

Research Needs Assessment of Canadian Organic Farmers: Analysis of Priorities by Production Sector



**Organic Agriculture Centre of Canada
Nova Scotia Agricultural College
Truro, NS**

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- In **Alberta**: Alberta Agriculture and Rural Development
- In **Saskatchewan**: the Organic Crop Improvement Association, Eco-Cert, Organic Producers Association of Manitoba, Pro-Cert and Quality Assurance International.
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- In the **Maritimes**: the Atlantic Canadian Organic Regional Network

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For more information contact: Andy Hammermeister: ahammermeister@nsac.ca or call 902-893-8037

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Table of Contents

1. Introduction.....	1
2. Respondent Demographics.....	1
3. Top Research Priorities Identified by Organic Producers.....	2
Appendix A: Organic Research Priorities Identified in Quebec.....	9

List of Tables

Table 1. Summary of survey respondents by producer category and region.....	1
Table 2. Top 20 research needs ratings among all respondents (out of 53 subject areas).	2
Table 3. Top 20 research needs among field crop producers.	3
Table 4. Top 20 research needs among livestock producers (not including dairy).	4
Table 5. Top 20 research needs among dairy producers.	5
Table 6. Top 20 research needs among vegetable producers.	6
Table 7. Top 20 research needs among fruit and berry producers.	7
Table 8. Top 20 research needs among herb and spice producers.	8

1. Introduction

In 2007, the OACC received funding from Agriculture and Agri-Food Canada's Advancing Canadian Agriculture and Agri-food (ACAAF) program to inventory organic research in Canada and prioritize organic research needs. A multi-stage project has resulted, involving identification of trends affecting the Canadian organic sector, opportunities and threats arising from these trends, strengths and weaknesses in the organic sector for addressing the opportunities and threats, and finally a research prioritization process arising from the preceding process. A key component of this process has been conducting a national survey of organic producers in Canada, asking them to rate the importance of different areas of research. National and regional reports resulting from this process outline the survey process and findings and are available at www.oacc.info.

This report outlines additional information on the priorities identified in the survey by various organic production sectors.

2. Respondent Demographics

With the assistance of our partners, OACC distributed 3781 surveys to organic or transitional producers across Canada. There were 613 surveys returned, corresponding to a **16.2%** response rate. For each sector (i.e. crops, livestock, vegetables, etc.) the analysis included both current producers and those planning to enter the sector in the near future. The analysis of the respondents by sector means that a producer with a mixed farm, for example, could be considered as part of the field crop, livestock and vegetable sectors and their responses would be included in all three sectors. However, their survey results were only included once when all of the data was combined.

In Québec, an assessment of *Research, Innovation and Technology Transfer Priorities in Organic Agriculture* had been prepared by the Centre de Référence en Agriculture et Agroalimentaire du Québec (CRAAQ) in 2006, with representatives from different organic sector groups and the provincial government. Twenty-seven priorities were identified for the organic agriculture sector; seven were noted to be high priority. The Québec priorities are included in full at the end of this document (Appendix A) and are also available at www.oacc.info/Docs/PRIORIT%C9S_DE_RECHERCHE_CRAAQ_e.pdf

Table 1. Summary of survey respondents by producer category and region.

	All	Field Crops	Livestock	Dairy	Vegetable (incl. greenhouse)	Fruit / berry	Herbs / spices
	number / percentage of producers						
Current producers	-	347	163	35	195	151	98
Plan to produce in the future	-	37	55	7	30	35	24
All respondents:	613	384	218	42	225	186	122
Current + future producers	-	63%	45%	7%	37%	30%	20%
BC	97	8	22	7	58	60	26
Alberta	56	43	23	2	10	6	4
Saskatchewan	190	175	53	4	18	17	19
Manitoba	54	42	24	2	10	6	4
Ontario	147	85	73	22	88	62	49
Maritimes	69	31	23	5	41	35	20

3. Top Research Priorities Identified by Organic Producers

Production-related research needs questions (53 subject areas in total) were ranked according to the average rating for each production sector. The top twenty subject areas for each sector are presented below in a series of tables. Tables also indicate which priorities identified in Quebec (CRAAQ, 2006) correspond to research needs prioritized by survey respondents.

Table 2. Top 20 research needs ratings among all respondents (out of 53 subject areas).

Rank	Category	Subject area	Average Score*	Quebec†
1	Soil	Soil fertility and crop rotations	4.52	QC8,9,10,11,18
2	Ecological Systems	Soil quality	4.49	QC20
3	Plants	Beneficial rotations for specific problems	4.44	QC18
4	Plants	Ecological interactions in rotations	4.43	-
5	Soil	Biology - improve existing soil life	4.39	QC27
6	Health & Food Quality	Quality & nutrition of organic foods - overall	4.37	-
7	Plants	Rotations and weed control	4.34	-
8	Ecological Systems	Pesticide reduction	4.32	-
9	Animals	Livestock parasites	4.32	QC22
10	Ecological Systems	Biodiversity	4.29	-
11	Ecological Systems	Energy use	4.28	-
12	Health & Food Quality	Quality & nutrition of organic field crops	4.24	-
13	Plants	Long term cropping systems research	4.23	-
14	Plants	Cultural disease controls	4.19	QC4,13
15	Animals	Livestock breeds	4.17	-
16	Plants	Cultural weed controls	4.17	QC3
17	Animals	Livestock feed	4.17	QC24, 26
18	Plants	Enhancing natural insect controls	4.15	QC1,2,5,13
19	Plants	Cultural insect controls	4.14	QC1,2
20	Plants	Enhancing natural disease controls	4.12	QC4,13

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 3. Top 20 research needs among field crop producers.

Rank	Category	Subject Area	Average Score*	Quebec†
1	Soil	Soil fertility and crop rotations	4.66	QC18
2	Plants	Beneficial crop rotations for specific problems	4.56	QC18
3	Plants	Ecological interactions in rotations	4.51	-
4	Ecological Systems	Soil quality	4.49	QC20
5	Plants	Rotations and weed control	4.48	-
6	Health and Food Quality	Quality and nutrition of organic foods - overall	4.47	-
7	Soil	Biology - improve existing soil life	4.44	QC27
8	Plants	Cultural weed controls	4.40	-
9	Plants	Canada thistle control	4.35	-
10	Health and Food Quality	Quality and nutrition of organic field crops	4.35	-
11	Soil	Minimizing soil compaction	4.33	-
12	Plants	Long term cropping systems research	4.33	-
13	Animals	Livestock parasites	4.31	QC22
14	Ecological Systems	Pesticide reduction	4.30	-
15	Ecological Systems	Energy use	4.27	-
16	Plants	Cultural disease controls	4.25	-
17	Plants	Mechanical weed controls (tillage)	4.22	QC20
18	Ecological Systems	Biodiversity	4.21	-
19	Plants	Cultural insect controls	4.18	-
20	Animals	Grazing	4.15	QC26

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 4. Top 20 research needs among livestock producers (not including dairy).

Rank	Category	Subject Area	Average Score*	Quebec†
1	Soil	Soil fertility and crop rotations	4.59	QC18
2	Ecological Systems	Soil quality	4.48	QC20
3	Plants	Beneficial crop rotations for specific problems	4.48	-
4	Plants	Ecological interactions in rotations	4.43	-
5	Plants	Rotations and weed control	4.42	-
6	Soil	Biology - improve existing soil life	4.36	-
7	Health and Food Quality	Quality and nutrition of organic foods - overall	4.36	-
8	Ecological Systems	Biodiversity	4.35	-
9	Plants	Long term cropping systems research	4.28	-
10	Ecological Systems	Energy use	4.28	-
11	Animals	Livestock parasites	4.28	QC22
12	Plants	Cultural weed controls	4.26	-
13	Ecological Systems	Pesticide reduction	4.23	-
14	Animals	Livestock breeds	4.20	-
15	Health and Food Quality	Quality and nutrition of organic field crops	4.14	-
16	Plants	Cultural disease controls	4.14	-
17	Animals	Livestock feed	4.14	QC24,26
18	Health and Food Quality	Quality and nutrition of organic animal products	4.14	-
19	Soil	Minimizing soil compaction	4.13	-
20	Plants	Canada thistle control	4.13	-

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 5. Top 20 research needs among dairy producers.

Rank	Category	Subject Area	Average Score*	Quebec†
1	Plants	Beneficial crop rotations for specific problems	4.60	-
2	Soil	Soil fertility and crop rotations	4.47	QC18
3	Health and Food Quality	Quality and nutrition of organic foods - overall	4.43	-
4	Ecological Systems	Soil quality	4.43	QC20
5	Plants	Ecological interactions in rotations	4.39	-
6	Soil	Manure Management	4.36	-
7	Production Economics	Dairy production economics	4.35	-
8	Health and Food Quality	Quality and nutrition of organic animal products	4.33	-
9	Plants	Rotations and weed control	4.30	-
10	Animals	Grazing	4.25	-
11	Animals	Livestock parasites	4.24	-
12	Ecological Systems	Pesticide reduction	4.21	-
13	Ecological Systems	Biodiversity	4.20	-
14	Health and Food Quality	Quality and nutrition of organic field crops	4.19	-
15	Plants	Cultural weed controls	4.19	-
16	Ecological Systems	Energy use	4.19	-
17	Animals	Livestock diseases	4.15	QC22,23
18	Plants	Long term cropping systems research	4.13	-
19	Animals	Livestock feed	4.13	QC24
20	Plants	Cultural disease controls	4.09	-

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 6. Top 20 research needs among vegetable producers.

Rank	Category	Subject Area	Average Score*	Quebec†
1	Soil	Soil fertility and crop rotations	4.58	QC8,9,10,11
2	Ecological Systems	Soil quality	4.54	-
3	Plants	Ecological interactions in rotations	4.46	-
4	Soil	Biology - improve existing soil life	4.44	QC27
5	Animals	Livestock parasites	4.41	QC22
6	Plants	Beneficial crop rotations for specific problems	4.41	-
7	Ecological Systems	Biodiversity	4.40	-
8	Plants	Enhancing natural insect controls (predators)	4.38	QC5,13
9	Health and Food Quality	Quality and nutrition of organic foods - overall	4.38	-
10	Animals	Livestock breeds	4.37	-
11	Plants	Rotations and weed control	4.36	QC7
12	Ecological Systems	Energy use	4.34	-
13	Ecological Systems	Pesticide reduction	4.31	-
14	Animals	Livestock feed	4.30	QC24
15	Plants	Cultural insect controls	4.27	QC5,13
16	Plants	Enhancing natural disease controls	4.21	QC13
17	Plants	Cultural disease controls	4.21	QC13
18	Health and Food Quality	Quality and nutrition of organic field crops	4.17	-
19	Plants	Long term cropping systems research	4.16	-
20	Health and Food Quality	Quality and nutrition of organic horticultural crops	4.09	-

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 7. Top 20 research needs among fruit and berry producers.

Rank	Category	Subject Area	Average Score*	Quebec†
1	Ecological Systems	Soil quality	4.57	-
2	Ecological Systems	Biodiversity	4.46	-
3	Health and Food Quality	Quality and nutrition of organic foods - overall	4.41	-
4	Plants	Enhancing natural insect controls (predators)	4.41	QC1,2
5	Soil	Biology - improve existing soil life	4.37	QC27
6	Animals	Livestock parasites	4.36	QC22
7	Soil	Soil fertility and crop rotations	4.34	-
8	Ecological Systems	Pesticide reduction	4.34	-
9	Plants	Ecological interactions in rotations	4.33	-
10	Plants	Beneficial crop rotations for specific problems	4.33	-
11	Ecological Systems	Energy use	4.32	-
12	Animals	Livestock feed	4.31	QC24
13	Plants	Enhancing natural disease controls	4.29	QC4
14	Plants	Cultural insect controls	4.26	QC1,2
15	Health and Food Quality	Quality and nutrition of organic horticultural crops	4.25	-
16	Animals	Livestock breeds	4.24	-
17	Plants	Rotations and weed control	4.19	QC3
18	Plants	Cultural disease controls	4.17	QC4
19	Health and Food Quality	Quality and nutrition of organic field crops	4.15	-
20	Ecological Systems	Sequestering carbon	4.11	-

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Table 8. Top 20 research needs among herb and spice producers.

Rank	Category	Subject Area	Average Score*	Quebec†
1	Soil	Soil fertility and crop rotations	4.65	-
2	Ecological Systems	Soil quality	4.59	-
3	Ecological Systems	Biodiversity	4.56	-
4	Plants	Ecological interactions in rotations	4.55	-
5	Soil	Biology - improve existing soil life	4.51	QC27
6	Plants	Beneficial crop rotations for specific problems	4.48	-
7	Plants	Enhancing natural insect controls (predators)	4.45	-
8	Health and Food Quality	Quality and nutrition of organic foods - overall	4.43	-
9	Animals	Livestock feed	4.40	QC24
10	Plants	Cultural disease controls	4.40	-
11	Ecological Systems	Pesticide reduction	4.39	-
12	Plants	Rotations and weed control	4.39	-
13	Animals	Livestock parasites	4.34	QC22
14	Plants	Enhancing natural disease controls	4.29	-
15	Plants	Cultural insect controls	4.29	-
16	Ecological Systems	Energy use	4.25	-
17	Health and Food Quality	Quality and nutrition of organic horticultural crops	4.19	-
18	Animals	Livestock diseases	4.14	QC22,23
19	Plants	Long term cropping systems research	4.13	-
20	Ecological Systems	Sequestering carbon	4.11	-

* Average score indicates the average importance rating of all individuals who responded to the question; 5 indicates a very important need, 1 indicates a less important need.

† Entries in this column refer to priority projects identified by the Organic Agriculture Committee of the Quebec Agriculture and Agri-Food Reference Centre (CRAAQ) in 2006 (see Appendix A).

Appendix A: Organic Research Priorities Identified in Quebec.

Source: CRAAQ, 2006. Priorities in Research, Technological Innovation and Technology Transfer Needs in Organic Farming. Presented by the Research Priorities Working Group, Organic agriculture committee, Centre de référence en agriculture et agroalimentaire du québec (CRAAQ) [Quebec Agriculture and Agri-food Reference Centre], May 2006.

Key: Technological Innovation = I
Technology Transfer = T
Research = R

Priorities appearing in bold font have been identified as being of particular concern and should be addressed through projects in the short term.

Sectors	Priorities	Type
Fruit and Small Fruit	1. Methods for fighting against the plum curculio in orchards.	R
	2. Methods for fighting against the tarnished plant bug and the strawberry and raspberry weevil.	R
	3. Control of strawberry patch weeds in the 2 nd year of production: soil covering, mulch, weeding, etc.	I
	4. Methods for fighting against gray mold (botrytis) and powdery mildew (oidium) in strawberries.	R
Field Vegetables	5. Develop effective methods for fighting against pests that are difficult to control in organic farming: tarnished plant bug, striped beetles affecting cucurbitaceae, cabbage maggots affecting cruciferae, carrot rust fly, flea beetles, cauliflower cecidomyia.	R,I,T
	6. Evaluate the effectiveness of various low-risk products for use in phytoprotection, including hydrogen peroxide, sodium bicarbonate, vegetable purines and compost extracts.	R,I
	7. Develop effective weed control methods that are adapted to organic farming.	R,I,T
	8. Develop new fertilization strategies for organic vegetable farming.	R,I,T
Greenhouse Production	9. Develop criteria for using basic materials for the production of potting soil and of programs for fertilizing transplants that are adapted to different types of soil.	I,T
	10. Identify indicators of activity in the soil in order to increase the rates of mineralization, thereby making the soil's CEC reserves available quickly.	T
	11. Define the optimum fertilization strategies for the creation and maintaining of a sustainable system, i.e. that will not produce any surplus (losses into the environment) or nutritional imbalances.	T
	12. Define the optimum irrigation strategies for different types of soil in order to optimize the diffusion of gases in the soil, soil activity, the efficiency of water absorption by the crop, and to avoid excessive losses into the environment.	R,I,T
	13. Manage pathogens such as gray mold, stem canker and excess eelworms and pillbugs.	R,I
Economics and management	14. Determine organic vegetable farming production costs.	T
Maple sugaring	15. Determine the effect of sodium hypochlorite when used as a resin channel disinfectant, so it can be approved for use.	R
	16. Determine the effects of acetic acid in terms of residue left in the finished product when it is utilized as a pot cleaner during the season.	R

Sectors	Priorities	Type
Medicinal plants	17. Mechanization of the growth, harvesting and post-harvest processing of medicinal plants with high commercial potential.	I,T
Large-scale farming	18. Develop new fertilization strategies for crops with high nutritional requirements.	I,T
	19. Selection of lines of cereal for human consumption (and other grains) adapted to organic cultivation and/or tolerant to pressure from weeds.	R,T
	20. Develop reduced tillage systems for large-scale organic farming.	I,T
	21. Develop seed treatments accepted by organic certification standards.	I,T
Animal Production	Animal health: 22. Tests on the effectiveness of various natural products in maintaining and restoring the health of animals, particularly in the case of internal parasites affecting ovines (sheep) and caprinae (goats) as well as mastitis among dairy cows.	R,I,T
	Dairy production: 23. Develop control methods that make it possible to reduce the somatic cell count in dairy cows.	I,T
	24. Identify and check the sources of feed/ingredients that contain natural vitamins, or order to replace synthetic vitamins in the rations.	R,I
	25. Identify strategies that will make it possible to increase the fertility rate among dairy cows.	R,I
	Meat production: 26. Develop methods of organic management to optimize the growth of beef cattle in the finishing phase.	I,T
Soil Management	27. Identify indicators of organic activity in soil, in order to improve their management.	T