G and agencies around Guelph such as Public Health Agency of Canada, Centre for Public Health and Zoonoses, and the Institute for Community Engaged Scholarship.

Vineland Research and Innovation Centre – Contributions to the KTT Program

Through the OMAFRA-U of G KTT program, a 0.5 FTE is employed at Vineland Research and Innovation Centre (VRIC) as a **Horticulture Technology Scout**. Michael Kauzlaric has been actively searching for opportunities for the Canadian horticultural Industry through evaluating/assessing Canadian Technologies, gaining an understanding of the needs of the industry, bringing technologies into Canada, and extending technologies to the global marketplace. To date, over 20 separate technologies have been identified as having potential for the Canadian horticultural industry.

The 4 Targeted Areas for Scouting are:

1. **Automation**- Labour Saving Technologies
2. **Marketing and Packaging**- Presentation and Quality Acceptance
3. **Production**- Innovative technologies and practices
4. **Horticultural Cultivars**- New potentials, new markets or utilization of existing cultivars

The Horticulture Technology Scout has been active in **pursuing In-licensing Agreements** that will ultimately benefit the Canadian horticultural industry.

The Horticulture Technology Scout has also been active in **reaching out to the horticulture industry** through interaction with growers and associations. The list below outlines the key contacts that have been made as well as activities that have occurred as a result of this position.

- Actively **showcasing fruit from U of G program** to Ontario industry
- Offering **twilight meetings for growers** to view new selections in U of G program

The Horticulture Technology Scout has actively participated in the following events:

- Greenhouse conference
- Landscape Expo
- Canadian Produce Marketing Association
- Ontario Fruit and Vegetable Growers Association
- Ontario Greenhouse Vegetable Growers Association
- Flowers Canada
- Ontario Fruit and Vegetable Convention
- Member of the Tender Fruit Evaluation Committee

- Member of the Innovation Sub-Committee of the Labour Working Group (Horticulture Value Chain) Round Table

Communications

The communications initiatives undertaken through the communications plan are managed within the overall KTT initiative under the Partnership because the communications activities contribute directly to the objectives of the KTT program. This includes expanding and enhancing stakeholders' awareness of activities, events, accomplishments and outputs of the various Partnership programs (Research, the Veterinary Clinical Education Program, and the Agri-Food and Animal Health Laboratory Programs). This awareness stimulates opportunities for stakeholders to provide informed input into planning and delivery of these programs. For example, stakeholders learning of specific research projects may contact the program managers (U of G Research Program Directors or OMAFRA Director Champions) or may communicate directly with the researchers about how the research findings could assist in addressing their particular needs, or suggest how further research would do so.

Several communications initiatives, outlined below, have continued and grown throughout 2010/11 in accordance with the plan.

News@Noon

News@Noon is a lunch-hour speaker series, held approximately every six weeks except during summer months. It alternates venues between 1 Stone Road, and somewhere on the U of G Campus.

Seven presentations were made in 2010/11

- Topics were:
 - o "Centre for Public Health and Zoonoses – Working at the human-animal-environment interface" (presentation by Prof. Jan Sargeant)
 - o "How Plants talk and why we should listen" (presentation by Prof. Clarence Swanton)
 - o "Vibrant veggies: Eating your way to better health with vibrant veggies." (presentation by Prof. Mary Ruth McDonald)
 - o "The Enviropig: The leading edge of genetically enhanced food animals" (presentation by Prof. Cecil Forsberg and Prof. Rich Moccia)
 - o "Perfect poinsettias: non-chemical strategies to control growth." (Presentation by Prof. Theo Blom)
 - o "Harnessing nature's medicine – with Ontario fruits." (Presentation by Prof. Gopi Paliyath)
 - o "High immune response in dairy cattle – Taking the technology to market." (Presentation by Lauri Wagter-Lesperance)

Up to 60 people attended each event; in some cases attendees included industry representatives. A review is underway to determine if there are ways to broaden News@Noon for additional exposure for the presenters and for the partnership.

The Buzz

The Buzz is an electronic community news vehicle for and about the OMAFRA - U of G Partnership. The Buzz contains articles up to 150 words long about research, research stations, news and coming events related directly to any of the programs supported through the Partnership.

- In 2010/11, there were six new issues of the Buzz
- Originally meant primarily as internal communications vehicle within the Ministry and the University, circulation now includes approximately 25 people outside of the U of G or OMAFRA through direct distribution or subscription. It is anticipated that external circulation will be expanded in the coming year
- Direct distribution is 374 people including U of G personnel (administrators then forward to their departmental faculty and staff) and external names, and it is also forwarded to all OMAFRA staff

SPARK

Between May 2010 and May 2011, the combined efforts of students in Students Promoting Awareness of Research Knowledge (SPARK), and the agricultural communication classes, both based at the U of G, produced an extensive list of published and broadcast news stories about a variety of OMAFRA-sponsored projects. This listing can be found on the U of G 'OMAFRA Agreement' website at www.uoguelph.ca/research/publications/index, as well as in Appendix A. These stories have appeared in a number of different publications, and cover the spectrum of the University's many different agricultural research institutions and sites, including the regional campuses and the research stations, as well as the colleges on the main Guelph campus.

The primary vehicles for publication are the Ontario farm media, the U of G *Research* magazine and the University of Guelph main website and research website. Students contribute SPARK*AIR radio pieces which profile agricultural research at the U of G. The SPARK*AIR program continued this year, and more details about this program are below.

In total, 49 print stories were published by SPARK about the Partnership. As well, Owen Roberts writes weekly columns called Urban Cowboy, which are published in both the *Guelph Mercury* and the *Woolwich Observer*. In 2010/11, Owen wrote 11 Urban Cowboy columns relating to the Partnership, and 4 Partnership related stories for *The Grower*.

SPARK*AIR – Partnership sponsored video stories

Building on the success of the first season of Partnership video stories, the Partnership continued funding the SPARK*AIR program including funding for:

- Two SPARK students
- Hosting on Farms.com
- Purchase of a new desktop computer for video editing

SPARK*AIR features news-like video stories about research coming out of the OMAFRA - U of G Partnership. The students produce the videos from the beginning to end by setting up the interview, creating the story based on the researcher's information, reporting the story on camera and being the videographer, collecting appropriate shots and finally editing all the clips into an informative three-minute story.

A key to SPARK AIR is a partnership with commercial agricultural information provider www.farms.com. From May 2010 to May 2011, 11 stories were completed and posted to www.farms.com's main page, a popular website for agricultural expertise. SPARK*AIR also continued its partnership with Rogers Television Guelph in February 2010 to air stories on the weekly newsmagazine show *First Local*. All stories produced, and their air dates are listed in Appendix A.

Feedback from this initiative, from key OMAFRA and U of G staff as well as farms.com has been encouraging – so much so that organizations are approaching SPARK*AIR to produce stories and informational videos for them. For example, SPARK*AIR was approached to work with KTT staff to produce a video about a KTT outreach day. Two SPARK students worked with Bronwynne Wilton to introduce various KTT projects and approaches to those in attendance, as a networking and idea-stimulating exercise.

The program continues to raise the profile of agri-food research, the Partnership, the University and the Ministry.

Yearbook

One of the key communications initiatives is to create a 'reader friendly' annual publication, featuring highlights and key accomplishments of the Partnership programs, for a broader and more general audience than would normally view the Agreement Annual Report. This resulted in the second 32-page special issue of *Research* magazine, focusing on the Partnership called the "2010 Agri-food Yearbook". The format for this edition is the same as the 2009 Agri-Food Yearbook:

- Presented in sections about AHL, AFL, seven research themes, VCEP and new initiatives HQP and KTT
- Printed and delivered in October 2010, including to readers of Ontario Farmer.
- The Yearbook will also be included as a 'chapter' within this OMAFRA - U of G Partnership "Annual Report"

Affiliated Researcher Program

This program was launched in June 2008. It gives full access to the U of G Library system – including remote access – to OMAFRA staff who work on delivering the OMAFRA - U of G Agreement programs. There are currently 96 affiliated researchers.

Affiliated researcher terms are for two years, and that meant starting in July 2010, renewal forms were sent out for people to renew. From this process, close to 20 accounts have been cancelled, most of those due to people leaving the Ministry or changing positions. The renewal process is ongoing, and there were seven new accounts opened in 2010/11.

Knowledge Translation and Transfer (KTT) Projects 2010-2011

Project #	Start Date	End Date	Primary Theme	Project Title	Project Leader
299500	1-Apr-10	31-Dec-12	PS	Undergraduate Student Experiential Learning Pilot Program	Robinson, A.
299501	1-Aug-10	12-Dec-12	EM	Measuring the impact of a participatory approach to accelerating the adoption of practices and procedures to control Johne's Disease (JD) on Ontario dairy farms	Kelton, D.*
299502	1-Sep-10	30-Jun-12	ARP	Doing Democracy with Circles: Workshops for Public Sector Professionals	Caldwell, W.
299503	1-Sep-10	31-Dec-11	ARP	Best Practices in Rural Economic Development and Planning: A Learning Series for Municipal Councillors and Practitioners	Caldwell, W.
299504	1-Sep-10	30-Apr-13	ES	Application of learning alliances to enhancing economic and environmental sustainability of food processors through efficient use of resources	Farahbakhsh, K.*
299505	1-Sep-10	31-Aug-12	PS	Animal Welfare and Food Animal Production – Training and education for leaders in Ontario's food animal sectors	Widowski, T.
299506	1-Oct-10	1-Oct-11	EM	Increasing poultry biosecurity by developing an instructional DVD with practical on-farm examples and promoting participation in interactive poultry biosecurity seminars	Guerin, M.
299507	1-Oct-10	30-Apr-13	PS	CALF-ETERIA: Using CALF health and productivity as a template for an Evaluation of Translation and Extension of Research Information for Agriculture	Leslie, K.*
299508	1-Sep-10	30-Apr-11	ARP	Policy Education Program (PEP)	Ker, A.
299509	1-Aug-10	1-Aug-13	FFH	Agri-food for Healthy Aging (A-HA): Building connections and advancing knowledge within the agri-food, nutrition and health sectors	Duncan, A.
299510	1-Sep-10	30-Apr-13	Open**	Development and Assessment of Quality Milk Courses for Ontario Dairy Sheep and Dairy Goat Producers	Menzies, P.
299511	7-Sep-10	8-Apr-11	PDEVC	Enhancing BUS*4550/4560, Interdisciplinary Product Development Course	Lang, M.
299512	1-Nov-10	15-Dec-12	PS	Enhancing the KTT of Field Crop Production information to Ontario growers.	Tardif, F.
299513	1-Sep-10	31-Dec-12	PS	Exploring the effectiveness of mobile web browsing, open data, and social media technology to improve communication with clients	LeBoeuf, J. McEwen,
299514	1-Jan-11	31-Dec-12	EM	Developing capacity for knowledge translation and transfer in agri-food public health in Canada	S./Rajic, A.*

299515	1-Sep-10	31-Aug-12	ARP	Young Workers in Ontario's Rural Labour Market: Current Realities and Strategic Options for Employees and Employers	Mann, S.
299516	1-Aug-10	31-Jul-11	ARP	Human Resource Management Practices in the Agri-sector: A Tool for Rural Employers	Mann, S.
299517	1-Sep-10	28-Feb-11	PS	Market survey to enable enhancement of the existing KTT by Equine Guelph to Ontario's extensive equine industry	Ecker, G.
299544	1-Sep-10	31-Mar-11	ES	Understanding knowledge mobilization: Connecting science with policy and industry associations	Allen, E.
299520	1-Jan-11	30-Apr-13	ARP	The Ontario Rural Landowners Stewardship Guide: Extending Its Application Across Rural Ontario - Review, Refinement and Promotion	Caldwell, W.
299521	1-Jan-11	23-Dec-12	FFH	Creating Awareness about the Demand for Locally Produced Ethno-cultural Vegetables: discovering barriers and opportunities to this niche market's entry	Filson, G.
299522	1-Jan-11	30-Apr-13	ES	Cover crop decision-making tools	Van Eerd, L.
299523	1-Jan-11	31-Dec-12	PS	Knowledge Transfer of the High Immune Response Technology to the Dairy Industry and the Dairy Support Industry as a Best Management Practice to Improve Animal Health	Mallard, B.
299524	1-Jan-11	31-Dec-12	EM	Enhancement of the Food Safety Network at the University of Guelph	Hill, A.
299525	1-May-11	31-Dec-12	PS	Developing Educational Resources for Specialty Crop Production in Ontario	McKeown, A.
299526	1-Apr-11	31-Mar-13	Bioecon	Bioeconomy Seminar Series and Innovative Outreach Program for Wider Dissipation of Knowledge	Mohanty, A.
299527	30-Apr-11	30-Apr-13	PS	Enhanced effectiveness of animal research KTT	de Lange, K.
299528	1-Nov-10	14-Mar-11	Open	Celebrating partnership: Delivery of a Community-University Tradeshow	Hawkins, L.
299529	1-Feb-11	31-Sep-2012	PS	Assisting Animal Welfare - Development of a Decision Tree Tool to Assist in Poultry Management	Guerin, M.
299530	1-Dec-10	30-Jun-11	ARP	Delivering High Skills Programs in Agriculture, Horticulture, Food and Environment: Professional Development Workshop Series for secondary school educators.	Schmidt, J.
299531	1-Jan-11	30-Apr-13	PDEVC	Building Regional Food Hubs in Ontario through effective knowledge translation and transfer: Creating resilient Ontario communities	Landman, K.
299532	3-Jan-11	29-Apr-11	Open	Web-based KTT Infrastructure	Remillard, P.
299533	1-Feb-11	31-Aug-11	FFH	Delivery of Functionality International Conference IV: Ontario-Agri-Food Industry Showcase to the World	Marangoni, A.
299534	1-Apr-11	31-Aug-12	ES	Best Management Practices for Pollination & Pollinators: Promoting & Sustaining a Crucial Ecosystem Service	Kevan, P.

299535	1-Apr-11	30-Apr-13	PS	Maintaining sustainable sport opportunities in rural communities by communicating new research in turfgrass management on IPM and pesticide free turfgrass management.	Lyons, E.
299536	1-Apr-11	31-Mar-13	ES	Best Management Practices for Manure and Organic Waste Treatment Technologies: Use of Videos, Workshops and Research Notes to Enhance Adoption of Technologies	Crolla, A.
299537	1-May-11	30-Apr-13	FFH	Development of consolidated and comprehensive 'Food for Health' content for the Agri-Food and Rural Link KTT website	Paliyath, G.
299538	1-May-11	30-Apr-13	ARP	Planning for Agriculture: KTT to Engage Municipalities, Farmers and the Public	Caldwell, W.
299539	7-Jul-11	1-Apr-13	Open	CME KTT Outreach Seminar Series	Lang, M.
299540	1-May-11	31-Dec-12	PS	Development of an Ontario Dairy Cattle Welfare Symposium	Leslie, K. Guzman- Novoa, E.
299541	1-Apr-11	30-Apr-13	PS	Advisory and Outreach for Apiculture in Ontario	
299543	30-Apr-11	30-Apr-13	Open	Establishment of an Ontario site for CgFARAD at the University of Guelph for the translation and transfer of food animal drug residue avoidance and toxicant exposure knowledge	Johnson, R.
299545	1-May-11	30-Apr-13	PS	A dynamic action threshold decision-making tool for soybean growers	Hallet, R.
299546	1-May-11	30-Apr-13	PS	Ontario Agri-Environmental Research Data Repository	Johnston, W.
299547	1-May-11	30-Apr-13	Open	Clear Language Research Summaries: Process, Training, Outputs and Dissemination	Hawkins, L.
299548	1-May-11	30-Apr-13	ES	Application of Participatory Model Building (PMB) to enhance knowledge translation in pollution prevention in the food processing sector	Farahbakhsh, K.
299549	1-Apr-11	30-Apr-13	Open	Bridging the gap between science and policy in the agri-food sector through knowledge synthesis and translation (KST) support tools	McEwen, S. / Rajic, A.
299550	31-Mar-11	31-Mar-13	ES	Evaluating the Role of Knowledge Translation & Transfer to Enhance Farm Organization Capacity to Participate More Effectively in Collaborative Decision Making	Fitzgibbon, J.*
299553	1-Jul-11	30-Apr-13	PS	"Report on Research" – Implementation of an Extension Program based on Equine Industry Needs and Priorities using a multimedia approach through social media channels	Thomason, J./ Ecker, G.

Highly Qualified Personnel Program (HQP)

The HQP Program provides Scholarships to enhance “market-readiness” of graduate students by providing experiential learning opportunities beyond that normally available to students working in the Agri-Food system.

The Scholarships are open to all students that meet the eligibility criteria for entry into graduate programs at the University of Guelph. In 2010/11 there were two competitions for HQP Scholarships the outcome of which was awards to 28 MSc and 23 PhD students across 15 departments.

For the 2011/12 budget year, there will be two further calls for applications for new graduate students starting degree programs in Summer 2011, Fall 2011 and Winter 2012 with up to 20 new Scholarships available. The only academic course requirement for support within the OMAFRA HQP program is enrollment in a new targeted course, UNIV 6050. This new HQP course was initiated in Fall 2010, designed to expose students to various aspects of business practices, commercialization and the impact of Agrifood industries on other societal issues. Thirty four HQP students enrolled in the first year, and this two semester course will be offered each year.

All HQP students must also participate in at least one semester of job shadowing/work experience. Some students have started these work semesters and this activity is being formalized with newly developed MoU`s for both the student and mentor. In 2011 the HQP website was updated to incorporate all HQP application templates as well as providing access to these MoU`s, together with exit surveys for both students and mentors.

Dr. Steve Leeson, the HQP co-coordinator, is working closely with the AVPR Agrifood and Partnerships, Program Directors overseeing the OMAFRA - U of G Research Themes, and OMAFRA staff in order to deliver the goals of the HQP Scholarship program. The budget projections for 2011/12 are within guidelines initially established for this 5yr program.

Animal Health Laboratory:

In 2010/11, 12 research projects were approved for funding under the Animal Health Strategic Investment (AHSI). Of these, 8 were classified as new test development and 4 were classified as surveillance or survey projects.

Two major equipment purchases were made in 2010/11 using AHSI funding that will support the development of new tests both within AHSI projects and in turn within the AHL labs in general. One was a complete ELISA automation system, and the other (only partly funded by AHSI), was a Matrix Assisted Laser Desorption/Ionization Time-Of-Flight (MALDI-TOF) Mass Spectrometer.

Five AHL project staff members are supported directly from AHSI funding: 1 Project Manager and four laboratory technicians. Within projects various other personnel are supported including 5 post-doctoral fellows, 1 DVSc, 6 PhDs, 7 masters students, 20 summer or part time students, and 18 lab support personnel.

Follow up investigations have been conducted in 2010/11. Much of the testing performed has been in the interest of on-going monitoring, and \$43,176 has been spent on this testing.

New test development projects:

AHSI Project 09-02: Determination of the prevalence of anthelmintic resistance in Ontario sheep flocks with indicators of gastrointestinal parasitism (Project Lead: Dr. Andrew Peregrine)

AHSI Project 09-05: Development and assessment of a diagnostic ELISA for *Clostridium perfringens* Cpb2 toxin, with special reference to swine and cattle (Project Lead: Dr. John Prescott)

AHSI Project 09-08: Mycoplasma speciation by molecular biology assays (Project Lead: Dr. Hugh Cai)

AHSI Project 09-11: Development of molecular typing method for the characterization of *Giardia duodenalis* (Project Lead: Dr. Hugh Cai)

AHSI Project 09-14: DNA bar-coding of coccidial parasites of production animals: Development and field testing of a LightCycler-based quantitative test (Project Lead: Dr. John Barta)

AHSI Project 09-15: Rapid detection and typing of *Haemophilus parasuis* (Project Lead: Dr. Hugh Cai)

AHSI Project 09-17: Development of *in-situ* hybridization (ISH) for diagnosis of *Coxiella burnetii* and *Toxoplasma gondii* in small ruminants (Project Lead: Dr. M. Hazlett)

AHSI Project 09-22: Optimization and validation of real-time PCR to determine the prevalence of pathogenic and non-pathogenic *Brachyspira* spp in Ontario layer flocks and to identify risk factors associated with dirty egg syndrome (Project Lead: Dr. D. Slavic)

AHSI Project 09-25: Validation of serum amyloid A (SAA) an acute phase protein as marker of inflammation in horses (Project Lead: Dr. B. Hoff)

AHSI Project 10-01: Using glycantyping to predict outcome in Ontario sow herds experiencing porcine reproductive and respiratory (PRRSV) outbreaks. (Project Lead: Dr. J. Alsop)

AHSI Project 10-02: Validating and implementing new real time PCR tests and ELISAs for mammalian viruses (Project Lead: Dr. S. Carman)

AHSI Project 10-03: Molecular typing of *Coxiella burnetii* identified in Ontario by multiple-locus variable number of tandem repeat analysis (MLVA) (Project Lead: Dr. Shu Chen)

AHSI Project 10-10: LHV-4 in Ontario rabbits (Project Lead: Dr. P. Turner)

AHSI Project 11-02: Avian *Chlamydophila* and *Coxiella* Infection in Ontario: Molecular Diagnosis Method Development (Project Lead: Dr. Hugh Cai)

AHSI Project 11-04: Development of immunohistochemical tests for small ruminant lentiviruses (caprine arthritis-encephalitis virus, maedi-visna virus) (Project Lead: Dr. Josepha DeLay)

AHSI Project 11-05: Validation of MALDI-TOF for bacterial speciation (Project Lead: Dr. Durda Slavic)

AHSI Project 11-06: Comparison of four different sample types and three different culture methods for *Salmonella* spp. detection in poultry environmental samples (Project Lead: Dr. Durda Slavic)

AHSI Project 11-07: Evaluation of Massively Parallel Sequencing for Detection and Characterization of Viruses (Project Lead: Dr. Davor Ojkic)

AHSI Project 11-09: Genotyping of fowl adenoviruses and infectious bursal disease viruses from Ontario broiler breeder flocks (Project Lead: Dr. Davor Ojkic)

AHSI Project 11-10: Development of Rapid Identification Assays for Veterinary *Mycoplasma* Using Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (Project Lead: Dr. Hugh Cai)

AHSI Project 11-12: Equivalency for Strong Positive Serum ELISA Johne's Disease Test Results AND Interpretation of Repeated Testing for Johne's Disease in Ontario Dairy Herds (Project Lead: Dr. David Kelton)

Surveillance projects:

AHSI Project 09-01: Disease surveillance in a selected group of hog producers with minimal exposure to veterinary diagnostic services (Project Lead: Dr. Tim Blackwell)

AHSI Project 09-03: Enhanced surveillance for viral and bacterial pathogens in commercial broiler chicken flocks in Ontario (Project Lead: Dr. Michele Guerin)

AHSI Project 09-04: Surveillance of disease agents of public health and agricultural significance in wildlife living on farms in Ontario (Project Lead: Dr. Claire Jardine)

AHSI Project 09-06: A survey of risk factors associated with condemnation of sheep carcasses due to *Cysticercus ovis* infection (Project Lead: Dr. Paula Menzies)

AHSI Project 09-07: Integrating milk based cow and bulk tank test data, dairy cattle inventory data and GIS location data into the AHL surveillance capacity (Project Lead: Dr. David Kelton)

AHSI Project 09-09: Investigation of infectious etiology of small ruminant abortion in Ontario with emphasis on *Chlamydophila* spp. and *Coxiella burnetii* (Project Lead: Dr. Hugh Cai)

AHSI Project 09-10: Epidemiological analysis of *Mycoplasma bovis* isolated from Canada in the past 30 years (Project Lead: Dr. Hugh Cai)

AHSI Project 09-13: Refining the Ontario Swine Veterinarian-Based Surveillance (OSVS) system for real-time surveillance and integration with laboratory-based surveillance (Project Lead: Dr. Bob Friendship)

AHSI Project 09-16: Is the treatment of exudative epidermitis in pigs becoming a problem because of the emergence of antimicrobial resistance? (Project Lead: Dr. R. Friendship)

AHSI Project 09-18: Associations between the incidence of *Cryptosporidium parvum* and selenium status in neonatal dairy calves in Ontario (Project Lead: Dr. K. Leslie)

AHSI Project 09-19: Surveillance for inclusion body hepatitis in broiler breeders (Project Lead: Dr. D. Ojkic)

AHSI Project 09-20: The development and design of a surveillance system for antimicrobial resistance in agricultural animal pathogens in Ontario (Project Lead: Dr. D. Pearl)

AHSI Project 09-21: Developing and implementing techniques to harvest additional surveillance information from existing AHL diagnostic laboratory data (Project Leads: Dr. C. Revie and Dr. J. Sanchez)

AHSI Project 09-23: Ear tip necrosis in swine (Project Lead: Dr. R. Friendship)

AHSI Project 09-24: Surveillance of antimicrobial resistant enteric bacteria in antimicrobial-free and conventional broilers in Ontario – a pilot study (Project Lead: Dr. M. Guerin)

AHSI Project 09-26: Proposal to determine the prevalence of *Coxiella burnetii* infection in sheep flocks and goat herds in Ontario and their farm workers (Project Lead: Dr. M. Guerin)

AHSI Project 09-27: Surveillance for enteric parvoviruses in poultry – a pilot study (Project Lead: Dr. É. Nagy)

AHSI Project 09-28: Risk-based surveillance of respiratory infections in growing pigs (Project Lead: Dr. Z. Poljak)

AHSI Project 09-29: Identification of novel toxin gene(s) associated with type A *Clostridium perfringens*-associated haemorrhagic abomasitis of calves in Ontario (Project Lead: Dr. J. Prescott)

AHSI Project 09-30: Genotyping and detection of *Leptospira spp.* in wildlife reservoir hosts in Ontario through comparison of immunohistochemical and polymerase chain reaction genotyping methods (Project Lead: Dr. K. Shearer)

AHSI Project 09-31: Case series of pandemic H1N1 in Ontario turkey breeder flocks (Project Leads: Dr. M. Guerin and Dr. Z. Poljak).

AHSI Project 10-04: Johne's Disease in Ontario's small ruminant dairy industries: Prevalence, potential risk factors, and performance comparison of serum, milk and fecal diagnostic methods (Project Lead: Dr. A. Jones)

AHSI Project 10-05: Expanded data transfer from AHL to CAHSN: In support of improved notifiable disease reporting to CFIA, emergency preparedness, timely disease detection and data analysis (Project Lead: Dr. H. Kloeze)

AHSI Project 10-06: Comprehensive evaluation of bacterial hazards in the upper respiratory tract of swine by terminal restriction fragment length polymorphism (T-RFLP) analysis (Project Lead: Dr. J. MacInnes)

AHSI Project 10-07: Regional PRRS elimination trial (Project Lead: L. Moser)

AHSI Project 10-08: Summer student assistantships, AHL Mammalian Virology and Bacteriology (Project Leads: Dr. D. Slavic and Dr. S. Carman)

AHSI Project 11-01: Salmonella Enteritidis baseline study in Ontario commercial broilers (Project Lead: Dr. Michele Guerin)

AHSI Project 11-03: Detection of *maedi visna* virus infection in sheep (Project Lead: Dr. Paula Menzies)

AHSI Project 11-08: Contact network based disease spread model in Ontario (Project Lead: Dr. Javier Sanchez)

AHSI Project 11-11: Diagnosis and surveillance of *chlamydia*-like organisms in Ontario rainbow trout (Project Lead: Dr. John Lumsden)

Farm-call surveillance project:

AHSI Project 09-12: Veterinary Farm Call Syndromic Surveillance (Project Lead: Kathy Zurbrigg) is fulfilling the requirement for farm-call surveillance and was initiated in Q4 2008/2009.

Emergency preparedness project:

AHSI Project 10-09: AHL necropsy laboratories emergency preparedness exercises and incident command system training (Project Lead: Dr. M. Spinato)

Emergency Plans

The Canadian/Ontario food animal industry must be constantly vigilant and prepared for an outbreak of a contagious animal disease. Hence all commodity groups have a shared responsibility to develop crisis management plans and exercise effective collaboration and communication strategies to ensure an effective response during a crisis.

In June 2010, the AHL participated in a poultry disease outbreak simulation initiative led by the Feather Board Command Centre (FBCC) (comprised of Chicken Farmers of Ontario (CFO), Egg Farmers of Ontario (EFO), Ontario Broiler Hatching Egg and Chick Commission (OBHECC), and Turkey Farmers of Ontario (TFO)). The Animal Health Laboratory played a significant role in this exercise by coordinating the training sessions on PPE donning/doffing procedures for private veterinarians and board field staff, by training participants on collection/submission of field samples to the AHL, and by testing specimen submissions and reporting diagnostic results. In total, 190 pooled samples were tested and results reported at the AHL. A final report was issued by the consulting company responsible for organizing the simulation, which included lessons learned.

In August 2010, an Emergency Response Planning (ERP) Notification Exercise was conducted in U of G Building 49. This exercise successfully tested the response capabilities that included rapid and accurate notification/communication, command and control responsibilities.

Finally, planning began in January 2011 for an OSHAB-coordinated swine disease outbreak simulation that will take place in September 2011

Veterinary Clinical Education Program

VCEP funding supports the following initiatives which are critical components in the development of the OVC's Integrated Plan and maintenance of full accreditation status. (http://www.ovc.uoguelph.ca/dean/planning/doc/OVC_Integrated_Plan_2011_01_31.pdf)

For OVC to remain a fully accredited veterinary college and to attract and to retain qualified food animal veterinarians and graduate students, state-of-the-art equipment and teaching facilities are critical. VCEP strategic funding has been a valuable resource to ensure the success of these efforts.

Veterinary Public Health

Presented below are two initiatives related to the area of veterinary public health that speak directly to the interests of OMAFRA and to OVC's priorities defined in OVC's Integrated Plan.

Centre for Public Health and Zoonoses (CPHAZ) <http://www.ovc.uoguelph.ca/cphaz/>

A large component of CPHAZ activities over the past year have been the development of new research laboratory facilities through infrastructure grants from CFI and a provincial match. During 2010, the grant details and equipment quotations were finalized, architectural plans were completed, and construction began in Dec. 2010. It is anticipated that the laboratories will be completed by Dec. 2011 and will serve as a shared resource for CPHAZ members and their collaborators. The new equipment and facilities will allow CPHAZ to conduct state-of-the-art research in animal-related aspects of public health, particularly zoonotic diseases. "There are a lot of people working on public health issues," Dr. Jan Sargeant, Director of CPHAZ, said. "The CFI funds will provide unique resources aimed at enhancing collaboration between basic scientists and field researchers. Zoonotic diseases are complex and finding solutions will require scientists from all disciplines working together".

In November 2010, CPHAZ co-sponsored the One Health One Model (OHOM) zoonotic disease spread modeling workshop and 3 day training course in Guelph. This meeting brought together 37 human and animal health modeling professionals and included presentations on the different modeling platforms currently being used within the groups to model the spread of disease in humans and animals.

In January 2011, CPHAZ hosted a 2-day workshop in which individuals from Canada's 5 veterinary colleges and other interested stakeholders met to discuss teaching of public health and regulatory medicine in the Canadian DVM curriculum. The workshop served as a forum for discussing opportunities for collaboration and resource-sharing between the veterinary colleges, as well as possible contributions from non-academic stakeholders. Funding for the workshop was provided by the Canadian Veterinary Regulatory Epidemiology Network (CRVE-Net).

CPHAZ is co-founder and co-host of a "community of practice for knowledge translation". This group includes individuals from CPHAZ, OMAFRA, and PHAC and meets monthly to overview ongoing projects in knowledge translation related to public health.

Masters in Public Health

The Master of Public Health (MPH) program is a 5-semester professional degree with concentration in epidemiology, environmental public health, infectious diseases, and zoonotic, foodborne and waterborne diseases. The MPH program prepares public health students and professionals for careers in which they will address the present and future needs of public health in Ontario, Canada, and internationally. Graduates will emerge as influential local, national, and international leaders committed to improving quality of life by protecting and promoting the health of their communities and by anticipating and preventing disease from both a policy and a science perspective.

This graduate program is being developed to expand the pool of highly-educated personnel in this field, with the first class having started in September 2008. The fall 2010 cohort was comprised of 19 full-time and 1 part-time students of which 2 were veterinarians. For the fall 2011 cohort, there were 179 applicants with the same enrollment target of 20 students. There are 4 veterinarians in this upcoming class (3 full-time and 1 part-time). To date, the program has graduated 23 students.

The main attraction of this program is the practicum placement that the students are required to complete during the summer semester midway through their program. The program coordinator and a faculty member interview each student to determine their desired focus in the public health system. The program then proceeds to place each student, matching them with an appropriate employer. Students are required to complete a project during this 12- to 16-week period and present this information during the Public Health Forum, where public health partners are invited to attend. Last year, 83 delegates attended this Forum giving the students an experience of presenting to peers in a conference-style format.

Agencies that have hosted our students include, among others the Public Health Agency of Canada, the Ontario Ministry of Health and Long-Term Care, Public Health Ontario, Cancer Care Ontario, Wellington-Dufferin-Guelph Public Health, Peel Health, Halton Regional Health Department, Chicken Farmers of Ontario, Veterinarians Without Borders and the Ontario Public Health Association.

Rural Veterinary Practitioner Development

Large Animal Clinical Skills Facility

Two agencies (the CVMA/AVMA Accreditation and the Canadian Council on Animal Care) require that the OVC house teaching animals separately from hospital patients. Thus, a plan was developed to remove all teaching animals from the hospital and place them in alternate permanent housing. The resulting new facility consolidates the housing of our large teaching animals (cattle, sheep, pigs and horses) into one facility and creates a clinical skills laboratory. Here students will develop the critical hands-on skills with these animals in a safe and appropriate learning environment both through scheduled teaching activities and by independent learning.

The official opening of the building was held on June 3 2011. The facility will be fully integrated into the large animal clinical teaching laboratories for the 2011/12 academic year. In March 2011, a few thousand people saw the facility in action when it was used to hold many of the

large animal shows and judging events held during the University of Guelph's College Royal Open House.

Rural Veterinary Practice

The intent is to provide focused experiential learning opportunities for students interested in practicing in rural areas and prepare them to have sustainable careers. These initiatives are very much in the developmental stage and will require stakeholder input to develop them into full proposals and implementation.

A working group is finalizing a proposal to develop a Rural Veterinary Track and a comprehensive Food Animal Track within the final year of the DVM curriculum. This proposal is to include the feasibility and implications of a targeted admissions process for agricultural focused students and a directed experience through the first three years of the program. Currently running is a pilot project where 10 Phase 4 students in the Food Animal Stream were placed in a local food animal practice that has agreed to provide an enriched experiential learning opportunity that extends beyond the current Veterinary Externship course and other external electives currently available to students.

During the 2010/11 academic year OVC delivered an elective equine primary care rotation for final year students. Primary care experiential learning in cattle, small ruminants and swine are currently offered through our existing VCEP supported field service clinics. However, there is no established equine field service, hence the need to develop this experiential learning opportunity in order to ensure graduating students have the necessary primary care skills to be able to deliver veterinary services to rural horse owners. This was a one week hands-on rotation, offered twice during the year. The supervising faculty worked in conjunction with two private equine practitioners to provide the students with practical learning opportunities.

The Bovine Education Trust, (<http://www.ovc.uoguelph.ca/bovineeducationtrust/>) a charitable endowment fund established by the Ontario Association of Bovine Practitioners (OABP) and the Ontario Veterinary College (OVC), was developed to provide veterinary students with the real-life learning opportunities and on-the-job experience that they need to develop successful careers serving the dairy and beef industries. Initial funding is being provided through the Veterinary Clinical Education Program. In the 2010 – 2011 academic year 11 students received \$8,800 to fund food animal related experiential opportunities. The trust will help students build confidence and experience by providing support for summer placements with established rural practitioners, extracurricular learning opportunities such as attending conferences, and external electives.

The OVC partnered with the Dairy Farmers of Ontario, the Ontario Cattlemen's Association, the Ontario Association of Bovine Practitioners, the Ontario Ministry of Agriculture, Food and Rural Affairs to advise and assist the Ontario Veterinary Medical Association in conducting a study of Future Market for Supply of Bovine Veterinary Services. The objectives were: 1) To forecast the demand for bovine and small ruminant veterinary services in the province of Ontario in 2020; 2) To forecast the supply of bovine and small ruminant veterinary services in the province of Ontario in 2020; and 3) To analyze the supply and demand forecasts to determine what (if any) action needs to be taken to address either a province-wide or regional shortage of veterinary services, or an oversupply of veterinary services, for consideration by the parties involved in the study. The final report from the OVMA is expected before the end of 2011.

OTHER REPORTING

Livestock Inventories

	Opening May 1, 2010	Sold	Died ⁽¹⁾	Transferred		Born or Acquired	Closing April 30, 2011
				in	out		
Alfred							
dairy	72	56	9	0	0	46	53
Kemptville							
dairy	66	33	2	0	0	44	75
New Liskeard							
beef	0	100	0	0	0	100	0
Ridgetown							
dairy	94	47	6	0	0	46	87
beef	34	14	1	0	0	14	33
swine	295	820	24	0	0	881	332
Guelph							
Arkell equine	55	21	2	48	41	25	64
Arkell poultry	6,962	1,760	9,728	0	1,688	12,982	6,768
Arkell swine	1,386	4,167	1,565	0	616	6,753	1,791
Alma aqua	55,829	17,274	14,585	0	12,903	40,325	51,392
Elora dairy	290	78	45	17	38	161	307
Elora beef	521	294	12	21	12	329	553
Ponsonby dairy	94	36	8	17	19	51	99
Ponsonby (GAF) ⁽²⁾	68	190	0	216	88	78	84
Ponsonby sheep	375	111	11	0	211	258	300
Clinical Studies							
dairy	32	20	0	15	0	0	27

⁽¹⁾ These figures include animals that are born dead and those which are euthanized for humane, disease and research reasons.

⁽²⁾ General Animal Facility

University of Guelph/ OMAFRA Equipment Inventory & Library Resources

Summary of U of G / OMAFRA Equipment Inventories				
For Fiscal 2010/11				
<u>Location Name</u>	<u>Opening Balance</u> (May 1, 2010)	<u>Acquisitions</u> (during 10/11)	<u>Dispositions</u> (during 10/11)	<u>Ending Balance</u> (April 30, 2011)
Summary (totals of detailed data, below)				
All OMAFRA Program locations	40,956,145	7,372,356	5,023,018	43,305,483
<u>Individual Locations</u>				
Alfred Campus	1,011,884	0	57,661	954,223
Alma Aquaculture	424,665	0	0	424,665
Arkell Equine	14,000	0	0	14,000
Arkell Feedmill	832,000	0	0	832,000
Arkell Poultry	687,255	30,000	72,000	645,255
Arkell Swine	315,000	50,000	70,000	295,000
Elora Beef	1,354,110	92,204	0	1,446,314
Elora Dairy	768,500	42,726	0	811,226
Elora Plant Ag.	2,386,475	237,000	18,900	2,604,575
Emo	70,000	0	0	70,000
Guelph RSO	2,820,298	372,650	17,000	3,175,948
Guelph Turfgrass	85,386	25,239	0	110,625
Kemptville Campus	565,797	303,874	129,200	740,471
Bradford Muck Stn	139,000	0	0	139,000
NLARS	798,395	0	0	798,395
Plant Ag. Dr. Mohanty	704,018	1,090,492	0	1,794,510
Ponsonby Dairy	316,000	30,337	34,000	312,337
PGAF	79,000	11,500	20,000	70,500
Ponsonby Sheep	41,000	0	0	41,000
Ridgetown Campus	3,276,549	259,260	86,283	3,449,526
Simcoe	505,700	0	0	505,700
Thunder Bay	63,000	0	0	63,000
Woodstock	369,628	66,016	27,255	408,389
Vineland	1,797,500	0	0	1,797,500
Lab Services	21,530,985	4,761,058	4,490,719	21,801,324
<u>Library Resources</u>				
<u>Location</u>	<u>Replacement Value \$</u> <u>('000)</u>			
Alfred	1,645			
Kemptville	1,163			
Ridgetown	1,252			

Proof of Principle Program

OMAFRA's Proof-of-Principle (POP) Fund directed toward University inventions that fall within OMAFRA's research objectives was successful in strengthening the commercial potential of various technologies. They are as follows;

Kott – High Rosmarinic Acid Mint to treat inflammation in horses

Amount: \$18,500

The purpose of the POP funds was to conduct an in vitro study using mint high in rosmarinic acid to prove that the mint has anti-inflammatory properties. The results were to be used to support further in vivo studies in horses and in humans, with the eventual aim of finding additional licensing partners for the mint. This project was successful, leading to a publication and to great interest among local companies in using the mint for horses. The BDO is currently in licensing negotiations with the company Ceapro to expand their license for cosmetic, nutraceutical and veterinary. Ceapro is expending considerable time and effort into establishing the agronomics of the mint and the drying technology, and is growing mint in Ontario, Alberta and PEI. Ceapro expects to begin offering product for sale in 2012, beginning in the cosmetics industry.

Squires – Boar Taint

Amount: \$24,000

While the POP funding for this project is over, the industry interest and involvement continues to be strong. The current set of markers explains a large proportion of the genetic variation of both skatole and androstenone in boars. With regard to industrial support, JSR Genetics has indicated a desire to continue funding the project, and we are currently discussing a sponsored research agreement to continue the collaboration and push the project closer to the market. In Canada, Ontario Swine Improvement Inc. has undertaken a project with the University to sample 900 Canadian pigs from three lines of pigs, extract DNA, validate markers in those lines, develop breeding selection methods and work to create the first line of 'low boar-taint' pigs. This is a \$539,000 project leveraged in part due to the funding received from the POP program.

Loewen – Tomatoes with early red colouring

Amount: \$12,225

The funding from the OMAFRA POP grant was to determine the genetics of an advanced fruit colour trait in tomato, which would be useful in the production of tomato pastes. Based on results in the 2009 growing year, it is thought that the trait is controlled by at least two recessive genes. Further studies in 2010 have shed further light on this conclusion, possibly enabling the breeding of an early colouring line of tomatoes. This study has evolved into a PhD thesis for Steve Loewen, and results are still promising. In 2011, there are stable, F8 inbred lines that contain the trait, and analysis of 2011 results will determine exactly how the trait is inherited. It is expected that a full report will be available in December 2011, at which time it will be evaluated for a possible utility patent application, since the trait has wide potential implication in the processing tomato industry, including possible fundamental changes to the tomato grading system.

Three additional projects received funding

Mine - Phosphopeptide-based interventions

Amount: \$25,000

This was a \$25,000 designed to support further in vitro work to prove that phosphoserine molecules derived from egg yolk can have a meaningful effect on oxidative stress. Results so far confirm that short dimer peptides indeed have an effect on oxidative stress, and the mechanism of action has been confirmed and validated. A decision on proceeding with the patent application will be made in late November 2011, dependent on possible research that could be led by the researcher. Completion of this project is expected in early 2012, and success will lead either to the pursuit of funding for a mouse study, or a license with a nutrition or pharmaceutical company.

Corredig – Soy Cheese

Amount: \$5,500

This was a small, \$5500 grant to help provide proof of concept that soy and dairy proteins could be co-fermented to produce viable cheese. This could lead to the development of products that taste like cheese, but are reduced cost and contain less saturated fat. The project was successful, leading to some positive examples of soft cheeses, in addition to the filing of a patent application. A non-confidential marketing summary has been produced and marketing is underway – it is hoped that this technology will find useful application in the fields of soft, processed, and spreadable cheeses.

Lencki - 1,3-Diacylglycerols for hard fat applications

Amount: \$45,000

This project aims to produce 1,3-DAG fats that could behave in much the same way as cocoa butter, and perhaps be used as a healthier and less expensive alternative to cocoa butter. Applications include energy/protein supplements and confection products. The principal goals of the project are to achieve scale-up of the process, and to make some additional modifications to the fatty acid profile of the product. This project is expected to last until spring 2012, and has so far attracted some good publicity.

Schedule G (Business Continuity, Emergency Response and Surge Capacity Planning)

Agriculture and Food Laboratory

During the 2010/11 fiscal year, the AFL completed the outstanding Year 2 Milestone to provide an enhanced Essential Level Continuity Plan including notification and dependencies of critical infrastructure and critical systems. The laboratory and OMAFRA completed the Year 2 Milestone August 31, 2010.

OMAFRA contacted a random staff member at 95 Stone Road W, Guelph at approximately 10:00 h to relay the notification of a prospective interruption to services at the AFL. The individual then contacted the first supervisor she encountered. This supervisor contacted the Manager, Regulatory Partnerships at 10:05 h. The notification drill exercise ensued. At 11:03 h all AFL staff had been notified and/or accounted for and documented as such. At 11:05 h the Manager, Regulatory Partnerships notified the Coordinator, Agriculture & Food Laboratory Program at OMAFRA to indicate the completion of the notification drill. Documentation was provided to the Coordinator, Agriculture & Food Laboratory Program in electronic form at 15:34 h by way of email.

The exercise was deemed successful by both OMAFRA and the AFL. The Essential Level Continuity Plan remains in draft form.

The AFL continues to work in concert with the AHL and OMAFRA to develop an Emergency Surge Capacity process. The requirement will be tested through a basic Table Top Exercise involving both organizations. The full implementation and documentation of this Year 3 Milestone remains incomplete at the time of this report.

Animal Health Laboratory

During 2010/11 AHL completed Year 3 Milestone of Schedule G (see below) and in Performance Indicator 'AHL#8'.

Year 3 Milestone:

The University shall provide an updated enhanced Essential Level Continuity Plan that includes notification and addresses the dependencies of Critical Infrastructure and critical systems. The Parties shall test this enhanced plan through a basic Table Top Exercise.

The University shall work with OMAFRA program areas to finalize the plan for additional Emergency Surge Capacity based on specific OMAFRA scenarios. The Parties shall test the plan through a general notification drill requesting confirmation of immediate capacity availability and relaying the response strategy to engage that capacity.

Business Development Office – Schedule N

The table below is a listing of relevant intellectual properties licensed and patented under the Agreement as of 2010/11.

Technologies by Inventor		
Inventor / Tech ID	Technology Title	Status
Baird 20011109	JEB diagnostic test for Belgian horses	Licensed
Barta 20100216	Compositions and methods of enhancing immune responses to Eimeria	Patented
Bowley 20080122-2	A method of enhancing gene expression in plants	Patented
de Lange 20050221	Pig growth model	Licensed
EFI 20080331	Dairy Product	Patented and Licensed
Erickson 20010524	Novel Inducible Genes from Alfalfa and Methods of Use Thereof	Patented
Forsberg 19990526	Transgenic animals expressing salivary phytase	Patented
Griffiths 20080108	Probiotic Bacteria Secreted Molecule Compositions and use in Methods to Treat/Prevent Infection by Harmful Bacteria and to Provide Nutritional Health	Licensed
Golovan 20090212	Aptamers for sex selection of bovine sperm	Licensed
Hall 20090311-2	Materials for the production and purification of plant-produced Trastuzumab	Licensed
Hall 20100611	Production of HER receptor antibodies in plants	Disclosed
Hall 20070306	Auxinic Herbicide-Tolerant Plants	Patented and Licensed
Hall 20090311-1	Anti-Cobra Toxin Anti-body Fragments	Patented
Holub 19960430	Custom Feed Supplement to Maximize Omega-3 Fatty Acids in Cow's Milk	Patented
Kott 20060221	PRODUCTION OF ROSMARINIC ACID FROM SPEARMINT AND USES THEREOF (mentha spicata clones with ultra high levels of rosmarinic acid (a powerful plant antioxidant-useful for reducing effects of various human inflammatory ailments including asthma)	Licensed and Patented
Lindinger 19970528	Perform'N Win, Equine Oral Electrolyte Supplement	Licensed
Lencki 20100430	The Development of a Functional DAG Fat	Disclosed
McGurrin 20040402	Pressure and ultrasound-guided cardiac catheter for transvenous electrical cardioversion of equine supra-ventricular cardiac arrhythmias	Licensed

Mckersie 19870324	Process to induce desiccation tolerance in somatic embryos	Licensed
Mckersie 19971215	Enhanced Root Production in Transgenic Perennial Plants	Licensed
Mine 20090303	Egg yolk protein derived anti-oxidative stress peptides	Patented
Mohanty 20090505	Lignin Based Blends and Composites/Hybrid Green Composites from Lignin and Biofiber Reinforcement with Bioplastics for Suitable Manufacturing	Patented
Mohanty 20090903	Lignin based carbon nanomaterials and uses thereof	Patented
Mohanty 20100117	Biodegradable Polymer Blends	Patented
Mohanty 20100318	Recycled plastic and biocomposite formulations	Licensed
Mohanty 20100923	Biofiber Reinforced Recycled Plastic Composites	Licensed and Patented
Nagy 20000817	Porcine Adenovirus Based Vector, Vaccine	Licensed
Nagy 20090723	Vectored vaccines based on the left end genome region of fowl adenovirus 9	Licensed
Nagy 20110227	A non-pathogenic serotype 4 fowl adenovirus (FAdV-4) for use as an immunogen against inclusion body hydropericardium/hepatitis syndrom	Patented
O'Brien 19900111	Diagnosis for Porcine Malignant Hyperthermia	Licensed
Ojkic 20101202	Vaccines for Inclusion Body Hepatitis	Patented
OmegaNutrel 20070713	A Feed Supplement and Use Thereof For Elevating Levels of Essential Fatty Acids in Livestock and Products Therefrom	Licensed
Paliyath 19980831	Inhibition of Phospholipase D activity by C6 Aldehydes and Alcohols	Licensed
Paliyath 20000517	Development of a Novel Antioxidant Formulation to Control Superficial Scald in Apples	Licensed
Plante 20000810	Porcine Embryo Production, Recovery, Maintenance and Transfer Systems for Use in Domestic and International Genetic Transport and the Elimination of Environmental Pathogens in Swine.	Licensed
Prescott 20070405	Protective immunogens against Clostridium perfringens-induced necrotic enteritis in chickens	Licensed and Patented
Shewen 19850207	Vaccine for Prevention of Pasteurella haemolytica pneumonia in Cattle.	Licensed
Squires 20100514	Method and Compositions for Control of Boar Taint	Patented
Zheng 20100423	Growth Substrates	Licensed

APPENDIX A

SPARK Research Stories with OMAFRA Sponsorship 2010/11

Research news articles can be accessed from:

<http://www.uoguelph.ca/research/research-publications>

General information on the University's research communications department can be found at:

<http://www.uoguelph.ca/research/services-divisions/research-communications>

All SPARK media materials acknowledge the support of the OMAFRA-U of G Partnership in funding of the subject material presented.

In Print

The University of Guelph *Research* magazine highlights the University's diverse research strengths in a concise news format. Published three times a year, each issue focuses on a specific area of research activity. *Research* is written and produced by SPARK, which also produces videos for the magazine's electronic version.

Summer 2010 issue – Agri-food Yearbook

Water-friendly farming

Project/Researcher: #26579 Warland, John

Next: The local water movement

Project/Researcher: #026603 Rudra, Ramesh

Biomass has great weight in the energy debate

Project/Researcher: #200007 Rennie, Tim, Kemptville Campus

Piecing together the carbon credit system

Project/Researcher: #200013 Wagner-Riddle, Claudia

Ford first on the market with "green" bio-bin

Project/Researcher: #26259 Erickson, Larry

Premiums stack up for food-grade soybeans

Project/Researcher: #26547 Weersink, Alfons

These robots know how to pick'em

Project/Researcher: #200071 Moussa, Medhat

A winning case for food packaging and processing

Project/Researcher: #200059/26663 Lim, Loong-Tak

Try a colourful plate for better health

Project/Researcher: #26484 McDonald, Mary Ruth

Healthy animals, healthy products, healthy people

Project/Researcher: #200103 McBride, Brian

Ontario hazelnut industry has customers lining up

Project/Researcher: #026645 Dale, Adam

Organic compounds control troublesome bee mites

Project/Researcher: #26728/200077 Guzman, Ernesto

Closing the gap from farm to fork

Project/Researcher: #200050/26692 Devlin, John

Biomass yields depend on soil carbon

Project/Researcher: #200046 Deen, Bill

Portable diagnostic sensor offers immediate pathogen detection

Project/Researcher: #200018/26699 Warriner, Keith

Tracking down disease pathways in animals

Project/Researcher: # 200024 Stacey, Deborah

Strengthening Ontario's pork industry through better surveillance

Project/Researcher: #26736 Dewey, Cate

Adding soy to your lunchbox

Project/Researcher: #26575 Duncan, Alison

Fibre-fortified dairy products may help Canadians reach their quota

Project/Researcher: #26573 Doug Goff

Nature's medicine

Project/Researcher: #26662/200035 Paliyath, Gopi

Increasing the link between dairy consumption and health

Project/Researcher: #200040 Corredig, Milena

Winter 2011 Issue – A Helping Hand

Backing off bird-flu

Researcher: Shayan Shariff

Bacteria can't beat Roboguts

Researcher: Emma Allen-Vercoe

@Guelph

Researchers piece together the carbon credit system, Joel Aitken

November 10, 2010

Prof. Claudia Wagner-Riddle

Imported grasses create problems for agriculture, Amanda Brodhagen
November 23, 2010
Prof. Jonathan Newman

Grain Farmers of Ontario (GFO) – Grain Farmer Magazine

Breeding toxin resistance into corn
Researcher: Laima Kott
Fall 2010

High oil soybeans in the works
Researcher: Istvan Rajcan
Nov 2010

Cutworm levels require long-term management strategy
Researcher: Tracey Baute
Spring 2011

Germplasm bank opens to Ontario farmers
Researcher: Albert Tenuta
Spring 2011

Monitoring and scouting nips pest in the bud
Researcher: Tracey Baute
Jan 2011

These starches resist digestion
Researcher: Michael Emes
Mar 2011

Long-term trials give glimpse of the future
Researcher: Bill Deen
Mar 2011

Ontario corn re-plant decision calculator on the way
Researcher: David Hooker
Apr 2011

Dairy Farmers of Ontario (DFO) – The Milk Producer Magazine

New revenue stream
Researcher: Anna Crolla
July 2010

Risks abated
Researcher: Steven LeBlanc
Aug 2010

Healthier dairy products
Researcher: Brian McBride
Oct 2010

Off to right start

Researcher: Vivianne Biemann
Dec 2010

Under scrutiny

Researcher: Rafael Neves
Feb 2011

Calf care at the forefront

Researcher: Ken Leslie
Mar 2011

Value-added protection

Researcher: Silvio Miranda
June 2011

Identifying healthier cows

Researcher: Bonnie Mallard
July 2011

Greenhouse Canada Magazine

Homegrown winners

Researcher: Alan Sullivan
Mar 2011

Canadian Poultry Magazine

Backing off bird flu

Researcher: Shayan Sharif
Summer 2011

Western Producer

Selling, burning crop residue steals nourishment from soil

(Sept. 16, page 15)

Researcher: Paul Voroney

Research network aims at healthier potato

(Sept. 30, page 69)

Researcher: Stephanie Bach

Producers not rewarded for offering tender beef

(Sept. 30, page 67)

Researcher: Steve Miller

Ag's Holy Grail: quest for nitrogen-fixing grain

(Oct. 7, page 22)

Researcher: Manish Raizada

Dairy disease early detection
(2011)
Researcher: Brian McBride

Soil Toxicity
(2011)
Researcher: Beverley Hale

Owen Roberts

Since Owen Roberts' appointment with the OMAFRA-UofG Partnership, he had written several of his weekly columns, *Urban Cowboy*, in the Guelph Mercury about the Partnership.

Field crops don't like unwelcome neighbours June 14, 2010
<http://www.guelphmercury.com/opinion/article/427045--field-crops-don-t-like-unwelcome-neighbours>

Poinsettia producers work hard to get them just right December 20 2010
<http://www.guelphmercury.com/opinion/article/310673--poinsettia-growers-work-hard-to-get-them-just-right>

Traceability is the new concern for exporters March 22 2010
<http://www.guelphmercury.com/opinion/article/450878--traceability-is-the-new-concern-for-exporters>

Rodents a growing problem for grain farmers December 13 2010
<http://www.guelphmercury.com/opinion/article/310966--rodents-a-growing-problem-for-grain-farmers>

Shared efforts needed in plant tolerance research July 10 2010
<http://www.guelphmercury.com/opinion/article/318208--shared-efforts-needed-in-plant-tolerance-research>

Ontario deserves the gold for bio-products research March 1 2011
<http://www.guelphmercury.com/opinion/article/457056--ontario-deserves-the-gold-for-bio-products-research>

Food labels don't tell us all they should June 10 2010
<http://www.guelphmercury.com/opinion/article/429635--food-labels-don-t-tell-us-all-they-should>

Nothing says local quite like Canadian whiskey February 28 2011
<http://www.guelphmercury.com/opinion/columns/article/492576--nothing-says-local-quite-like-canadian-whisky>

We'll hear often from new Liberal agriculture critic June 6 2011
<http://www.guelphmercury.com/opinion/columns/article/549379--it-s-tough-to-balance-farmers-rights-versus-society>

It's tough to balance farmers' rights versus society June 20 2011

<http://www.guelphmercury.com/opinion/columns/article/549379--it-s-tough-to-balance-farmers-rights-versus-society>.

University of Guelph beefs up its local food program July 10 2011

<http://www.guelphmercury.com/opinion/columns/article/560101--university-of-guelph-beefs-up-its-local-food-program>:

Owen Roberts column in *The Grower*:

New market opportunities are right in our backyard

July 2010, Page 7

G20 leaders invite private sector to help feed hungry

August 2010, Page 7

Joint effort needed to cater to consumers

December 2010, Page 7

Robust plants will help growers and retailers gain irrigation efficiencies

April 2011, Page 7

Broadcast

SPARK*Air Video Broadcasts on YouTube

Saving nitrogen costs

Researcher: Manish Raizada

Farms.com - April 5, 2010

First Local, Rogers Television Guelph – June 11, 2010

Making plastic from biodiesel by-products

Researcher: Amar Mohanty

Farms.com – April 26, 2010

First Local, Rogers Television Guelph – May 19, 2010

Bee Deaths

Researcher: Ernesto Guzman

Farms.com – May 17, 2010

Telemedic Bolus

Researcher: Brian McBride

Farms.com - June 7, 2010

Poultry Feed Mycotoxins

Researcher: Trevor Smith

June 2010

Drought Flowers – Petunia Genetics

Researcher: Daryl Somers

Farms.com – June 28, 2010

Fusarium Control

Researcher: Trevor Smith
Farms.com – July 19, 2010

Soybean Breeding

Researcher: Istvan Rajcan
Farms.com – August 9, 2010

Colostrum Management

Researcher: Vivienne Bielman, Ken Leslie
Farms.com – August 30, 2010

Equine Development

Researcher: Wayne Caldwell
Farms.com – September 20, 2010

KTT Outreach Day

Bronwynne Wilton
April 7, 2011

APPENDIX B

2010/11 Revisions to Agreement Performance Indicators

The following revisions were recommended by the **Agriculture and Food Laboratory Program Management Committee** and approved by the Agreement Executive Committee June 8, 2010

PI #1

Revised Key Outcome

Highly qualified & skilled lab personnel & equipment supported by required accreditation. Improved lab and food safety technology & practices.
Rationale: Key outcome has been modified to include some of the original wording from AFL#6 *"supported by required accreditation"*.
No revisions to PI, metric, methodology, potential data sources or baseline.

PI #2

Revised Key Outcome

Scientific & statistical integrity of routine analytical test data to ensure quality, reliable results.
Rationale: Key outcome has been modified to include some of the original wording from AFL#6 *"quality, reliable results"*.
No revisions to PI, metric, methodology, potential data sources or baseline.

PI #3

Revised Key Outcome	Revised PI	Revised Purpose	Revised Metric	Revised Methodology	Revised Potential Data Sources	Revised Baseline
Strong linkages built to ensure effective, timely sharing of information and to communicate violative / actionable test results to stakeholders in a timely manner.	Tests completed and communicated within specified timeframes required for actionable response.	Unchanged. To evaluate the consistency with which the AFL provides timely test results.	a) Documented LabTrack reports associated with all non-conformances. b) Unchanged. Level of customer satisfaction with AFL services.	a) Track and review incident reports (LabTrack) and report all non-conformances, resolution and continuous improvement initiatives. b) Unchanged. Customer satisfaction will be measured with existing annual AHL survey related to quality and timeliness of services.	a) AFL LabTrack. AFL will report the number of times the standard is not met. b) Unchanged. Annual survey.	Service Level Standard is to continually improve through the process of documenting and reviewing incident reports (LabTrack) and associated follow-up and resolution initiatives Responsibility a) AFL b) Unchanged. AFL

PI #4

Revised Key Outcome	Revised PI	Revised Purpose	Revised Metric	Revised Methodology	Revised Potential Data Sources	Revised Baseline
Unchanged. Ability and capacity to detect and confirm positive test results to provide effective response to food contamination incidents and other serious plant and environmental hazards with severe human health or economic consequence.	Unchanged. Level of compliance with communication requirements in the lab testing and sampling protocols.	Unchanged. To evaluate AFL's level of compliance with communication protocols, as outlined in the sampling and testing plans, by program.	Number of tests requiring actionable report/response from AFL that did not meet the criteria as defined by either: - Interface Protocol Documents - Sampling and Testing Plans - Standard Operating Procedure for Adverse Results Notification	Numerator: Number of tests that did not meet the reporting requirements. Denominator: Total number of tests.	Numerator: LabTrack report. Denominator: AFL quarterly sample test report.	Service level standard of 98%. Responsibility AFL.

PI #5

(Note: PIs #5 and #7 were merged into one single PI, now PI#5. As such there are now only seven PIs in total, instead of the original eight.)

Revised Key Outcome	Revised PI	Revised Purpose	Revised Metric	Revised Methodology	Revised Potential Data Sources	Revised Baseline
Capacity and capability to support coordinated and effective emergency management, and the ability and capacity to detect and confirm	Effective response to food safety, environmental health and plant health/pest emergencies & unanticipated urgent incidents / requirements in	1. To assess how well the AFL is responding to the need for developing new tests that are required to address urgent incidents and identify	Evaluation / case study of AFL's response to, and management of significant / unanticipated / urgent situations / events of environmental, health and plant /	OMAFRA will conduct a review / case study of the effectiveness of AFL's management of significant / urgent food safety, environmental health and plant health / pest emergencies and unanticipated / urgent situation against such	AFL provides details of identified events in order for OMAFRA to conduct evaluation / case study.	No baseline – case study approach. Responsibility: OMAFRA to conduct the review / case study.

positive test results to provide effective response to unanticipated / urgent testing requirements and food safety, environmental health and plant health / pest emergencies.	a reasonable timeframe using existing or new methodologies / tests.	opportunities to improve response capability for future situations. 2. To assess how well AFL is responding to serious food safety events and response capability using existing methodology and identify opportunities to improve emergency response capability for future situations.	pest emergencies including any requirement for the development of new AFL tests / methodologies.	criteria as: • timeliness • effective diagnosis • communication of test results. • monitoring and reporting of surveillance data • participation with stakeholders • development of tests/methods and will develop recommendations for improvement.		
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AFL#6

Revised Key Outcome	Revised PI	Revised Purpose	Revised Metric	Revised Methodology	Revised Potential Data Sources	Revised Baseline
Ability to detect contamination of the food supply and other testing projects through the implementation of statistically valid sampling plans and ensure the cost effective use of available resources.	Level of compliance with sampling schedule as described in the annual sampling and testing plan agreements and documented in year changes.	To evaluate how consistently OMAFRA is following the submission of samples in accordance with the sampling and testing plan and documented in-year changes.	Percentage compliance with annual Testing and Sampling plans, by program (Schedule F).	This measure will track and report OMAFRA's overall percentage compliance with final version sampling and testing plans by program, based upon samples submitted, as detailed in Annual Testing Plan Agreements and any documented in-year changes.	• FSDSS • Annual sampling & testing plans	Service level standard: 98% overall. This level will be re-assessed on a program-by-program basis after several reporting cycles due to the challenges faced with collecting and submitting samples as planned (seasonality, logistical, resource availability, etc). Both

				Numerator: Total samples submitted by program. Denominator: Total number of samples requested by program in annual sampling and testing plan.		OMAFRA and LSD acknowledge these challenges and remain flexible and committed to working towards a realistic and workable goal. Responsibility OMAFRA.
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AFL #7 (originally AFL #8)

Revised Key Outcome	Revised PI	Revised Purpose	Revised Metric	Revised Methodology	Revised Potential Data Sources	Revised Baseline
Unchanged. Improved UofG research through laboratory-based expertise	Unchanged. Contribution of AFL or University personnel or students to articles and final project reports presented or published.	To document the quality and quantity of AFL's contribution to research funded by and/or related to OMAFRA.	a) Unchanged. Total number of publications in peer reviewed journals and/or final project reports presented, related to OMAFRA strategic research themes. b) Unchanged. Summary of knowledge transfer events related to new practices and including number of attendees.	a) Conduct analysis (including Journal Impact Factors) of the peer reviewed publications at the time of publication of U of G researchers and project reports on AFL research related to OMAFRA priority areas, including research work that is funded by OMAFRA and/or by other sources, and/or demonstrates knowledge transfer. b) Unchanged. This measure will track and report annually, a summary of knowledge transfer events by the AFL, related to new practices or technologies (e.g. workshops, seminars,	Publications and citations in scientific journals by specified researchers and published project reports. Journal Impact Factor (from Journal Citation Report, a product of Thomson Institute for Scientific Information) will be used for quantitative evaluation of publications.	a) and b) No, there is no existing baseline. Responsibility Unchanged. AFL

				technical bulletins etc). The summary report should also include statistical information, such as the number of events/publications, number of participants and results of any event evaluation that may have taken place.		
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APPENDIX C

OMAFRA - U of G Audited Statement of Revenues and Expenses



Financial Services

Sept 28, 2011

Ms. Karen Chan
Assistant Deputy Minister
Research and Corporate Services Division
Ontario Ministry of Agriculture, Food and Rural Affairs
1 Stone Road, 2nd Floor NW
Guelph, Ontario N1G 4Y2

Dr. Kevin Hall
Vice President (Research)
University of Guelph
50 Stone Road East
Guelph, Ontario, N1G 2W1

To the Executive Members of the OMAFRA-University of Guelph Agreement;

The annual audited financial statement for the research, education and laboratory services agreement with the University of Guelph for the 12-month period May 1, 2010 to April 30, 2011 is enclosed.

The report presents the audited financial statement for the fiscal year 2010/2011 as per Article 22.1.b of the master agreement, summarizing revenues and eligible expenditures by program.

If you have any questions or require any further information, please let me know.

Yours truly,

A handwritten signature in black ink, appearing to be "John M. Miles", written over a circular scribble.

John M. Miles
Assistant Vice-President, Finance and Services

Email: jmiles@uoguelph.ca
Fax: (519) 836-3278

Enclosures

UNIVERSITY OF GUELPH OMAFRA AGREEMENT

Annual Financial Report

Audited Financial Statements for the fiscal year May 1, 2010 to April 30, 2011



September 16, 2011

Independent Auditor's Report

To the Ministry of Training, Colleges and Universities

We have audited the accompanying statement of revenue and expenditures (the statement) of the University of Guelph (the organization) with respect to the OMAFRA Program (the program), carried out in accordance with the agreement between the University of Guelph and the Ontario Ministry of Agriculture, Food and Rural Affairs (the agreement) for the year ended April 30, 2011, and the related notes, which comprises a summary of significant accounting policies and other explanatory information.

Management's responsibility for the statement

Management is responsible for the preparation of this statement in accordance with Canadian generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of a statement that is free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on this statement based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the statement is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the statement. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the statement, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of the statement in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the statement.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the statement presents fairly, in all material respects, the revenues and expenditures with respect to the program for the year ended April 30, 2011, in accordance with the Canadian generally accepted accounting principles.

PricewaterhouseCoopers LLP

Chartered Accountants, Licensed Public Accountants

UNIVERSITY OF GUELPH
MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS AGREEMENT
STATEMENT OF REVENUES AND EXPENSES
For the Year Ended April 30, 2011
(in thousands of dollars)

	OMAFRA Programs					Total OMAFRA 2011	Total OMAFRA 2010
	Research	Vet Clinical Education	Agri-food Laboratory	Animal Health Laboratory	Minor Capital Repairs		
Income							
Provincial	39,130	5,283	3,947	7,893	6,040	62,293	63,108
Sales of Goods and Services	4,064		11,504	3,766		19,334	17,458
Investment Income	649					649	201
Other	1,338		12	7	11	1,368	1,421
Total Income	45,181	5,283	15,463	11,666	6,051	83,644	82,188
Expenses							
Personnel Costs	18,750	195	9,294	7,641	17	35,897	37,314
Support for Faculty Costs	9,915	1,900				11,815	11,815
Operating	10,939	3,083	6,415	5,532	6,034	32,003	28,462
Internal Recoveries	(3,832)		(533)	(1,706)		(6,071)	(5,403)
Service Costs	9,409	105	287	199		10,000	10,000
Total Contract Expenses	45,181	5,283	15,463	11,666	6,051	83,644	82,188
Net Income (Expense)	-	-	-	-	-	-	-

UNIVERSITY OF GUELPH
ONTARIO MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS AGREEMENT
NOTES TO THE STATEMENT OF REVENUES AND EXPENSES
FOR THE YEAR ENDED APRIL 30, 2011
(in thousands of dollars)

1. AUTHORITY AND PURPOSE

The University of Guelph operates as a not-for-profit entity under the authority of the University of Guelph Act (1964). The University is a comprehensive, research intensive university offering a range of undergraduate and graduate programs. With the exception of academic governance, which is vested in the University's Senate, the University is governed by the Board of Governors. The University is a registered charity (#10816 1829 RR001) and is therefore exempt from income taxes under section 149 of the Income Tax Act.

In April 2008 a ten year agreement (the Agreement) was signed between the University and OMAFRA (Ontario Ministry of Agriculture, Food and Rural Affairs). This financial statement has been prepared under the terms of the Agreement which requires an audited financial statement of revenues and expenditures summarized by program. In addition to annual funding under the Agreement, a one time payment of \$56,000 (referred to as New Initiative) was received in April 2008 which will be disbursed, with interest, over a five year period ending in 2013. The \$56,000 one time payment while a significant component of funding for OMAFRA projects does not form part of the Agreement (refer to Note 5).

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND REPORTING PRACTICES

These financial statements have been prepared by management in accordance with generally accepted accounting principles, applied consistently within the framework of the accounting policies summarized below:

(a) Fund Accounting

The accounts of the University are maintained in accordance with the principles of fund accounting in order to observe the limitations and restrictions placed on the use of available resources. Under fund accounting, resources for various purposes are classified for accounting and reporting purposes into separate funds in accordance with specified activities or objectives.

(b) Recognition of Revenue

The University accounts for revenue in accordance with the deferral method whereby externally restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unspent revenue is deferred until the goods or services are provided.

Unrestricted revenue is recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

UNIVERSITY OF GUELPH
ONTARIO MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS AGREEMENT
NOTES TO THE STATEMENT OF REVENUES AND EXPENSES
FOR THE YEAR ENDED APRIL 30, 2011
(in thousands of dollars)

3. UNSPENT REVENUE

The Agreement provides revenue restricted for use in approved research and service programs. Funds that were received but unspent during the year will be recognized as revenue in future years as eligible expenses are incurred.

	<u>2011</u>	<u>2010</u>
Opening Balance	16,478	14,621
Funds Received	58,100	59,100
Expenditure	<u>(55,118)</u>	<u>(57,243)</u>
Ending Balance	<u>19,460</u>	<u>16,478</u>

4. MINOR CAPITAL REPAIRS

The University operates facilities designated under the Agreement located across Ontario. These facilities are either owned by the Province or Agricultural Research Institute of Ontario (ARIO).

For ARIO owned properties, the cost of minor capital projects for facilities are funded through separate funds held by ARIO.

5. NEW INITIATIVE FUND

While not formally included as part of the Agreement a major one-time allocation of \$56,000 was received in April 2008. The New Initiative funds are not included in the attached Statement of Revenue and Expenses.

The \$56,000 is utilized during a five year period starting May 2008 and ending April 2013. As of April 30, 2011, \$21,659 has been spent leaving a balance of \$34,341.

The expenditures were spent in the following OMAFRA programs:

	<u>2011</u>	<u>2010</u>
Research	7,206	3,698
VCEP	2,636	522
Animal Health Lab	<u>2,221</u>	<u>1,614</u>
	<u>12,063</u>	<u>5,834</u>