

Greening the Economy



Transitioning
to **New**
Careers

AGRICULTURE

**CAREER
PROFILES**

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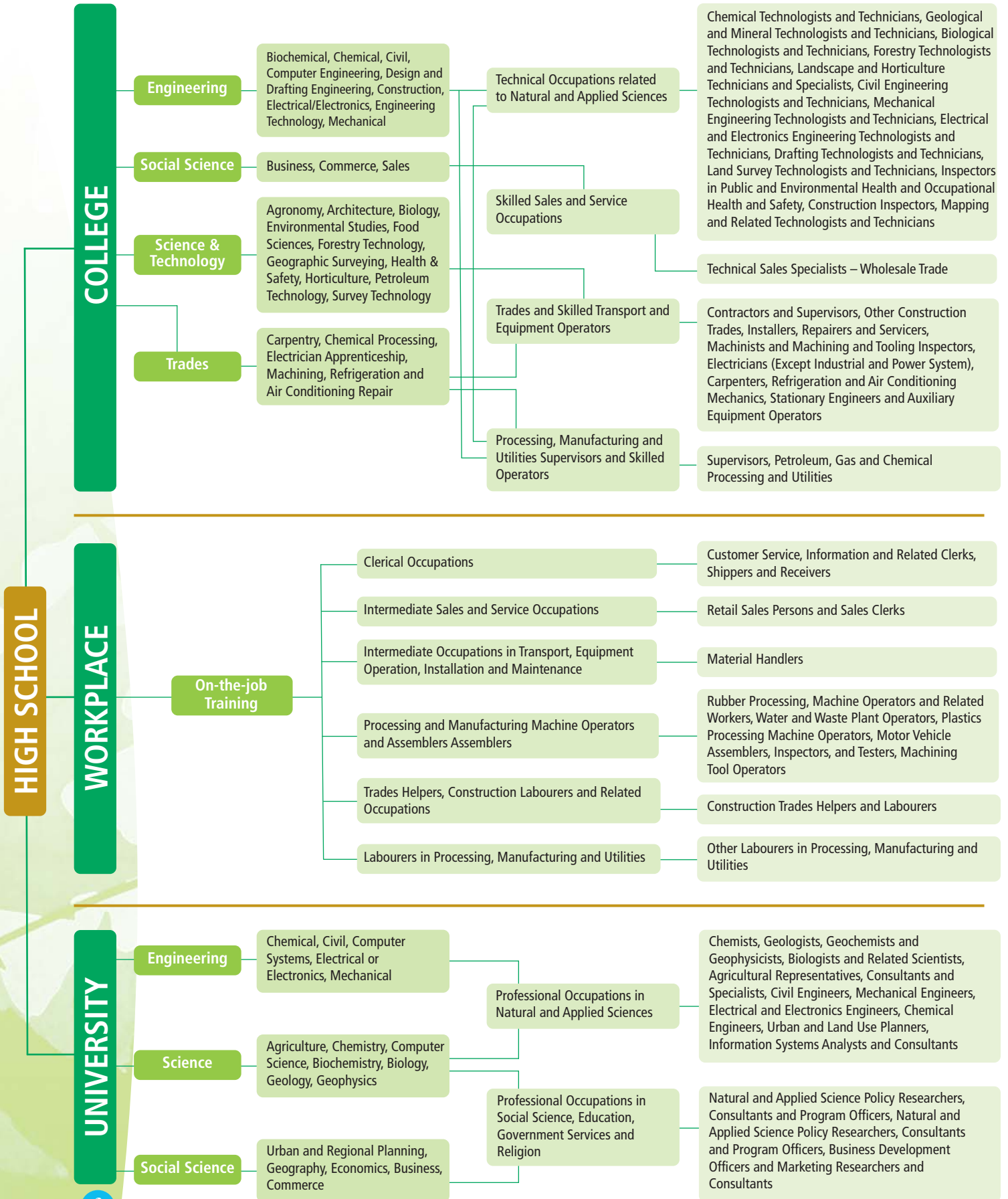
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Educational Flow Chart



Agricultural/Bio-Resource Engineer

NOC 2148

Agricultural and bio-resource engineering integrates engineering science and design with biological sciences. Bio-resource engineering includes the design, construction, operation, maintenance, remediation and upgrading of systems related to agriculture and food processing. They develop efficient and environmentally-sensitive methods of producing food, fiber, timber, bio-based products and renewable energy sources for an ever-increasing world population.

Agricultural engineers may specialize in areas such as the relationships among organisms and their environments, soil and water, structures and environments, power and machinery, electronic and computer applications, or electrical power and processing¹.

Places of Employment²:

- Consulting Engineering firms
- Educational Institutions
- Governments
- Industry
- Research Facilities

Employment Requirements²:

- A bachelor degree in an appropriate engineering discipline is required
- A masters degree or doctorate in a related engineering discipline may be required for some positions
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports, and to practise as a professional engineer
- Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination².

Local Educational Programs:

Minimum education required for this position is 4 years post-secondary education

Program	Length	Certification	Institutions
Engineering	4 years	Bachelor of Engineering	University of Guelph
Engineering	4 years	Bachelor of Engineering	University of Toronto
Engineering	4 years	Bachelor of Engineering	Ryerson University
Engineering	4 years	Bachelor of Engineering	University of Waterloo

Most important skills for occupation²:

- Learning ability - to design and develop criteria for the manufacture and construction of machinery, equipment, structures, systems and facilities related to agriculture and food processing
- Verbal ability/communication skills to solve problems with fellow engineers
- Numerical ability - conduct analysis of data, and to design sensing, measuring and recording devices
- Spatial perception - to prepare design specification for systems and facilities
- Innovative interest - to develop criteria and specification for the design, manufacture and construction of equipment, structures and facilities
- Ability to work precisely
- Interest in supervising

The most important High School subjects are²:

- Math
- Sciences

Agricultural/Bio-Resource Engineer

NOC 2148

Number of Employees by Age Range⁴:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	9.9%	14.1%
25 – 44 years	60.3%	45.1%
45 - 64 years	29.8%	38.8%
65 years and over	0.0%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁵

Average salary in this occupation:

\$ 89,860

Top Industries of Employment for 3 regions⁴:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 4150)	Number of Employers in York Region
5413 Architectural, Engineering and Related Services	15.6%	647	6715
311 Food Manufacturing	9.1%	377	4485
411 Farm Product Wholesale	5.2%	216	150

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁶:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Agricultural Consultants (NOC 2123)
- Biochemical and Biotechnical Engineers (NOC 2134)
- Biologists and Related Scientists (NOC 2121)

Local Employers^{3,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Agviro Inc.
367 Gordon Street,
Guelph, ON N1G 1X8
Telephone: 519 836-9727
Fax: 519 836-5708
www.agviro.com

Associated Engineering Group Ltd.
304 The East Mall,
Toronto, ON, M9B 6E2
Fax: 416 622-6249
www.ae.ca

Esri Canada Ltd.
12 Concorde Place,
North York, ON M3C 3R8
Telephone: 416 441-6035
www.esri.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources and Skills Development Canada www30.hrsdc.gc.ca/NOC/English/CH/2001/quicksearchresult.aspx?v=

³Working In Canada www.workingincanada.gc.ca

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca. Note: These salaries represent an average of both unionized and non-unionized workers. Salaries may vary by workplace.

⁵Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁷AGcareers.com www.Agcareers.com/ontario-jobs.cfm

Agricultural Chemists

NOC 2112

Agricultural chemistry is a science concerned with means of affecting chemical and biochemical processes in the soil and plants, with the mineral nutrition of plants and with the use of fertilizers and other chemical means to improve soil and increase yield, therefore improving sustainability. Agricultural chemistry also deals with several other means of increasing yield, such as herbicides and growth stimulants, and serves as the scientific basis for introducing chemical processes into agriculture. In its aims, methods, and subject areas of research, agricultural chemistry is related to both the chemical and the biological sciences. It is also closely related to soil science, farming, meteorology, plant physiology and biochemistry, agricultural microbiology, physics, and chemistry. Its primary subdivisions are plant nutrition, the interaction of soils and fertilizers, evaluation of particular types and kinds of fertilizers and the methods of applying them, soil improvement by chemical means - for example, the application of lime or gypsum and research into and use of chemicals for weed control. There is a specific area within agricultural chemistry that has direct implications for sustainable agriculture: the field of bio-pesticides^{1,7}.

Places of Employment²:

- Agricultural chemists are employed in government agencies, such as Agriculture and Agri-Food Canada (AAFC), in industry, and in academia, because agricultural chemistry is a very active area of research, classroom teaching, and outreach.
- Food companies that are involved in genetically modified foods.
- Agricultural divisions of large chemical. The increase in environmental regulations has created opportunities in environmental chemistry work within the agricultural chemicals industry.

Employment Requirements²:

- A Ph.D. in chemistry is the most common requirement for the agricultural chemicals field, although an advanced degree is not a prerequisite for nonresearch support positions. A Ph.D., however, generally gets an individual more complex and challenging research assignments earlier in his or her career.
- Agricultural chemists recommend that students take courses in biology, biochemistry, human toxicology, water and soil chemistry, and geology.
- Knowledge of computers
- A course in research ethics is strongly suggested.
- Completion of a degree program in environmental sciences

Local Educational Programs:

Requirements: A bachelor's degree in chemistry, biochemistry or in a related discipline.

- A master's or doctoral degree is usually required for employment as a research chemist.
- Licensing by a provincial association of chemists is compulsory in Quebec and available but voluntary in Ontario

Program	Length	Certification	Institutions
Environmental Science	5 year Co-op	Bachelor of Science in Environmental Science	University of Guelph
Environmental Science	4 years	Bachelor of Science, Honours Specialization in Environmental Science	University of Western Ontario
Environmental Chemistry Specialist	4 Years	Bachelor of Science in, Specialization in Environmental Chemistry	University of Toronto
Professional Master of Environmental Science	1 Year	Master of Environmental Science	University of Toronto
Master of Environmental Science	1 Year	Master of Environmental Science	University of Guelph

Most important skills for occupation²:

- Verbal ability/communication skills - participate in interdisciplinary research and development projects working with chemical engineers, biologists, microbiologists, agronomists, geologists and other professionals; and to prepare laboratory and research reports
- Numerical ability - conduct programs of sample data collection and analysis in order to identify and quantify environmental toxicants

Agricultural Chemists

NOC 2112

- Spatial Perception – visualize chemical reactions and changes to properties
- Synthesizing information to conduct research to develop new chemical formulations and processes and to devise new technical applications of industrial chemicals and compounds
- Precision working with instruments

The most important High School subjects are²:

- Sciences
- Math
- English

Number of Employees by Age Range⁴:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	3.6%	14.1%
25 – 44 years	70.2%	45.1%
45 - 64 years	25.1%	38.8%
65 years and over	1.2%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁵

Average salary in this occupation:

\$ 64,884

Top Industries of Employment⁴:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 7805)	Number of Employers in York Region
3253 Pesticide, Fertilizer & Other Agricultural Chemical Manufacturing	36%	2810	55
111 Crop Production/Chemical Manufacturing	20.4%	1592	1,975

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁶:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Chemical Engineers (NOC 2134)
- Geochemists (NOC 2113)
- Metallurgists and Material Scientists (NOC 2115)
- Molecular Biologists (NOC 2121)

Local Employers^{3,8}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Vive Crop Protection

700 Bay Street, Suite 1100,
Toronto, ON M5G 1Z6,
Telephone: 416 260-8889
Fax: 416 260-8839
www.vivecrop.com

Casco Inc. (Canadian head office)

405 The West Mall, Suite 600,
Etobicoke, ON M9C 0A1
Telephone: 416 620-2300
Fax: 416 620-4488

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Working In Canada. www.workingincanada.gc.ca

⁴Statistics Canada. 2006 Census. www.statcan.gc.ca. Note: These salaries represent an average of both unionized and non-unionized workers. Salaries may vary by workplace.

⁵Ontario Labour Market. www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁶Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁷www.CareerCornerstone.org/pdf/chemistry/careerbriefs/agricchem.pdf

⁸AGcareers.com. www.AGcareers.com/ontario-jobs.cfm

Agricultural Commodity Inspector

NOC 2222

Agricultural commodity inspectors ensure that agricultural products meet the production, storage and transportation standards set by federal and provincial agriculture departments. Individuals in this occupation conduct inspections, checking the sanitation, quality control and food safety programs¹.

Places of Employment²:

- Farms
- Pesticide manufacturing plants (sustainable branch)
- Nurseries
- Fertilizer manufacturers

Employment Requirements²:

- A high school diploma is the minimum educational requirement for this position. Related experience or training is needed if only a high school diploma is held
- A related post-secondary diploma or degree (in agriculture or food science) is an asset

Local Educational Programs:

Program	Length	Certification	Institutions
Agriculture	4 years	Bachelor Degree	University of Guelph
Industrial Food Technology	8 Courses	Post-Secondary Diploma	Seneca College
Food Science Technology	3 years (4 Semesters)	Ontario College Advanced Diploma	Centennial College (Morningside Campus)

Most important skills for occupation²:

- General Learning ability to inspect agricultural products and ensure they conform to production, storage and transportation standards
- Verbal and numerical ability to analyze data and prepare reports on crop production
- Form perception to recognize defects in vegetables
- Manual dexterity to inspect the vegetables
- Methodical interest in handling the plants during processing to establish size, quality and grade of product
- Innovative interest in analyzing data collected during inspection, and examining specimens to detect or identify diseases
- Directive interest in speaking with growers, farmers and shippers regarding methods of culture, registration requirements, eradication of diseases and sustainability of crops

The most important High School subjects are²:

- Grade 12 English
- Grade 12 Math
- Grade 12 Science

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	6.6%	14.1%
25 – 44 years	45.9%	45.1%
45 - 64 years	47.4%	38.8%
65 years and over	0.0%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 54,159

Agricultural Commodity Inspector

NOC 2222

Top Industries of Employment for 3 regions³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 1300)	Number of Employers in York Region
911 Federal Government Public Administration	51.5%	670	3500
912 Provincial Government Public Administration	12.1%	157	4115
311 Food Manufacturing	15.7%	204	4485
411 Farm Product Wholesale	8.1%	105	150
11 Agriculture	6.1%	79	2330

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Biological Technologists and Technicians (NOC 2221)
- Testers and Graders, Food and Beverage Processing (NOC 9465)
- Inspectors in Public and Environmental Health and Occupational Health and Safety (NOC 2263)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Intertek, Consumer Goods Canada

Division: Consumer Goods
6225 Kenway Drive,
Mississauga ON L5T 2L3
Telephone: 1 905 678-7820
Fax: 905 678-7131

Canadian Food Inspection Agency (Government)

1124 Finch Avenue West, Unit 2,
Downsview, ON M3J 2E2
Telephone: 416 665-5055
Fax 416 665-5069 and 416 667-4965

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Agricultural Equipment Technicians

NOC 7312

Heavy-duty equipment technicians repair, overhaul and maintain mobile heavy-duty equipment used in construction, forestry, mining, landscaping, land clearing and farming. Since these machines are used extensively in the harvesting process of food production, the sustainability of these vehicles play a large role in the overall sustainability of the food production process¹.

Places of Employment²:

- Heavy Agricultural Equipment Dealers

Employment Requirements²:

- Completion of high school is required
- Additionally:
 - Completion of a 3-5 year apprenticeship program, or
 - Combination of over 4 years work experience in the trade and high school, college, or industry courses in heavy equipment repair is required to be eligible for trade certification

Local Educational Programs:

Program	Length	Certification	Institutions
Agriculture and Heavy Duty Equipment Technician	2 year (two 8 month periods)	Ontario College Diploma	University of Guelph Kemptville College
Heavy Duty Equipment Technician (Co-op Apprentice)	3 Year (6 semesters)	Ontario College Diploma	Centennial College
Heavy Equipment Operator	12 Week Program	Post Secondary Certificate of Successful Completion	Fleming College

Most important skills for occupation²:

- General learning ability to check agricultural equipment for proper sustainable performance
- Form perception to inspect equipment and detect faults and malfunctions
- Motor co-ordination to perform repair work on agricultural/harvesting equipment as required
- Manual dexterity to test repaired equipment for proper performance and to ensure they meet sustainability requirements. May also fit machinery with sustainable components
- Objective interest in precision working with hand and power tools to adjust equipment and repair/replace defective components.
- Methodical interest in performing routine maintenance work
- Innovative interest in analyzing to diagnose faults and malfunctions in equipment, using computerized and other testing equipment to analyze the sustainable performance of machinery.

The most important High School subjects are²:

- Completion of Grade 12
- Participation in the Ontario Youth Apprenticeship Program (registered apprentices while finishing the last two years of high school)

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	11.8%	14.1%
25 – 44 years	45.2%	45.1%
45 - 64 years	41.8%	38.8%
65 years and over	1.3%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 55,320

Agricultural Equipment Technicians

NOC 7312

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 8030)	Number of Employers in York Region
4171 Farm Machinery and Equipment Wholesale	24%	1927	210
8113 Commercial and Industrial Machinery and Equipment Repair and Maintenance	15%	1205	815
23 Construction	12%	964	32685

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Construction Millwrights and Industrial Mechanics (NOC 7311)
- Automotive Service Technicians, Truck Mechanics and Mechanical Repairers (NOC 7321)
- Contactors and Supervisors, Mechanic Trades (NOC 7216)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Green Tractors Inc.
6770 King Road,
Nobleton, ON L0G 1N0
Telephone: 905 859-0581

Maizis and Miller Consultants
5405 Eglinton Avenue West,
Etobicoke, ON L5N 1B3
Telephone: 416 620-5111

Soroc Technology Inc.
607 Chrislea Road,
Woodbridge, ON L4L 8A3
Telephone: 905 265-8000

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Agricultural Geneticist

NOC 2121

Agricultural genetics is the study of disease resistance in plants and animals and other genetic improvements in crops and stocks to improve the sustainability in the food production process. The role of DNA (deoxyribonucleic acid) is central to this study. This is generally a laboratory/research intensive career¹.

Places of Employment²:

- Crop Production Farms

Employment Requirements²:

- Must have an advanced degree in genetics or a related field such as biology or biochemistry
- Most begin studies with the completion of a 4 year Bachelor of Science (B. Sc.) degree in a biological science. This is the minimum requirement to work as a genetics technician.
- Further advancement is usually required, with the completion of a Master's (M. Sc.) or Doctoral (PhD) degree in genetics. This is the minimum requirement to work in higher level independent research positions.

Local Educational Programs:

Listed below are undergraduate Bachelor of Science programs. Subsequent master's and doctoral programs can be found at the universities listed.

Program	Length	Certification	Institutions
Molecular Genetics	4 Year	Bachelor of Science	University of Toronto
Biology	4 Year	Bachelor of Science	Ryerson University
Biochemistry	4 Year	Bachelor of Science	York University

Most important skills for occupation²:

- Interest in biology
- Aptitude for mathematics
- Problem solving skills
- Curiosity and imagination
- Persistence and patience in a laboratory setting
- Good communication skills
- Manual dexterity for performing experiments
- Ability to pay close attention to detail
- Willingness to keep up to date with research publications and to keep up with new developments and discoveries in a rapidly advancing field
- Should enjoy synthesizing information, finding innovative solutions to problems using sophisticated instruments and equipment to perform tasks requiring precision.

The most important High School subjects are²:

- English
- Math
- Sciences

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	5.6%	14.1%
25 – 44 years	64.8%	45.1%
45 - 64 years	28.1%	38.8%
65 years and over	1.4%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 65,125

Agricultural Geneticist

NOC 2121

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 5230)	Number of Employers in York Region
911 Federal Public Administration	33%	1726	3500
912 Provincial Public Administration			4115
5419 Other Professional Services	20%	1046	3000
62 Health Care and Social Assistance	15%	785	37,090
61 Educational Services	6%	314	33,540

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Agricultural and Biomedical Engineers (NOC 2148)
- Biochemists (NOC 2112)
- Specialists in Laboratory Medicine (NOC 3111)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Agriculture and Agri-Food Canada

93 Stone Road West,
Guelph, ON N1G 5C9
Telephone: 519 829-2400
Fax: 519 829-2602
www.agr.gc.ca

Monsanto

Soybean Research Facility
5192 Jones Baseline Road South, RR 4
Guelph, ON N1H 6J1
Telephone: 519 821-0781
www.monsanto.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Agricultural Farmers and Farm Managers

NOC 8251

Farmers and farm managers manage the operations and functions of a farm. They are responsible for growing crops, raising and breeding livestock, poultry and other animals and marketing farm products. It is the responsibility of the agricultural manager to mimic as closely as possible the complexity of a healthy and natural ecosystem. Goals of a agricultural manager include providing a more profitable farm income and promoting environmental stewardship through reducing input, choosing ecological pest and weed management strategies, introduce nutrient cycles to maintain soil fertility. Sustainable agricultural managers have the responsibility of maintaining the productivity and usefulness of the farming yield indefinitely¹.

Places of Employment²:

- Self-employment
- Crop production farms

Employment Requirements²:

- Extensive farming experience is needed. Previous work as a farmer, farm supervisor or family farm work is usually required
- College diploma in agriculture may be required

Local Educational Programs:

Program	Length	Certification	Institutions
Agriculture	2 years	Post Secondary Diploma	University of Guelph - Kemptville Campus or Ridgetown Campus
Sustainable Agriculture	1.5 Years (3 semesters Co-op)	Ontario College Graduate Certificate	Fleming College - Lindsay

Most important skills for occupation²:

- Verbal ability to create marketing programs
- Numerical ability to develop and keep financial production records
- Ability to operate machinery
- Ability in co-ordinating information to plant, cultivate and harvest crops according to a nutrient cycle

The most important High School subjects are²:

- Math
- Sciences

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	7.0%	14.1%
25 – 44 years	36.3%	45.1%
45 - 64 years	47.9%	38.8%
65 years and over	8.8%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 24,297

Agricultural Farmers and Farm Managers

NOC 8251

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 46650)	Number of Employers in York Region
11 Agriculture	95%	44318	2330
411 Farm Product Wholesale	1%	443	150

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- General Farm Worker (NOC 8431)
- Farm Supervisor (NOC 8253)
- Agricultural and Related Service Contractors and Managers (NOC 8252)
- Supervisors, Landscape and Horticulture (NOC 8256)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Pine Farms

2700, 16th Sideroad
King, ON L7B 1A3
Orchard Phone: 905 833-5459
Wine Phone: 905 833-6023
www.pinefarmsorchard.com

Cooper's CSA Farm and Maze

266 Ashworth Road,
Zephyr, ON. L0E 1T0
Telephone: 905 830-4521

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.Agcareers.com/ontario-jobs.cfm

Agricultural Products Processing Machine Operator

NOC 9461

Agricultural products processing machine operators run machines that process and package food and beverage products. These individuals are concerned with the sustainability of the packaging process, minimizing waste from this portion of food processing¹.

Places of Employment²:

- Food and beverage processing establishments
- Fruit and vegetable processing plants
- Meat plants
- Flour mills
- Breweries

Employment Requirements²:

- Completion of secondary school required
- On-the-job training is provided
- Experience as a machine operator, food and beverage processing, is usually required for process control operators

Local Educational Programs:

Program	Length	Certification	Institutions
Food Processing Operator – Food Manufacturing (Apprenticeship)	300 Hours	Ontario College Certificate	Conestoga College
Industrial Food Technology	2 years	Ontario College Certificate	Seneca College

Most important skills for occupation²:

- General learning ability to operate multi-function process control systems and equipment to process and package food and beverage products
- Form perception to observe gauges, computer printouts and video monitors
- Motor co-ordination and manual dexterity to adjust temperature and pressure controls, and turn valves to start machines and processing equipment
- Innovative interest in proposing and implementing adjustments to processing to achieve greater levels of sustainability
- Manual dexterity

The most important High School skills are²:

- Completion of basic high school subjects, most knowledge comes from on-the-job training

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	10.5%	14.1%
25 – 44 years	45.7%	45.1%
45 - 64 years	43.0%	38.8%
65 years and over	0.8%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 40,015

Agricultural Products Processing Machine Operator

NOC 9461

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 13400)	Number of Employers in York Region
311 Food Manufacturing	72.7%	9742	4485
3121 Beverage Manufacturing	11.3%	1514	600
413 Trade - Food, Beverage and Tobacco Wholesale (Distributors)	5.9%	791	3905

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Bakers (NOC 6252)
- Butchers and Meat Cutters – Retail and Wholesale (NOC 6251)
- Fish Plant Workers (NOC 9463)
- Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers (NOC 9462)
- Labourers in Fish Processing (NOC 9618)
- Labourers in Food, Beverage and Tobacco Processing (NOC 9617)
- Supervisors, Food, Beverage and Tobacco Processing (NOC 9213)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Mother Parkers Tea and Coffee Inc.

2531 Stanfield Road,
Mississauga, ON L4Y 1R6
Telephone: 905 279-9100
Fax: 905 279-9821
www.mother-parkers.com

International Nutrition Ltd.

200 Shields Court,
Markham, ON L3R 9T5
Telephone: 905 475-0422 (Ext. 300)
www.nutrivene.com

Boehmer Box

120 Trillium Drive,
Kitchener, ON N2E 2C4
Plant Telephone: 519 576-2480
Fax: 519 576-2489

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojif/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Agricultural Researcher

NOC 2123

These professionals provide advice and services related to agricultural and environmental science and technology. They apply scientific principles to the cultivation, production, utilization and improvement of plants and animals, and the management of associated resources. The fields they are employed in ranges from farming, food processing, packaging, transportation and marketing to the protection of soil, water, plant and wildlife resources¹.

Places of Employment²:

- Federal, provincial, municipal government departments
- Manufacturers and suppliers of agricultural production inputs (fertilizers, pesticides, feedstuffs, seeds, livestock)
- Farm business advisory services
- Financial institutions
- Agri-food companies
- Agricultural producers
- Conservation authorities
- Educational institutions
- Consulting firms
- Land reclamation companies
- Environmental companies

Employment Requirements²:

- A bachelor's or master's degree in agriculture or in a related science is required
- Membership or eligibility for membership in a provincial agricultural institute is usually required

Local Educational Programs:

Program	Length	Certification	Institutions
Agriculture	4 year	Bachelor of Science (Agriculture)	Ontario Agricultural College (University of Guelph)
Agriculture and Biological Science	4 Year	Bachelor of Science	University of Toronto
Associate Diploma in Agriculture	2 year (3 semesters)	Ontario College Diploma	Ontario Agricultural College (Alfred, Kemptville and Ridgetown Campus)
Sustainable Agriculture	4 Year	Bachelor of Arts	Trent University

Most important skills for occupation²:

- Intellect, curiosity, creativity, patience and perseverance required to solve complex problems and keep technical knowledge up to date
- Good oral and written communication skills
- Good organizational skills
- Good analysis and problem solving skills
- Interpersonal skills
- Leadership skills
- Conflict management skills
- Ability to work independently or as part of a team

The most important High School subjects are²:

- Sciences
- Math
- Geology
- English

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	7.0%	14.1%
25 – 44 years	58.7%	45.1%
45 - 64 years	32.8%	38.8%
65 years and over	1.5%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 50,012

Agricultural Researcher

NOC 2123

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 1300)	Number of Employers in York Region
5416 Management, Scientific and Technical Consulting Services (Agronomy Consulting included)	18.2%	237	5885
91 Public Administration	22.8%	296	16735
111 Agriculture/Farms	16.7%	217	1975
311 Food Manufacturing	9.2%	120	4485

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Agricultural Engineers (NOC 2148)
- Agrology Technologists and Technicians (NOC 2221)
- Biologists and Related Scientists (NOC 2121)
- Horticulture Technicians and Specialists (NOC 2225)
- Managers of Agricultural Extension and Consulting Services (NOC 0212)
- Government Managers responsible for agricultural economic policy (NOC 0412)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Ministry of Agriculture, Food and Rural Affairs

581 Huron Street,
Stratford, ON N5A 5T7
Telephone: 416 327-8393
www.gojobs.gov.on.ca

Protenergy Natural Foods Corporation

125 East Beaver Creek Road,
Richmond Hill, ON L4B 4R3
Telephone: 905 707- 6223
Fax: 905 707-7223
www.protenergyfoods.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Conservation Officer (Eco-preservation)

NOC 2224

Conservation officers enforce the federal and provincial regulations established for the protection of natural resources and collect and relay information on resource management. These officers perform resource protection duties and gather resource data (water samples, soil samples etc.) to assist biologists in scientific research. Employees work to maintain a sustainable environment¹.

Places of Employment²:

- Employed by federal and provincial government departments

Employment Requirements²:

- Completion of a one- to three-year college program in renewable resources management is required.
- On-the-job training and courses related to law enforcement and resource management are provided.
- A class-5 driver's licence, pesticide applicator's licence and explosives licence may be required.

Local Educational Programs:

Program	Length	Certification	Institutions
Environmental Management – Natural Resources Management and Policy	2 years	Diploma	Ontario Agricultural College (affiliated with University of Guelph) – Ridgetown Campus
Environmental Management	1 year	Post-Diploma Graduate Certificate	Canador College
Environmental Management and Assessment	1 year	Post-Diploma Graduate Certificate	Niagara College
Environmental Protection Technician	2 years, or 1 year (fast track)	Post-Secondary Diploma	Centennial College

Most important skills for occupation²:

- General learning ability – enforce and generate awareness of regulations and perform resource protection duty
- Communication skills
- Ability to compile information during investigations
- Social interest in generating awareness
- Tact, diplomacy and excellent interpersonal skills
- Problem solving ability

The most important High School subjects are²:

- Math
- Sciences
- English

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	3.1%	14.1%
25 – 44 years	46.5%	45.1%
45 - 64 years	50.3%	38.8%
65 years and over	0.0%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 55,709

Conservation Officer (Eco-preservation)

NOC 2224

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 650)	Number of Employers in York Region
911 Federal Government Public Administration	20.8%	135	3500
912 Provincial Government Public Administration	42.8%	278	4115
11 Agriculture	8.2%	53	2330
712 Heritage Institutions	22.6%	147	385

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Biologist (NOC 2121)
- Bylaw Enforcement Officer (NOC 6463)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Ministry of Natural Resources - Ontario

300 Water Street, P.O. Box 7000
Peterborough ON K9J 8M5
Telephone: 1 705 755-2000
Fax: 1 705 755-1677
www.mnr.gov.on.ca

Ontario Federation of Agriculture

Ontario AgriCentre,
100 Stone Road West, Suite 206,
Guelph, ON N1G 5L3
Telephone: 1 519 821-8883
Fax: 1 519 821-8810
www.legacy.ofa.on.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Entomologists

NOC 2121

Entomologists are a smaller classification of the larger biologist and related scientists group. This group conducts basic and applied research to extend knowledge of living organisms, to manage natural resources, and to develop new practices and products related to agriculture. Specifically, Entomologists study the classification, biodiversity, life cycles and ecology of insects and other arthropods, and plan and implement surveys and sustainable pest management programs. For example, entomologists employed by the Canadian Food Inspection Agency work to prevent the spread of invasive invertebrates in a sustainable manner¹.

Places of Employment²:

- Educational institutions
- Municipal, provincial and federal government
- Technical Sales Specialists
- Chemical Industries
- Managerial Positions

Employment Requirements²:

- Minimum of a Bachelor's degree in biological sciences or agriculture.
- A graduate degree (master's or doctoral degree) is required for employment in research positions in universities, governments and industrial organizations

Local Educational Programs:

Program	Length	Certification	Institutions
Biological Science	4 Years	Bachelor of Science	York University
Biological Science	4 Years	Bachelor of Science	Ryerson University
Agriculture	4 Years	Bachelor of Science	Ontario Agricultural College (University of Guelph)
Sustainable Agriculture	4 years	Bachelor of Science	Trent

Most important skills for occupation²:

- Ability to think in a methodical and scientific way
- Aptitude for analysis, synthesis, problem solving, team work, communication, ability to concentrate
- Attention to detail
- Scientific curiosity

The most important High School subjects are²:

- English
- Math
- Sciences

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	5.6%	14.1%
25 – 44 years	64.8%	45.1%
45 - 64 years	28.1%	38.8%
65 years and over	1.4%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 65,125

Entomologists

NOC 2121

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 5230)	Number of Employers in York Region
91 Public Administration	33%	1726	16735
5419 Other Professional Services	20%	1046	3000
62 Health Care and Social Assistance	15%	785	37090
61 Educational Services	6%	314	33540

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Architecture and Science Managers (NOC 0212)
- Biochemists (NOC 2112)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Antonio Bajar Greenhouses Limited

18545 Keele Street,
Newmarket, ON L3Y 4V9
Telephone: 905 775-2773
Fax: 905 775-4911
www.bajargreenhouses.com

Ministry of Agriculture, Food and Rural Affairs Agriculture Development Branch – Field Crops

581 Huron Street,
Stratford, ON N5A 5T7
Telephone: 416 327-8393
www.gojobs.gov.on.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workinginCanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Environmental/Agricultural Consultant

NOC 2123

Environmental and agricultural consultants are committed to supporting sustainable development through responsible environmental stewardship. These consultants verify compliance with environmental regulations throughout the food production process¹.

Places of Employment²:

- Environmental Consulting Firms

Employment Requirements²:

- Bachelor's Degree in Environmental Science or related field is preferred
- Minimum two years of experience and an environmental monitor
- Proficient in Microsoft Word and Excel

Local Educational Programs:

Program	Length	Certification	Institutions
Environmental Science	4 years	Bachelor of Science	University of Western Ontario
Environmental Science	4 years	Bachelor of Science	York University
Environmental Science	4 years	Bachelor of Science	University of Toronto

Most important skills for occupation²:

- Must be competent with GPS equipment
- Proficient in Microsoft Word and Excel (general computer skills)
- Scientific mindset
- Skilled in analysis, synthesis and problem solving
- Ability to work in a team environment

The most important High School skills are²:

- Sciences
- English

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	7.0%	14.1%
25 – 44 years	58.7%	45.1%
45 - 64 years	32.8%	38.8%
65 years and over	1.5%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 52,000

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 1300)	Number of Employers in York Region
5417 Scientific Research and Development Services	26.2%	341	1695
91 Public Administration	22.8%	296	16735
111 Agriculture/Farms	21.4%	278	1975
311 Food Manufacturing	9.2%	120	4485

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Environmental/Agricultural Consultant

NOC 2123

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Agricultural Engineers (NOC 2148)
- Agrology Technologists and Technicians (NOC 2221)
- Biologists and related Scientists (NOC 2121)
- Landscape and Horticulture Technicians and Specialists (NOC 2225)
- Managers of Agricultural Extension and Consulting Services (NOC 0212)
- Managers of Agricultural Economic Policy (NOC 0412)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

BioSyent Inc

170 Attwell Drive, Suite 520,
Toronto, ON M9W 5Z5
Telephone: 905 206-0013
Fax: 905 206-1413
www.biosyent.com

Silver Stream Farms

200 Shields Court,
Markham, ON L3R 9T5
Telephone: 905 475-0422 (Ext. 300)
www.nutrivene.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Greenhouse Operator

NOC 8254

Greenhouse operators run wholesale and retail horticultural firms ranging in size from small family businesses to operations employing over fifty people. They may deal with all kinds of plants and produce, or specialize in a particular type. These professionals use their background training in horticulture, or other related environmental fields, to determine the proper sustainable environmental conditions required to grow the selected crops and plants. They are involved in the full growth process, and implement strategies to ensure a sustainable crop is produced¹.

Places of Employment²:

- Agricultural companies
- Service firms to agriculture
- Greenhouses
- Nurseries (lawn and garden centers)

Employment Requirements²:

- Minimum 2 years post-secondary education/training
- Completion of a college program in horticulture is usually required
- Experience as a nursery or greenhouse supervisor is required

Local Educational Programs:

Program	Length	Certification	Institutions
Horticulture	2 years (8 month semesters)	Post-Secondary Diploma	Ontario Agriculture College (University of Guelph) – Kemptville Campus
Environmental Landscape Management	2 Years (8 month semesters)	Post-Secondary Diploma	Seneca College
Landscape Technician	2 Years (4 semesters)	Post-Secondary Diploma	Humber College

Most important skills for occupation²:

- General learning ability – manage the operations of nurseries and greenhouses and to establish the environmental conditions required to grow
- Verbal and numerical ability
- Interest in supervising
- Methodical interest in co-ordinating

The most important High School skills are²:

- Sciences
- Math
- English
- Geology

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	12.3%	14.1%
25 – 44 years	32.0%	45.1%
45 - 64 years	44.3%	38.8%
65 years and over	11.5%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 56,742

Greenhouse Operator

NOC 8254

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 1475)	Number of Employers in York Region
111 Agriculture/Farm	81%	1195	1975
411 Farm Product Wholesaler	5%	74	150

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Nursery and Greenhouse Workers (NOC 8432)
- Supervisors, Landscape and Horticulture (NOC 8256)
- Farmers and Farm Managers (NOC 8251)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Leslie Gardens Nursery and Greenhouse

22517 Leslie Street,
Queensville, ON L0G 1R0
Telephone: 905 478-8111
Fax: 905 478-1923
www.lesliegardens.com

Vanhart Greenhouses

950 Woodchoppers Lane,
Kettleby, ON L0G 1J0
Telephone: 905) 775-7412
Fax: 905 775-4977
www.vanhartsallorganic.ca/

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Horticulture Technician

NOC 2225

Horticulture technicians focus on the process of enhancing the spaces in which we live and work, using good design and appropriate plants, with a strong emphasis on environment sustainability¹.

Places of Employment²:

- Landscape designers and contractors
- Municipal, provincial and national parks
- Greenhouses
- Self-Employment

Employment Requirements²:

- Completing of a university or college program in horticulture, landscape technology, arboriculture or agronomy
- An apprenticeship program is available for horticulturists
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required
- Candidates must have relevant landscape or horticulture experience, and enjoy working outdoors. They also need to be in good physical condition and have good manual dexterity.

Local Educational Programs:

Program	Length	Certification	Institutions
Horticulture Technician	2 Year (co-op)	Post-Secondary College Diploma	Niagara College
Horticulture Technician	2 Year	Post-Secondary College Diploma	Durham College
Horticulture Technician	2 Year	Post-Secondary College Diploma	Humber College

Most important skills for occupation²:

- Oral Communication
- Critical Thinking (problem solving, decision making, job task planning)
- Ability to work in a team setting efficiently

The most important High School skills are²:

- Biology - Grade 11 (C or U) or Grade 12 U
- Chemistry - Grade 11 U or Grade 12 (C or U)
- Math - Grade 12 (C or U)
- English - Any grade 12 level course

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	14.5%	14.1%
25 – 44 years	45.3%	45.1%
45 - 64 years	38.4%	38.8%
65 years and over	1.8%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 32,734

Horticulture Technician

NOC 2225

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 4800)	Number of Employers in York Region
11 Agriculture (Horticultural Included)	23.7%	1138	2330
913 Public Administration	14.4%	691	9030
4442 Lawn and Garden Equipment and Supplies Stores	5.3%	254	430

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Greenhouse and General Farm Workers (NOC 8432)
- Labourer (NOC 8612)
- Managers in Horticulture (NOC 0822)
- Biological Technologists and Technicians (NOC 2221)
- Landscape Architects (NOC 2152)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Quality Gardens

44 Camborne Avenue,
Toronto, ON M3M 2R1
Telephone: 647 784-6686
Fax: 416 398-7790
www.qualitygardens.ca

Crossfield Plant Interiors

242 Burns Boulevard,
King City, ON L7B 1E1
Telephone: 905 833-2108
www.crossfieldplants.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Hydrogeological and Geotechnical Engineer

NOC 2144

Geotechnical engineers work with geologists, other scientists and engineers to solve engineering and environmental problems. They investigate the engineering feasibility of planned projects, and help design cost-effective solutions to problems while maintaining recognized standards. They usually specialize in a particular type of work such as land remediation, rock mechanics or groundwater hydrology. Their role in sustainability stems from how heavily geotechnical engineers rely on resources. It is known as one of the most resource intensive disciplines in civil engineering. Design and construction related to geotechnical engineering consumes a vast amount of resources and energy, thus improving the sustainability of geotechnical processes is important for achieving an overall sustainable development. Being conscious of resource efficiency is at the center of sustainability in this career¹.

Places of Employment²:

- Governments
- Engineering consulting companies
- Educational and research institutions
- Mining companies

Employment Requirements²:

- A bachelor's degree in geological engineering or in a related discipline (civil) is required
- A master's degree or doctorate in a related engineering discipline may be required
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P. Eng.)
- Engineers are eligible for registration following graduation from an accredited educational program, three or four years of supervised work experience in engineering and passing a professional practice examination.

Local Educational Programs:

Minimum 4 years post-secondary education (bachelor degree, with selected relevant courses such as civil engineering and chemical engineering)

Program	Length	Certification	Institutions
Geological Engineering	4 years (co-op)	Bachelor of Applied Science (B.A.Sc.)	University of Waterloo
Civil Engineering	4 years	Bachelor of Applied Science (B.A.Sc.)	University of Toronto
Civil Engineering	4 year or 5 year (1 year IIP program)	Bachelor of Engineering (B. Eng.)	Ryerson University
Civil and Environmental Engineering	4 years	Bachelor of Engineering Science	University of Western Ontario
Civil Engineering and Environmental Engineering (separate programs)	4 years	Bachelor of Applied Science (B.A.Sc.)	University of Windsor
Chemical Engineering	4 years	Bachelor of Applied Science (B.A.Sc.)	University of Waterloo
Chemical Engineering	4 years	Bachelor of Applied Science (B.A.Sc.)	University of Toronto
Chemical Engineering	4 years	Bachelor of Engineering	Ryerson University

Most important skills for occupation²:

- Must have good oral and written communication skills
- Strong math and science skills
- Have a practical and creative approach
- Ability to visualize 3D objects from 2D drawings
- Analytical skills

The most important High School subjects are²:

- Sciences
- Math

Hydrogeological and Geotechnical Engineer

NOC 2144

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	7.4%	14.1%
25 – 44 years	33.3%	45.1%
45 - 64 years	51.9%	38.8%
65 years and over	7.4%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 77,646

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 250)	Number of Employers in York Region
5413 Architectural, Engineering and Related Services	58.3%	146	6715
91 Public Administration	12.5%	31	16735

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Civil Engineering (NOC 2131)
- Chemical Engineering
- Engineering Managers (NOC 0211)
- Geologists, Geochemists, Geophysicists (NOC 2113)
- Land Surveyors (NOC 2154)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Golder Associates Ltd.
110 - 140 Renfrew Drive,
Markham, ON L3R 6B3
Telephone: 1 905 475-5591
Fax: 1 905 475-5257
www.golder.com/careers

Coffey Geotechnics
351 Steelcase Road West, Unit 10,
Markham ON L3R 4H9
Telephone: 905 474-9255
Fax: 905 474-9267
www.coffey.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.Agcareers.com/ontario-jobs.cfm

Hydrologist

NOC 2113

A hydrologist is a scientist who researches the distribution, circulation and physical properties of underground and surface waters. He or she may help environmental scientists and other scientists preserve and clean up the environment or may search for groundwater. The proper use and conservation of water during the food production process is an important environmentally-friendly aspect of this occupation.

Hydrologists study the quantity, distribution, circulation, and physical properties of underground and surface waters. Often, they specialize in either underground water or surface water. They examine the form and intensity of precipitation, its rate of infiltration into the soil, its movement through the earth, and its return to the ocean and atmosphere. Hydrologists use sophisticated techniques and instruments. For example, they may use remote sensing technology, data assimilation, and numerical modeling to monitor the change in regional and global water cycles. Some surface-water hydrologists use sensitive stream-measuring devices to assess flow rates and the quality of water. The work hydrologists do is particularly important in flood control and environmental preservation, including groundwater decontamination¹.

Places of Employment²:

- Consulting firms – advising and helping businesses and government agencies comply with environmental policy. Their focus is particularly on ground-water decontamination and flood control. They can also provide services in environmental risk assessment.
- Federal and provincial governments
- Educational Institutions

Employment Requirements²:

- Adequate for entry-level jobs: Bachelor's degree in Earth Science
- Preferred: Master's degree
- For high-level research positions, or teaching positions: Ph. D is required
- To enter this occupation, candidates normally require a bachelor's degree in a discipline related to earth science, geology or geophysics. A Master's degree in geology, earth sciences and hydrology is an asset, and fast becoming a requirement.

Local Educational Programs:

- Bachelor's degree in Earth Science, geology, geochemistry, geophysics or related fields is the basic requirement.

Program	Length	Certification	Institutions
Earth Science or Geomatics Engineering	4 year	Honours Bachelor of Science	York University
Environmental Geosciences or Geology and Physics	4 Year	Bachelor of Science	University of Toronto

Most important skills for occupation²:

- General learning ability: To conduct theoretical and applied research to extend knowledge of surface and subsurface features of the earth, its history and the operation of physical, chemical and biological systems that control its evolution; and to conduct geological and geophysical studies for regional development, site selection and the development of public works projects
- Verbal Skills: Prepare assessment reports and plan, direct and participate in analysis of data
- Numerical Ability: develop and use software to analyze and interpret data
- Spatial Perception: Assess the movement of ground and surface waters and identify natural environmental risks such as slope erosion, landslides, soil instability
- Interest in Precision Working: With instruments to identify deposits of construction materials, and in participating in remote sensing programs and in analyses of core samples, drill cuttings and rock samples to identify chemical composition
- Directive interest in consulting

The most important High School subjects are²:

- 12 U English
- Calculus and Vectors (MCV4U)
- Physics (SPH4U)
- Advanced Functions (MHF4U)
- Chemistry (SCH4U)

Hydrologist

NOC 2113

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	5.1%	14.1%
25 – 44 years	58.2%	45.1%
45 - 64 years	34.2%	38.8%
65 years and over	2.6%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Full time, Full Year	Part-time
\$ 66,900	\$ 44,189

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 2140)	Number of Employers in York Region
541 Professional, Scientific and Technical Services	31%	663	50090
91 Public Administration	17%	364	16735
5419 Other Professional Services	14%	300	3000
212 Mining (except Oil and Gas)	17%	364	235

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Chemists (NOC 2112)
- Geological Engineers (NOC 2144)
- Physicists and Astronomers (NOC 2111)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Eastmain Resources Inc.
834572 4th Line, Mono Twp, RR#1,
Orangeville, ON L9W 2Y8
Telephone: 519 940-4870
Fax: 519 940-4871
www.eastmain.com

Stantec Consulting Ltd.
675 Cochrane Drive,
Markham, ON L3R 0B8
Telephone: 905 944-7777
www.stantec.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Organic Farm Workers

NOC 8253

Organic farm workers implement organic farming systems that rely on ecologically based practices, such as cultural and biological pest management, and virtually exclude the use of synthetic chemicals in crop and animal production. In addition, the use of antibiotics and hormones in livestock production is prohibited. Genetically modified crops such as those containing genes that express toxins or confer herbicide resistance are not allowed. In organic farming systems, the fundamental components and natural processes of ecosystems, such as soil organism activities, nutrient cycling, and species distribution and competition, are used to work directly and indirectly as farm management tools¹.

Places of Employment²:

- Food production/crop farms

Employment Requirements²:

- Organic farm supervisors and workers may require a college certificate or other specialized training in agriculture

Local Educational Programs:

- General agriculture programs are offered at the college and undergraduate level.
- This program focuses on the general principles and practice of agricultural research and production and that prepares individuals to apply this knowledge to the solution of practical agricultural problems. These programs include courses in basic animal, plant, and soil science; animal husbandry and plant cultivation; soil conservation; and agricultural operations such as farming, ranching, and agricultural business.

Program	Length	Certification	Institutions
Agriculture	2 years	Post-secondary diploma	Kemptville College
Agriculture	2 years	Post-secondary diploma	Ridgetown College
Agriculture	4 years	Bachelor of Science in Agriculture - B.Sc.(Agr.)	University of Guelph

Most important skills for occupation²:

- 0-2 years experience required
- General farm duties
- Maintain quality control and production records
- Innovative interest in co-ordinating information to develop work schedules and establish environmentally friendly procedures

The most important High School skills are²:

- Ability to work with others, oral communication, problem-solving, reading, numeracy, job task organization

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	25.9%	14.1%
25 – 44 years	46.0%	45.1%
45 - 64 years	24.9%	38.8%
65 years and over	3.2%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 24,584

Organic Farm Workers

NOC 8253

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 550)	Number of Employers in York Region
111 Agriculture/Farms	73.5%	404	1975
1150 Support Activities for Farms	10%	55	200

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Agricultural and related Service Contractors and Managers (NOC 8252)
- Farmers and Farm Managers (NOC 8251)
- General Farm Workers (NOC 8431)
- Harvesting Labourers (NOC 8611)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Zephyr Organics

10900 Concession 4
Zephyr, ON L0E 1T0
Telephone: 416 577-3685
Fax: 905 852-6579
www.zephyrorganics.com

Organics Farm

7550 19th Avenue,
Markham, ON L6B 1A8
Telephone: (905) 640 5206
www.organicsfarm.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojf/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Organic Food Salesperson

NOC 6421

Organic food salespersons specialize in local meat, dairy and produce and run the daily operations of organic retail stores. These persons specialize in the green friendly products that they sell and have the ability to discuss the care of the product throughout production, the type and quality of the goods they are selling¹.

Places of Employment²:

- Organic food retailers
- Department stores

Employment Requirements²:

- Minimum requirements for this position is a secondary school diploma
- University degree or college diploma in a related field might be required by some employers
- Vocational programs are an asset, areas include: sales, sales consulting, food
- Product knowledge is required
- Sales ability

Local Educational Programs:

- Secondary School diplomas from any local institution is accepted
- The following programs are assets:

Program	Length	Certification	Institutions
Agriculture	2 years	Post-secondary diploma	Kemptville College
Agriculture	2 years	Post-secondary diploma	Ridgetown College
Agriculture	4 years	Bachelor of Science in Agriculture - B.Sc.(Agr.)	University of Guelph

Most important skills for occupation²:

- Learning ability – Product knowledge
- Ability to develop interpersonal relationships
- Independent worker with the ability to listen and communicate
- Shows a high level of customer service

The most important High School skills are²:

- English
- Biology

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	38.6%	14.1%
25 – 44 years	29.8%	45.1%
45 - 64 years	29.2%	38.8%
65 years and over	2.4%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 38,719

Organic Food Salesperson

NOC 6421

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 20000)	Number of Employers in York Region
4452 Specialty Food Stores	77%	15400	1370
411 Farm Product Wholesale	4%	800	150

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Cashiers (NOC 6611)
- Retail Stock Clerks (NOC 6622)
- Sales Clerk Supervisors (NOC 6211)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

Nature's Emporium

16655 Yonge Street,
Newmarket, ON L3X 1V6
Telephone: 905 898-1844
Fax: 905 898-0237
www.naturesemporium.ca

The Garden Basket

9275 Markham Road,
Markham, ON L6E 1A1
Telephone: 905 471-0777
Fax: 905 471-0922
www.thegardenbasket.ca

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojfi/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca

⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm

Soil Fertility Scientist (Biological Research Scientist)

NOC 2115

Soil scientists study the composition, distribution, development and behaviour of soils, the interaction of soils with plants, and the management of soil resources for agriculture production and environmental protection. They study the properties of soils, processes that occur in soil (physical, chemical, biological) and the positive and negative effects of human activity on soil quality. They develop methods to conserve and manage soil for future generations and develop plans to fix contaminated soils and reclaim disturbed soils. They apply knowledge of soil science in areas related to crop or plant productivity, environmental protection and biological conservation¹.

Places of Employment²:

- Post secondary education institutions
- Federal, provincial and municipal government departments and research centers
- Industrial establishments
- Fertilizer companies
- Engineering and land appraisal firms
- Coal, oil, gas and forestry companies
- Consulting firms
- Environmental remediation and reclamation positions are in high demand for those with soil science training

Employment Requirements²:

- New graduates can work on a seasonal basis until they gain job experience
- Doctoral degrees are usually required to direct and administer research programs or to teach at the university level

Local Educational Programs:

- 4 year post-graduate degree
- Bachelors degree in agriculture, forestry, biological, earth or environmental sciences with a specialization in soil science
- Research positions require a master's or a doctoral (PhD) degree
- Must be up to date with provincial and federal legislation

Program	Length	Certification	Institutions
Environmental Science	4 years	Bachelor of Science, Honors Specialization in Environmental Science	University of Western Ontario
Environmental Science	4 years	Bachelor of Science in Environmental Science	University of Guelph
Environmental and Resource Studies/Science		Bachelor of Science or Bachelor of Environmental Science/Studies	Trent University
Geography and Environmental Management	3 years	Bachelor of Environmental Studies	University of Waterloo
Geography and Environmental Management	4 years (co-op)	Honours Bachelor of Environmental Studies	University of Waterloo
Environmental Studies	4 years	Bachelor of Environmental Studies	York University
Environment and Science	4 years	Bachelor of Science	University of Toronto
Chemistry	4 years	Bachelor of Science	University of Toronto, York University, University of Guelph, University of Western Ontario, University of Waterloo

Most important skills for occupation²:

- Verbal Ability/communication skills - understand terms associated with agricultural science and communicate ideas thoroughly
- Spatial and form perception
- Innovative interest and problem solving

Soil Fertility Scientist (Biological Research Scientist)

NOC 2115

- Numerical ability
- Directive interest in consulting and decision making
- Precision working, planning and organization

The most important High School subjects are²:

- Math
- Sciences

Number of Employees by Age Range³:

Employment Distribution by Age	% of Total	All Occupations
15 – 24 years	6.3%	14.1%
25 – 44 years	41.3%	45.1%
45 - 64 years	49.2%	38.8%
65 years and over	3.2%	2.0%

Source: Statistics Canada, 2006 Census

Average Salary⁴

Average salary in this occupation:

\$ 66,921

Top Industries of Employment³:

Industry (NAICS)	% of Total Employed	Number of People Employed (Total 500)	Number of Employers in York Region
91 Public Administration	18%	90	16735
5417 Scientific Research and Development Services	13.4%	67	1695
11 Agriculture	6%	30	2330

Source: Statistics Canada, 2006 Census; Statistics Canada. Canadian Business Patterns Data. December 2003, June 2009.

Matrix of Skills Transferability⁵:

Transferability between occupations has been analyzed using the National Occupational Coding system. Judgments have been made based on an analysis of available information regarding the overlap of knowledge and skills and labour market hiring practices for occupations. Occupations to which transferability exists are:

- Chemists (NOC 2112)
- Metallurgical and Materials Engineers (NOC 2142)

Local Employers^{6,7}:

The following list of employers was randomly selected as examples of companies employing this occupation. An attempt was made to represent a company from each local board area.

De Beers Canada
 900 - 250 Ferrand Drive,
 Toronto, ON M3C 3G8
 Telephone: 416 645-1710
 Fax: 416 429-2462
www.debeerscanada.com

CH2M HILL
 245 Consumers Road, Suite 400,
 Toronto, ON M2J 1R3
 Telephone: 416 499-9000
 Fax: 416 499-4687
www.ch2m.com

For a more complete listing of potential employers please visit www.labourmarketinformation.ca.

ENDNOTES

¹Human Resources Skills Development Canada. National Occupational Classification System 2006. www5.hrsdc.gc.ca/NOC.

²Human Resources Skills Development Canada. Essential Skills Profiles. www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

³Statistics Canada. 2006 Census. www.statcan.gc.ca.

⁴Ontario Labour Market www.tcu.gov.on.ca/eng/labourmarket/ojif/findoccupation.asp

⁵Human Resources Skills Development Canada. Matrix of Skills Transferability – January 2003. www.hrsdc.gc.ca.

⁶Working In Canada www.workingincanada.gc.ca


⁷AGcareers.com www.AGcareers.com/ontario-jobs.cfm



durham
workforce
authority

Peel Halton  Workforce
Development
Group

TWIG | TORONTO WORKFORCE
INNOVATION GROUP

Workforce 
Planning BOARD
OF YORK REGION & BRADFORD WEST GUILMBURY