CANADIAN ORGANIC RESEARCH NEEDS AND PRIORITIES

2016-17 Report

Completed by the Organic Agriculture Centre of Canada at Dalhousie University on behalf of the Research Needs Working Group of the Organic Value Chain Roundtable

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1 EXECUTIVE SUMMARY

The Canadian organic sector recognizes the need for a clear list of research priorities to guide provincial and national funding initiatives and inform researchers. As such, in 2016-17, the Research Needs Task Force of the Organic Value Chain Roundtable embarked upon the Canadian Organic Research Needs and Priorities Assessment Process, with data collected and summarized from across Canada by the Organic Agriculture Centre of Canada (OACC), Dalhousie University.

All stakeholders within the organic sector in Canada were invited to participate in this process. Nearly 250 research questions were received, with the majority of submissions coming from groups. In total, an estimated 550 people participated directly in the Canadian Organic Research Needs and Priorities Assessment Process, many of which represented the interests of larger groups.

Prioritization was accomplished through the identification of submitted priority research questions that overlapped, or all spoke to a similar research need. Submissions were first grouped into overarching themes, including Livestock, Crops, Soils, Ecology and Environment, Policy, and Food Quality, Nutrition and Health. Within these themes, overarching research priorities were then identified by grouping like submissions and examining the number of submitted research questions contributing to these overarching priority research areas, as well as the number of groups, regions, and contributing individuals. Priority research areas for each category are outlined below and detailed further in this report.

Livestock - Priority research areas in organic livestock production focused on aspects of animal welfare (including outdoor access, housing systems, and young rearing), alternative feeds and pasture management, the development of cultural and preventative measures to manage diseases and parasites, the identification of the best livestock breeds for organic production, and supports for organic aquaculture. Livestock priorities focus largely on organic dairy, swine and poultry production systems.

Crops - The Crops category, which included organic cereals, oilseeds, pulses, fruits, vegetables, and speciality crops, received the most submissions. Consistent with previous organic research priorities, the organic community identified a strong need for management options for diseases, insect pests and weeds, including both systems-based management approaches and novel tools or inputs. In addition, a strong need for breeding or variety selection for crops that are well suited to the unique conditions of organic production was identified. Organic growers are also interested in explorations of management practices that fit well within their rotations, including cover cropping strategies, production systems for specific crops, season extension, intercropping, and nutrient management strategies. Post-harvest management, integrated crop-livestock systems, novel crop amendments, and greenhouse production supports rounded out the list.

Soils - Healthy soils are a foundation of organic agriculture. The Canadian organic community is thus interested in exploring the impacts of organic management practices on soil health and soil carbon, and is also looking for ways to improve soil fertility.

Environment - The organic research priorities in the Ecology and Environment category generally look to science to characterize and improve the ecological and environmental impacts

and benefits of organic production. This includes biodiversity, pollinators, climate resilience, carbon dynamics, energy use and water quality.

Food - In the Food Quality, Nutrition and Health category, the Canadian organic community has identified not only the characterization of the nutrition of organic foods as a priority, but also the exploration of practices to improve nutrition under organic management. A need to explore the potential benefits and risks of organic agriculture to public health was also noted.

Policy - The Policy theme included a number of diverse topics, including explorations of GE contamination of organic crops, assessment of the risks of synthetic products and their organic counterparts, a stated need for extension of organic research outcomes, and the need for research that is regionally specific yet adaptable, or that addresses issues of public good.

Other - Some submissions also touched on topics in the areas of social science, economics and marketing, and processing.

A preliminary set of potential priority research areas was presented to the Organic Value Chain Roundtable in March 2017, with attending members asked to rank the level of importance for each. Attendees assigned the highest importance to research areas that improve productivity, stability, resiliency and quality, that improve knowledge about how organic ecosystems function, that evaluate ecosystem services or assess sustainability, that evaluate ecosystem services, and that apply holistic principles. Many of these principle research areas are echoed in the research questions submitted through the Research Needs and Priorities Assessment Process.

As the Research Needs and Priorities Assessment Process was underway, the organic sector was also preparing for the third Organic Science Cluster. The Organic Science Clusters are industry-supported research and development initiatives led by the Organic Federation of Canada in collaboration with the OACC at Dalhousie University to serve the needs of Canada's organic sector.

To ensure that Organic Science Cluster III addressed priority research areas, researchers applying for Organic Science Cluster III funding were provided with an early and brief synopsis of the identified priority research areas, as identified at that stage of the process by the OVCRT's Research Needs Task Force. The Letter of Intent (LOI) Review Committee, consisting of 20 leading organic sector professionals and stakeholders from across Canada with awareness of organic sector priorities in their areas of expertise, then evaluated the submitted LOIs against a standardized set of criteria focused on these identified strategic priorities. The identified priorities are outlined below, with details on the alignment between these early priorities and those detailed in the final section of this report.

1. Increasing competitiveness through improvements in productivity, production stability and resiliency with climate extremes and/or quality of product through:

- Breeding - developing/identifying crop cultivars and livestock that are: adapted to regional organic management, resilient to pest pressure, adapted to use nutrient s /feed efficiently.
- Pest (disease and insect) management strategies with an emphasis on prevention and cultural strategies for:
    - livestock (e.g. mastitis, lameness, external/internal parasites, etc.),

  - horticultural crops (e.g. apple scab, blight, rots, nematodes, powdery mildew, wireworm, spotted wing drosophila, Colorado potato beetle, flea beetle, thrips, etc.),
  - cereals and pulse crops (e.g. fusarium head blight, seedling blight, root diseases, white mold, etc.).
- Weed management strategies - cultural and mechanical practices for organic field and horticultural crops with emphasis on perennial weeds (e.g. Canada thistle, field bindweed); impacts and alternatives for plastic mulch use in horticulture.
- Cropping systems strategies – cover crops and green manures, intercropping, development of climate resilient systems, greenhouse systems.
- Soils, including
  - effects of management practices on the form and quantity of soil organic matter,
  - practices to improve soil health; linking soil health with productivity, product quality and ecosystem services (e.g. clean air, clean water, water storage, etc.),
  - improved soil fertility management with crop rotation and soil amendments.
- Livestock feed - alternative feed sources to reduce grain/concentrate use, including food waste, forages, insect protein; improved pasture management to maintain productivity and quality of feed while maintaining or improving biodiversity.
- Improving quality of organic products
  - improved nutritional value through management practices and cultivar selection,
  - evaluating and improving grain cleaning and storage practices.
- Development and application of new technologies to support organic production systems including soil amendments (local resources/waste recycling), equipment, pesticides.
- Assessment of GE contamination risks to organic production systems, evaluating the effectiveness of mitigation practices and development of improved practices.

2. Advancing public good through characterization and improvement of:

- Agroecosystem function – nutrient cycling and movement, carbon life cycle and energy use analysis (whole system)
  - carbon balance of organic production systems in Canada
- Ecosystem services – carbon sequestration, soil health, biodiversity, and pollination
  - soil health in tillage based systems
  - using buffer zones to boost biodiversity; costs, impacts
- Nutritional benefits of organic
- Note: Characterization of the environmental impacts of organic systems is a high priority, and is encouraged to be included as a component of all research projects as appropriate.

3. Supporting organic sector evolution through:

- Assessments of the sustainability of organic agriculture production systems and practices to improve sustainability.
- Application of holistic principles to find solutions that close nutrient/energy cycles.
- Integration of crops and livestock, recycling of waste by products (especially local/regional waste).
- Improvement of animal welfare – optimizing outdoor access and housing.

2 BACKGROUND

2.1 THE 2016-17 CANADIAN ORGANIC RESEARCH NEEDS AND PRIORITIES ASSESSMENT PROCESS

The Canadian organic sector recognizes the need for a clear list of research priorities to guide provincial and national funding initiatives and inform researchers. As such, in 2016-17, the Research Needs Task Force of the Organic Value Chain Roundtable (OVCRT) embarked upon the Canadian Organic Research Needs and Priorities Assessment Process, with data collected and summarized from across Canada by the Organic Agriculture Centre of Canada (OACC), Dalhousie University.

All stakeholders within the organic sector in Canada were invited to participate in this process, which was open for submissions between October 2016 and February 2017. Within the Canadian organic community, national and provincial/regional organic organizations, certification bodies, and organic extension specialists were invited to participate in the process and encouraged to coordinate efforts within their groups. To expand the reach of the assessment process, invitations were also sent to national commodity groups, as well as to all Agriculture and Agri-Food Canada scientists. In addition, notice of the assessment process was circulated in the OACC's monthly electronic newsletter, as well as the newsletters and/or social media of other national, provincial, and regional organic groups.

Participants in the Research Needs and Priorities Assessment Process were provided with a comprehensive document that included an overview, instructions to guide the process, examples, information about the participants, brainstorming worksheets, and forms to complete for each of the Top 5 identified priority research questions. See Appendix B for the complete Research Needs and Priorities Assessment Process package. This package was developed by the OACC in conjunction with the Research Needs Task Force of the OVCRT, with feedback from the organic community. The Research Needs and Priorities Assessment Process package was made available in both English and French.

To facilitate the process, OACC also produced and posted two online videos to inspire thought and direct groups/individuals through the process. OACC also hosted or coordinated sessions at the 2nd Canadian Organic Science Conference, the ACORN conference, and at a meeting of the PEI COPC, and liaised with other groups undertaking the process. The organic communities of British Columbia, Saskatchewan, and Québec were also undergoing their own research needs assessments concurrently, the results of which were integrated into this larger, national-scope process.

2.2 PARTICIPATION

Nearly 250 research questions were received, with the majority of submissions coming from groups. In total, an estimated 550 people participated directly in the Canadian Organic Research Needs and Priorities Assessment Process, many of which represented the interests of larger groups. See Table 1 for a listing of participants.

Table 1 – Overview of the participants in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process

Group Name	Subgroup	Group ID	Number of Participants	Representing a Larger Group?	Notes
Atlantic Canada Organic Regional Network	Environmental Goods & Services and Livestock	ACORN-EGS-LS	6	No	Session held at the 2016 ACORN Conference. The participating group largely consisted of organic producers and extension staff, and was large enough to break into three focus groups.
	Fruits	ACORN-Fruits	4		
	Vegetables	ACORN-Veg	5		
Aquaculture		Aquaculture	1	No	
Bauta Family Initiative on Canadian Seed Security	National	Bauta-National	102	Yes, but not formally endorsed	Individual submissions were received from each of these groups under the Bauta umbrella. Groups included organic, transitioning and non-organic farmers, researchers and extension agents.
	Ontario	Bauta-ON	55		
	Prairie	Bauta-Prairie	20		
	Quebec	Bauta-QC	26		
British Columbia Seeds Program, FarmFolk City Folk		BC-Seeds	39	Yes	This group participated via an online form and email feedback, and included many organic and a few non-organic farmers, researchers, extension agents, and consumers.
2nd Canadian Organic Science Conference	Dairy	COSCII-Livestock-Dairy	8	No	Session held at the 2nd Canadian Organic Science Conference. The participating group was large enough to break into several focus Groups, largely comprised of researchers engaged in organic science.
	Other Livestock	COSCII-Livestock-Other	5		
	Field Crops West	COSCII-Field-Crops-West	7		
	Field Crops East	COSCII-Field-Crops-East	7		
	Fruit Horticulture	COSCII-Hort-Fruit	6		

Group Name	Subgroup	Group ID	Number of Participants	Representing a Larger Group?	Notes
	Vegetable Horticulture	COSCII-Hort-Veg	9		
	Greenhouse Horticulture	COSCII-Hort-Greenhouse	6		
	Environmental Goods & Services	COSCII-EG&S	8		
Canada Organic Trade Association		COTA	4		Questions were submitted both from COTA members and on behalf of COTA.
Canadian Organic Growers		COG	10	Yes, but not formally endorsed	This group met via conference call, and included organic farmers, researchers, extension agents, consultants and policy personnel.
Centre d'expertise et de transfert en agriculture biologique et de proximité, Club CDA		CETAB+	15	Yes, but not formally endorsed	This group included researchers, extension agents, agricultural technicians, and educators.
Centre de référence en agriculture et agroalimentaire du Québec		CRAAQ	130	Yes	These priorities were identified through a research needs process for Quebec undertaken by CRAAQ. See the full report (in French) at https://www.agrireseau.net/documents/Document_95585.pdf
Certified Organic Associations of British Columbia		COABC	79	Yes	These priorities were identified through a research needs process for British Columbia undertaken by COABC, largely consisting of organic producers as well as organic consultants and researchers. See the full report at https://www.certifiedorganic.bc.ca/docs/BCs-organic-research-needs-report-final-Feb2017.pdf
Ecological Farmers Association of Ontario		EFAO	40	Yes	EFAO submitted priorities identified through 2 Farmer-led Research Program workshops and additional EFAO member input. See https://efao.ca/research-details/
Growers of Organic Food Yukon		GoOFY	5	Yes	This group included organic and transitioning farmers.

Group Name	Subgroup	Group ID	Number of Participants	Representing a Larger Group?	Notes
Herb, Spice and Specialty Agriculture Association		HSSA	1	Yes	
Individuals	GE	Individual-GE	1	No	
	Researcher	Individual-Researcher	1	No	
	Synthetics	Individual-Synthetics	1	No	
Kwantlen Polytechnic University, Department of Sustainable Agriculture		Kwantlen	48	Yes, but not formally endorsed	This group Included organic farmers, researchers and agriculture students and staff.
National Organic Organizations		COG-COTA-USC-OFC	4	Yes	These priorities were pulled from a document presenting recommendations for the Next Agricultural Policy Framework produced collaboratively by Canadian Organic Growers, Canada Organic Trade Association, USC Canada and the Organic Federation of Canada. See the full report at https://ota.com/sites/default/files/NAPF%20Organic%20Sector%20Dec%205.pdf
New Brunswick Organic Forum		NB-Organic-Forum	9	No	Session held at the 2017 New Brunswick Organic Forum, which included organic and aspiring farmers.
New Brunswick Sweet Potato Group		NB-Sweetpotato	9	No	This group included organic and non-organic farmers, a processor, a researcher, a consultant, a retailer and a consumer.
Organic Alberta		Organic-Alberta	26	Yes	Session held at the 2017 Organic Alberta Conference, which included organic, transitioning and non-organic farmers, processors, researchers, and policy workers.
Organic Minor Use Group		Minor-Use	20	No	These priorities stem from those identified by a group that brings Minor Use Priorities to the PMRA Minor Use meetings on behalf of the organic sector.
Pig Research Group		Pig-Researchers	3	No	This submission was from a group of researchers involved or interested in organic pig production.

Group Name	Subgroup	Group ID	Number of Participants	Representing a Larger Group?	Notes
Prairie Organic Grain Initiative		POGI	8	No	These priorities were identified on a conference call of the POGI Optimization Steering Committee, which included organic producers and researchers.
Prince Edward Island Certified Organic Producers Co-operative	Environmental Goods & Services	PEI-COPC-EGS	7	No	Session held at the 2017 PEI COPC Farmer-Researcher Day. The participating group included organic farmers, processors, researchers and consultants, and was large enough to break into three focus groups.
	Field Crops	PEI-COPC-Field-Crops	7		
	Vegetables	PEI-COPC-Veg	7		
Quebec Apple Network		QC-Apple	65	Yes	Priorities from this group were selected following virtual and physical meetings and discussions with the Quebec Apple Network, which includes scientists, horticulturalists, scouts and grower representatives.
SaskOrganics		SaskOrganics	48	Yes	These priorities were identified through a research needs process for Saskatchewan undertaken by SaskOrganics, focusing on the needs of organic field crop producers. See the full report at http://saskorganics.org/saskorganics-publishes-saskatchewan-organic-production-research-priorities-2017
Saskatchewan Grain Group		SK-Grain	18	No	This group included farmers from Southeastern Saskatchewan and Southwestern Manitoba.
Standards Interpretation Committee		SIC	9	No	This group includes organic stakeholders with advanced knowledge of the Canadian organic standard.
Syndicat des producteurs de bleuets du Québec, comité de production biologique		QC-Blueberry	7	Yes	This group included organic, non-organic and wild harvest blueberry producers, and a researcher.

2.3 PRIORITIZATION

All submitted priority research questions were compiled and grouped into broad themes, including Crops, Livestock, Soils, Ecology and Environment, Policy, Social Science, Economics and Marketing, Processing, and Food Quality, Nutrition and Health.

Within each theme, questions that addressed overlapping issues were then grouped together under an overarching priority research area or question. The number of submissions contributing to these overarching priorities, as well as the number of people contributing to these submissions, and their geographical range provide an indication of the scope, relevance and priority of the topic. The priorities identified through this process are presented in Tables 2 to 7.

As the Research Needs and Priorities Assessment Process was underway, the organic sector was also preparing for the third Organic Science Cluster. The Science Clusters industry led programs that are funded through the Canadian Agri-Science Clusters Initiative of Agriculture and Agri-Food Canada's Growing Forward Policy Framework and matching contributions from indsutry. The Organic Science Clusters are led by the Organic Federation of Canada in collaboration with the OACC at Dalhousie University to serve the needs of Canada's organic sector. The first Organic Science Cluster ran from 2009-2013 including 30 research activities conducted by over 50 researchers plus 30 collaborators in approximately 45 research institutions across Canada, supported by over 30. Organic Science Cluster II runs from 2013-2018, and includes 37 research activities that involve over 200 researchers and graduate students working at over 45 research institutions across Canada with the support of 65 organic sector partners.

To ensure that Organic Science Cluster III continues to address priority research areas, researchers applying for Organic Science Cluster III funding were provided with an early and brief synopsis of the identified priority research areas. A Letter of Intent (LOI) Review Committee, consisting of 20 leading organic sector professionals and stakeholders from across Canada with awareness of organic sector priorities in their areas of expertise, was established to evaluate submitted LOIs against a standardized set of criteria, focused on these identified strategic priorities.

A preliminary set of potential priority research areas was presented to the Organic Value Chain Roundtable in March 2017, with attending members of the asked to rank the level of importance for each. The outcomes are presented in Figure 1 below, and show that the highest importance was assigned to research areas that improve productivity, stability, resiliency and quality, that improve knowledge about how organic ecosystems function, that evaluate ecosystem services or assess sustainability, that evaluate ecosystem services, and that apply holistic principles. Many of these principle research areas are echoed in the research questions submitted through the Research Needs and Priorities Assessment Process.

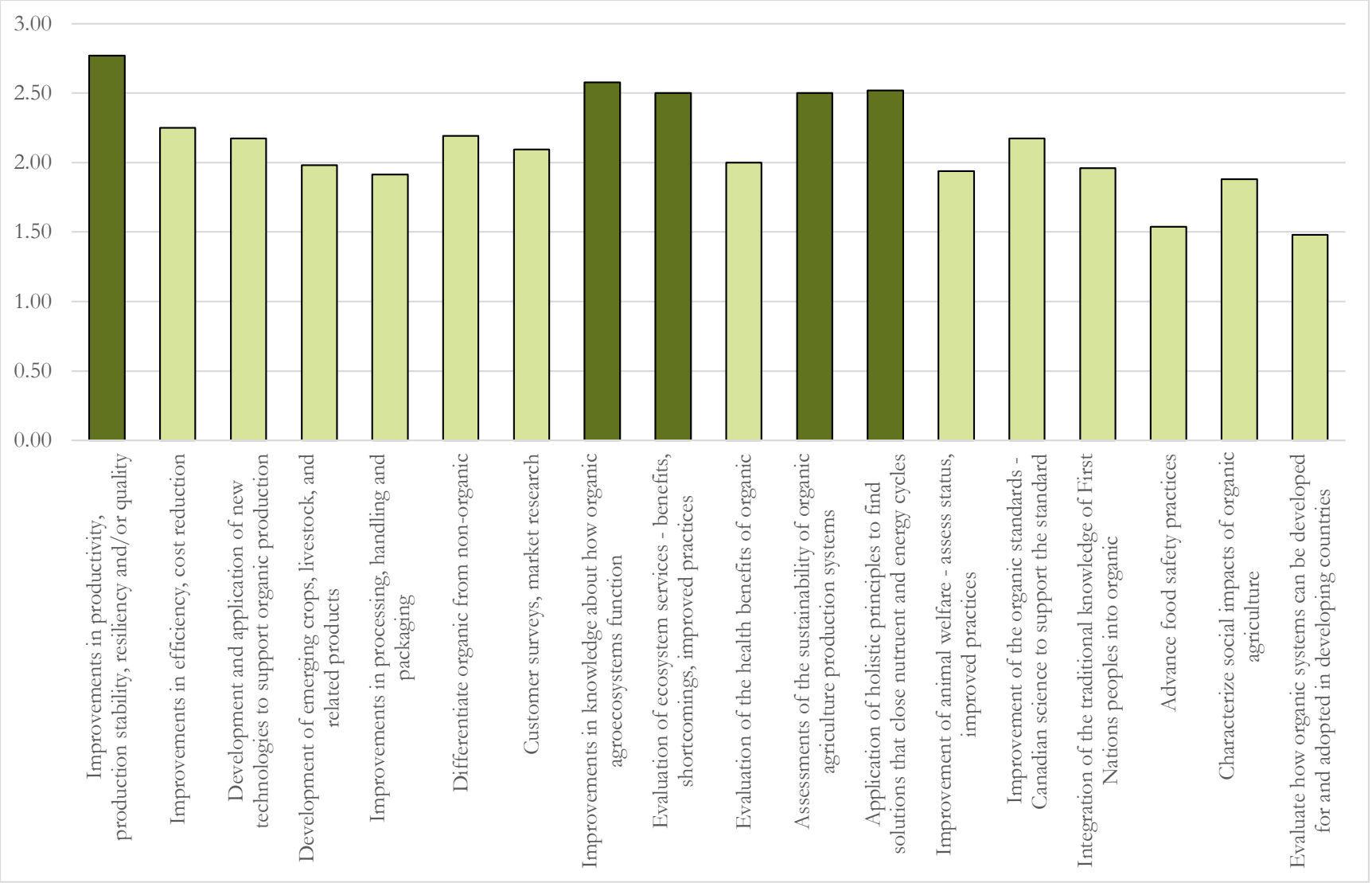

Figure 1. Rankings of key research areas by level of importance (1 = low importance, 2 = moderate importance, 3 = high importance) by 26 members of the Organic Value Chain Roundtable in March 2017.

3 RESEARCH PRIORITIES BY THEME

The following section presents overarching priority research areas broken into various themes applicable to organic production, including Livestock, Crops, Soils, Ecology and Environment, Policy, Processing, Marketing and Economics, Social Science, and Food Quality, Nutrition and Health.

These priority research areas were derived by combining similar submissions from various groups into overarching priority research areas. The priorities within each theme are presented in order of the number of submitted questions that contributed to an overarching priority research area. The detailed submitted questions that contributed to each overarching priority research area can be found by consulting the referenced questions in Appendix A.

3.1 LIVESTOCK

Priority research areas in organic livestock production focused on aspects of animal welfare, including outdoor access and housing systems, and young rearing. Alternative feeds and pasture management, and the development of cultural and preventative measures to manage diseases and parasites were also identified as priorities. The identification of the best livestock breeds for organic production, and supports for organic aquaculture round out the list. Livestock priorities focus largely on organic dairy, swine and poultry production systems. See Table 2 for additional details, and consult Appendix A for individual submitted priority research questions.

Table 2. Priority research areas identified for organic livestock production in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process.

Priority Research Area: Livestock	Contributors to Priority Research Area		
	Regions	Number of People	Submitted Priority Research Questions
L.1. Develop livestock housing and yard systems that allow and encourage outdoor access and exercise.	National	114	COABC-14 COSCII-Livestock-Dairy-2 COSCII-Livestock-Other-2, 4 & 5 Pig-Researchers-2 SIC-1
L.2. Explore alternative livestock feeds, including the use of food wastes, forages, insects, and cover crops.	National, Central, West Coast	183	COABC-16 COSCII-Livestock-Dairy-4 COSCII-Livestock-Other-1 EFAO-1 Kwantlen-2 Pig-Researchers-4
L.3. Develop cultural/preventative methods and inputs to manage diseases and parasites in organic livestock production.	National, Central, West Coast	316	COSCII-Livestock-Dairy-1 COSCII-Livestock-Other-3 CRAAQ-12 & 13 EFAO-7 Pig-Researchers-3
L.4. Develop and evaluate systems to integrate crop and livestock production.	National, Atlantic	15	ACORN-Fruits-4 COTA-3 PEI-COPC-Field-Crops-3

Priority Research Area: Livestock	Contributors to Priority Research Area		
	Regions	**Number of People**	**Submitted Priority Research Questions**
L.5. Develop supports for organic aquaculture, including organic aquaculture feed sources and organic aquaponics.	National, West Coast	80	Aquaculture-1 COABC-17
L.6. Improve pasture management.	National, Central	48	COSCII-Livestock-Dairy-3 EFAO-5
L.7. Identify livestock breeds best adapted for organic production.	National, Central	43	EFAO-3 Pig-Researchers-1
L.8. Develop recommendations for rearing young livestock, particularly dairy calves and piglets.	National	11	COSCII-Livestock-Dairy-5 Pig-Researchers-5

3.2 CROPS

Many research questions were submitted in the Crops category, which includes organic field crop, fruit, vegetable, and speciality crop production. Consistent with previous organic research priorities, the organic community has identified a strong need for management options for diseases, insect pests and weeds of organic crop production systems, including both systems-based management approaches and novel tools or inputs. In addition, the Canadian organic community identified a strong need for breeding or variety selection for crops that are well suited to the unique conditions of organic production. Organic growers are also interested in explorations of management practices that fit well within their rotations, including cover cropping strategies, production systems for specific crops, season extension, intercropping, and nutrient management strategies. Post-harvest management, integrated crop-livestock systems, novel crop amendments, and greenhouse production supports rounded out the list. See Table 3 for additional details, or consult Appendix A for individual submitted priority research questions.

Table 3. Priority research areas identified for organic plant (field crops, fruits, vegetables) production in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process.

Priority Research Area: Plants	**Contributors to Priority Research Area**		
	Regions	Number of People	Submitted Priority Research Questions
C.1. Explore management options for crop diseases in organic field crops, vegetables, and fruits, including management practices and inputs.	National, West Coast, Prairie, Central, Atlantic	771	ACORN-Fruits-5 ACORN-Veg-3 COABC-1, 2, 3 COTA-1 CRAAQ-6 COSCII-Field-Crops-West-1 COSCII-Hort-Fruit-4 COSCII-Hort-Greenhouse-3 CRAAQ-11 HSSA-1 Minor-Use-1, 5, 8, 9, 10, 11, 12, 13 QC-Apple-2 QC-Blueberry-2 SIC-3
C.2. Explore management options, including cultural and input-based, for insect pests in organic vegetable and fruit crops.	National, West Coast, Central, Atlantic	938	ACORN-Veg-2 Bauta-QC-1 COABC-1, 2, 3

Priority Research Area: Plants	**Contributors to Priority Research Area**		
	Regions	Number of People	Submitted Priority Research Questions
			COSCII-Hort-Fruit-3 COTA-1 CRAAQ-4, 6, 9 EFAO-6 HSSA-1 Kwantlen-4 Minor-Use-1, 3, 4, 6, 7 NB-Organic-Forum-1 QC-Apple-1 QC-Blueberry-3
C.3. Develop effective, integrated weed management options for organic fruits, vegetables and specialty crops.	National, West Coast, Prairie, Central, Atlantic	319	CETAB+-2 COABC-4 COTA-1 HSSA-1 Kwantlen-1 Minor-Use-2, 3, 5, 8, 12 QC-Apple-5 QC-Blueberry-1
C.4. Investigate preventative and management techniques for control of perennial weeds in grain production systems.	Prairie	64	POGI-1, 2 SaskOrganics-5
C.5. Evaluate equipment for effective weed management in organic production systems.	National, Prairie	34	COSCII-Field-Crops-West-5 COSCII-Hort-Veg-1 SK-Grain - 7
C.6. Investigate cultural weed management practices for effective weed control in organic systems.	Prairie, Central	88	EFAO-11 SaskOrganics - 3
C.7. Support organic crop breeding, including breeding for regional adaptations, competitiveness against weeds, nutrient use efficiency, climate resilience, early maturity/short season, and disease resistance. Implement participatory breeding programs.	National, West Coast, Prairie, Central, Atlantic	605	Bauta-National-1, 2 Bauta-ON-1, 2 Bauta-Prairie-2, 3, 4 Bauta-QC-3 BC-Seeds-1, 2, 4 COG-COTA-USC-OFC-4 COSCII-Hort-Veg-2 COTA-2

Priority Research Area: Plants	**Contributors to Priority Research Area**		
	Regions	Number of People	Submitted Priority Research Questions
			EFAO-9 NB-Sweetpotato-2 PEI-COPC-EGS-4 PEI-COPC-Field-Crops-6 POGI-5
C.8. Develop cover cropping strategies for organic producers, including explorations of cover crop mixes, winter hardy cover crops, green manures, cultivar selection, cover crop management, and the impact pf cover crops on soil health, nutrient supply, and pest populations.	National, Prairie, Central, Atlantic	201	Bauta-Prairie-5 CETAB+-1 COG-3 COSCII-Field-Crops-East-4 EFAO-2 Individual-Researcher-1, 2 NB-Organic-Forum-7 PEI-COPC-Field-Crops-5 SaskOrganics-1 SK-Grain-1, 2 PEI-COPC-Veg-2
C.9. Optimize organic management practices and systems for specific crops.	National, West Coast, Central, Atlantic	300	ACORN-Fruits-1 ACORN-Veg-4, 6 Bauta-National-4 CETAB+-5 COABC-12 NB-Organic-Forum-9 NB-Sweetpotato-1 QC-Apple-4 QC-Blueberry-5
C.10. Determine crop varieties that are well suited to organic production, including those with disease resistance, regional adaptations, heritage varieties, and those that meet market demands.	National, Central, Atlantic, North	280	ACORN-EGS-LS-3 Bauta-National-3 Bauta-ON-3, 4 Bauta-QC-2 CETAB+-3 COSCII-Hort-Veg-4 GoOFY-1 PEI-COPC-Veg-1

Priority Research Area: Plants	**Contributors to Priority Research Area**		
	Regions	Number of People	Submitted Priority Research Questions
C.11. Develop and explore the costs and impacts of post-harvest management strategies to improve quality and storability of organic grains and horticultural crops.	National, West Coast, Prairie, Central, Atlantic	143	COABC-6 Minor-Use-14 NB-Sweetpotato-3, 4 POGI-3 SK-Grain-3
C.12. Develop effective nutrient management strategies for organic crops to improve quality and productivity.	West Coast, Central, Atlantic	301	COABC-1, 2 COSCII-Hort-Greenhouse-2 CRAAQ-10 QC-Blueberry-4
C.13. Develop intercropping strategies for organic grain and vegetable crops, including post-harvest separation.	Prairie, Atlantic	49	COSCII-Field-Crops-West-4 NB-Organic-Forum-4 PEI-COPC-Veg-3 POGI-4 SK-Grain-5
C.14. Explore season extension options, including the use of novel crops, for Canadian organic production.	West Coast, Central, North	147	CETAB+-4 COABC-9 GoOFY-5 Kwantlen-5
C.15. Develop and evaluate systems to integrate crop and livestock production.	National, Atlantic	15	ACORN-Fruits-4 COTA-3 PEI-COPC-Field-Crops-3
C.16. Develop growing media to support organic greenhouse production.	National, Central	136	COSCII-Hort-Greenhouse-4 CRAAQ-7
C.17. Explore management practices that contribute to high quality organic grains.	Prairie	38	Bauta-Prairie-1 SK-Grain-3
C.18. Identify practices that allow resilient organic production in a changing climate.	Prairie, Central	83	QC-Apple-3 SK-Grain-6
C.19. Identify and test crop amendments and inputs for fertility and pest management.	National, Atlantic	12	ACORN-Veg-1 PEI-COPC-Field-Crops-4

Other submissions:

Develop crop rotations to fit the needs of sustainable production systems (SaskOrganics-2)

Adapt precision agriculture techniques for use on organic farms (PEI-COPC-EGS-2)

3.3 SOILS

Healthy soils are a foundation of organic agriculture. The Canadian organic community is thus interested in exploring the impacts of organic management practices on soil health and soil carbon, and is also looking for ways to improve soil fertility. See Table 4 for additional details, or consult Appendix A for individual submitted priority research questions.

Table 4. Priority research areas identified in the Soils category, 2016-17 Canadian Organic Research Needs and Priorities Assessment.

Priority Research Area: Soils	**Contributors to Priority Research Area**		
	Regions	Number of People	Submitted Priority Research Questions
S.1. Characterize and evaluate the effects of organic management practices on soil health.	National, West Coast, Prairie, Central, Atlantic, North	446	ACORN-EGS-LS-6; Fruits-3 COABC-7 COG-1 COSCII-EG&S-1 COSCII-Hort-Veg-3 CRAAQ-2, 8 EFAO-10 GoOFY-4 PEI-COPC-EGS-3 SK-Grain-4
S.2. Improve soil fertility management with soil amendments.	National, North, West Coast, Prairie	190	COABC-8 COSCII-Field-Crops-East-2 COSCII-Field-Crops-West-2 GoOFY-3 Kwantlen-3 Organic-Alberta-5 SK-Grain-8
S.3. Explore the effects of organic management practices on soil organic carbon.	National, Prairie	84	COG-5 Organic-Alberta-2 SaskOrganics-4
S.4. Examine tillage management for organic farms, including reduction of compaction and reduced tillage.	Prairie, Atlantic	40	COSCII-Field-Crops-West-3 Organic-Alberta-3 PEI-COPC-Field-Crops-2
S.5. Monitor and document soil organic carbon and carbon sequestration under organic management.	National, Atlantic	16	COSCII-Field-Crops-East-5 NB-Organic-Forum-2

3.4 ECOLOGY AND ENVIRONMENT

The ecological and environmental benefits of organic agriculture are often touted, but in many cases lack strong Canadian science for support. In addition, many organic producers farm with the ecological and environmental consequences of their management actions in mind. As such, the organic research priorities in the Ecology and Environment category generally look to science to characterize and improve the ecological and environmental impacts and benefits of organic production, including biodiversity, pollinators, climate resilience, carbon dynamics, energy use and water quality. See Table 5 for additional details, or consult Appendix A for individual submitted priority research questions.

Table 5. Priority research areas identified in the Ecology and Environment category in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process.

Priority Research Area: Ecology and Environment	Contributors to Priority Research Area		
	Regions	Number of People	Submitted Priority Research Questions
E.1. Characterize, improve, and explore the impacts of biodiversity on organic farms.	National, West Coast, Prairie, Atlantic, North	160	ACORN-EGS-LS-4 COABC-11 COSCII-Hort-Fruit-2 COSCII-EG&S-2 GoOFY-2 POGI-8 SaskOrganics-6
E.2. Identify practices that allow resilient organic production in a changing climate.	West Coast, Prairie, Central	162	COABC-10 QC-Apple-3 SK-Grain-6
E.3. Explore the carbon balance on organic farms.	National, Prairie, Atlantic	21	ACORN-EGS-LS-1 PEI-COPC-Field-Crops-1 POGI-6
E.4. Evaluate and develop best management practices for energy use on organic farms.	National, West Coast	83	COABC-11 COG-COTA-USC-OFC-1
E.5. Develop water management practices, including irrigation, for organic systems.	West Coast	158	COABC-5,11
E.6. Explore methods to promote pollinators on organic farms.	National, Central	47	COSCII-Field-Crops-East-1 EFAO-8
E.7. Investigate the balance of ecology, environment and economics in organic production.	National, Atlantic	13	COTA-6 NB-Organic-Forum-3

3.5 FOOD QUALITY, NUTRITION AND HEALTH

Many consumers buy organic products because of a belief that organic is healthier. Yet, the science supporting this claim on a nutrition basis is often conflicted. As such, the Canadian organic community has identified not only the characterization of the nutrition of organic foods as a priority, but also the exploration of practices to improve nutrition under organic management. A need to explore the potential benefits and risks of organic foods to public health was also noted. See Table 6 for additional details, or consult Appendix A for individual submitted priority research questions.

Table 6. Priority research areas identified in the Food Quality, Nutrition and Health category in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process.

Priority Research Area: Food Quality, Nutrition and Health	Contributors to Priority Research Area		
	Regions	Number of People	Submitted Priority Research Questions
F.1. Characterize and identify practices to improve the nutrition of organic foods.	National, West Coast, Prairie, Central, Atlantic	228	ACORN-EGS-LS-2 COABC-13 COSCII-Hort-Fruit-1 COSCII-Hort-Greenhouse-5 EFAO-4 NB-Sweetpotato-5 Organic-Alberta-1 POGI-7 SaskOrganics-8
F.2. Explore and address the benefits and risks to health of organic agriculture.	National, West Coast	94	COABC-11 COSCII-Hort-Greenhouse-1 COSCII-Hort-Veg-5

3.6 POLICY

The Policy theme included a number of diverse topics, including explorations of GE contamination of organic crops, assessment of the risks of synthetic products and their organic counterparts, a stated need for extension of organic research outcomes, and the need for research that is regionally specific yet adaptable, or that addresses issues of public good. See Table 7 for additional details, or consult Appendix A for individual submitted priority research questions.

Table 7. Priority research areas identified in the Policy category in the 2016-17 Canadian Organic Research Needs and Priorities Assessment Process.

Priority Research Area: Policy	Contributors to Priority Research Area		
	Regions	Number of People	Submitted Priority Research Questions
P.1. Explore the levels of contamination with genetically engineered (GE) crops in organic crops, methods to prevent contamination, and how the organic sector can capitalize on the lack of GE contamination.	National, Prairie, Central	206	COG-2 COSCII-EG&S-3 CRAAQ-5 Individual-GE-1 SIC-2 SaskOrganics-7
P.2. Assess the risks of synthetic products (e.g. pesticides) and their organic counterparts.	National, Prairie, Atlantic	21	ACORN-Fruits-2 Individual-Synthetics-1 PEI-COPC-EGS-1 SIC-4
P.3. Support extension, knowledge transfer, and training for organic agriculture, and document the impacts of these supports.	National, West Coast	53	BC-Seeds-3 COG-4 COG-COTA-USC-OFC-3
P.4. Direct research such that it is regionally specific but adaptable, and provide incentives for research that delivers a public good.	National, Prairie	30	COG-COTA-USC-OFC-2 Organic-Alberta-4

Other submissions:

How can farmers/seed savers foster *in situ* conservation of crop diversity through collaborations with *ex situ* collections? (Bauta-National-5)
What is the impact of the solutions used to control fires in the forest on wild foods? (HSSA-2)
What are the risks/benefits for new breeding technologies in organic systems (PEI-COPC-EGS-5)

3.7 PROCESSING

In total, six research questions were submitted relating to organic processing. These questions included cleaning and sanitation options for organic (COABC-18), ecopacking materials (COTA-4), alternatives to tube sanitation for maple production (CRAAQ-3), new ways to add value while reducing waste (COSCII-Field-Crops-East-3), mechanical husk removal for ground cherry (NB-Organic-Forum-8), and small scale methods for soybean processing (NB-Organic-Forum-10). Please consult Appendix A for individual submitted priority research questions.

3.8 MARKETING AND ECONOMICS

Six research questions relating to organic marketing and economics were submitted through the Research Needs and Priorities Assessment Process. These questions focused on the development of effective marketing strategies (CRAAQ-1), the economics of bulk seed production (BC-Seeds-5) and the viability of small-scale diversification (ACORN-Veg-5) for organic vegetable production, market (COTA-5) and economic (COTA-7) analysis, and volumes for centralized distribution (NB-Organic-Forum-6). Please consult Appendix A for individual submitted priority research questions.

3.9 SOCIAL SCIENCE

Few social science-related questions were submitted through the Research Needs and Priorities Assessment Process. The two submitted research questions focused on the social impacts of organic on profitability, yield and debt ratio (ACORN-EGS-LS-6), and the economic impacts of organic “hotspots” (COTA-8). Please consult Appendix A for individual submitted priority research questions.

4 RESEARCH PRIORITIES FOR ORGANIC SCIENCE CLUSTER III

As the Research Needs and Priorities Assessment Process was underway, the organic sector was also preparing for the third Organic Science Cluster. The Organic Science Clusters are industry-supported research and development initiatives led by the Organic Federation of Canada in collaboration with the OACC at Dalhousie University to serve the needs of Canada's organic sector.

To ensure that Organic Science Cluster III addressed priority research areas, researchers applying for Organic Science Cluster III funding were provided with an early and brief synopsis of the identified priority research areas, as identified at that stage of the process by the OVCRT's Research Needs Task Force. The Letter of Intent (LOI) Review Committee, consisting of 20 leading organic sector professionals and stakeholders from across Canada with awareness of organic sector priorities in their areas of expertise, then evaluated the submitted LOIs against a standardized set of criteria focused on these identified strategic priorities. The priority research areas supplied to researchers applying for Organic Science Cluster III are outlined below (Table 8), along with the supporting priorities as identified in this report from the final submissions and analysis.

Table 8. Priority research areas identified for Organic Science Cluster III and their alignment with the final priority areas identified in this report.

Identified Priority for LOIs	Supporting Priorities
Increasing competitiveness through improvements in productivity, production stability and resiliency with climate extremes and/or quality of product through:	
Breeding - developing/identifying crop cultivars and livestock that are: adapted to regional organic management, resilient to pest pressure, adapted to use nutrient s /feed efficiently.	C.7, C.10, L.7
Pest (disease and insect) management strategies with an emphasis on prevention and cultural strategies for: - Livestock (e.g. mastitis, lameness, external/internal parasites, etc.), - Horticultural crops (e.g. apple scab, blight, rots, nematodes, powdery mildew, wireworm, spotted wing drosophila, Colorado potato beetle, flea beetle, thrips, etc.), - Cereals and pulse crops (e.g. fusarium head blight, seedling blight, root diseases, white mold, etc.).	C.1, C.2, L.3
Weed management strategies - cultural and mechanical practices for organic field and horticultural crops with emphasis on perennial weeds (e.g. Canada thistle, field bindweed) ; impacts and alternatives for plastic mulch use in horticulture.	C.3, C.4, C.5, C.6
Cropping systems strategies – cover crops and green manures, intercropping, development of climate resilient systems, greenhouse systems.	C.8, C.9, C.13, C.14. C.16, E.2
Soils, including: - Effects of management practices on the form and quantity of soil organic matter,	S.1, S.2, S.4

- Practices to improve soil health; linking soil health with productivity, product quality and ecosystem services (e.g. clean air, clean water, water storage, etc.), - Improved soil fertility management with crop rotation and soil amendments.	
Livestock feed - alternative feed sources to reduce grain/concentrate use, including food waste, forages, insect protein; improved pasture management to maintain productivity and quality of feed while maintaining or improving biodiversity.	L.2, L.6
Improving quality of organic products - Improved nutritional value through management practices and cultivar selection, - Evaluating and improving grain cleaning and storage practices.	C.9, C.11, C.12, C.18
Development and application of new technologies to support organic production systems including soil amendments (local resources/waste recycling), equipment, pesticides	C.16, C.19, L.5
Assessment of GE contamination risks to organic production systems, evaluating the effectiveness of mitigation practices and development of improved practices	P.1
Advancing public good through characterization and improvement of:	
Agroecosystem function – nutrient cycling and movement, carbon life cycle and energy use analysis (whole system) - Carbon balance of organic production systems in Canada	S.5, E.3
Ecosystem services – carbon sequestration, soil health, biodiversity, and pollination - Soil health in tillage based systems - Using buffer zones to boost biodiversity; costs, impacts	S.1, S.3, S.4, S.5, E.1, E.6
Nutritional benefits of organic	F.1, F.2
Supporting organic sector evolution through:	
Assessments of the sustainability of organic agriculture production systems and practices to improve sustainability.	E.2, E.4, E.5, E.7
Application of holistic principles to find solutions that close nutrient/energy cycles.	C.15, C.19, L.4
Integration of crops and livestock, recycling of waste by products (especially local/regional waste)	C.15, L.4
Improvement of animal welfare – optimizing outdoor access and housing.	L.1, L.8

- Note: Characterization of the environmental impacts of organic systems is a high priority, and is encouraged to be included as a component of all research projects as appropriate.

5 APPENDIX A: ALL PRIORITY RESEARCH QUESTIONS SUBMITTED

Submitting Group	Question ID	Research Question	Theme
ACORN-EGS-LS	1	Lifecycle analysis of carbon balance in organic and conventional systems	Ecology & Environment
	2	Characterize the health, nutritional and risk reduction benefits of organic in Canada	Food Quality & Health
	3	Quality and yield stability of organic and conventional varieties under a competitive environment	Plants
	4	Buffer zones as a conservation tool for biodiversity, carbon sequestration, etc.	Ecology & Environment
	5	Social impacts of organic on profitability and yield, debt ratio	Social Science
	6	How can we characterize soil health in organic systems that can be easily characterized and extend to an outcome that we can promote	Soils
ACORN-Fruits	1	How can permaculture be adapted to traditional Aboriginal culture?	Plants
	2	The effects of aerial spray programs on public health, organic producers, First Nations, native species and wildlife.	Policy
	3	Impact of different plastic mulches on soil life	Soils
	4	Impact of livestock used in orchard floor management and the potential for biosecurity/disease transmission	Plants/Livestock
	5	Research into fungal endophytes as part of a plant's innate immunity (improved by organic farming), especially in relation to organic viticulture	Plants
ACORN-Veg	1	How do different off-market/untested biological foliar/soil amendments impact plant health, vigour, pest/disease resistance on vegetable crops? Efficacy & mode of action of different untested foliar sprays/amendments	Plants
	2	What are the optimal strategies for suppressing wireworm pressure on organic vegetable and field crop systems?	Plants
	3	What are successful organic pest management strategies to suppress stem/bulb nematode?	Plants
	4	What are the optimal planting dates for production of leafy greens by variety (spinach, lettuce, brassicas) for overwintering/early spring harvest production?	Plants
	5	What are the variables that impact the viability of small-scale diversified vegetable production?	Marketing and Economics
	6	Comparison of drip, no irrigation and overhead on leafy greens (disease, food safety, bolting, yield)	Plants
Aquaculture	1	Maintain and increase the organic feed supply for organic agriculture	Livestock

Submitting Group	Question ID	Research Question	Theme
Bauta-National	1	Implement a Participatory plant breeding program for vegetables to meet the needs of organic growers in Canada	Plants
	2	Extend and complete a participatory plant breeding for field crops adapted to the needs of organic growers in Canada.	Plants
	3	What is the most promising crop germplasm for Canadian producers and seed growers: an assessment method via a participatory national variety trial network	Plants
	4	What are the best options for integrating small grains, heritage varieties, and pulses in a diversified, small-scale farming operation?	Plants
	5	How can farmers and seed savers foster meaningful *in situ* conservation of crop diversity through collaborations with *ex situ* collections?	Policy
Bauta-ON	1	Can we develop early-maturing field eggplants and sweet peppers regionally adapted to Ontario climates and organic farming conditions?	Plants
	2	Can we develop early-maturing for all species of winter squashes (C. pepo, C. maxima, C. moschata), that also exhibit some resistance to common cucurbit pest pressure (e.g. squash borer, cucumber beetle) and common cucurbit diseases in temperate climates (e.g. downy mildew, powdery mildew, and bacterial wilt) in Ontario?	Plants
	3	Is there merit to growing field crops that are currently not commercially available (e.g. heritage grains like emmer and einkorn, open-pollinated flint/dent corn varieties, edible dry beans, etc.) for niche baking and food processing markets in Southwestern Ontario? If so, what varieties of field crops are suitable to be grown in diversified organic field crop operations in Southwestern Ontario?	Plants
	4	What are the most suitable organic vegetable crops that can, and should be, grown for seed in temperate Ontario climates based on regional viability and market demand?	Plants
Bauta-Prairie	1	What are the factors that contribute to high quality seed grain, and what are the management practices that farmers can employ to get the best quality?	Plants
	2	What are the varieties/cultivars of vegetables most suitable for short seasons? Could a breeding program benefit the vegetable seed growers to address suitable varieties for shorter seasons?	Plants
	3	Variety testing for organic production: what are the varieties that do best under organic field production, and what crops should be targeted for organic variety development?	Plants
	4	Can genetic material from the Plant Gene Resources of Canada (PGRC) be suitable for organic production (field crop and vegetable) and/or parent material for breeding programs?	Plants
	5	How can cover crop cocktails be successfully integrated into organic farms (ex. What species mix to use, what seeding rate to use, seeding windows)?	Plants
Bauta-QC	1	What are the best strategies for control of the Colorado Potato beetle in organic production?	Plants

Submitting Group	Question ID	Research Question	Theme
	2	What are the best OP vegetable varieties for organic market gardeners to grow in Quebec?	Plants
	3	Implement a Participatory plant breeding program for vegetables to meet the needs of organic growers in Quebec and link them to expertise throughout North America.	Plants
BC-Seeds	1	Which vegetable cultivars can be bred to be better suited for winter production in maritime regions? Crops of particular interest for BC are brassicas, carrots, alliums, overwintering lettuce	Plants
	2	What is the most efficient way to support on-farm vegetable variety trials and farmer-led plant breeding efforts with the absence of strong institutional capacity for extension services? What new models for collaboration and knowledge sharing could be developed?	Plants
	3	What models of training or mentorship would work best to support BC seed growing and plant breeding efforts? How can existing, or developing, training programs in North America be best leveraged to build capacity locally?	Policy
	4	Identify which vegetable cultivars can be bred to be better suited for seed production in northern areas if Canada (for example, outside of primary agriculture production areas of Fraser Valley, Islands and Okanagan)? Traits of particular interest include cold tolerance and short days to maturity.	Plants
	5	What are the economics of incorporating bulk seed production into an organic mixed vegetable farming operation and what are the market barriers for farmers wanting to incorporate commercial seed production into their operations? What support do farmers need to access this seed market?	Marketing and Economics
CETAB+	1	What are the cultivars of specific green manures or the green manure species mixtures that have the best potential for organic field crop operations in southern Quebec from an economic and agronomic point of view?	Plants
	2	What are the best means of weed control in the organic production of processing vegetables, particularly sweet peas and beans?	Plants
	3	What are the cultivars and the cultural practices best adapted to processing into flour for artisan breadmaking in Quebec?	Plants
	4	What are the best production methods for organic raspberries grown under tunnels in order to increase supply and the technical performance of operations?	Plants
	5	Is it possible to grow cranberries according to the principles of biodynamic agriculture? If so, what are the most recommendable practices?	Plants
COABC	1	Explorations of pest and nutrient management for specific organic vegetable crops, including alliums, beans, brassicas, carrots, corn, cucumbers, garlic, peas, potatoes and tomato	Plants

Submitting Group	Question ID	Research Question	Theme
	2	Explorations of pest and nutrient management for specific organic fruit crops, including blueberries, cranberries and tree fruits	Plants
	3	Pest management practices for horticultural crops, including cultural methods (crop rotation, border crops) and inputs (biological controls, probiotics, organic fungicides, new products)	Plants
	4	Weed management options for organic producers	Plants
	5	Irrigation water quality management options for organics – alternative compliant water treatments	Ecology & Environment
	6	Post-harvest strategies for horticultural crops, including: development of post harvest treatments for tree fruit (to address post harvest challenges/diseases); Investigating the efficacy of electrolyzed water solutions as cleaning agents – on farm and in preparation facilities; Crop stress/nutrient load – how to correlate to post harvest life/decay. For example in beets	Plants
	7	Soil management options for organic horticultural production, including the impact of mulches on soil health, compost use, mulch options	Soils
	8	Fertility options for organic production, including optimal fertility, inputs, nutrient management	Soils
	9	Explore alternative crops and season extension options for BC organic growers	Plants
	10	Climate change adaptation and contributions for organic production	Ecology & Environment
	11	Development of best practices for organic production that address water and nutrient dynamics, biodiversity, energy and food safety	Ecology & Environment
	12	Seed production methods, economics and marketing for regionally appropriate varieties	Plants
	13	Relationship between inputs, soil health and ultimate nutritional quality of fruit and vegetables. Likewise, feed types and resulting nutritional qualities of livestock products.	Food Quality & Health
	14	Organic husbandry practices for beef, dairy and pork production, including pest and disease management, outdoor access, welfare, housing.	Livestock
	15	Organic husbandry practices for poultry, including rearing, feed, breeds, pest and disease management, outdoor access, welfare, housing.	Livestock
	16	Organic feed and forage options for ruminants and monogastrics	Livestock
	17	Aquaponic systems for organic production	Livestock
	18	Cleaning and sanitation options for organic	Processing
COG	1	What are the impacts of occultation and solarization practices on soil life, such as microbial populations and biodiversity? Evaluate the potential of this method in reducing tillage and moving toward no-till agriculture.	Soils
	2	How effective has the Canada Seed Trade Association (CSTA) coexistence plan been in controlling the spread of GM alfalfa?	Policy

Submitting Group	Question ID	Research Question	Theme
	3	Evaluate the impact of early-flowering cover crops in the beneficial control of pests in organic alfalfa seed production.	Plants
	4	In US states where agriculture extension services are well-funded, are there any strong correlations or causal links between farming success/profitability/outcomes and the availability of extension services?	Policy
	5	What are the impacts of biochar soil amendments on carbon levels and nutrient availability in soil?	Soils
COG-COTA-USC-OFC	1	Perform a lifecycle assessment and energy audit of Canada's agriculture and agri-food system	Ecology & Environment
	2	Incentivize research related to sustainable and organic agriculture that delivers a public good	Policy
	3	Invest in organic extension and knowledge transfer activities that support transition and which help producers increase productivity	Policy
	4	Participatory varietal selection and participatory plant breeding of organic, climate resistant, locally adapted seeds	Plants
COSCII-EG&S	1	How can we measure the positive benefits of achieving healthy soils?	Soils
	2	How does increased biodiversity impact crop productivity and environmental goods and services?	Ecology & Environment
	3	How to monetize the lack of GE contamination along with increased seed diversity across markets?	Policy
COSCII-Field-Crops-East	1	Promote pollinators - how can OA go to watershed scale - certify O watershed?	Ecology & Environment
	2	Alternatives to animal manure	Soils
	3	Assess waste in processing and keep health as a priority while still adding value in new ways. Maybe O has new ways how farmers add value	Processing
	4	Cover crops - Mixes, clover varieties and techniques for clover	Plants
	5	SOM measuring more cost effectively, representatively & quickly and link to land tax or crop insurance	Soils
COSCII-Field-Crops-West	1	Disease: What are the differences between organic & conventional wheat, pulses, legumes? Long-term study focused on this - identify strategies for farm management to produce less disease	Plants
	2	Nitrogen: How to best increase supply in soil? How to "prime the pump" to deliver to plant?	Soils
	3	Tillage management: Timing, depth, amount, tools, method in different soil zones/crop rotations "New tillage paradigms"	Soils
	4	a) Intercropping: How to do this well in different soil zones, cropping systems. Crop management b) New crop opportunities - hemp, quinoa, etc. - agronomy	Plants
	5	Weed control: The comb-cut tool	Plants

Submitting Group	Question ID	Research Question	Theme
COSCII-Hort-Fruit	1	Fruit quality - What organic practices impact fruit quality - positively, negatively or not at all? How best to measure them?	Food Quality & Health
	2	How biodiversity might be included in agricultural studies to address challenges of pests, diseases, nutrient needs, income, production quantity and quality, and also feasibility by human, specifically from farmers?	Ecology & Environment
	3	What are the effective practices used against new major insect pests by organic growers on fruit crops? Examples: spotted wing drosophila, marmorated plant bug	Plants
	4	What is the best comprehensive solution in combating powdery mildew by any method? I.e. sulfur/bicarb vs. copper vs. non-input solutions	Plants
COSCII-Hort-Greenhouse	1	What are the risks associated with organic inputs on human health (also organic amendments, biopesticides, biostimulants)	Food Quality & Health
	2	How to improve greenhouse productivity and quality attributes of fruit & vegetables through better mineralization (soil/substrate nutrient release) during different growing seasons	Plants
	3	How can we use bacteria to control specific pests (to identify/develop more specific bacteria/control tools)	Plants
	4	How to create an optimum root zone environment for indoor organic production (better soil health, agro-ecosystem services, microbial balance, etc.)	Plants
	5	How can we increase productivity in terms of nutrients, taste and shelf-life?	Food Quality & Health
COSCII-Hort-Veg	1	Identification and evaluation of equipment to control weeds and to improve farmers' practices	Plants
	2	Which vegetable crops are needed for varietal improvement & plant breeding?	Plants
	3	Providing farmers with soil health toolkits to facilitate soil health assessments and facilitate and encourage improvement of soils	Soils
	4	What are suitable crops and varieties for large scale production, to support more transition to organic agriculture	Plants
	5	What are the health effects of organic agriculture (vs. conventional agriculture)? Cost on health for the government	Food Quality & Health
COSCII-Livestock-Dairy	1	How can we better control disease in dairy farms? What preventative measures could be used to improve health and reduce need for curative treatments? When all else fails, what are the scientifically proven non-allopathic treatments that can be used for mastitis, lameness and diseases of young stock?	Livestock
	2	How to address cow behavioural needs with regard to winter exercise through management (e.g. limitation of hours outdoors) and environment adaptations (e.g. enclosed paddock)?	Livestock
	3	Improve management of pastures in terms of economics, welfare, nutrition, health and plant production	Livestock

Submitting Group	Question ID	Research Question	Theme
	4	How to reduce the diet concentration of grains for adult cattle How to reduce the concentrate requirement in dairy cow diets	Livestock
	5	Improving/providing new recommendations for rearing management from birth to breeding in dairy heifer, providing new recommendation - early life, liquid feeding, transition to forage, transition to pasture, housing	Livestock
COSCII-Livestock-Other	1	Can grains be replaced with alternative sources of protein & energy as livestock feed (ex: food waste, forages, insects, etc.) Need to test voluntary intake, growth & feed efficiency, health and meat/egg quality	Livestock
	2	Design/develop a free range area for pigs or poultry that can be used either year round or part of the year, but in the latter in combination with a covered attractive (free range like) area	Livestock
	3	Parasite and pathogen control using alternative methods. Probiotics and prebiotics could be useful tools	Livestock
	4	What temperatures and relative humidity ranges are acceptable to allow outside access as measured by hormonal stress indicators for poultry and pork	Livestock
	5	What design improvements are needed to housing for organic pigs and poultry to achieve best outcomes for health, welfare and productivity?	Livestock
COTA	1	Weed and pest management, including IPM and looking at specific pest/weed problems	Plants
	2	Looking for drought resistant vegetable varieties	Plants
	3	Environmental and economic impacts of livestock grazing on farm	Plants/Livestock
	4	Ecopacking materials	Processing
	5	Market analysis and consumer reports	Marketing and Economics
	6	Developing multiple-function farming systems that balance economic and environmental outcomes	Ecology & Environment
	7	Long-term economic analysis of organic farming systems	Marketing and Economics
	8	What are the economic impacts of being an 'organic hotspot'?	Social Science
CRAAQ	1	Document effective marketing strategies and techniques to influence the Quebec consumer and study willingness to pay for organic foods	Marketing and Economics
	2	Evaluate the long-term agronomic merits of soil structure improvement techniques (e.g. liming, green manure)	Soils
	3	Study alternatives to sanitizing tubing in order to reduce the use of cleaning products in the sugar bush (e.g. inoculation)	Processing

Submitting Group	Question ID	Research Question	Theme
	4	Improve and document cauliflower midge techniques in organic broccoli and cauliflower crops: exploration and validation of trap plants, effect of biodiversity on entomophagous populations	Plants
	5	Improve access to non-GMO high-performance seeds (e.g. on-farm production protocol, test network, buying group) for field crops	Policy
	6	Develop preventive and curative methods for pest control (including the study of the influence of landscape ecology)	Plants
	7	Develop recipes for farm-made potting mixes to improve transplant production and promote producer self-sufficiency for greenhouses	Plants
	8	Increase knowledge of the biological activity of soils in greenhouses, the suppressive effect of composts and amendments, biopesticides and interactions between micro-organisms and the plant, whether in pots or living soil	Soils
	9	Develop biological, conventional or integrated pest management methods: Strawberry - cyclamen mite and tarnished plant bug; raspberry - weevil, scarab beetle; blueberry and raspberry - spotted wing drosophila	Plants
	10	Perform tests of fertilization and fertigation for cranberry	Plants
	11	Limit apple tree and harvest losses caused by apple diseases such as fire blight, scab and secondary diseases, using the currently accepted tools in organic production, and optimize their use.	Plants
	12	Identify and evaluate the effectiveness of products or practices that strengthen the immune system (livestock)	Livestock
	13	Develop alternative methods to improve the health of dairy cows and reduce the need for curative treatments (e.g. mastitis, lameness)	Livestock
EFAO	1	Alternative livestock feed (e.g. comparing alternative fodder; spent grains; grazing cover crops)	Livestock
	2	Cover crops (e.g. comparing species and/or cocktails; planting date; benefits of grazing cover crops)	Plants
	3	Livestock breed selection (e.g. comparing hardy varieties; Heritage breeds; breeds for alternative feeds)	Livestock
	4	Nutritional quality of ecologically-raised foods (e.g. testing small-scale organic veggies; pasture-raised; grass-fed; feeds for specific milk profiles)	Food Quality & Health
	5	Pasture regeneration (e.g. comparing soil amendments; tillage methods and intervals; grazing methods)	Livestock
	6	Pest control (e.g. testing efficacy of foliar sprays; natural fly repellents)	Plants
	7	Pest control (e.g. testing efficacy of foliar sprays; natural fly repellents)	Livestock

Submitting Group	Question ID	Research Question	Theme
	8	Pollinator services (e.g. cover crops that attract pollinators; methods of enhancing pollination)	Ecology & Environment
	9	Seed production and breeding (e.g. comparing biennial seed production methods; breeding regionally adapted OP varieties)	Plants
	10	Soil health (e.g. comparing reduced tillage for market gardens; homemade fertilizers; frass; compost tea)	Soils
	11	Weed control (e.g. comparing mulch methods; different cover crop species; seeding rates; planting dates, etc.)	Plants
GoOFY	1	Are any of the 200+ varieties of Jerusalem artichokes (Helianthus tuberosis) more suitable to growing in the climate and soil types of the Yukon Territory? What varieties do best? Do any varieties have a higher inulin count when grown in cool soils?	Plants
	2	What are the best practices for conserving biomass when converting boreal forest to pasture or fields?	Ecology & Environment
	3	What is the feasibility of using the existing infrastructure and mineral resources in the Yukon Territory to provide resources for mineral balancing of the relatively young soils present to increase productivity in the organic agriculture sector?	Soils
	4	What are the microbial communities in the soils of the Yukon Territory and how do they change as boreal forest is converted into agriculture?	Soils
	5	How does the pronounced daylight of long summer days and the extended low angle twilights of the shoulder season affect plant physiology?	Plants
HSSA	1	What organic pest control products are available in Canada to address weeds, disease and insects	Plants
	2	What is the impact of the solutions used to control fires in the forest on wild foods?	Policy
Individual-GE	1	What are the levels of genetically engineered DNA present as unintended presence in seed of the same crop type for field crop seed (field corn, soybeans, canola & alfalfa) in Canada?	Policy
Individual-Researcher	1	Does planting winter-hardy cover crop(s) after winter wheat deliver sufficient nutrients for the following year corn in a soybean-winter wheat-corn rotation in Southern Ontario?	Plants
	2	Can inter-seeding winter hardy cover crop(s) into standing corn effectively deliver nitrogen to winter wheat in a corn-soybean-winter wheat rotation system in Southern Ontario?	Plants
Individual-Synthetics	1	Research on the effects of one particular input prohibited in organic certification--growth hormones	Policy
Kwantlen	1	What options are available to organic horticultural growers looking to reduce their reliance on plastic mulch in their production systems?	Plants
	2	Can food waste be used to produce safe and efficient organic livestock rations?	Livestock
	3	What are the best manure management practices to address food safety concerns and greenhouse gas emissions on integrated organic farms?	Plants/Ecology & Environment

Submitting Group	Question ID	Research Question	Theme
	4	How can spotted wing drosophila be managed in accordance with national organic standards?	Plants
	5	Identifying and evaluating novel crops suited to organic production systems	Plants
Minor-Use	1	Pest management options for organic potato, including Colorado potato beetle, potato leafhopper, wireworm, and late blight	Plants
	2	Control of broadleaf weeds in small fruit crops, particularly currant, grape and strawberry	Plants
	3	Pest and weed management options for organic carrot production, particularly for carrot rust fly and broadleaf weeds.	Plants
	4	Flea beetle management options for the production of organic broccoli and mustard greens	Plants
	5	Pest and weed management options for organic apple production, particularly apple scab and broadleaf weeds.	Plants
	6	Management options for tarnished plant bug in organic strawberry production.	Plants
	7	Management options for spider mites in organic hop production.	Plants
	8	Pest and weed management options for organic dry bulb onion production, particularly neck rot and broadleaf and grassy weeds.	Plants
	9	Management options for blub and stem nematode in organic garlic production.	Plants
	10	Management options for alternaria in organic broccoli, cauliflower and cabbage production.	Plants
	11	Management options for seed diseases in organic spring wheat, particularly seedling blight and root rots.	Plants
	12	Management options for downy mildew and weed management in organic basil and hops.	Plants
	13	Management options for diseases in organic hemp production, particularly white mold and stem rot.	Plants
	14	Sprout inhibitor for post-harvest storage of organic potatoes.	Plants
NB-Organic-Forum	1	Wireworm control (rotation crops)	Plants
	2	Carbon sequestration monitoring protocols, and getting paid for carbon sequestration	Soils
	3	Ecological and organic research (ecological footprint)	Ecology & Environment
	4	Effective grain mixes during growing (ex. Peas and wheat, peas and barley, peas and oats)	Plants
	5	Literature review of past research	Policy
	6	How much volume is needed in New Brunswick to centralize distribution for growers	Marketing and Economics
	7	Cover crop rotations for the Maritimes	Plants

Submitting Group	Question ID	Research Question	Theme
	8	Possibility to mechanize the removal of husks from the ground cherry	Processing
	9	Strategies for organic grain corn	Plants
	10	Smaller-scale methods to process soybean (currently shipping to PEI for processing - possible leads: ONB, CCNB Bathurst)	Processing
NB-Sweetpotato	1	How to increase the productivity of organic sweet potatoes in Atlantic and Central Canada?	Plants
	2	How to edit genes for cold tolerance, starch properties, and root color in sweet potato and how to genotype the genetic resources?	Plants
	3	How to increase the processing quality of organic sweet potatoes?	Processing
	4	How to increase the storability of organic sweet potatoes through integrated approaches?	Plants
	5	How to characterize and improve the health attributes of organic sweet potatoes?	Food Quality & Health
Organic-Alberta	1	How does on-farm crop and/or livestock management affect nutritional content of food (including meat, milk, meat, grain)?	Food Quality & Health
	2	What are the management practices that provide the most potential for carbon sequestration and increased organic matter?	Soils
	3	What are the management practices to farm successfully as no-till organic farmers?	Soils
	4	How do you make organic research regionally specific and adaptable?	Policy
	5	Assessment of the efficacy of organic inputs	Soils
PEI-COPC-EGS	1	Risk assessment of organic vs. conventional pesticides	Policy
	2	Adapting precision agriculture on organic farmers (lack of uptake of precision ag technologies)	Plants
	3	Is organic actually better from a soil health perspective?	Soils
	4	Can we breed for better pest resistance/nutrient utilization?	Plants
	5	What are the risks/benefits for new breeding technologies in organic systems	Policy
PEI-COPC-Field-Crops	1	Explore the carbon neutrality, nutrient sustainability, energy efficiency, and green house gas emissions of organic crop rotations	Ecology & Environment
	2	Develop best management practices for limiting soil compaction, including exploring the effects of equipment size and providing more efficient ways of determining compaction levels in fields for a move towards precision operations to correct	Soils
	3	Develop systems to integrate livestock into field crop rotations (and vice-versa)	Plants/Livestock
	4	Identification and evaluation of regionally sourced crop amendments and inputs	Plants
	5	Explore cover crop selections based on soils and cropping history, especially winter cover crops and cover crop mixes.	Plants

Submitting Group	Question ID	Research Question	Theme
	6	Plant breeding in organic systems, with goals of limiting seed size to allow higher seeding density, pest resistance, weed suppression, good nutrient use efficiency, and shortening the time to harvest	Plants
PEI-COPC-Veg	1	Explore disease resistance in organic vegetable production - how do organic seeds perform in contrast to conventional seeds in organic systems	Plants
	2	Cover cropping and rotation and their effect on soil health, as well as pest, weed, and disease populations (as markers)	Plants
	3	Interseeding for better organic vegetable crops	Plants
Pig-Researchers	1	Which breeds are best adapted to organic pig production in Canada?	Livestock
	2	How to manage outdoor access in organic pig production?	Livestock
	3	What mitigation strategies could be used to reduce parasite load in pig production?	Livestock
	4	What alternative feedstuff could be used in organic pig production?	Livestock
	5	How should farrowing sows be managed and housed to improve piglet survival?	Livestock
POGI	1	Managing perennial weeds using organic practices, particularly field bindweed	Plants
	2	What are the most effective tools and conditions for management of Canada thistle. Particularly the effectiveness of various tools (CombCut, scythe/sickle blade vs. flail mower)	Plants
	3	What are the economic and cultural benefits of grain cleaning? Explore the impacts of various combine settings and their impact on removing weed seeds from fields and the use of these weed screenings as a supplemental income source. What is the balance between time at harvest vs. after harvest? What is the return on investment for grain cleaners, considering grain quality, storability, market access (and timing)	Plants
	4	How critical is it to separate intercropped grains before storage?	Plants
	5	Can varieties be bred that are well adapted to organic growing conditions, particularly for weed competitiveness and nutrient use efficiency?	Plants
	6	Collection and validation of carbon data for organic farming systems, especially in relation to soil carbon and net carbon balance	Ecology & Environment
	7	Explorations of the nutrient density of organic grains, including defining and measuring nutrient density and how to select and manage crops (e.g. compost use) to be nutrient-dense. Is there a trade-off between yields and nutrient density?	Food Quality & Health
	8	Explore ways to increase biodiversity on organic farms without compromising the system or negatively impacting the farmer's bottom line	Ecology & Environment

Submitting Group	Question ID	Research Question	Theme
QC-Apple	1	Is it possible to reduce crop losses caused by primary apple pests, such as plum curculio, as well as foliage and wood pests that limit or prevent the adoption of organic production in most of the main apple production areas in Canada?	Plants
	2	Is it possible to limit tree and harvest losses caused by apple diseases such as fire blight, scab and secondary diseases, using the tools currently in use in organic production, and how can we optimize their use?	Plants
	3	What are the most effective mitigation measures to reduce the negative impacts of climate change, such as an increased risk of outbreaks and infestations by alien and/or invasive species?	Plants
	4	Can the cost-effectiveness of labor-intensive agricultural practices (e.g. plot establishment, soil fertilization, annual thinning, fallen fruit harvesting) be improved in the context of organic apple growing for currently certified producers and for producers in transition?	Plants
	5	How do we compare the different methods of weed control for organic apple production, and what are the conditions that maximize their effectiveness and profitability?	Plants
QC-Blueberry	1	How to optimally manage weeds in organic [lowbush] blueberries?	Plants
	2	How can diseases be managed in organic [lowbush] blueberry production?	Plants
	3	How can insects be managed in organic blueberry production?	Plants
	4	What fertilization is effective and feasible in organic blueberry production?	Plants
	5	How can organic lowbush blueberry harvest be optimized?	Plants
SaskOrganics	1	Growing cover crops and green manures to improve soil quality and restore soil health	Plants
	2	Developing crop rotations fitting the needs of sustainable organic production systems	Plants
	3	The role of crop rotations, green manures, and intercrops in improving weed control	Plants
	4	The strategies for building soil organic matter and managing soil nutrients	Soils
	5	Weed management prevention and control of noxious perennial weeds	Plants
	6	Research related to biology and nutrient cycling, biodiversity and its role in crop health	Ecology & Environment
	7	The impacts of GMO on environment and economics of organic farmers	Policy
	8	Nutritional quality, health benefits and integrity of organic food	Food Quality & Health
SIC	1	Outdoor access for poultry	Livestock
	2	Prevention of GE contamination	Policy
	3	Use of sulfur as a crop amendment	Plants
	4	Revisiting definition of synthetic	Policy

Submitting Group	Question ID	Research Question	Theme
SK-Grain	1	Nutrient supply from cover cropping and green manures: actual N supply to different crops	Plants
	2	Tillage radish seeding date effects on soil structure and nutrient cycling	Plants
	3	Grain quality improvement strategies including quantifying the economics of grain cleaning	Plants
	4	Sustainability of organic systems in terms of maintaining soil health	Soils
	5	Intercropping strategies for lentils	Plants
	6	Identify practices that reduce risk (i.e. improve yield stability) in climate extremes	Plants
	7	Evaluation of new weed control equipment for efficacy and economics	Plants
	8	Phosphorus fertilizer alternatives for seed placement in organic grain production	Soils

6 APPENDIX B: RESEARCH NEEDS AND PRIORITIES ASSESSMENT PROCESS PACKAGE

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

About the research needs and priorities assessment process

A clear list of research priorities is needed to guide provincial and national funding initiatives and inform researchers as to where they should direct their efforts. The Research Needs Task Force of the Organic Value Chain Roundtable is leading this initiative; data is being collected and summarized by the Organic Agriculture Centre of Canada, Dalhousie University.

This process is important!

There are many research needs, but only limited funds. This process will identify where research funding should be directed and how the sector approaches funding sources. The results of this process may be used to:

1. Target research activities for a national research program, the Organic Science Cluster
2. Identify provincial or regional research priorities
3. Identify research priorities for special interest or commodity groups
4. Identify research needs within a business

Who should carry out this assessment?

All stakeholders within the organic sector in Canada are invited to participate in this process. Since the goal is to set priorities, provincial/regional organizations or commodity groups are encouraged to coordinate efforts within their groups.

While individuals are encouraged to consider their own research needs, the process of prioritizing research is most effective when working in groups with a similar field of interest/work (e.g. apple growers in BC, grain processors in ON). This provides opportunities for in-depth discussions and considerations before prioritizing future research directions.

The information that you provide will be compiled anonymously with entries from groups and individuals across the country. Maintaining a consistent format through the use of this document will allow results from various sectors of organic agriculture from across Canada to be compiled.

Promoting the needs assessment process

Forms can be accessed at: www.dal.ca/oacc. To facilitate sharing, some short captions for Twitter, Facebook and newsletters are provided below.

Twitter/Facebook: We want your input! Help influence organic research in Canada by participating in the 2016-17 organic research needs assessment. www.dal.ca/oacc

Newsletters/websites: We want your input! Have your say in guiding research priorities for Canada's organic sector. Collect your thoughts with a group of peers and participate in the 2016-17 assessment of organic research needs and priorities. www.dal.ca/oacc

Should you have any questions about how to complete the research needs assessment and forms, please contact Joanna White at joanna.white@dal.ca or (902) 896-2249. Please submit completed assessment documents by **February 28, 2017**.

For information on previous research needs assessments and current research, please visit www.dal.ca/oacc.

Instructions

Step 1. Break into focus groups, as needed.

Larger groups are encouraged to break into sub-groups that focus on specific subject areas (e.g. a grains group might break into groups for wheat, barley, oats, pulses, etc.). A maximum group size of ten is recommended to allow everyone to contribute. If you are facilitating a session, we suggest minimal interruption once groups have been established. Each sub-group will complete their own brainstorming and identification of their Top 5 research priorities.

Step 2. Provide us with some information about yourselves

Complete the **Submitter Information** page. Here, you will be asked to provide information about the size, makeup and representation of the group completing the research needs process. This information is important in categorizing and weighting the information as it is compiled.

Step 3. Brainstorm research questions

Take some time to contemplate the question "**What research is needed to support the evolution and growth of the organic sector in your province/region and/or in Canada?**" Think about this question in the context of your production system or area of interest/expertise. We encourage you to use the tables provided to record your brainstorming ideas, and ask that you also submit the brainstormed ideas along with the Top 5 research questions.

Carefully consider whether each research idea issue identified is one that requires new research to address, or whether the issue is based on the need for extension and education. While we acknowledge the importance of extension, we are seeking input on research needs.

Step 4: Identify the Top 5 research questions

Vote or prioritize within your group to narrow down the research questions list. You need only identify the top 5 questions - there is no need to rank.

Step 5. Provide information on your Top 5

Complete a **Research Question** table for each of the identified priorities. The priorities can be presented in no particular order (i.e. do not need to be ranked). Examples for guidance are included below. For each priority research question, you are asked to:

1. Provide a clear, detailed **research question**. Provide as many details as possible to clearly define the scope of the question. Be as specific as you can be when describing the research question. Examples are provided below for reference.
2. Provide up to **5 keywords or phrases** that relate to and further define the research question. These will be used to categorize the research questions, so please be detailed and descriptive. Please use descriptors that are in addition to those used in the research question.
3. Provide a short description of **why this research question is a priority**. Any comments or notes that clarify the intent of the research question can also be included here.
4. Quickly complete the **checkboxes**, checking all that apply. If "Other" is selected as a response in any of these categories, please give details in the space provided. This is intended to be a section that can be quickly completed, so no need for lengthy debates.

Step 6. Submit your priorities by February 28, 2017.

Completed forms (Brainstorming and Top 5) can be emailed to joanna.white@dal.ca or mailed to:
Organic Agriculture Centre of Canada
ATTN: Joanna White
Dalhousie University
Faculty of Agriculture
PO Box 550 Truro, NS B2N 5E3

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

EXAMPLE Research Question 1

What research is needed to support the evolution and growth of the organic sector in your province/region and/or in Canada?

EXAMPLE Research Question 1:
Can organic potatoes be successfully grown on the planet Mars?

Keywords or phrases (up to 5):
Potato, Mars, low moisture, low oxygen

Why is this a priority?
This can be an opportunity to set a precedence for organic production on a new planet. Given the lack of water, low soil organic matter, lack of (known) soil organisms, and thin atmosphere on Mars, can we develop a model for organic potato production to support future research missions and colonies on Mars? Can organic production, which is based on a holistic system reliant on healthy soils, be successful on a barren planet? There are opportunities for recycling waste resources, and pest problems should not be a concern (although potato beetles certainly are resourceful creatures).

The project will need to examine the growing medium, fertility sources, water supply, atmosphere needs, and economics of an organic production system on Mars. Alternative crops can also be examined.

Select all appropriate boxes in each category:

Impact
- ☑ International
- ☐ National
- ☐ Regional
- ☐ Provincial
- ☐ Specific business

Research Target
- ☐ Specific farm
- ☐ Specific industry partner
- ☐ Commodity group
- ☐ Whole organic sector
- ☑ Whole agricultural sector
- ☐ Policy
- ☐ Consumers
- ☑ Public good
- ☑ Basic knowledge
- ☐ Other: _____

Type of Research
- ☐ Producer-led
- ☐ Business-led
- ☑ Researcher-led
- ☐ Other: _____

Location
- ☐ On-farm
- ☐ On-business
- ☑ Research station
- ☐ University ☐ AAFC ☑ Other
- ☐ Other: _____

Non-Governmental Funding
- ☐ Uncertain
- ☑ Funding partner not easily identified
- ☐ Funding partner likely
- ☐ Funding partner identified: _____

** Government funding agencies may require from 0-50% matching funding from non-governmental sources**

Region
- ☐ All of Canada
- ☐ NL ☐ ON
- ☐ NS ☐ MB
- ☐ PEI ☐ SK
- ☐ NB ☐ AB
- ☐ QC ☐ BC
- ☑ Other: Mars

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

EXAMPLE Research Question 2

What research is needed to support the evolution and growth of the organic sector in your province/region and/or in Canada?

EXAMPLE Research Question 2:
What cover crop mix (cocktail mix) works best for nutrient supply and weed suppression in annual grain rotations in the Brown soil zone?

Keywords or phrases (up to 5):
annual cropping system, Alberta, Brown soil zone, soil fertility, weed management

Why is this a priority?
While the benefits of cover cropping are well known, moisture limitations in the Brown soil zone can cause producers to approach cover cropping with caution. We have heard many people are beginning to experiment with cocktail mixes (4-12 species) that can provide multiple benefits from one cover crop – nitrogen fixation, weed suppression, soil health benefits, etc. We feel that if a water conscious cover crop mix can be developed, that can deliver multiple benefits, producers are more likely to adopt this practice. We are also interested in exploring the possibility of including warm-season crops in the mixes (such as cowpea, sunn hemp, lablab) that are novel in this region, as they would not normally reach maturity in a prairie climate.

Developing a successful mix, and providing information about the general performance (nitrogen supply potential, weed suppression abilities, soil moisture use, cost of production for each cocktail mix) could encourage uptake, which in turn can protect soils, boost biodiversity and improve yields.

Select all appropriate boxes in each category:

Impact
- ☐ International
- ☐ National
- ☑ Regional
- ☐ Provincial
- ☐ Specific business

Research Target
- ☐ Specific farm
- ☐ Specific industry partner
- ☑ Commodity group
- ☐ Whole organic sector
- ☐ Whole agricultural sector
- ☐ Policy
- ☐ Consumers
- ☐ Public good
- ☐ Basic knowledge
- ☐ Other: _____

Type of Research
- ☐ Producer-led
- ☐ Business-led
- ☑ Researcher-led
- ☐ Other: _____

Location
- ☑ On-farm
- ☐ On-business
- ☑ Research station
- ☑ University ☑ AAFC ☐ Other
- ☐ Other: _____

Non-Governmental Funding
- ☐ Uncertain
- ☐ Funding partner not easily identified
- ☑ Funding partner likely
- ☐ Funding partner identified: _____

** Government funding agencies may require from 0-50% matching funding from non-governmental sources**

Region
- ☐ All of Canada
- ☐ NL ☐ ON
- ☐ NS ☐ MB
- ☐ PEI ☑ SK
- ☐ NB ☑ AB
- ☐ QC ☐ BC
- ☐ Other:_____

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

Submitter Information

Date of session: _____ **Location:** _____

Contact if needed for clarification purposes:

Name: _____ Email: _____ Phone: _____

I am submitting this on behalf of:

☐ A group
☐ Myself

Please indicate who contributed to developing these research priorities (please choose the best category for each participant):

#_____ Organic farmers
#_____ Transitioning farmers
#_____ Non-organic farmers
#_____ Processors
#_____ Researchers
#_____ Extension agents
#_____ Consultants
#_____ Input/equipment suppliers
#_____ Retailers
#_____ Policy
#_____ Consumers
#_____ Other (please indicate): _____

If your answers represent the views of a larger organization than those that have participated in this assessment, please indicate:

Organization name: _____

Are these priorities formally endorsed by this organization?
☐ Yes
☐ No

The organization represents #_____ people, and includes:
☐ Farmers
☐ Processors
☐ Retailers
☐Other (Please indicate): _____
☐ Researchers
☐ Extension Agents
☐ Consumers

FOR OFFICE USE ONLY:
Identifier: _____
Date Received: _____
Date Recorded: _____

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

Brainstorming/identification of research questions that did not make the Top 5.

Please submit this form along with the completed Top 5 Research Questions

Canadian Organic Research Needs and Priorities Assessment Process 2016-2017

Research Question 1

What research is needed to support the evolution and growth of the organic sector in your province/region and/or in Canada?

Research Question 1:

Keywords or phrases (up to 5):

Why is this a priority?

Select <u>all appropriate boxes</u> in each category:

Impact
- ☐ International
- ☐ National
- ☐ Regional
- ☐ Provincial
- ☐ Specific business

Research Target
- ☐ Specific farm
- ☐ Specific industry partner
- ☐ Commodity group
- ☐ Whole organic sector
- ☐ Whole agricultural sector
- ☐ Policy
- ☐ Consumers
- ☐ Public good
- ☐ Basic knowledge
- ☐ Other: _____

Type of Research
- ☐ Producer-led
- ☐ Business-led
- ☐ Researcher-led
- ☐ Other: _____

Location
- ☐ On-farm
- ☐ On-business
- ☐ Research station
- ☐ University ☐ AAFC ☐ Other
- ☐ Other: _____

Non-Governmental Funding
- ☐ Uncertain
- ☐ Funding partner not easily identified
- ☐ Funding partner likely
- ☐ Funding partner identified:

_____

** Government funding agencies may require from 0-50% matching funding from non-governmental sources**

Region
- ☐ All of Canada
- ☐ NL ☐ ON
- ☐ NS ☐ MB
- ☐ PEI ☐ SK
- ☐ NB ☐ AB
- ☐ QC ☐ BC
- ☐ Other:_____