

ANNUAL REPORT
FOR FISCAL YEAR 1998-99



OMAFRA-FUNDED EDUCATION, RESEARCH AND LABORATORIES PROGRAMS

Integrated Education, Research and Laboratories Programs
Serving Ontario's Agriculture and Food Industries

October, 1999

TABLE OF CONTENTS

Executive Summary	1
Background	1
Summary of Activities and Results	1
Research	2
Education	2
Laboratory Services	3
 1. Introduction	 4
 2. Research Program	 6
2.1 Budget	6
2.2 Accomplishments in 1998/99	7
2.3 Performance Measures	9
 3. Education Program	 12
3.1 Diploma Programs	12
3.1.1 Financial	12
3.1.2 Performance Measures	13
Enrolments	13
Graduation Statistics	13
Attrition Rates for 1997 Cohort	14
Financial Efficiency	14
Quality of Programs	15
Recruitment	16
New Programs	17
3.2 Continuing Education	18
3.2.1 Quality Evaluation	19
3.2.2 Effectiveness of Program Delivery	19
 4. Laboratory Services Division	 20
4.1 Budget	20
4.2 Performance Measures	20
 5. April 1999 Equipment Inventories (including Library holdings)	 23
 6. April 1999 Inventory of Dwelling Houses, Rents and Accounts' Status	 24
 7. April 30, 1999 Livestock Inventories	 25
 Acronyms	 27

EXECUTIVE SUMMARY

Background

This is the second Annual Report on the Enhanced Partnership submitted to the Ontario Ministry of Agriculture, Food and Rural Affairs by the University of Guelph under the new Memorandum of Understanding that was effective April 1, 1997.

This report covers the activities, expenditures and performance measures for all of the programs covered by the MOU for the fiscal year May 1, 1998 to April 30, 1999. The program areas are education, research and laboratory services and each area has individual reports in this document.

The 1998-99 Operational Plan originally detailed the visions, goals, activity plans and budgets of the three program areas and their components. In this report, original budget figures are included with actual expenditures, to facilitate easier comparison.

Summary of Activities and Results

The University of Guelph is contracted by OMAFRA to deliver research, education and laboratory services to the agriculture and food industry and to the people of Ontario. Some of these services were delivered directly by OMAFRA until April 1997 when staff, programs and facilities were transferred to the University.

The 1998/99 year has been one of consolidation of all operations following an excellent initial year under the new Agreement. The University in 1998/99 has continued to fulfill all aspects of its obligations in terms of program delivery. Furthermore, the University has continued to generate high levels of activity in all program areas, including six percent higher overall revenue flows than estimated in the Operational Plan.

The College Academic/Research Group (CARG), representing approximately eighty College Professors and Lecturers, negotiated their first employment contract with the University, effective in 1999.

The majority of the research scientists at the Horticultural Research Institute of Ontario (HRIO) in Vineland (now part of the Plant Agriculture Department) joined the University of Guelph Faculty Association (UGFA). Two scientists at Ridgetown College have also achieved University Faculty status and will continue in their current positions at Ridgetown.

Initial job evaluations of Exempt Group employees at the regional colleges and research stations and UGSA employees at the Agri-Food Lab are nearing completion.

Similarly, job evaluations for employees in the Professional and Management Group are also underway.

Research

The Environment and Natural Resources Program and the Agri-Food Systems Program have been replaced by one new program, the Agri-Food System Resources and Environment Program. The accomplishments and program directions for the next four years of this program and the Plant Research Program, consisting of Field Crops, Horticulture and Pest Management sub-programs, were reviewed and accepted by the Agricultural Research Institute of Ontario (ARIO).

Communications among Deans, Department Chairs, College Directors and senior management have been enhanced so that the role of Research Program Directors (RPD's) is better understood in areas such as vacancy management, performance evaluations and budget management.

A system for moving resources from one program to another has been identified and accepted in principle but the process still needs to be documented in detail.

Highlights of research accomplishments include: development of a transgenic pig that produces elevated levels of phytase enzyme which breaks down phytate in feed grains; significant improvement in genetic transformation efficiency in soybeans and alfalfa; establishment of a breeding program in white corn to develop food corn hybrids for tortillas and tacos; development of effective software to assist producers in manure management; establishment of an Ontario-wide analysis to identify "leading and lagging" rural communities, in terms of sustainability and economic development, in the expanding program in Sustainable Rural Communities.

Education

Student enrolment was similar to the 1997/98 numbers. The new Summer Veterinary Technology option at Ridgeway had a successful first year and is creating considerable interest among potential students.

A food technology diploma program is being prepared for delivery starting in Fall 2000. This program involves partnering between Kemptville, Alfred, Guelph Food Technology Centre, Durham College and possibly Quebec's St.-Hyacinthe College. It is intended that this program will meet industry needs and provide a series of educational and training options to students, which will complement the current Food and Nutrition Management diploma program.

The Equine Studies diploma program has been redesigned to offer students options in

health, and business, in addition to a general studies option, beginning in September 1999.

Graduates from diploma programs at the four colleges totalled 417 students during 1999.

Employment opportunities continued to be high with all programs reporting high employment rates by graduation.

Continuing Education and Service programs expanded considerably at all three Colleges. Human Resources Development Canada awarded large contracts to both Alfred and Kemptville Colleges to train crews and carry out clean-up following the 1998 ice storm which devastated much of rural Eastern Ontario.

Laboratory Services (LS)

ISO 9002 certification within LS expanded to include 3 additional laboratories.

Regulatory Programs

Regulatory testing was completed as negotiated. The initial phase of OMAFRA's Pathogen Reduction Study is underway. Raw milk bacterial testing is now processed using Bactoscan technology, making LS the first lab within North America to use this process for regulatory reporting. Both the VADDS system (Animal Health Lab) and the LIMS system (Dairy & Meat programs) have been implemented.

Service Areas

Service delivery to non-government clients was maintained at a level consistent to 1997/98 (\$4.0 million) despite business interruptions caused by building renovations required to accommodate Agriculture & Agri-Food Canada within the 95 Stone Rd. facility. Joint ventures with a number of external organizations were successful. The 1998 Customer Service Survey indicated that LS clients were pleased with the services offered and would return with future business.

Education Program Support

LS supervisors and research scientists supervised a number of Ph.D. and M.Sc. students. Post-doctoral and on-campus technicians from other departments received specialized training within LS. A significant number of other students enrolled in U of G programs were taught by LS staff through either hands-on training programs or lectures as part of their course requirements.

Research Programs

LS has a number of ongoing projects in areas such as food and dairy microbiology, molecular biology, food chemistry and nutraceuticals, animal health, pesticides and trace contaminants and plant health. Research projects completed in 1998/99 resulted in invitations to present at scientific meetings and publication in a variety of journals, magazines, etc. Many collaborative research projects were also initiated involving LS scientists as the project lead.

1. INTRODUCTION

Under the Memorandum of Agreement (MOA) between OMAFRA and the University of Guelph, effective April 1, 1997, the transfer payment to the University totalled \$54.0 million for both 1997-98 and 1998-99 fiscal years.

The figures in this report are for the University of Guelph fiscal year from May 1, 1998 to April 31, 1999

The total budget for fiscal 1998-99 was \$70.5 million. This figure included \$16.5 million in expected revenues from produce sales, and fees for educational, research and laboratory services in addition to the \$54 million transfer payment.

Budget estimates by program/institution are detailed in Figure 1-1. Actual total expenditures are listed beside the estimates for comparison purposes.

Figure 1-1: 1998-99 Estimates and Actual Expenditures (\$ M)

	OMAFRA Transfer Funds		Revenues (non-OMAFRA)		Total Expenditures (OMAFRA & Revenues)	
	Est.	Actual	Est.	Actual	Est.	Actual
Guelph Research	25.1	26.3	1.0	3.8	26.1	30.1
OAC Diploma	0.6	0.7	1.4	1.5	2.0	2.2
OVC - VCEP	4.7	4.7	0.2	0.2	4.9	4.9
Alfred College	2.3	2.3	1.0	2.1	3.3	4.4
Kemptville College	4.1	4.1	4.0	4.7	8.1	8.8
Ridgetown College	4.2	4.1	3.2	3.4	7.4	7.5
HRIO (Research)	4.0	4	0.1	0.3	4.1	4.3
Lab Services	9.0	8.7	5.6	4.0	14.6	12.7
TOTALS	54.0	54.9	16.5	20.0	70.5	74.9

Actual expenditures (and total revenues) were \$4.4 million higher than forecast and the differences are explained in the following Program Sections 2, 3 and 4.

The Colleges at Alfred, Kemptville and Ridgetown are funded for three primary functions: namely, diploma education, applied research and continuing education and service. Figure 1-2 breaks down the expenditures by program.

Figure 1-2: 1998-99 Colleges Expenditures (\$ '000)

	Alfred	Kemptville	Ridgetown
Diploma Education	1,968	2,408	2,462
Research	145	3,212	3,228
Continuing Education & Services	1,773	2,750	1,527
Other: (flow through funds)			
- cafeteria	85	475	315
- utilities	432	0*	0*
Totals	4,403	8,845	7,532
OMAFRA base funding	2,300	4,100	4,100
Expenditures covered by revenues	2,103**	4,745**	3,432

* Utility costs paid by Ontario Realty Corporation

** Includes Ice Storm Cleanup Contracts

Note: Program costs **include** allocated administrative costs.

2. RESEARCH PROGRAM

2.1 Budget

Funds for research were allocated to six commodity/discipline areas in the 1998/99 budget. All research expenditures at all locations are included in Figure 2-1.

Figure 2-1: 1998/99 Research Budget Estimates and Actual Expenditures (\$'000)

Program	HRIO & Colleges		Guelph		TOTAL	
	Budget	Actual	Budget	Actual	Budget	Actual
Plants	3909	3977	5140	5367	9049	9344
Animals	693	664	5650	5925	6343	6589
Food	87	94	1083	1282	1170	1376
Environment	207	181	1653	1644	1860	1825
Systems	124	119	715	691	839	810
Rural	0	40	70	139	70	179
RSO	2490	2390	5602	6905	8092	9295
Research I & S	421	366	14	1746	435	2112
Totals	7931	7631	19927	23699	27858	31530
Overhead	1830	2497	6125	6493	7955	8990
Grand Totals	9761	10328	26052	30,192*	35813	40520

RSO: Research Station Operations

Research I & S: Research program infrastructure and support

* Actual expenditures at Guelph exceeded budget estimates due primarily to the following factors:

- 1) Produce sales and associated revenues exceeded estimates by almost \$1 million.
- 2) The difference in carryover totals between 1997/98 and 1998/99 (\$ 0.8m) is included.
- 3) Salary increases (approx. \$1.3 m) not currently covered by OMAFRA funds are included. These were temporarily covered through the University pension fund contribution holiday.

2.2 Accomplishments in 1998/99

Research Projects Conducted in 1998/99 and Approved for 1999/00

Programs	1998/99		1999/00		
	# Projects Active	# Projects Completed	# Proposals Received	# Proposals Approved	# Projects Active
Animals	183	92	89	70	161
Plants	107	10	7	6	103
Environment	40	40			
Agri-Systems	20	20			
Agri-Food System Resources & Environment			55	45	45
Food	42	19	7	4	27
Sustainable Rural Communities	7	7	17	11	11
Total	399	188	175	136	347

- A new program, Agri-Food System Resources and Environment Program, has been developed. It replaces the Environment and Natural Resources Program and the Agri-Food Systems Program. The accomplishments of these two programs were reviewed and accepted by the Agricultural Research Institute of Ontario (ARIO) in April, 1999.
- The research proposals for the next four years of the Agri-Food System Resources and Environment Program were presented to ARIO in April, 1999. ARIO recommended to OMAFRA that the proposal be accepted as presented and OMAFRA has approved the program with a request for minor additional information.
- The Plant Research Program, consisting of Field Crop, Horticulture and Pest Management sub-programs, was reviewed by ARIO in 1998. The past accomplishments and the program for the next four years were accepted.
- The process for reviewing and possibly refilling positions that are new or vacated due to resignations, sickness, retirements, etc. have been established. This process identifies the role of Research Program Directors (RPD's) in cooperation with academic management.

- Closer communication linkages have been established with Education, Research and Laboratories Division (ERLD), OMAFRA research analysts and staff in the Agricultural and Rural Division (ARD), OMAFRA. A formal committee structure is under review.
- A Confidentiality Agreement has been developed for signature by the members of the Project Review Committees.
- A Job Factsheet describing a Research Program Director's responsibilities and duties has been finalized and approved.
- A process for moving resources from one program to another has been identified and accepted in principle but it still needs to be developed in detail.
- Communications among Deans, Department Chairs, College Directors and senior management have been enhanced so that the role of RPDs is better understood in areas such as vacancy management, performance evaluations and budget management.

Highlights of Research Accomplishments

- Development of a transgenic pig that produces elevated levels of phytase enzyme which breaks down phytate in feed grains. This will lead to significantly reduced phosphorus losses from swine operations.
- A comprehensive decision support system has been developed for manure management on dairy and swine farms. (Agri-Food System Resources and Environment Program.)
- Techniques have been developed for detecting *Cryptosporidium parvum* in environmental samples, and for identifying potential sources of bacterial contaminants in domestic farm wells. (Agri-Food System Resources and Environment Program.)
- Successful oocyte recovery from young calves. In conjunction with *in vitro* fertilization, this will lead to significantly increased rates of genetic improvement in beef and dairy cattle.
- Cartilage tissue has been grafted onto worn leg joints of horses which will provide a treatment to alleviate lameness in both horses and humans.

- Significant improvement in transformation efficiency in soybeans and alfalfa.
- Release of four improved varieties of soybeans and one of barley from breeding programs.
- Establishment of a breeding program in white corn to develop food corn hybrids for tortillas and tacos.
- Improvements in closed-loop recirculating nutrients systems to increase production and efficiency in greenhouse crops.
- Development of effective software to assist producers in manure management.
- Significant strengthening of the research base in food safety in collaboration with Agriculture and Agri-Food Canada.
- Establishment of an Ontario-wide analysis to identify “leading and lagging” rural communities, in terms of sustainability and economic development. These community analyses will serve as baseline data for future evaluation of programs in the expanding program in Sustainable Rural Communities.

2.3 Performance Measures

Objective	Measure/Activity	Result (\$)
Increase funding in support of research under the OMAFRA contract from outside sources	Increase total funding from outside sources relative to the base funding from OMAFRA.	Granting Councils 13,840,944
		Federal Gov't 6,259,001
		Ont. Gov't (non-MOA) 1,313,787
		Business & Industry 12,047,822
		Charitable Organizations 4,220,987
		Other Gov'ts 327,073
		Private donors 23,134

		Total 38,032,748
		1995/96: 32.7 m
1996/97: 33.0 m		
1997/98: 40.8 m		
The 1998/99 total is 7% less than the previous year. The difference is mainly due to the one-time transfer of trust funds from the Colleges to the University in 1997. Also, the Federal Govt. category is \$1,135,891 lower because of a decrease in CIDA funding.		

	Increase total number of organizations providing funding.	490 organizations provided funding, including 269 in the business and industry category.
	Increase the number of repeat contributors.	There were 316 repeat contributors but there are no comparable statistics for previous years.
	Increase funding from business and industry, in particular.	The funding in the Business & Industry Category increased by \$2,114,543 or 21%. 1995/96: \$ 5.3m 1996/97: \$ 6.0m 1997/98: \$ 9.9m 1998/99: \$12.1m
Licenses and Patents, Royalties	Increase from 70 agreements in 1997/98 to 80 in 1998/99	There were 121 agreements (including 41 hybrid corn contracts) in place in 1998/99.
	Increase royalties from approximately \$600,000 in 1997/98 to \$800,000 in 1998/99 (target is to reach \$1 million per year by 2002).	Seed royalties in 1998/99 were \$655,538 and technology royalties were \$48,497, totaling \$704,035. This is a 6.9% increase from the previous year. (These funds are held in an ARIO trust account)
Technology Transfer	Number of peer reviewed journal publications (target approximately 350 papers per year; one paper per \$25,000 of operating funds)	369 plus 21 books and 45 chapters in books.
	Number of scientific conference papers.	521
	Number of reports.	220
	Number of software products.	7
	Number of presentations in media.	446
	Number of presentations at meetings and conferences.	850
	Number of provincial/national agri-food committees on which UofG faculty participate	194
Client (OMAFRA) Satisfaction	Percent of projects completed on time and budget and project milestones delivered (target is 95% or more complying).	96% of projects are complying.

	Deliverables identified in MOA available on time and deadlines met.	Achieved.
Program Review	Programs to conform to goals and objectives as outlined by ARIO.	In 1998, the entire Plant Research Program was reviewed by ARIO. OMAFRA approved the 1998-2002 program with the noted changes and amendments. The Agri-Food System Resources and Environment Research Program was also reviewed by ARIO in April 1999. Future issues, objectives and goals were accepted by ARIO and OMAFRA.
	Delivery of project/program milestones.	Accepted.
	Impact and significance of research programs.	Some examples of significant impacts include: • 18 patent disclosures. • Increasing financial participation by producer groups. • 40% market share by UofG/OMAFRA soybean varieties in Ontario, which is much higher than comparable numbers in any U.S. state. • Increasing efficiency in the dairy sector so the price of milk to consumers relative to U.S. prices is no longer an issue. At the same time, the average Canadian dairy cow has a 2-year longer lifespan than a U.S. cow.
Impact of Research	Number of studies conducted (target is to review five projects conducted in 1998/99)	Scheduled to begin as soon as cost-effective methods are identified.
	Develop tools to measure impact of research.	A project will be funded in 1999/00 to develop methodology to measure impact of research.

3. EDUCATION PROGRAM

Three educational components are included in the Contract:

- Diploma programs at Alfred, Kemptville, Ridgetown and OAC
- Continuing Education programs at the Colleges
- the Veterinary Clinical Education Program (VCEP) at OVC

Details of the VCEP are provided in the VCEP Annual Report including expenditures and performance measures. The Diploma and Continuing Education programs are covered in this report.

3.1 Diploma Programs

In the 1998/99 Operating Plan, funding was allocated by diploma programs and overhead (including infrastructure and support). The budget figures were comprised of OMAFRA funding and revenues generated through tuition and other program fees and produce sales from educational components of farm operations.

3.1.1 Financial

Diploma budgets and actual expenditures for 1998/99 are shown in Figure 3.1-1.

Figure 3.1-1: Diploma program budgets and actual expenditures, 1998/99 (\$'000)

Program	Alfred		Kemptville		Ridgetown		OAC		Totals	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
Agriculture	869	982	456	476	953	833	950	981	3,228	3,272
Horticulture	284	321	431	414	505	493	650	654	1,870	1,882
Food & Nutrition Management	353	389	518	621	—	—	—	—	871	1,010
Equine	—	—	433	559	—	—	—	—	433	559
Vet. Tech.	—	—	—	—	705	660	—	—	705	660
Overhead	384	276	500	338	457	476	525	509	1,866	1,599
Totals	1,890	1,968	2,338	2,408	2,620	2,462	2,125	2,144	8,973	8,982

Total expenditures on diploma programs decreased by 2% (\$8.982 m vs. \$9.166 m) from the previous year. This is attributed to a more accurate partitioning of costs to programs than in the first year, and a corresponding reduction in overhead costs.

3.1.2 Performance Measures

Enrolments

Figure 3.1- 2: Diploma Program Enrolments 1995/96 - 1998/99 (F-T students)

	Alfred	Kemptville	Ridgetown	OAC	Total	Change
1998/99	94	293	347*	392	1,126	0.2%
1997/98	112	272	316	424	1,124	1.8%
1996/97	111	295	297	401	1,104	8.2%
1995/96	127	280	233	380	1,020	—

* Includes 36 Veterinary Technology students in new Summer Option.

The overall number of diploma students remained steady from the previous year, slight decreases in Agriculture, Horticulture and Food programs were offset by the increased number of students in the Veterinary Technology program at Ridgetown.

Graduation Statistics

Figure 3.1-3: 1998/99 Graduates

	Alfred	Kemptville	Ridgetown	OAC	Total
Agric.	18	41	71	112	242
Hort.	3	12	26	59	100
Food	5	18	—	—	23
Equine	—	13	—	—	13
Vet. Tech.	—	—	39	—	39
Total	26	84	136	171	417

The number of graduates (Figure 3.1-3) in total increased by 11.5% (417 vs. 374) over 1997-98, due mainly to:

- 1) the large 1996/97 cohort
- 2) improved retention rates in most programs.

Attrition Rates for 1997 and 1998 Cohorts

Figure 3.1-4: 1997 Cohort

	Alfred	Kemptonville	Ridgetown	OAC	Average
# enrolled in Fall '97	69	171	180	224	—
# enrolled in Fall '98	51	124	149	188	—
# graduated	26	84	136	161	—
Attrition in Year 1	26%	27%	17%	16%	20%
Attrition in Year 2	49%	32%	9%	9%	20%
Total Attrition	62%	56%	24%	28%	37%

Figure 3.1-5: 1998 Cohort

	Alfred	Kemptonville	Ridgetown	OAC	Average
# enrolled in Fall '98	43	169	198	204	—
# enrolled in Fall '99	42	119	153	161	—
Attrition Year 1	2%	29%	23%	21%	23%

- Attrition rates on average were lower for the 1997 cohort (35% vs. 41%) as compared with the 1996 cohort. It should be noted that a significant number of students not graduating in Year 2 of their program have completed the two years but may be lacking one or more courses required to graduate. Of this group many do not return to complete their program. These students are included as part of the “attrition” group in the calculations in Figure 3.1-4.

Financial Efficiency

- Figure 3.1-6 details costs per student at the four Colleges. Total cost figures at each location were calculated on the same basis. Cost differences between locations can be attributed primarily to differences in student numbers.

Figure 3.1-6: Diploma Program Costs

	Alfred	Kemptville	Ridgetown	OAC	Total	Average (\$)
Total Cost/College (\$ '000)*	1,968	2,408	2,462	2,144	9,268	—
# students	94	293	347	392	1,126	—
Total cost/student (\$)	20,936	8,218	7,095	5,469	—	7,977
Student fees paid	281	988	1,108	1,544	3,921	—
OMAFRA cost/College (\$ '000)	1,687	1,421	1,354	600	5,062	—
OMAFRA cost/student (\$)	17,946	4,489	3,902	1,530	—	4,496

* Costs do not include utilities, or other building costs covered by OMAFRA or Ontario Realty Corporation.

Total cost per student in 1998/99 was slightly lower than in 1997/98 (\$7,977 vs. \$8,162) and represents a remarkably cost efficient system. Comparisons with other institutions and jurisdictions are difficult but similar programs in the Quebec colleges are estimated to be costing \$15,000/student/year (taxpayers dollars), as reported at the Annual Meeting of the Canadian Association of Diploma in Agriculture Programs (CADAP) in August 1999. CADAP institutions are being encouraged to provide program cost estimates in future years for comparison purposes. The total cost to OMAFRA at \$4,496 per student on average, represents a much lower cost than in the years prior to the new Agreement, and fully confirms that this partnership has accomplished the initial goals of increased efficiency and improved quality in diploma education.

Figure 3.1-7: 1998- 99 Value of Diploma Student Awards

	Alfred	Kemptville	Ridgetown	OAC
Total Awards (\$)	11,000	35,535	31,350	44,600
Value of Awards (\$) per student	117	121	90	114

Quality of Programs

- Uniform course and instructor evaluations are carried out using a common system developed by OAC faculty. Results cannot be analysed across institutions, however, the system does provide critical information from students in rating courses and instructors at each campus. Recommendations for course changes or improvements are brought forward through curriculum committees at each location to the Provincial Diploma Committee for discussion, consideration and approval.
- Graduate surveys were conducted in 1999 as per the University's current process — diploma graduates at all locations are surveyed via this process, in alternate years. Results have not been compiled and analysed as yet for the current year, but they will be included in the 1999/2000 Annual Report.

Figure 3.1- 8: Employment statistics for graduates in 1998 (April - May survey)
(percentage of graduates employed)

	Alfred	Kemptville	Ridgetown	OAC
Agric.	95	100	98	87
Hort.	100	100	91	92
Food	95	80	—	—
Equine	—	90	—	—
Vet. Tech.	—	—	89	—

- The overall employment picture continued positive at all locations. All available positions were not filled (due to a lack of graduates) at the end of the academic year.
- Employment statistics are being used to encourage high school graduates to seek post-secondary education and careers in the agriculture and food industry.

Recruitment

- A corporate recruitment program is employed to ensure co-ordination and efficiency in the use of limited resources. School visits are co-ordinated to ensure good coverage across all rural schools and targeted schools in cities. The College Information Program (CIP) tour across Ontario is being supported by College liaison staff at almost all locations.
- The diploma calendar and the diploma/certificate brochure were both revised and updated in early 1999. The brochure now highlights all residential education programs

at the four colleges including OAC degree programs.

- A diploma program CD- ROM was produced in 1998 which highlights all four campuses including facilities, programs, careers available, and promotional clips from students and alumni. The CD has been distributed to schools and to interested groups and individuals at no cost to them. Web pages have been updated to improve access to information on our programs and to facilitate easier application to programs.
- New initiatives with school boards and a few high schools are underway to promote agri-food education in the school system as part of their new curriculum. Plans are underway to get Grade 8 and Grade 11/12 students to our campuses and to provide them with first-hand experience of our programs.

New Programs

- The Summer Vet Technology Diploma option has had a successful first year and is now a first choice option for a considerable number of applicants to the Veterinary Technology program.
- Food technology certificate and diploma programs are under development for delivery at Alfred and Kemptville. Durham College, in conjunction with the University, will also offer the program starting in Fall 2000.
- The equine studies diploma program at Kemptville has been redesigned to include three options (horse health, business and general studies) for students. This is intended to meet student and industry demands for more specialisation.

3.2 Continuing Education

- Activities for Continuing Education are almost entirely self-funded through contracts and certificate courses (including residential programs of up to one academic year).
- The financial activity for each of the three colleges is shown in Figure 3.2-1.

Figure 3.2-1: 1997/98 Estimates and Actual Expenditures for C.E. (\$ '000)

	Alfred*		Kemptonville*		Ridgetown		Total	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
Total Revenues	450	1,773	1,100	2,750	800	1,527	2350	6,050
Total Expenditures	—	1,749	—	2,488	—	1,271	—	5,508
Surplus(Deficit)	—	24	—	262	—	256	—	542
<i>Revenue components:</i>								
Base funding	—	75	—	75	—	75	—	225
CE Revenues		1,669		2,400		1,260		5,329
Conferencing/Facility Rentals		29		275		192		496

Both Alfred and Kemptonville Colleges exceeded estimated revenues by very large amounts (112% increase over 1997/98). This was mainly the result of very large, one-time only contracts with Human Resources and Development Canada (HRDC) to train work crews and deliver a massive rural clean-up effort in many counties of Eastern Ontario following the 1998 Ice Storm.

Conferencing and facility rentals were also significantly increased (up 22%) over the previous year.

Continuing education programs at all three locations, as shown in Figure 3.2-2 show consistent client participation numbers. Kemptonville and Ridgetown generated similar numbers of student days when compared to 1997-98 statistics, but with increased revenues. Alfred increased student days by 82% over the previous year with a corresponding increase in revenues from those activities.

Figure 3.2-2: Student Days and Range of Fees/Student Day, 1998-99

	Alfred	Kemptonville	Ridgetown	Total
# of Student Days (6 hrs/day)	10,953	17,763	16,967	45,683
Fees/day (\$)	25-200	70-95	74.26(average)	—

3.2.1 Quality Evaluation

- All training programs have participant evaluations for completion at the program conclusion.
- Standardized course assessments for similar programs.
- Needs assessment — input from agrifood sector and C.E. council, community councils.

3.2.2 Effectiveness of Program Delivery

- Client evaluations and support
- Repeat business (returning clientele)
- Follow-up with clients of conferences
- Joint initiatives with industry — too numerous to list, and expanding.

4. LABORATORY SERVICES DIVISION

4.1 Budget

The Laboratory Services Division provides government and industry with a one-window approach for its services. These services are provided through four units:

- Analytical Services
- Regulatory Services
- Research Coordination, and
- Animal Health Laboratories at Guelph, Kemptville and Ridgetown.

Laboratory Services achieved financial performance that far exceeded original estimates, as seen in Figure 4.1-1. Considerable business was developed within the University as well as with external clients.

Figure 4.1-1 Comparison of Budgeted and Actual Revenue and Expenses 1998/99 (\$ M)

	Budget	Actual
TOTAL EXPENDITURES	14.6	13.7
<i>Components:</i>		
OMAFRA (transfer)	9	8.7*
External Product Sales	4.3	4.0*
Internal Transfers	1.3	1.0**
TOTAL REVENUES	14.6	13.7**

* 12.7 shown as Total in Figure 1-1.

** Internal U. of G. transactions not included in Totals in Figure 1-1.

4.2 Performance Measures

ISO 9002 certification within LS expanded to include the Guelph Centre for Functional Foods and the Soils and Nutrients Laboratory. The Guelph Molecular SuperCentre satellite laboratory operated through the College of Biological Sciences was also awarded ISO certification through their affiliation with Laboratory Services.

Regulatory

Comprehensive regulatory testing requirements as negotiated with OMAFRA and various agri-food industry affiliates was completed as negotiated. The OMAFRA Pathogen

Reduction Study was awarded to LS and the testing phase is well underway.

Raw milk bacterial testing is now processed using Bactoscan technology, making LS the first lab within North America to use this process for regulatory reporting. Resulting changes in bacterial counts, data analysis and reporting has enhanced milk quality as dairy producers begin to understand and use the information available through this technology.

Both the VADDs system (Animal Health Lab) and the LIMS system (Dairy & Meat programs) continue to be developed and enhanced to meet the evolving needs of OMAFRA, veterinary clients and the dairy industry.

Service

Joint ventures with various external businesses resulted in projects such as the publishing and public launch of a garden book for household use which was distributed through the Loblaws chain. The establishment of the Canadian Urolith Centre with VMD has provided LS with additional clients through the veterinary community and, enabled VMD to obtain detailed analytical information to apply toward their pet food production. Service delivery to non-government clients was maintained at a level consistent to 1997/98 (\$4.0 million) despite business interruptions caused by building renovations required to accommodate Agriculture & Agri-Food Canada within the 95 Stone Rd. facility. 1998 Customer Service Surveys indicated that 78% of all respondents ranked LS services as very good or excellent and 98% of respondents would use the services again.

Education

LS supervisors and research scientists supervised 13 Ph.D. and M.Sc. students from the University of Guelph. An additional 25 post-doctoral and technical staff from University of Guelph departments were provided with specialized training within LS to complement their fields of study and research work. Approximately 100+ students enrolled in courses and programs through other on-campus departments were also taught by LS staff holding adjunct or associate faculty status from colleges/departments within the university. As part of the course structure either through hands-on learning within the laboratory or, through a series of lectures, many LS staff are involved in the educational process of the university.

Research

LS has also been very successful in its research activities. With 23 ongoing projects related to food & dairy microbiology, molecular biology, food chemistry &

neutraceuticals, animal health, pesticides & trace contaminants and plant health, there is a diversity of projects rarely found within one laboratory or university department. Funding through OMAFRA, OREP, Health Canada, and industry groups including the dairy industry, meat & poultry industry and the product industry, enabled LS to carry out its research initiatives. Research projects completed in 1998/99 resulted in the authoring/co-authoring of 29 publications and resultant technology transfer via an assortment of peer review journals, magazines, newspapers, etc. Invitations were received to present 8 different abstracts and specific presentations at scientific meetings. Collaborative research projects were initiated involving LS (as the project lead) and Universities of Toronto, Waterloo, Western Ontario, Nebraska, other University of Guelph departments, the Nova Scotia Agricultural College and various government and industry organizations.

Research highlights include:

- development of molecular, immunological and culture-based methods for the detection and enumeration of foodborne pathogens
- studies on shelf-life extensions of foods
- epidemiological typing of foodborne pathogens by molecular and serological methods
- development of automated fluorescent PCR-based systems for detection and typing of human pathogens
- use of DNA chips and biosensors for diagnostic and food safety tests
- development of a pre-screening and multi-residue approach for the detection of Beta-Agonists in veal cattle
- method development for the measurement of carbohydrates and soluble, insoluble and total dietary fibers in foods
- development of baseline database for vitamin E in beef and dairy cattle
- development of quantitative analytical reference methods for iodine in raw and processed milk
- analysis of soya isoflavones in food and urine as indicators of cholesterol-lowering potential of soyfoods
- identification of volatile organic compounds in food and food packaging materials
- development of enzyme-linked immunosorbent assays for the detection of herbicides glyphosate and dicamba
- development and application of solid phase microextraction method for the screening of waterborne organic contaminants
- animal health surveillance in support of public health, trade and industry
- development and implementation of molecular methods for the diagnosis of veterinary diseases
- development and implementation of methods in veterinary clinical pathology and veterinary toxicology
- development of PCR-based assay for diagnosis of aster yellows

APRIL 1999

5. EQUIPMENT INVENTORIES (INCLUDING LIBRARY HOLDINGS)

The following summary of estimated equipment replacement values is submitted in compliance with the requirements of the Memorandum of Agreement (1996) and includes the following institutions which became part of the University of Guelph as of 1 April, 1997.

Laboratory Services Division

(including the Ag. & Food Lab, and Animal Health Lab in Guelph and Animal Health Labs in Kemptville and Ridgetown)

Alfred College

Kemptville College

Ridgetown College

Horticultural Research Institute of Ontario.

	<u>Cost Value</u>	<u>Estimated Market Value</u>	<u>Estimated Replacement Value</u> (Cost x 2) (Market x 3)
Alfred College (incl. some fixed equipment)	————	1,500,000	4.5 m
Kemptville College	————	1,849,985	5.5 m
Ridgetown College	————	1,653,656	4.9 m
Horticultural Research Inst.	————	2,303,135	<u>6.9 m</u>
		TOTAL	21.8 m

Lab Services Division

Agric. & Food Lab 9,587,293 ——— 19.0 m
(plus 2.5 m fixed equip.)

Guelph Animal Health Lab 1,584,000 ——— 3.0 m

Kemptville A.H. Lab 450,000 ——— 0.9 m

Ridgetown A.H. Lab 400,000 (est.) ——— 0.8 m

TOTAL 23.7 m

Research Station Operations - Guelph

- Owned equipment 16.0 m

- Leased equipment 2.4 m

TOTAL 18.4 m

Grand Total (Estimated)

63.9 m

NOTE: Detailed Inventories are filed in the Office of the Assistant Deputy Minister,

Education, Research and Laboratories Division, OMAFRA.

APRIL 1999

6. INVENTORY OF DWELLING HOUSES, RENTS AND ACCOUNTS' STATUS

	# Units	Revenues	
Kemptville College			
Kemptville	1		
New Liskeard	<u>2</u>		
TOTAL	3	13,960.12	
Expenses			<u>20,331.12</u>
Account balance: Opening		10,910.12	
Closing		4,539.12	
Ridgetown College			
Ridgetown	2		
Cedar Springs	<u>1</u>		
TOTAL	3	18,612.00	
Expenses			<u>12,606.00</u>
Account balance: Opening		19,713.00	
Closing		26,319.00	
Guelph Stations			
Ariss	3		
Cambridge	1		
Alma	1		
Hall House	1		
Ponsonby	1		
Arkell	3		
Simcoe	1		
Vineland	<u>2</u>		
TOTAL	13	114,152.00	
Expenses			<u>48,355.00</u>

Account balance: Opening	163,136.00
Closing	228,933.00

APRIL 30, 1999

7. LIVESTOCK INVENTORIES

	Opening April 1, 1998	Sold	Died*	Transferred		Born or Aquired	Closing April 30, 1999
				In	Out		
ALFRED							
Dairy Herd							
Cows	43	8	0	3	0	0	38
Heifers	12	1	0	8	3	0	16
Calves	12	22	7	0	8	41	16
Totals	67	31	7	11	11	41	70
KEMPTVILLE							
Dairy Herd							
Cows	32	8	2	11	0	0	33
Heifers	19	1	0	16	11	0	23
Calves	21	12	3	0	16	27	17
Totals	72	21	5	27	27	27	73
Dairy Research							
Steers	0	0	0	0	0	0	0
Bull Calves	0	25	1	0	0	26	0
LRF Cows	25	25	0	0	0	33	33
Totals	25	50	1	0	0	59	33
NEW LISKEARD							
Beef Herd							
Cows	146	57	1	133	0	0	221
Calves	84	69	4	0	0	144	155
Totals	230	126	5	133	0	144	376
Sheep Flock							
Rams	14	1	1	3	0	2	17
Ewes	259	38	17	102	0	82	388
Lambs	315	491	151	0	5	575	243
Totals	588	530	169	105	5	659	648

	Opening April 1, 1998	Sold	Died*	Transferred		Born or Aquired	Closing April 30, 1999
				In	Out		
RIDGETOWN							
Dairy Herd							
Cows	39	21	1	15	0	1	33
Heifers	40	2	1	0	20	19	36
Bulls	4	16	5	0	0	18	1
Totals	83	39	7	15	20	38	70
Beef							
Steers	54	122	2	0	0	86	16
Swine							
All classes	500	1308	216	64	0	1612	652
GUELPH RESEARCH UNITS							
Arkell Equine	56	7	7	0	0	15	57
Arkell Poultry	6921	5044	7894	0	0	11260	5243
Arkell Swine	1516	3376	1444	0	433	5728	1991
Alma Aqua ('000)	116	145	43	0	0	227	155
Clinical Research (Swine)	0	315	0	0	0	333	18
Clinical Studies (Dairy)	48	16	4	47	6	0	69
Elora Dairy	315	114	18	8	30	153	314
Elora Beef	470	255	10	70	4	168	439
Ponsonby Dairy	102	26	5	9	29	52	103
Ponsonby (General Animal Facility)	168	0	3	48	0	0	213
Ponsonby Sheep	303	0	4	0	0	94	393

* Includes animals slaughtered for research studies.

ACRONYMS

AAFC	Agriculture and Agri-Food Canada
AHL	Animal Health Laboratory
ARIO	Agricultural Research Institute of Ontario
BIO	Beef Improvement of Ontario
CAEAL	Canadian Association for Environmental Analytical Laboratories
CIP	College Information Program
CFI	Canadian Foundation for Innovation
CFIA	Canadian Food Inspection Agency
DFO	Dairy Farmers of Ontario
GLP	Good Laboratory Practices
HRIO	Horticultural Research Institute of Ontario
ISO	International Standards Organization
LIMS	Laboratory Information Management System
LS	Laboratory Services Division
OAC	Ontario Agricultural College
OASIS	OMAFRA Agreement's Information System
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
ORC	Ontario Realty Corporation
OVC	Ontario Veterinary College
RFP	Request for Proposal
RSO	Research Station Operations
SCC	Standard Council of Canada
SOP's	Standard Operating Procedure
VADDS	Vetstar Animal Disease Diagnostic System
VCEP	Veterinary Clinical Education Program
VMD	Veterinary Medical Diets

