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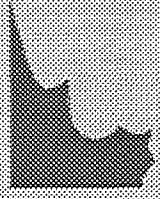
Organic Agriculture in Canada:

current state and future prospects

(draft discussion paper)

CANADIAN INSTITUTE FOR ENVIRONMENTAL LAW AND POLICY



July 1999

ORGANIC AGRICULTURE IN CANADA

Current state and future prospects (DRAFT)

JULY 1999

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Executive Summary

The conventional food industry is using an increasing amount of bio-engineered seeds, chemicals, drugs, hormones and irradiation. The customers are an involuntary and unsuspecting subject of this large scale experiment.

Certified organic food is the only alternative on the market that is guaranteed to be free from biotechnology products, irradiation, chemical pesticides and is produced without commercial fertilizers. Public interest in organic food is growing quickly and so is the domestic and international market for organic produce.

The governments of many countries have responded with support programs and national strategies for the development and promotion of organic agriculture, recognizing not only social, environmental and health benefits, but also the business potential of the growing organic market.

Canada however, has no government programs or policies in support of organic agriculture. In official departmental strategies organic agriculture is generally omitted. Organic farming organizations are fractionalized and seemingly incapable of forming an effective promotional or lobbying campaign. The recent growth of the organic market has been driven predominantly by the consumers' interest, specialty food retailers and some progressive big grocers that cater to this growing demand. It is reasonable to conclude that any progress in the development of organic production in Canada will be a result of the growing interest of consumers.

Background

Founded in 1970, the Canadian Institute for Environmental Law and Policy (CIELAP) is a not-for-profit environmental research and education organization. CIELAP is incorporated under the laws of the Province of Ontario and registered with Revenue Canada as a charity.

The Institute has been closely involved in agro-environmental issues for the last several years. CIELAP participated in a series of consultations and provided comments for the National Strategy for the Environmentally Sustainable Agriculture in Canada, the National Plan of Action to the World Food Summit in Rome and commented on several acts and regulations linked to the regulation of some aspects of agricultural activities in Canada. In 1995 CIELAP published an overview of programs and initiatives in support of environmentally sustainable agriculture entitled "The Environmentally Sustainable Agriculture in Canada: Review and Recommendations".

This discussion paper is one of the components of the program initiated in 1998 in cooperation with Fundacion Ambio in Costa Rica and with the support of the Canadian International Development Agency (CIDA). CIELAP's joint project with Fundacion Ambio will contribute to the development of better environmental regulations and policies concerning agricultural production, processing and trade.

Introduction

The initial purpose of this discussion paper was to research the Canadian government's programs and policies in support of organic agriculture. We expected to discover ideas and options that would provide interesting material for discussion on organic agriculture policy and programs development in Costa Rica.

Unfortunately what we discovered was complete indifference toward organic agriculture and absence of support for the development of the organic agriculture sector in Canada from the federal and most of the provincial governments. However, there are a lot of interesting initiatives outside of realm of the governments. We hope that these initiatives will provide a good basis for further discussions.

There is growing awareness of the presence of pesticide residues in food and their potential health effects. There is also growing concern about the environment and a desire to buy environmentally acceptable food. The whole array of ethical, health, environmental and economic concerns around genetically modified foods is now raising questions about the food system.

Organic agriculture provides an alternative that alleviates a whole array of problems associated with conventional agriculture. It represents not

BRITAIN CAUGHT OUT BY LEAKED GENETIC FOOD REPORT

By Mike Peacock

LONDON - The British government scrambled yesterday to deal with a leaked report which said commercial growing of genetically modified crops would contaminate other foodstuffs over large distances. A Ministry of Agriculture official said the report had not yet gone to ministers while the John Innes research centre, whose experts compiled the study, said it had been leaked. Neither would comment on it before publication, due late this month or early in June after the government has digested its contents. But organic farmers were outraged.

Environment Minister Michael Meacher tried to quell the latest fears about GM foods which have become a headache for the government. Public opinion is largely against them but Prime Minister Tony Blair determined that Britain should remain at the forefront of the technology.

"The government is very concerned to preserve the integrity of organic farming," Meacher told BBC radio. "We want to see an increase in organic farming. We want to see proper separation distances. Exactly what they should be is a matter that we are now looking at extremely closely." The Daily Mail said the John Innes Centre will tell the government that pollen from GM crops can be spread across wide distances by winds and insects. The paper said the report - "Organic Farming and Gene Transfer from Genetically Modified Crops" - concluded that contamination could not be entirely stopped so acceptable levels would have to be decided upon.

Official GM crop trials operate with only a 200-yard buffer zone. The Soil Association, which regulates organic farming, says a six-mile barrier is the minimum needed to guarantee organic crops are not contaminated. "We are determined to maintain the purity of organic crops in the UK and this is why we have set ourselves against GM," said the association's Richard Young. "The boundaries between GM crops are totally inadequate to protect organic farmers."

Meacher said the question of whether consumers wanted foods labelled as GM-free to be just that, or whether they may accept a residual amount of modified ingredients amounting to one or two percent, was key. "If the answer is that people expect it to be virtually nil, that does require considerably greater separation distances," he said. "It is perfectly true that there are no 'no-fly' zones for bees and they can travel long distances."

English Nature, a government advisory body, has called for a five-year ban on the commercial release of GM crops to allow more research on their environmental impact. But Cabinet Office minister Jack Cunningham has said if all regulatory hurdles were cleared, commercial planting of GM crops could begin next year.

Mad cow disease, the human equivalent of which has claimed about 30 British lives, has made people deeply conscious of food safety and sensitive to stories about "Frankenstein foods". Most supermarkets have already banned GM foods from their stores or, at the very least, clearly labelled them.

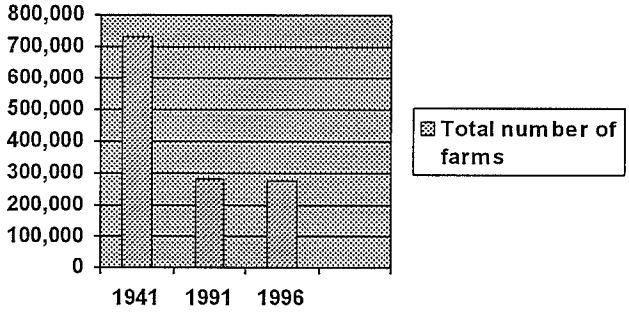
only a system of farming but also a system of values in balance with nature. Knowledge and awareness of the implications of farm operations are used to minimize the ecological impact and to create sustainable harmonious system that works with natural processes.

There is a growing interest in organic agriculture in both developed and developing countries. In several developed countries, organic agriculture already represents a significant portion of the food system and the economy. In Austria, for example, it represents 10% and in Switzerland 7.8%[1] of the agricultural sector. Several developing countries have examples of successful organic production of specialty crops for export, such as organic coffee in Mexico and organic cotton in Uganda[2].

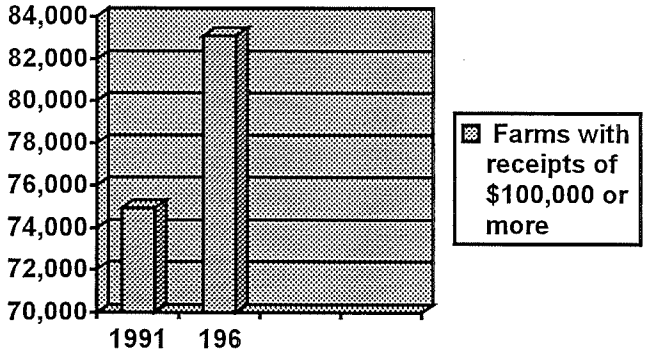
Trends in Canadian Agriculture

Land use

The total area of agricultural land in Canada remains relatively constant. There is no increase in agricultural land and none can be expected in the future, as all the land suitable for agricultural production is already under cultivation. The area might actually decrease due to increasing pressures from urbanization and other non-agricultural uses in the areas near large urban centres. In the Prairie region, where most of Canadian grains are grown, about 4.9 millions of hectares of marginal agricultural land continues to be cultivated annually. With increasingly competitive commodity



Source: 1996 Census of Agriculture, Statistics Canada, 1997 (http://www.stCatcan.ca/english/censusag/can.htm



Source: 1996 Census of Agriculture, Statistics Canada, 1997 (http://www.stCatcan.ca/english/censusag/can.htm)

market and diminishing profit margins this land may become too expensive to remain in production.

The number of farms is declining while the size of farms is growing. The average size of farms increased from 96 hectares (1971) to 242 hectares (1991)[3]. This trend is common for all the provinces and regions in Canada.

The size of the rural population is decreasing, while the average age of farmers is increasing. It points at the fact that farming is not an attractive option for young people.

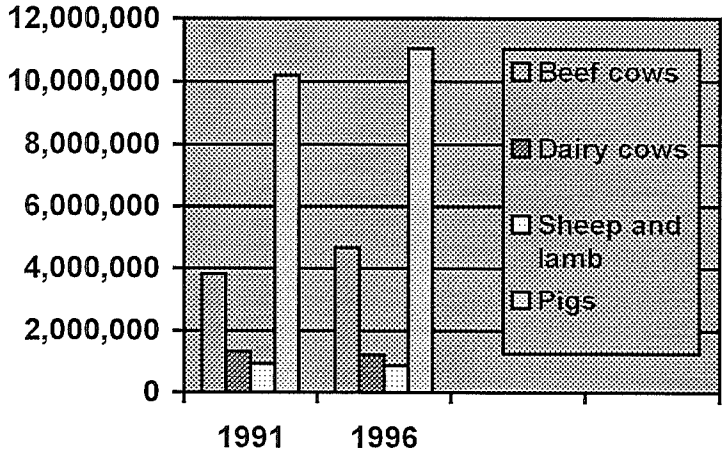
Place of agriculture in the Canadian economy

Canadian agriculture and agri-food production contributed approximately 11% to the Gross Domestic Product (GDP):

- 2.1% from farm level production
- 4.3% from food and beverage processing
- 4.3% from food service and retail

As it is important to note that the contribution from the farm level production, which has traditionally been perceived as a true agriculture, is relatively small. Most of the contribution to the GDP is coming from the agri-food business sector, represented by some of the largest corporations in Canada, such as Loblaws, Molson, Labatts, McCain, and others.

The main grain crops produced in Canada are wheat, corn and canola[4]. These crops are produced predominantly for export. In 1995 Canada exported $17.5 billion of agri-food products. The principal commodities exported by Canada are grains and grain products (32.3%) red meats (18%) and



Source: 1996 Census of Agriculture, Statistics Canada, 1997 (http://www.statcan.ca/english/censusag/can.htm)

oilseeds and oilseed products (16%)[5]. However, it is interesting to note that while Canada is a net food exporter, if one excludes grain exports from the Prairies, Canada would be a net food importer. Most of imports to Canada are fruits and vegetables.

Beef farms represent 26% of national total and are the leading type of farm. Strong export markets have fueled recently large increases in red meat sector. There was also a strong growth in pig farming in response to then growing demand for hogs on the Asian market and to firm support from the Canadian government. Unfortunately, following economic problems in Asian countries in 1998, the market for hogs collapsed and the whole Canadian pig farming industry fell into a difficulty. The federal government, in cooperation with the provinces, had to prepare an emergency support package in the amount of over $I.4 billion. This support will be provided over the next three years.

The number of farms carrying non-traditional livestock species, such as bison, elk, goats, llamas and emu has increased significantly. Precise data for the most of these species is not available. However, there were 2,028 llamas on Canadian farms in 1991 and 8,669 in 1996, an increase of over four times.

There was also a strong growth in specialty crops, such as medicinal herbs, spices, etc.) in response to changing consumer tastes and growing export market.

Biotechnology is likely to dominate changes in Canadian agriculture. The area farmed using genetically engineered crops, particularly corn, soybean and canola is increasing rapidly.

The population of Canada is aging. The number of older, wealthier Canadians is increasing, as is the demand for healthy food. It can be expected that the demand for specialized food products will continue to grow. This presents a clear opportunity for the development of organic agriculture.

Regional differences

The economic importance of agriculture varies from province to province. For example, total primary agriculture and food and beverage processing industry contributed 11.2% of Saskatchewan's GDP, but only 4% for Ontario and Quebec. Meanwhile, Ontario and Quebec contribute 31% of primary agricultural production and 72% of food and beverage processing.[6]

There are significant regional differences in the allocation of crops and systems of farming in Canada. For example, approximately 97% of the area under wheat and 99% of canola is in the Prairie provinces (Alberta, Saskatchewan and Manitoba), while 95% of grain corn and silage corn (1.2 Mha; 84% grain and 16% silage) and 89% of Canadian soybean, are grown in Ontario.

The Prairie provinces (mainly Alberta) dominate beef cattle production with 75% share. Two provinces, Ontario and Quebec, produce 83% of vegetables and 66% of fruits in Canada.

The number of alternative livestock operations is increasing rapidly and it is an area of major environmental concern. There are over 1000[7] alternative livestock farms with many species represented. The most common species are: deer, elk, bison, llama, alpaca, wild boar, ostrich and emu.

Economic considerations

Current trends towards the concentration and industrialization of agricultural production have increased the environmental and health risks associated with food production. At the same time, there is a growing understanding of links between ecosystem health, human health and food quality.

Mainstream Canadian agriculture traditionally operated in the high-yield paradigm. The maximization of production, based on the assumption that higher the yield, the more profit can be made was, and still is, the main goal. After the Second World War, when the demand was strong and profitability of agriculture was high, this assumption seemed appropriate. The government's policies were designed to enhance the profitability of large farms and replace human labour with bigger equipment and more inputs. This labour force could then be used in new manufacturing jobs in growing cities where the demand for labour was strong. Bigger operations were considered to use resources more efficiently, whether it was equipment, labour or other inputs.

The high yields depend very heavily on the purchase of out-of-farm inputs. As of 1989, 72% of the value of farm production went to pay for cash inputs and 13% to pay interest on borrowed capital[8]. The growing dependence on the outside inputs has diminished the profit margin for the farmers, and strengthened the trend towards the consolidation of farming operations. The rural economy in Canada has been suffering for years from the cost-price squeeze between growing farm input prices and stagnant prices for products, even when the retail prices for these products were growing. This trend, combined with the high level of specialization and dependence on international markets, proved to be very risky. International markets proved to be very volatile and too risky to enter without support of the government. The best example is the expansion of the pork industry in Canada in response to the growing demand in the Asian market. However, when Asian economies crashed and so did prices for pork. These developments left Canadian producers in a desperate situation. The cost of feeding a hog was twice as much as it was worth on the market.

A very rapid consolidation is also taking place in the agri-food industry providing inputs for farmers. The industry is increasingly being controlled by a handful of large players.

MONOPOLY MUSCLE THREATENS SMALL BUSINESS

HALIFAX - A takeover of Oshawa Group by Empire Co. would be bad for business, bad for consumers and bad for economic development in Atlantic Canada, Alexa McDonough said this week.

"If permitted, Sobeys who controls Empire would monopolize well over 75 percent—some estimate as high as 90 percent—of the food service distribution market in Atlantic Canada," Ms. McDonough said.

"Most restaurants and family-run grocery stores in our region will be left with one wholesale food supplier."

Ms. McDonough raised the matter at a press conference where she was joined by Wendy Lill, New Democrat MP for Dartmouth and representatives of the Canadian Restaurant and Foodservices Association and the Independent Food Stores Association.

"We have been stunned at the number of small business owners who have privately expressed fear of a backlash and punitive treatment from the powerful Empire/Oshawa conglomerate if they came forward themselves," she said.

The $1.4 billion takeover of Oshawa Group by Empire was announced last fall. The Competition Bureau has been examining the deal ever since and is expected to report to the Industry Minister John Manley in the near future. The federal government has the power to act in the interests of the community, however, and Ms. McDonough urged the minister to do so.
Globe and Mail, June 9, 1999

Since Canada has been traditionally a large food exporter, the most common and a very misleading argument for the high-yield policy is the need to feed the hungry people of the world. However, according to the UN statistics 78% of the value of food exported by the developed countries was imported by other developed countries and 67% of the value of food exported by the less developed countries was imported by the developed countries. It is obvious that the high-yield agricultural policy combined with increasing trade in farm commodities does not solve the problem of the hunger in the world.

Environmental and health concerns

The focus on maximization of production, particularly for international markets and on providing economic assistance to farmers has meant that environmental sustainability has been largely ignored. Most of the traditional farm support programs have encouraged farmers to adopt environmentally detrimental practices. Simultaneously, most of the environmental and health costs associated with the high yield/high input agriculture are external to the farm. In the absence of the economic incentives, introduction of conservation farming practices is not an economically attractive farm management decision.

Food production is inherently connected to the wide variety of environmental issues, including: land use (conservation of agricultural land), surface waters (irrigation, the fishery), soil and water conservation, water quality (agrochemicals, organic waste), biodiversity and biotechnology issues ("terminator" seeds, recombinant bovine somatotropin-rBST), hormones and pesticides residues in food, food quality (organic, biotechnology, additives, plastic residues; household waste generation.

Pesticides

Health problems attributed to the presence of the pesticide residues in food are regularly reported in the press and scientific literature[9]. The recent outbreak of mad cow disease in Britain and its human equivalent, which caused about 30 human deaths, has made the public, especially in Europe, conscious about food safety and deeply concerned about food production methods[10].

Under the North American Free Trade Agreement (NAFTA) the efforts are under way to harmonize pesticide approvals and safety levels in US, Canada and Mexico.[11] In Canada, the Pest Management Regulatory Agency (PMRA) is conducting re-evaluation of pesticides in question.

The new pesticides are generally less acutely toxic than the old ones. Their mode of operation is more selective, often operating on hormonal level or affecting one particular enzyme responsible for synthesizing of one particular protein. They are active in lower doses due to changed mode of operation, and so less are needed. However, the environmental and health impact of their use can be the same or even worse. There is a growing body of evidence that these pesticides can mimic functions of human and animal hormones and enzymes and cause unexpected mutations and deformities. In 1996, the *American Journal of Public Health* published a report that showed living closer than 780m to an agricultural area increases the risk of developing brain cancer.[12]

Antibiotics

Prolonged use of antibiotics in the poultry industry has led to the development of a strain of salmonella resistant to treatment with almost all existing antibiotics. Meanwhile, attempts to keep the public informed about the real and potential risks to human and animal health are met with the opposition from both farmers and ministry of agriculture officials. In Britain, former health minister Edwina Currie, was forced to resign when she issued a public warning about the health risk from eggs infected with salmonella. She said that it seems that the ministry of agriculture cares more about farmer's finances than about human health.[13] In Canada, scientists with Health Canada and the CFIA were pressured by their superiors to approve drugs of questionable safety against considerable concerns. These included the famous rBST produced by Monsanto Inc.[14] The company officials offered two million dollars for research to Health Canada scientists, which was understood to be conditional on their approval of the drug.[15]

Water use

Agricultural water use has been growing rapidly over the years. It increased by 38% between 1971 and 1991[16], when it reached 4 billion m^3/year. Irrigation is a predominant use for water in agriculture. The total area under irrigation was 715,000 hectares in 1995.[17] In several regions (prairies, BC, southwestern Ontario), the competition for water use between agriculture and other users such as wildlife, manufacturers and municipalities, is intensifying. It has to be noted that the price of providing water, especially for agricultural use, is not being internalized in the prices charged for the resource.

Nitrates and pesticides are present in nearly all groundwater underlying the principal agricultural regions in Canada. The maximum permissible level for nitrates is 10 ug/L. In the regions with intensive agriculture levels of nitrates and pesticides already periodically exceed government established safe limits[18]. This standard is being challenged by environmental and health professionals. There is no comprehensive monitoring program in Canada and in Ontario at the present time. The Ontario Ministry of the Environment began preparation of a comprehensive plan for water quality monitoring program in the province. Due to financial constraints and uncertain political climate, it is impossible to speculate when and if the program will be implemented.

Phosphorus loadings into the surface waters were, according to the International Joint Commission, the biggest problem in the Great Lakes. In Quebec, approximately 308,000 ha (or 63%) of soils under annual crops were considered overfertilized[19]

About 5% of prairie cultivated land and 60% of cultivated land in Ontario require implementation of the soil conservation practices[20]. Soil compaction is a problem mostly in central and eastern Canada. Soils in the St. Lawrence lowlands and the potato belt in northeastern New Brunswick are structurally degraded due to compaction. In Quebec 429,000 ha of land under monoculture is suffering from structural degradation[21].

Wildlife habitats in Canada are either being destroyed or seriously altered by agricultural practices. Over 85% of decline in Canada's original wetlands area is attributed to drainage for agriculture[22]. It is hard to estimate impact of agriculture on original habitat because there is no national inventory of woodlands and woodlots in agro-ecosystems.

There is lack of research on linkages between biodiversity, agricultural productivity and various farming systems. However it has been noted that the growing concentration of food production has decreased the number of varieties of crops grown and the genetic base of livestock.

It is difficult to identify the precise effects of some government programs and policies. It takes years to properly assess the impact and years to correct or terminate the program[23].

Organic Agriculture in Canada

Definition of organic farming

Organic farming is a holistic production system, which involves much, more than elimination of pesticides, fertilizers, antibiotics and growth hormones. Its primary goal is to optimize health and productivity of interdependent life systems.

"Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additives. To the maximum extent feasible, organic farming systems rely upon crop rotation, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral-bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients, and to control insects, weeds, and other pests". (USDA, 1980)

Organic agriculture relies on natural processes and biological cycles that conserve resources, minimize waste and promote sustainable agro-ecosystems. Inter-relations between soil conditions, crop quality and livestock health are promoted. Organic farmers utilize crop rotations, crop residues, animal manure, green manure, mechanical cultivation and mineral rocks to maintain good soil conditions. They avoid synthetic fertilizers, pesticides, growth regulators and feed additives which create biological and environmental imbalances.

Agriculture and Agri-Food Canada has defined organic agriculture as "a production system that relies on natural products and processes to foster growth, maintain or improve soil quality, control pests, and encourage biodiversity"[24].

The federal Ministry of Consumer and Corporate Affairs has accepted a definition of organic food written by the organic food industry. This definition is presently theoretically enforceable under the general provisions of section 5 of the Food and Drug Act and section 7 of the Consumer Packaging and Labeling Act respecting misleading and deceptive representation of food. It is, however, unlikely to be enforced until there is a change in perception and understanding of the term "organic" among consumers, since it is still very vague.

According to the *Basic Standards for Organic Agriculture and Food Processing*

Published by the International Federation of Organic Agriculture Movements (IFOAM) in 1994, the principal aims of organic agriculture are:

- to produce food of high nutritional value in sufficient supply
- to interact in a constructive and life enhancing way with all natural systems and cycles
- to encourage and enhance biological cycles within farming system, involving microorganisms, soil flora and fauna, plants and animals.
- to maintain and increase long-term fertility of soils
- to use, as far as possible, within a closed system with regard to organic matter and nutrient elements
- to work, as much as possible, with materials and substances which can be reused or recycled, either on the farm or elsewhere.
- to give all livestock life conditions which allow them to perform the basic aspects of their innate behaviour
- to minimize all forms of pollution that may result from agricultural practice
- to maintain the genetic diversity of the agricultural system and its surroundings, including the protection of plant and wildlife habitats
- to allow agricultural producers a life according to UN human rights, to cover their basic needs and obtain an adequate return and satisfaction from their work, including a safe working environment
- to consider the wider social and ecological impact of the farming system

Benefits from organic farming

An increasing number of farmers in Canada are turning to organic agriculture or seriously considering this option. There are certain advantages to the organic system, such as: improvement in health and safety of farmers and their families; healthier products for consumers; livestock kept in more humane conditions; lower input and economic benefits. Well-established organic farms are less susceptible to economic fluctuations and natural disasters due to higher diversification of crops and more equally distributed risks.

The quality of organic food is improving and it has been proven that its nutritional value exceeds the value of conventional food. For example, potatoes from ecological farms contained ½ the amount of available nitrate compared to conventional farms using both organic and inorganic fertilizers[25]. The sperm quality of bulls from a breeding station using compost applications was superior to that of bulls from a comparable station where pasture land had been treated with commercial fertilizer[26]. The examples are numerous.

Conversion to organic agriculture would have a beneficial influence on macroeconomic scale. It would reduce the need for government support for commodity prices, reduce use of fossil fuels and other non-renewable resources, reduce soil erosion, improve fish and wildlife habitat and maintain land productivity for the future generations. There is a need to quantify social and environmental benefits of organic farming in comparison with other options.

Environmental aspects of food production, processing, distribution, consumption, safety and security are becoming a central factor encompassing other issues. Food and environment are intimately related at every level of food production, distribution and consumption.

There are various reasons that farmers are converting to organic production methods. The most important of them are the health and environmental impact of conventional farming practices, followed by increases in pest and disease problems, and expectations of increased profits from accessing the specialty organic market.[27]

The reality of Canadian organic farming is that the majority of farmers converted their farms to organic production because they believed that what they are doing is right.[28] Under present conditions it is not and cannot be a profit motivated decision.

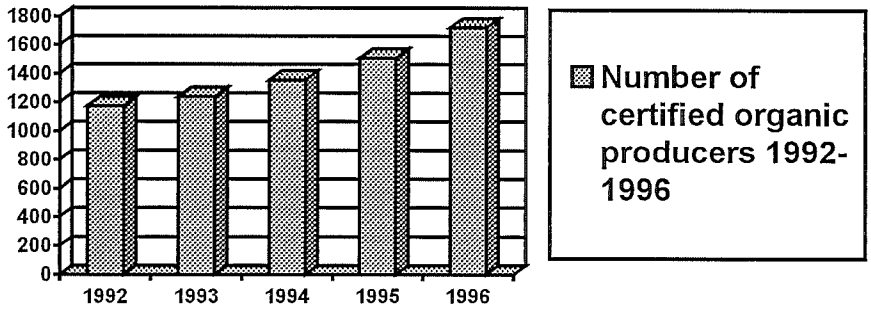
TABLE 1

PRODUCING AND CONSUMING ORGANIC VEGETABLES	PRODUCING AND CONSUMING SUPERMARKET VEGETABLES
Selection of the Plant	
Selected for: tastiness and nutritious value, resistance to pests, suitability for local conditions	Selected for: weight of crop, shelf life, superficial appearance
Selection of site	
Planted only in sites in which the various needs of the crop are likely to be met	Area planted is dictated primarily by projected demand and profit margin for crop, i.e. may be grown in unsuitable conditions and consequently be more susceptible to pests
Planting Design	
Small plots; mixed crops; complex layout using companion plants and avoiding antagonistic plants; timed to avoid pests	Large uniform plots; monoculture ; planted as early as possible altogether; (facilitates distribution of pests)
Maintenance of site	
Cultivation, aeration and drainage encourage earthworms and rely on them (i.e. minimal disturbance of crops) Provision of moisture: by using a mulch to prevent evaporation from the soil surface (also reduces erosion, stabilizes soil temperature, prevents compaction. Fertilization: by recycling organic wastes back to the soil usually via compost heap (helps solve our waste disposal problems) Control of weeds: by using mulch Control of animal pests: by biological controls and preventive measures	: by fossil fuel requiring machines (often damages plants creating sites for pest entry) and putting in tile drains. : by irrigation (distributes pathogens and causes erosion) : by adding man-synthesized fertilizers e.g. NPK (plants often become succulent and more attractive to pests) : by herbicides : by man-synthesized organic pesticides (pests become resistant, predators and parasites killed)
Harvesting and Storage	
Harvest throughout year when produce is ripe and ready, stored so as to preserve maximum nutritional value	Harvested altogether. Stored altogether in most convenient, inexpensive way; stored product pests controlled with pesticides.
Eating	
Usually eaten raw, fresh out of the garden, often with the outer leaves and pod. Etc. i.e. using everything that is produced	Packaged; with outer leaves or pod removed; usually several days to several months old when eaten, usually cooked; often processed or canned; with some of the following added: additives, colours, flavours, antioxidants, emulsifiers, extenders, modifiers, bleaches, acidifiers, clarifiers, etc.
Underlying objectives	
Produce only what is needed. Produce within complex natural environment. Produce with the minimal consumption of energy and raw materials by returning organic wastes to the land; environmental disturbance. Permit the cycling of materials by returning organic wastes to the land. Use the "laws of nature and ecology" to our advantage	Produce only what can be sold. Produce within a simple environment e.g. a monoculture Balance use of energy and raw materials, and environmental disruption against profits. Return wastes to the land if economic. Improve on the laws of nature (a pious hope)

Source: "An organic garden", Environmental Agriculture Project, McGill University, Publication -65

Organic Farms in Canada

It is estimated that organic agriculture represents one-half to one percent of Canada's agricultural output, and the sector is growing quickly. There are currently 1,724 certified organic producers and an estimated 124 certified processors and seed cleaning operations.



Source: "Canadian Organic Statistics Update", Eco-Farm & Garden - Fall 1998

The distribution of organic farms in Canada is as follows:

- 51% in central Canada,
- 30% in the Prairie region,
- 15% in B.C.
- 4% in the Atlantic region[29].

Producers' interest in organic production

Farmers are converting their operations to organic production methods for variety of reasons. However, the most important of them are concerns about health and the environmental impacts of conventional agriculture involving use of a wide variety of agricultural chemicals. Another reason is the possibility of increased profits from a specialized market niche. Presently, there is no regular collection of price data for organic products in Canada. Organic farmers' estimates are that the prices for

organic food in comparison with conventional food are generally higher by approximately 30%, and with sometimes even as high as 250%[30]. The market however is very unstable and the higher prices cannot be guaranteed.

Consumers interests in organic products

The health and safety conscious consumers are the driving forces behind the efforts to develop safer alternatives to mainstream agriculture. Food safety is becoming a concern for all consumers. People are beginning to realize that they cannot depend on government to ensure food safety the way they used to and the way they might like to. In July 1997 federal government announced, as a cost-cutting measure, closing of the labs that conducted independent tests for tolerable chemical residue in food and assessed the effects on human safety. [31]

Consumers are also becoming more skeptical about government approvals as a measure of safety. The so-called safe levels of pesticides may not be quite as safe as once believed. The definition of what exactly is a safe level is disturbingly fluid. Toxicity levels are constantly being re-evaluated. The United States Environmental Protection Agency is currently conducting a 10-year reassessment of tolerance levels for some 10,000 agricultural pesticides.[32] The worrying question is if the reliable assessment, based on long-term studies, was conducted prior to granting an approval then why this is necessary?

The special attention is given to baby foods, since the children are the most vulnerable group. Due to comparatively smaller size they can be easily ingesting several times the "safe" dose.

Consumers are also concerned about use of chemicals in food production and potential chemical contamination of the final product. This fear is combined with growing distrust of government inspections and monitoring systems designed to ensure food safety and value.

Food safety regulatory system

The agricultural sector in Canada is under shared provincial and federal jurisdiction. The responsibility for delivering government policies and implementing regulations of food system is divided between different levels of government.

Health Canada is responsible for the safety of the food on the Canadian market. This Department administers the Food and Drugs Act. Section 5 of the Act prohibits the use of misleading claims, statements or representations on food labels, or advertisements including use of organic designation. The use of health claims is generally restricted. The organic industry is responsible for self-regulation with

respect to organic foods. There are no specific regulations regarding organic claims.

The main body entrusted with overlooking the Canadian food system is the Canadian Food Inspection Agency (CFIA) established under the Canadian Food Inspection Agency Act. CFIA is operating out of the Agriculture and Agri-Food Canada. The CFIA is responsible for administering food labeling, packaging, grade, quality, composition and advertising, and for the enforcement of food regulations.

CFIA administers the following acts: Canada Agricultural Products Act; Feeds Act; Fertilizers Act; Fish Inspection Act; Health of Animals Act; Meat Inspection Act; Plant Breeders Act; Plant Protection Act; Seeds Act. The agency has a policy of voluntary compliance and it is interesting to note that while CFIA is primary responsible for food regulations, it also has a conflicting mandate to promote biotechnology, food production and food trade. It plays a key role in negotiations of international agricultural trade agreements (i.e. WTO) that may affect Canadian food industry regulations.

In April 1999, Bill C-80, the Canada Food Safety and Inspection Act was introduced in the House of Commons. If enacted, the Act will place the administration and enforcement of food safety in the hands of the Canadian Food Inspection Agency. The role of the minister of health would be limited to assisting in setting some of the policies and standards for food safety and nutritional quality. The bill also reverses the burden of proof and provides stronger legal protection to food manufacturers at the expense of consumers. For example, the new act requires the proof that any food is injurious to health before it can be taken off the market.

Since 1994 a number of research labs was closed and the capacity of the government to do independent research on food and drug safety decreased. By the year 2000 the budget of the Heath Protection Branch of Health Canada will be reduced by 50%. The government will be forced to increasingly depend on the market-driven food inspection and voluntary compliance. In the light of these new developments it is not a surprise that the public confidence in the government food safety system is eroding.

Industry Canada administers the following acts: Consumer Packaging and Labeling Act, the Trade-marks Act and the Competition Act. These acts are important for the food trade.

In Ontario, municipalities have responsibility for implementing provincial regulations regarding food safety as they relate to public health (for example: restaurant inspection).

The main focus of the current regulations is the prevention of fraud and deception, with regard to value, composition, quantity or safety of the food products. The Fertilizer Act, for example, is designed to prevent fraud and is focused on chemical

fertilizers. It does not provide for easy registration of organic fertilizers. The regulations made under the Act require that a precise minimum formulation will be consistently present. It is impossible to maintain such consistency in biological fertilizers and natural rock powders. Amendments to the act are needed to enable alternative fertilizers registration.

There is no requirement for comprehensive nutrition labeling of food in Canada. When the claim is made with regard to the specific nutrient its content has to be disclosed. The information provided is often incomplete. Listings of nutrients provided on the label are at the discretion of the company marketing the product. There is no requirement to provide the full information and the company is not responsible for the misinforming the consumer about the health-related attributes of the product.

Neither the provincial nor federal governments grant organic agriculture any special status or recognition.

In Agriculture and Agri-Food Canada's strategy document for Environmentally Sustainable Agriculture released in 1997 organic agriculture was barely mentioned. It was merely recognized as another of the production methods without mentioning any of the environmental benefits and economic potential.

The Agriculture and Agri-Food Canada's expenditure plans published in "1999-2000 Estimates: A Report on Plans and Priorities" do not mention organic agriculture in any manner. Instead there is strong focus on support for the development of biotechnology and export markets.

Organic Certification

Certification is a very important area of organizing for the organic industry. Well-qualified, ethical and trained organic inspectors are an absolutely necessary link to ensure the respect for organic standards and their marketing value.

Organic certification programs have been in Canada since the late 1970's. The most popular of them were the Organic Crop Improvement Association, Demeter and Le Mouvement pour l'agriculture biologique (MAB) in Quebec. Most of the certifying bodies in Canada established their standards based on guidelines prepared by the International Federation of Organic Agriculture Movements (IFOAM). The standards have the same base but some details are different, depending on ecological and economic conditions of the region as well as on the philosophy behind the movement. At the present time there are 47 private certification bodies in Canada, of which several have a national scope[33]. In general, the certifying agencies have been successful in ensuring the farmers' adherence to the certification regulations. However, the certifying agencies have no resources to verify fraudulent organic claims from uncertified farmers and prosecute them.

Basic requirements for certification are[34]:

- ⇨ membership in the certification agency
- ⇨ completed certification agency's questionnaire and farm records
- ⇨ no chemical fertilizers or pesticides for a minimum of three years used on the fields or crop
- ⇨ commitment to follow soil-building management techniques
- ⇨ a third-party inspectors report to the certification committee based on on-farm assessment and spot checks
- ⇨ payment of annual dues and licensing fees.

National standards

The process of developing national standards for organic agriculture started in 1980's, when the organic industry began advocating uniform national standards. It was formally initiated in 1990 with the involvement of Canadian Organic Unity Project (COUP), later replaced by the Canadian Organic Advisory Board (COAB), and Agriculture and Agri-Food Canada (AAFC). The goal was to define a set of certification standards and provide some form of national regulatory control, incorporated into the federal legislation, namely the Canadian Agricultural Products Act. In 1995 draft guidelines were sent out by AAFC for pre-publication consultations. Some serious concerns about the consultation process and the general direction of the initiative triggered hearings before the House of Commons Standing Committee on Agriculture and Agri-Food in the spring of 1996. Subsequently, AAFC stopped the project and it seemed that a route was completely abandoned. The part of the problem was organic farmers' inability to organize effectively and form a common front.

The process parallels that in the United States, where organic farmers lobbied for uniform national standards in order to protect consumers (Presently, there are 44 independent bodies for certification and standard setting for organic food).[35] However, when the United States Department of Agriculture (USDA) proposed a set of new legally binding standards for organic food last year, they were so weak that neither organic farmers nor consumers could accept them. The most contentious points included permitting the use of biotechnology products, irradiation and municipal sewage sludge in organic production. While these rules have been reversed, this is by no means the end of the process. Pressure on the USDA to weaken existing organic standards comes from several government departments and some powerful trade associations, such as National Food Processors Association, the Biotechnology Industry Organization and the Grocery Manufacturers of America[36].

In Canada, the new effort was initiated in 1997 to create national standards outside of existing regulatory system. While it seems to easier to develop standards this

way, there is a serious threat that the standards will be weaker and might never be applied, as in effect it presents a "non-regulatory" approach. The Canadian General Standards Board operating out of Public Works and Government Services Canada, was approached to facilitate the development of "National Standard of Canada for Organic Agriculture". After long consultations the compromise has been reached and the final version of organic standards was released to the public in June 1999 by the Canadian General Standards Board and the Standards Council of Canada, a federal crown corporation. The full text of national standards is attached in Apendix 1.

The consequence of creating national organic standards outside of legislative system is that their enforceability might be questioned. It will depend on how effectively they are adopted by organic industry and the government. The status of the new national standards will also depend on the approach of government bodies enforcing various acts related to organic standards. If they will use these standards as a benchmark then their enforceability might increase.

International standards

The most important feature of organic label is that it indicates that the product was produced using methods and inputs accepted by a recognized certifying body. Therefore, what makes an organic product distinct from a similar produced using conventional methods is the production process. Effectively, since the term "organic" is defined by the process and not the product any claims that products produced with non-organic methods are identical are baseless.

While there are a multitude of organic certifying bodies in different countries, there is still a great uniformity of the definitions and requirements for certified organic products. The uniformity is the result of the work of the International Federation of Organic Agriculture Movements (IFOAM), a non-governmental organization for networking, coordination and the promotion of organic agriculture. The guidelines developed by IFOAM are widely adopted by various national and regional certifying organizations, which understand that clear, rigorous and uniform rules will help to facilitate the development of organic market and international trade.

There are growing attempts to institutionalize the international rules for the organic products to facilitate global trade. The Codex Alimentarius Committee on Food Labeling is presently debating the adoption of the "Draft Guidelines for the Production, Processing, Labeling and Marketing of Organically Produced Foods". It was expected that a definition would be accepted at the June 1999 meeting of the Committee[37]. However, t has not reached the final stage yet.

The European Union farm ministers recently approved new standards for organic food. These organic standards are a compromise that provides base level organic food criteria for an EU organic food logo. Other certifying organizations, such as

Soil Associations in UK, which have more stringent requirements for certification, can set higher standards and support them with their logo. Nevertheless, Pan-European standards provide protection to consumers and can facilitate trade in organic products in Europe.

It can be expected that international standards for organic food production will be designed in order to facilitate food trade. Most likely it will be Codex Alimentarius standards and they will be subsequently adopted by the World Trade Organization (WTO). It is very important thus to ensure that the Codex Alimentarius standards are not be weakened to the point of loosing the relevance.

Government policies and programs in support of organic agriculture

Internationally, Canada might have an image of the country with a "clean" environment. This image needs to be constantly verified and, if true, preserved. The marketing advantage of this image and export potential cannot be realized without the support of strict regulations and standards, consistent with the most advanced initiatives in another countries. This is the measure of environmental leadership.

Federal and provincial governments have provided very little support for organic agriculture. This interest was not driven by environmental, health, food security and food quality considerations, but by consumers' demand and marketing opportunities[38].

There are no policies and programs specifically designed for the organic agriculture sector in existence in Canada. No government body is even collecting information on the development of the Canadian organic agriculture.

Organic farmers can take advantage of some government support programs available for all farmers. While they do not have any special provisions for organic farmers they might still be useful. For example, the Canadian Adaptation and Rural Development Fund is designed to help eligible farm groups, agri-business and rural communities to adapt to changes taking place in the sector, such as trade liberalization, policy and program changes, new environmental requirements, changes in consumer preferences, technological change. It is used also to foster increased long-term growth, employment and competitiveness in the industry. The irony is that when one government program or policy is encouraging changes, another one is designed to mitigate their effects.

The lack of understanding of the specific of organic agriculture affects farmers' coverage under the Crop Insurance Programs. The higher market value of their crops is not recognized, as well as the environmental benefits. In addition, farmers who do not use commercial fertilizers and pesticides can be denied coverage due to "poor management" practices.

The main problem with the government support programs is that they are

commodity specific. This type of organization is well suited for conventional farmers specializing in one type of product/commodity. However, the organic farms are more diversified and organized as holistic systems. Therefore, the government programs are generally of little use to organic farmers.

The market development activities of AAFC, DFAIT and Industry Canada are focused on export markets in Asia, South America and Eastern Europe[39]. In contrast, no government department collects any data on organic products market development in Canada. There are no analysis available and apparently no official interest in this segment of the market. Some interest, outside of official government policy, has been expressed in private communications with some government officials[40].

Taxation

Taxation policy is one of the important factors influencing developments in agriculture in Canada. Incentives for capital investments and capital gains, tax deductions for out-of-farm input expenditures and accelerated depreciation on equipment promote bringing marginal land into production and the excessive use of inputs. This policy puts organic farmers in comparative disadvantage.

Instead, the tax policy should be changed to promote sustainable agricultural practices including organic agriculture. The pollution tax could be applied to synthetic fertilizers and pesticides to reflect the social and environmental costs of agro-chemicals[41]. The tax would serve two objectives:

⇨ it would provide incentive to optimize and reduce the use of farm inputs (pesticides, fuels, fertilizers, commercial feed, antibiotics, etc.

⇨ the collected tax could be used to finance conservation programs, research and education.

In order to have any significant impact on agricultural practices the taxes would have to be set very high. In Sweden, for example, such taxes are set at 30%[42]. It is highly unlikely in the present political climate and considering the fact that taxes are generally unpopular, that any new tax would be introduced in Canada.

There are still numerous tax exemptions at the federal and provincial levels that promote use of agricultural chemicals, synthetic fertilizers and fuels.

Crop insurance and income stabilization programs

The transition period from the conventional to organic agriculture is the time that

carries the most risk of diminished yields and higher operating costs. There is a strong need for a support program, specifically designed for organic farmers and recognizing their specific conditions, that would compensate farmers, at least partially, for the income losses during the transition period. Examples of such programs are available from Germany and some other European countries. No such program exists in Canada. Organic farmers can participate in government supported crop insurance and income stabilization programs, available to all farmers.

The federal government provides about $600 million annually for farm income safety nets[43], of which 30% goes to crop insurance and 70% to the Net Income Stabilization Account (NISA). Farmers and the government contribute to the account, from which the producers can withdraw in the lean years. The payments are triggered when a single commodity crop is destroyed by weather conditions or devalued by low market prices. Organic farms are so diversified that they can rarely take advantage of the crop insurance programs. The major beneficiaries are conventional single crop farms that are operating on the highly volatile world commodities market.

These programs do not recognize differences between organic and conventional agriculture. The only exemption has been reported in Saskatchewan, where a crop insurance program provided higher premiums for organic farmers based on higher market prices for organic products[44]. It is the only program in Canada we have information about that acknowledged differences between organic and conventional farming.

Credit availability

The conversion from conventional to organic farming is the critical period of time for the financial viability of the operation and usually takes three to five years. In this period synthetic inputs are discarded and biological activity is being restored to the land. During this period soil fertility is low and there are usually problems with pest suppression. Farmers can expect a loss of yield and more weed problems. The degree of the loss depends on numerous factors, such as the extent of the damage to soil structure, history of the use of pesticides and the soil's biological activity.

At this point, the farm is in vulnerable financial position. This is the time that organic farmers need financial support. However, there is evidence that the organic farmers face difficulties in obtaining loans from credit agencies due to the relatively small size of their operations, as well as poor understanding of the specific way the organic systems work on the part of credit agencies.

Even the government agencies, such as Farm Credit Corporation, do not have any

specific programs that take a different approach to organic farmers.

In contrast, well-established organic farms do not depend on financial support /credit availability as much as conventional farmers. There are two main reasons why organic farmers do not need to borrow as much money as conventional farmers: First, organic farmers rely heavily on the on-farm input and buy fewer out-of-farm inputs such as fertilizers and pesticides. Second, due to greater diversification of crops, costs and income are more evenly distributed through the year.

Grants and subsidies

In Canada production subsidies has been designed to promote the production of certain commodities, such as, for example: canola, soybeans or hogs. While theoretically one particular production system is not promoted over another, in practice this approach is strongly advancing conventional agriculture methods. This is mostly due to the higher level of specialization and higher volume of production in conventional farming. There are no grants or production/transition subsidies specifically designed for organic farmers in Canada.

Some European countries have interesting examples of transitional subsidies. For example Danish government provides organic farmers with about Can$430 per ha during the transition[45].

While the level of direct subsidies for the conventional agricultural production in Canada decreased over the last several years due to international trade pressures and government cost cutting initiatives, the indirect support is still strong. Grants and subsidies to other industries, such as fuel, energy generation or chemical manufacturers have an impact on the structure and composition of agricultural production.

Labour

The organic agriculture is significantly more labour intensive than conventional agriculture. In the areas where labour is not a constraint organic agriculture will have a positive impact on the employment. Additionally, due to greater diversification of crops, and subsequently different planting and harvesting schedules, the demand for labour is more evenly distributed over the year. Increased opportunity of employment may contribute to slowing down population migration from the country to the big cities in search for work opportunity and may slow down the aging of the farming population.

Market development

Presently, big grocery chains such as Loblaws and market research companies are the best sources of information on the organic market trends and its state of the

development in Canada[46]. The little interest that is expressed by the grocers is not driven by environmental, health or food quality concerns but by consumers' demand and the perception that the image of 'clean' organic products can be exploited for marketing advantage.

Altogether, the organic food and beverages market grew more than 26% to US$5 billion in 1997, and is expected to reach $6.5 billion in 1999[47]. Approximately 60% of total organic food sales come from specialty retailers. However, supermarkets, convenience stores and warehouse clubs have started to feature increasing number of organic products. Supermarket sales of organic food have grown in excess of 40% yearly over last 5 years. Much of the growth in the sector is coming from processed food such as frozen meals and baby foods[48].

The market for organic products in Canada is considered to be underdeveloped and plagued by numerous problems. There is relatively little variety of produce and there are seasonal fluctuations in supply. There are certification problems and consumers' confusion with terms such as "natural", "ecological", "environmentally friendly" and "organic". Nevertheless the market is growing relatively quickly. The sales of organic products in Canada are growing at the rate of approximately 25% annually[49]. (estimate of the Canadian Organic Growers)

The market for organic products develops in two directions. One is locally grown food for the local market and consumption; the other is export oriented commodity organic products. Both are interesting and even complimentary, considering recent developments in international trade regulations and policies.

In Canada the organic market has not reached the critical mass that would allow it to become part of the mainstream grocery distribution system. Loblaws chain, among other big grocers, is carrying about 50 lines of organic food. Organic sections are present in about 50 of the 70 stores in Ontario. Some stores are too small to make room for organic produce and in some locations there is not enough demand for organic food. The other big grocer chains, IGA and A&P begun to carry some organic products as well.

There is still not a wide variety of produce available. The majority of the selection is imported from US. The Canadian organic growers cannot yet offer the volume and consistency of supply that big grocers are looking for.

The comparisons between organic and conventional food prices are difficult to make, because of extensive supply and demand swings and subsequent dramatic price changes. In some instances, prices are the same, sometimes a little lower, sometimes a little higher and sometimes they are much more expensive than conventional produce.[50] Store mark up can significantly add to the final price of the produce. Typically, there is 30-35% mark up on conventional produce at the supermarket. In health-food stores the mark up on organic produce is often 75-85%.[51]

The lack of the access to the mainstream distribution system constitutes an impediment to the development of organic market in terms of higher distribution, handling, packaging, inventory and display costs. The customer who is in the middle of the buying spectrum needs to be interested in order to reach the critical mass needed to move organic products from the specialty to the mainstream market.

In many cases organic farmers depend on their own initiative for marketing their products. Some are doing simple on-farm food processing (milling operations, etc), and some are forming cooperatives. In order to ensure a premium price for organic products farmers have to ensure a variety and a high quality of the product. Organic products are usually priced at 20-30% premium, although there is certain resistance among consumers to accepting these premiums[52]. Another possibility of securing stable markets for a product is a cooperative venture, where a group of farmers enters into a contract with a food processor or food retailer to supply certified and quality assured product on the continual basis.

Many Canadian provincial and municipal government bodies provide support to the development of farmers' markets. Farmers' markets are open to all farmers and not restricted to organic food production. However, they promote local food production and consumption, which is one of the characteristics of organic farming.

One of the serious problems with the organic market development that were often identified by surveyed farmers was lack of uniform certification standards and labelling. This problem is closely related to the lack of consumer awareness and sometimes confusion among consumers regarding organic claims for food products.

There is a perception that Canada has an advantage as a country with vast areas of clean environment and a country that cares about the nature. This image, while very attractive for the marketing purposes, cannot be exploited in the absence of the regulations and standards to support the claim.

Organic agriculture research

Most of organic agriculture research is being done in developed countries, mostly European. The investment in organic agriculture research is minimal compare to overall agricultural research (i.e. less than 0.01% of the US Department of Agriculture research budget)[53].

In Canada, the Research Branch of Agriculture and Agri-Food Canada does not have even one project focused specifically on organic agriculture. In the "Canada's National Strategy for Agri-Food Research and Technology Transfer 1997-2002" prepared by the Canadian Agri-Food Research Council there is no mention of organic agriculture. There is, however, the recommendation that, in order to satisfy consumer issues "Canadian universities, the federal and provincial governments and the private sector all work together to provide information about the role of

biotechnology in agri-food production"[54], which is consistent with the government's policy of supporting the biotechnology industry. These facts reflect the lack of interest in organic agriculture research and education in Canada and lack of funding support for non-government organizations providing information to organic farmers and the public.

Organic agriculture research and education is continuously struggling for funding. For example, Quebec's Centre de development d'agrobiologie closed in 1998 due to financial problems and organic food program at the Institute de technologie agro-alimentaire de La Pocatiere is struggling due to declining funding[55]. The only university level program in ecological agriculture in Canada is available at McGill University's Macdonald College. The University's very successful Ecological Agriculture Project was a leading centre for organic agriculture information dissemination and extension officers training in Canada. Its website presents a wealth of information about organic agriculture (http://www.eap.mcgill.ca/index.html). Presently the project is under very serious financial stress. The most of the web site updates are done by volunteers when possible. Needless to say that the quality and timeliness of the work will suffer.

Even the instant influx of funding for organic agriculture research would not change the situation. Usually, it takes years to generate useful results after establishing experiments.

Presently, the most important source of information on organic agriculture methods is the farmers' on-farm experience and the advice of the other organic farmers. Activities that bring farmers together and facilitate the establishment of the on-farm research associations seem to be the most successful.

Economic studies comparing conventional and organic agriculture are inconlusive due to variety of reasons. Some of them have too small a size of the sample, which cannot be subjected to statistical tests. There is a great difficulty in making a selection of representative farms since they usually operate in completely different circumstances[56]. In general, the studies have concluded that organic farming methods are the most appropriate to small farms with a mix of crops.

Organic farmers need to be included in the review of research projects supported by the government in order to benefit from this research. The farmers need to be actively involved in decision making process. An interesting idea is to allocate some money to farmers (for example $200/year) which in turn would be allocated to specific research conducted by the institution or organization of the choice. This approach would likely encourage on-farm research, increase democratization of the decision making process and improve the quality of research through increased competition[57].

It is imperative that more research on organic farming be conducted. It can improve

the economic performance of organic methods and promote the development of organic market. Government supported research is currently focused on chemical and biotechnology intensive agriculture[58] and there is no sign of any possible change of that direction. Other sources of funding for organic agriculture research should be explored.

There is no private foundation in Canada that specifically supports the research on organic agriculture, similar to the Organic Agriculture Research Foundation in California. That Foundation is responding to the need for more and better information and research on organic agriculture.

Extention/farmers' education

The most critical time is the transition period from conventional to organic farming methods. The proper planning of the transition as well as technical assistance is critical to the successful transition and can avoid serious problems.

The lack of specific information on organic production strategies and the general lack of knowledge are presenting the major obstacles to the development of organic agriculture in Canada. 73% of surveyed organic farmers in North America state the lack of knowledge is the greatest barrier to adoption of organic farming methods[59]. There are very few agronomists with a specialized training in organic agriculture methods.

According to the national survey conducted in the United States of America the major impediments during the transition from conventional to organic farming were weed management, access to information and lack of experience and access to the market. The costs of organically allowable inputs and uninformed or uncooperative extension agents were listed as the primary barriers to organic production.

There is a potential that some land stewardship initiatives, for example farm conservation clubs, that are presently addressing the issue of soil conservation, may evolve into broader environmental role.

The Ecological Agriculture Project at Macdonald College, McGill University has a rich collection of materials on organic agriculture and is one of the best sources of information for organic farmers, and the centre for networking. Unfortunately, the program has serious financial difficulties and is almost entirely dependent on voluntary contributions. It is impossible than to do consistent planning and information dissemination. No doubt it will affect educational and research activities of the project.

The Willing Workers on Organic Farms (WWOOF), a non-profit organization has an interesting apprenticeship program. In exchange for the apprentice's labour the farmer provides know-how, room and board and usually a small stipend. The WWOOF publishes a booklet with the contacts of all farmers accepting

workers/apprentices.

Consumers education

Consumers need a very clear and factually credible statement on the label, which has to be an expression of strict rules. Statements such as 'environmentally friendly', 'green', 'natural', 'ecological' do not have high credibility with consumers[60]. The demand for the reliable information is growing.

The recent food safety problems in Europe, as well as introduction of genetically modified food on the market, has made many consumers very uneasy about their food purchases and many people have lost their trust in information provided by government institutions. Consumers recognize that they do not have sufficient knowledge and/or data available to make an informed choice and are frustrated with being disconnected from the decision-making process. There is a feeling that for too long food industry has influenced decision-makers' perceptions on the food issue[61].

Numerous surveys[62] confirm that the consumers' understanding of organic food and organic farming remains low. Consumers seem to be unclear about the meaning behind the claim "organic"[63]. This confusion does not help to develop the market. In a marketplace where numerous environmental and health claims are being made for advertising purposes only, it is imperative that a consumer education campaign around food issues in general and organic food in particular is organized. The difficulty lies with finding a capable organization interested in undertaking this initiative. As it was mentioned earlier, the government bodies are not interested in promotion of organic agriculture.

The grocers are driven by the consumers' demand and focused on the "bottom line" and not on what is nutritionally and environmentally beneficial. Additionally, they do not feel it is their role to take sides on the issue and potentially antagonize one of their suppliers or lose the market share in a highly competitive market. In order for change in the marketplace to happen it would be necessary for one of the major players (i.e. Loblaws) to step in, show leadership and actively promote the development of organic market.

This can potentially be achieved through strong growth in consumer demand and therefore decreasing the risk of the promotional strategy and/or convincing top executives of the major retailing company that the strategy is not only ethically good but will be profitable as well.

More progress on the issue of public information was made in the USA, in Maine for example it is mandatory to label products from the countries using pesticides banned in the USA and the state has in-store education programs for consumers on the possible implications[64].

The consumer demand growth can be achieved through consumer education and media blitz or advertising. The lack of consumer understanding about organic food and a lack of marketing networks[65] has been often cited as one of the major barriers to the development of organic food market.

The integrity of organic labeling and certification are essential to consumers' confidence in organic products. Organic products are being sold at the premium and consumers need to be well informed and make their choice based on the flavour, nutrition and freshness of local organic food.

Some Initiatives of the Non-Governmental Organizations in support of organic agriculture

Knives and Forks

Knives and Forks is a non-profit organization that promotes organic food and organic agriculture in general to people in Toronto and the surrounding area. The organization was formed in 1989 by the prominent Toronto chefs, Jamie Kennedy and Michael Stadtlander. Knives and Forks brings together organic food producers, consumers, chefs and restaurateurs.

Feast of Fields is an annual Knives and Forks' event involving restaurant owners, chefs and restaurant staff, bakeries, catering companies, breweries and wineries. They get together in a rural setting and prepare and organic buffet for hundreds of people. In addition to being a great promotional tool for the organic industry, it is also a fundraising event for the organization. The organization is also supporting weekly organic farmers' market in the Mirvish Village in Downtown Toronto.

Community Shared Agriculture

The urban populations became increasingly removed from the source of their food. The concept of the community shared agriculture is to shorten the distance between the consumers and the producers. It is an opportunity to meet each other's needs and the needs of the land. The number of members can vary from a few to over a hundred. Consumers enter into an agreement with the farmer on what kind of crops they need and how they are going to contribute. Payments for the members' share in crops can be arranged in diverse forms. It can be a straight monetary payment, the contribution of some equipment, or help in busy times, etc. During the growing season, from June to October, members come to the farm to pick up their share straight from the field. In winter, they can come and get what they need from the storage crops. The arrangements are usually different on each CSA farm.

One of the important benefits of the CSA is that members know precisely what methods are used to grow their food and that their health and environmental concerns are being addressed. The CSA is well suited for a small-scale family

farming. Another important aspect is that members are supporting the local community and local economy.

Good Food Box Program

It is a program for the delivery of nutritionally balanced food to poor families. For example, the GFB Program of Ottawa-Carleton project is a coalition of 14 community health and resource centres and non-profit housing groups. The initial idea was to make food more affordable to community members. This project is not focused exclusively on organic food, but on the food in general, with a strong connection to nutrition and health. Nevertheless, organic food is a significant and growing component of the food box[66].

Urban Agriculture

For years urban agriculture has been underrated by governments and agricultural and environmental organizations. At the present time, urban agriculture is growing fast in both developed (i.e. Japan, Netherlands) and developing countries. The extent of the growth of urban agriculture in Canada is largely unknown. The available information comes from three cities: Montreal (7000 plots in 75 locations), Toronto (3000 plots in 20 locations) and Vancouver (2000 plots in 21 locations). These community gardens are supported by municipal governments through a variety of programs. There is no support from the provincial and federal governments.

Virtually every produce that is grown in the country can also be found in the urban setting: fruits, vegetables, grains and livestock products. The scale of operations tends to be small and intensive. The benefits of urban agriculture include:

- Food self-reliance for poor families - access to a wide variety of fresh produce
- Increased income - surplus produce can be sold on the market
- More friendly urban environment - improves visual space
- Better health due to better nutrition
- Fosters community building and social participation
- Improves organic waste management and reduces air pollution

The potential contribution of urban farming to overall food supply can be significant. For example Hong Kong produces nearly 50% of its own vegetables and most of its own poultry[67]. Urban agriculture has a great potential for organic production. In Toronto, almost all community gardening is organic[68].

It is estimated that farmers are receiving 20 cents or less of every dollar spent by customers. Transportation, processing, marketing and advertising are paid for by the rest. Therefore, urban agriculture can potentially offer a significant economic advantage through elimination of the cost of transportation and by providing direct access to the market.

Conclusions

1. Canada is far behind in terms of the developments of organic production, processing, marketing, research and the development of necessary regulations in comparison with Western Europe, Japan, US or Costa Rica.
2. Canada does not utilize the potential it has for the development of organic farming for its domestic market as well as for export.
3. There are no government policy or programs for organic agriculture development in Canada and, providing the governments preoccupation with the development of biotechnology, it is very unlikely that any program in support of organic agriculture will be established in the near future.
4. In an ideal world, Canada would have a National Organic Agriculture Strategy. However, there are serious concerns regarding the possibility of coordinating and organizing organic producers, processors, food retailers, researchers and the governments representatives. The failed attempt to incorporate organic standards into a legislation proved that it is extremely difficult for organic producers to present unified position and effectively negotiate in the multistakeholder environment.
5. The major efforts should be concentrated on the market development and the consumer education. These are areas presenting the most possibility. With the increase in the size of organic market it will become more attractive to conventional farmers to convert to organic methods and to large grocers to introduce more variety of organic produce and actively promote organic food.
6. Organic agriculture research in Canada desperately needs financial support. Areas of special interest are: development of on-farm research network; support for an extension service; research on the economics of organic farming;
7. There is a pressing need for a comprehensive monitoring and reporting on the environmental impact of agriculture in Canada and on the impact of international trade on food market and rural communities.

8. Consumers need access to better information about organic food. There needs to be mandatory labelling of food for full disclosure of contents and processes. The labelling system for organic products has to be uniform, stringent and enforceable. The same standards should be implemented for imported organic products.
9. Food products imported from the countries that use pesticides banned in Canada should be labelled and there should be an in-store consumers' education/information program on food choices
10. Public education campaign on health and safety issues in food and agricultural production would help to accelerate the process of organic market development. Consumers need to be provided with tools to make a full informed choice about their food purchases.

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