



CIELAP's 4th Partnering for Sustainability Workshop
Achieving Resilient Agricultural Systems: Innovation, People and Partnerships
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Discussion Paper: Agricultural Production Systems

“The main challenge for the agricultural sector is to simultaneously: secure enough high-quality agricultural production to meet demand; conserve biodiversity and manage natural resources; and improve human health and well-being”

- Agricultural Ecosystems: Facts and Trends, WBCSD and IUCN, 2008 ¹ -

“[Food security] is based on the integral connections between the three commitments, to zero hunger, healthy and safe food, and a sustainable food production and distribution system – in other words, a food system based on the principles of social justice and economic and environmental sustainability.

- Food Secure Canada ² -

The above quotes speak to the significant range of benefits that agricultural production systems are being asked to provide in the interest of sustainable development. In light of the global food crisis and growing resource scarcity, there has been significant debate around how to meet this challenge – domestically and around the world.

For decades, Canadian policy focused on the economic and production aspects of agriculture. In recent years, however, an emphasis on agriculture's relation to the environment has grown.³ Federal and provincial governments are now making more efforts to address agri-environmental problems⁴ and to investigate how agricultural practices can address other environmental concerns, such as climate change. Changes in farming practices and land use over the past decade have resulted in many improvements, such as better soil quality and decreased levels of phosphorus in all but one of the Great Lakes.⁵

There is much room for improvement, however. Contamination of drinking water from agricultural sources has been a growing concern; the ability of farmland to support wildlife is declining; some marginal lands are still under cultivation; agricultural water use is increasing, and ammonia and greenhouse gas emissions are on the rise.⁶ Subsidies that make water and its infrastructure inexpensive and accessible have led to its inefficient use.⁷ There are also gaps in data: for instance, Canada has no consistent, nation-wide monitoring network of rural water quality and quantity, and is also one of only a few Organization for Economic Co-operation and Development (OECD) countries that does not regularly report yearly used pesticide quantities.⁸ This contradicts the Food and Agriculture Organization of the United Nations' International Code of Conduct on the Distribution and Use of Pesticides.⁹ A major concern is that Canada lacks a national food policy or other mechanism to ensure that agricultural policy links with health promotion.

The role of a number of trends and approaches are important to consider in any discussion about resilience.

- Although industrialization and the intensification of agricultural activity have increased production dramatically, the number of small and medium sized family owned and operated farms is in decline and

that they are under significant financial pressures. Industrialization has also led to greater environmental pressures per hectare of land.

- Stakeholders are divided over whether the expansion of genetically-modified (GM) crops has advanced sustainable development; some argue that they can increase yields and feed growing populations while others are concerned about unintended ecological and health impacts and that patent holders will have disproportionate control over food markets and the potential for populations to grow their own food. The benefits of GM crops also certainly depend on whether the baseline is conventional practices or more ecological methods.
- Similarly, while public interest in the health and environmental benefits of organic agriculture has increased, this method of production is sometimes questioned and criticized as being unproductive, inefficient, and unrealistic.
- The relations between climate change and agriculture are becoming of increasing interest and concern.
- There is also great potential for research, technology, innovation, and education to contribute to sustainable development.

It is generally recognized that if Canadian agricultural production systems are to foster resilience, there should be adequate support for farmers and prudent management of natural resources among many other key elements. The issue is complex, however, and moving forward on policies and programs will require an informed and open dialogue, and a broad consideration of the different aspects of sustainability.

Basis in *Agenda 21* and the *Johannesburg Plan of Implementation*

The importance of sustainable agriculture is evident in *Agenda 21*, the blueprint of action for the 21st century that was ratified by 179 countries at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. Chapter 14, “Promoting Sustainable Agriculture and Rural Development”, notes that unsound land use practices are a major cause of land degradation, and while techniques for increasing production as well as conserving soil and water resources exist, they are not being widely or systematically implemented.¹⁰ In addition, agricultural policies must take advantage of human potential and actively promote people’s participation, which brings up the concern of Canada’s concentration of agricultural activity into fewer and fewer hands and the enormous future shortage of skilled people facing most of the food system.¹¹ Chapter 14 also stresses the importance of maintaining crop and animal biodiversity, and the wider implementation of integrated pest management.¹²

The *Johannesburg Plan of Implementation*, a follow-up to *Agenda 21* that came out of the World Summit in 2002, states that “Sustainable agriculture and rural development are essential to the implementation of an integrated approach to increasing food production and enhancing food security and food safety in an environmentally sustainable way.”¹³ It calls for actions at all levels to develop sustainable land- and water-use plans, protect natural resources, integrate existing information on best practices, and support existing sustainable farming initiatives.¹⁴ Working toward the environmental sustainability of agricultural production systems goes hand in hand with both the goals of *Agenda 21* and the *Johannesburg Plan of Implementation*.

Canadian Research and Case Studies

Canada is challenged to simultaneously protect its natural resources, meet international environmental commitments, support rural development, support economic development, improve food quality and quantity in a sustainable manner, and achieve other gains in the direction of sustainable development. A number of projects and initiatives have emerged across Canada to address some of these issues and to make agricultural production systems more sustainable—economically, socially, and ecologically. The following examples provide a snapshot of just some of these initiatives.

FarmStart, a non-profit organization based in Guelph, Ontario, works to increase the presence of young and new farmers in Canada by providing the capital, training, and networks necessary to establish and operate their own farm enterprises. FarmStart addresses concerns about an aging farmer demographic; the consolidation of small farms; and the need for more sustainable, locally produced food. Hence, in addition to supporting a new generation of farmers, FarmStart programs promote sustainable business models, coordinate and communicate local market research, and emphasize stewardship. Realizing that there are many economic and structural barriers to conventional farming, FarmStart takes innovative approaches to agriculture, including the introduction of mid-scale, precision-farming techniques; no-till organic farming; and addresses urban or near-urban farms. Another innovative aspect of the program is the operation of two “incubator farms”, on which accepted participants can rent land, on-site infrastructure, and equipment; and receive training, business support, and mentoring for several years before leaving to establish their own farm.¹⁵

Greencover Canada is a five-year, \$110-million national program that offers technical and financial assistance for better managing grassland and sustainable practices. The program has five components: (1) converting environmentally sensitive cropland to perennial cover, (2) adopting beneficial management practices in riparian ecosystems (land that is near water), (3) establishing shelterbelts (trees and shrubs on farmland), (4) providing technical assistance to provincial projects, and (5) providing technical assistance to regional projects. Depending on the program component, a wide range of groups and individuals may apply, including producers, industry, government, non-profit organizations, cooperatives, incorporated environment groups, and educational institutions are eligible for support. Greencover Canada is funded under the Agricultural Policy Framework (APF), which came into force in 2003 as a five-year agreement between territories, provinces, and the federal government.¹⁶ There are 52 programs and services under the APF, which is being replaced this year by an updated plan, entitled Growing Forward.¹⁷

Established in 1979, the **Ecological Farmers Association of Ontario** (EFAO) is a non-profit organization that offers courses, workshops, advisory services, farm tours, and other resources for farmers interested in sustainable agriculture. Its purpose is threefold: (1) to develop programs that promote ecological farming practices, (2) to educate the public on environmentally sound agricultural methods, and (3) to foster information exchange between people interested in ecological agriculture in a supportive community. EFAO promotes practices such as soil tillage, green manures, cover crops, composting, crop rotations, erosion control and conservation practices. It also runs a library, maintains an organic seed directory, publishes a newsletter, and posts market prices and classifieds on its website.¹⁸

All of the above initiatives are signals of a growing movement toward sustainable agricultural production systems. They demonstrate a strong response to the issues facing Canadian agriculture, including increasingly consolidated farm ownership, declining numbers of new and young farmers, and the costs of environmental degradation.

Questions for Discussion

At the *Achieving Resilient Agricultural Systems* workshop, we will hear case studies from participants and consider how Canada can move forward on making agricultural production systems more sustainable and resilient, given the range of choices and perspectives.

Please consider and provide your perspectives on the following questions and reference any research or case studies if you like. Prior consideration by participants and input from the broader community will contribute to the discussion of how to advance resilient agricultural systems.

- What elements and practices are central to fostering resilient agricultural production systems? (see background documents on resilience)

- What policy instruments, programs, and processes need to be put in place for the development of agricultural production systems that foster resilience and advance sustainable development in Canada?
- What challenges and barriers exist to fostering resilient agricultural production systems?
- Conventional agriculture, ecological agriculture, innovative agricultural technologies, bioenergy, mitigating climate change, other competing uses of farmland... How do we find an appropriate balance?
- How can we respond to the decline in family owned and operated farms, the need for new and young farmers, and the shortage of skilled people?
- What formal and non-formal education is needed for strengthening resilient agricultural production systems?

Bibliography and Further Readings

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Endnotes

¹ <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=MzA4MDM>

² Quoted in The People's Food Policy Project, <http://www.foodsecurecanada.org/sites/foodsecure.openconcept.ca/files/PFPP%20outline%20draft%202.pdf>; more information about Food Secure Canada at <http://www.foodsecurecanada.org/en/about-fsc-sac>.

³ Organization for Economic Co-operation and Development, *Environmental Performance in Agriculture in OECD Countries Since 1990: Canada Country Section*, 2008 <<http://www.oecd.org/dataoecd/27/18/40753614.pdf>>, 244.

⁴ *Ibid.* at 249.

⁵ *Ibid.* at 245, 246.

⁶ *Ibid.* at 245, 248, 245, 247.

⁷ *Ibid.* at 251.

⁸ *Ibid.* at 249.

⁹ Food and Agriculture Organization of the United Nations, *International Code of Conduct on the Distribution and Use of Pesticides*, 2005. <<ftp://ftp.fao.org/docrep/fao/009/a0220e/a0220e00.pdf>>, 6.1.8.

¹⁰ United Nations, *Agenda 21*, 1992.
<<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter14.htm>>, 14.34, 14.35.

¹¹ *Ibid.* at 14.4.

¹² *Ibid.* at 14.4.

¹³ United Nations, *Plan for Implementation of the World Summit on Sustainable Development*, 2002
<http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf> 22-23.

¹⁴ *Ibid.* at 23, 24.

¹⁵ FarmStart <<http://www.farmstart.ca>>.

¹⁶ Canada, Agriculture and Agri-Food Canada, “GreenCover Canada Program”, 23 Jun. 2008.
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¹⁷ Canada, Agriculture and Agri-Food Canada, “Growing Forward: The New Agricultural Policy Framework”, 16 Sep. 2008
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¹⁸ Ecological Farmers Association of Ontario <<http://www.efao.ca>>.