

A National Strategic Plan for the Canadian Organic Food and Farming Sector

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Table of Contents

Acknowledgements

Executive Summary

1. Introduction

2. Why is the development of the organic sector important?

2.1 Adopting organic farming helps governments address pollution problems and their costs

2.2 Adopting organic farming can reduce Canada's greenhouse gas emissions

2.3. Adopting organic farming builds consumer confidence by not using products, practices and processes seen to be controversial by some consumers

2.4. Adopting organic farming can reduce financial pressures on farmers

2.5. Adopting organic farming can decrease the need for government farm payments.

2.6. Adopting organic farming can help with rural community revitalization

3. The national vision for the organic food and farming sector

4. Key challenges facing the sector

4.1 Introduction - an overview of the Canadian and international organic sectors

4.2. Market challenges

4.3. Farming challenges

4.4. Processing challenges

4.5. Organizational capacity

4.6. Public image

5. The strategic plan - what is being done, what else needs to be done

6. Developing organizational action plans and commitments

7. Concluding remarks

Endnotes

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Executive Summary

Canada's organic sector has been emerging over the past 40 years. Although Canada has several regions where organic development is strong, the organic sector is not yet national in vision and activity. For years this absence seems not to have been unduly problematic, but recent developments suggest that the organic sector will miss opportunities, and even be penalized, if a national presence and agenda does not soon emerge. Shifts within domestic and international markets and increased support from the federal and provincial governments signal a new opportunity for the organic sector to strategically develop, based on a plan of its own design.

The plan presented in this report is designed around a belief in abundance - that many individual and broader social benefits will result from having many more organic farms on the land, and much more organic food in stores. The development of the organic sector provides government with opportunities to solve 6 pressing policy problems in the food and agriculture sector:

- Increased adoption of organic farming helps governments address pollution problems and their costs
- Increased adoption of organic farming can reduce Canada's greenhouse gas emissions
- Increased adoption of organic farming and food processing builds consumer confidence by not using products, practices and processes seen to be controversial by some consumers
- Increased adoption of organic farming can reduce financial pressures on farmers
- Increased adoption of organic farming can decrease the need for government farm payments.
- Increased adoption of organic farming and food processing can help with rural community revitalization

Consequently, the Canadian organic sector has a vision that:

- It is a major component of the Canadian food and agriculture system
- Organic farmers are able to make a reasonable living as farmers
- Organic foods are accessible and affordable for all sectors of the population in all regions
- The organic processing sector is vibrant
- The adoption of organic farming systems contributes to rural revitalization

Making this vision a reality means overcoming numerous challenges facing the sector.

- An immature market, with supply lagging behind demand, and lacking much of the infrastructure necessary to ensure efficient and affordable movement of goods, both domestically and internationally
- Lack of research, extension, and financial support for organic farmers, especially during the transition phase
- Insufficient numbers of food processors and processing facilities
- Overly taxed voluntary organizations working to develop the organic sector, with

- insufficient resources to further their expertise and capacity
- Insufficient appreciation of the broad public benefits of organic food and farming

To overcome these obstacles, a seven step plan with 32 strategic elements is proposed covering the following key areas:

- Certification and accreditation
- Government policy, program and regulatory supports
- Research, education and training
- Domestic and international market development
- Organizational and sectoral capacity building
- Alliances with other parts of the farming community.

If this plan receives widespread acceptance within the organic sector, it is hoped that organizations will identify specific tasks they are willing to take on to implement the plan. We anticipate that these organizational discussions will take place over the next 6 months. These organizational commitments will guide the project steering committee and other collaborators in the development of subsequent funding proposals and plan implementation.

1. Introduction

Canada's organic sector has been emerging over the past 40 years. Although Canada has several regions where organic development is strong, the organic sector is not yet national in vision and activity. While provincial government / industry collaborations are implementing (Quebec and BC) or developing (Manitoba, Alberta and Saskatchewan) strategic plans, a national planning effort that built upon provincial efforts had, till now, been absent. For years, this absence seems not to have been unduly problematic, but recent developments suggest that the organic sector will miss opportunities, and even be penalized, if a national presence and agenda does not soon emerge. On the market side, uneven patterns of development exist across regions and commodities that are dampening the willingness of retailers and food service companies to buy Canadian organic. National governments in many parts of the world have been taking an active interest in the evolution of their organic sectors for many years, and are well ahead of Canada. International standard setting and development bodies are actively examining the nature and potential of organic agriculture.

Shifts in thinking appear to be underway at the Canadian federal level with the recent announcements of some \$1.5 million for the organic sector and the Federal/Provincial/Territorial Ministers of Agriculture new vision for the food and farming sector. Federal politicians and officials are more interested in discussing issues with the organic sector and find the lack of a national presence problematic. That they do is partly rooted in reality, partly in a limited understanding of what organic is and what has already been achieved. For many in the organic sector, national level activity is itself problematic. Based on both ecological theory, and the lived experience of many in the organic sector, organic agriculture and food distribution will ultimately succeed if it is vibrant in the locales and regions of the country, and there has been some reluctance to devote resources to national level activity as a result.

But Canada's patterns of agricultural development revolve around bulk commodity production and export / import relations. Consequently, many farmers, including many organic farmers, are dependent on Canada's position and reputation as a global food trader. For them, having a national organic presence will prove critical to their short and medium term success. So the plan that has emerged attempts to balance these two significant realities. This strategic plan is for those organizations, firms and individuals who believe there should be a national organic agenda, but one rooted in a recognition that if organic agriculture and food distribution is not vibrant at local and regional levels, then a national level of activity will ultimately have little purpose.

Unlike earlier processes, this one has not been based on extensive meetings and this plan is not a product of an all encompassing consensus. It emerged out of an invitation by the federal government to representatives of Canadian Organic Growers (COG), the Table filière biologique in Quebec, Nova Scotia Agricultural College (NSAC) and the Canadian Organic Advisory Board (COAB) to request funding to facilitate the process of developing a national strategic plan. Agriculture and Agrifood Canada (AAFC) subsequently provided \$27000 to develop the plan. A draft plan was prepared by this small group of people and widely circulated. There have been a

number of feedback opportunities, both electronically and face to face, and the plan has been rewritten four times to reflect the feedback received.

The plan will serve as a general blueprint for the development of a national presence and agenda and will be used by the organic sector and by governments. This plan is designed around a belief in abundance - that many individual and broader social and environmental benefits will result from having many more organic farms on the land, and much more organic food in stores. The plan sets out a vision for the organic sector, some indicators for monitoring success, and strategic directions in the following key areas:

- certification and accreditation
- government policy, program and regulatory supports
- research, education and training
- domestic and international market development
- organizational and sectoral capacity building
- alliances with other parts of the farming community

Its implementation will depend on the width and breadth of support it receives and the willingness of some keystone organizations to facilitate the implementation phase. Some thoughts on implementation are expressed at the end of the report.

2. Why is the development of the organic sector important?

Organic food and farming is more than simply a niche market to be developed. Given relatively low adoption levels to date, the extensive benefits of organic farming systems are not yet very visible. However, there is growing evidence that adoption of such systems produces multiple environmental, social and financial benefits.

2.1. Adopting organic farming helps governments address pollution problems and their costs.

Agriculture is a significant contributor to water quality problems, both acute ones associated with spills and more chronic ones, such as excess nutrient runoff into streams from regular farm practices. For example, the annual cost of damage to water from agricultural practices in the USA is estimated at \$2.6 billion. The cost of pesticide damage to all natural capital in the USA is estimated at \$3.70 / kg of active ingredient¹. In contrast, a UK study of the real costs of the British food basket estimates that the external costs of organic farming are one third those of conventional agriculture², so investing in organic farming is a good pollution abatement and remediation strategy. As an example of such investing, a Swiss study concluded that it was cheaper to pay conversion subsidies to all the farmers surrounding a lake, than to pay for a technological solution to clean up the lake³. It is well established in North American literature that the off-farm benefits of mitigating soil and watercourse degradation far exceed the on-farm costs of soil conservation⁴. The implication is that those benefitting from the mitigation, i.e., society at large, should pay at least some of the on-farm costs of conservation. Some Canadian jurisdictions have recognized that it is cheaper to invest in farm pollution prevention than

remediation – for example, the Regional Municipalities of Waterloo and Wellington in Ontario are investing heavily in on-farm pollution abatement structures to protect the water supply⁵ – but have yet to extend this concept to organic farming adoption. Fish kills in PEI streams, associated with mostly “normal” farm applications of endosulfan, carbofuran, mancozeb, chlorothalonil, and azinphos-methyl in potato fields, provide a telling Canadian example of both the costs of failing to act and the benefits of such investments.

2.2 Adopting organic farming can reduce Canada’s greenhouse gas emissions

Farming in Canada contributed (with fossil fuel use included) about 13% of total 1996 Canadian greenhouse gas emissions, up 4% from 1986⁶. The main Canadian agriculture emission sources are:

For carbon dioxide (CO₂): breakdown of soil organic carbon, consumption of fossil fuels, use of synthetic pesticides and fertilizers;

For methane (CH₄) : liquid manure tanks, animals;

For nitrous oxide (N₂O): inefficient, ineffective or inappropriate use of nitrogen fertilizers resulting in significant nitrogen release to water and air.

N₂O and CH₄ are priorities for reduction⁷, since agricultural soils are now thought to be net CO₂ sinks and emissions from agriculture represent only 1% of Canada’s total CO₂ emissions. In contrast, primary agriculture in Canada accounts for 61% and 38% of Canada’s total emissions of N₂O, and CH₄ respectively⁸. Over half of all agricultural GHG emissions are N₂O⁹. 50-75% of annual N₂O emissions occur during the spring, around snow melt and planting. 42% of GHG emissions are associated with the livestock sector¹⁰, particularly, most CH₄ emissions which are associated with animal digestion (almost all of it from beef and dairy) and manure¹¹ management (also N₂O and CO₂ emissions). The most significant emissions from the cropping sector are associated with synthetic nitrogen fertilizer (12 Mt CO₂eq in 1996).

To reduce these kinds of emissions, the International Panel on Climate Change (IPCC) has concluded that, in general, mitigation practices should: a) enhance sustainable production; b) have additional benefits for farmers, including profitability; and c) generate products that are suitable to consumers¹².

From a systems perspective, organic farming usually leads to reductions in emissions and meets the IPCC’s criteria for success. These farms are generally characterized by complex cropping patterns, with significant use of green manures, intercrops and legumes and reduced reliance on synthetic pesticides and fertilizers, reduced tillage, deep and extensive root masses, and high soil organic matter levels, and good soil tilth. Relative to most conventional farm operations, organic farming reduces soil erosion, stores more C, does not require synthetic N and pesticides (and their associated emissions), eliminates N₂O emissions from non-biological sources, does not permit anaerobic digestion of manure (and the associated methane emissions), often has lower animal stocking rates which contribute to lower methane emissions generally, consumes less energy and water overall, and has higher percentages of farm acreage in perennial crops

(including pasture) and shelterbelts¹³. Organic farms may have higher emissions relative to conventional farms from the following sources because these practices are more frequently used on organic farms: CO₂ from composting manure and tillage (both soil release and fuel use)¹⁴; N₂O from nitrogen fixing crops and crop residues.

There is some empirical research on sustainable farming systems that demonstrates greenhouse gas emission reductions, greater adaptive capacity in the face of climate variability and significant carbon sequestration potential. For example, a study carried out for the federal German parliament came to the following conclusions when comparing conventional and organic farming systems¹⁵:

- The organic systems used 65% less energy than the conventional ones. The main differences in fossil fuel consumption were associated with the “operating materials”, synthetics pesticides and fertilizers and imported feedstuffs.
- Although conventional operations fixed more carbon in shoots and harvested main crops, the organic systems tended to have much higher root masses. Roots in organic systems had 1.6 times more bound carbon dioxide, most of it associated with legume crops such as alfalfa and red clover). When all biomass generated in ecological systems is contrasted with conventional ones, the above ground production is similar.
- Ecological systems generally have more active soil microflora and detectable increases in the assimilation of carbon dioxide, whereas conventional systems have less carbon dioxide bound up in soil organic matter.

Drinkwater et al. in their study contrasting conventional and alternative corn - soybean cropping systems in Pennsylvania, found that longer rotations involving leguminous plants did not necessarily add more total organic matter to the soil, but because of the lower carbon to nitrogen ratio additions resulted in greater organic carbon sequestration and improved soil physical properties¹⁶. As well, they cut nitrogen losses in half compared to conventional system.

The most comprehensive comparative studies to date have been carried out by research teams at Michigan State University. They have compared corn-soybean-wheat systems under conventional tillage, no-till, low input and organic systems (with legumes, but without animals and manure). Using CO₂ equivalents (g/m/year) as their measure for systems comparisons, they found that no-till had the lowest net Global Warming Potential (GWP) (14), followed by organic (41), low-input (63) and conventional tillage (114)¹⁷. The no-till system superiority over organic was a result of higher soil C sequestration (-110 to -29). However, there is some debate about the extent to which no-till systems actually sequester carbon. In some studies, soil C content increases within the top 7.5 cm of the soil profile, but results in no changes over the entire profile¹⁸. The Michigan study only measured soil C changes in the top 7.5 cm, so the C sequestration benefits of no-till may be overestimated relative to organic systems. The Michigan study also found that perennial crops (alfalfa, poplars) and successional communities all had much lower emissions and in fact most were net sinks.

Other studies, from the US mid-west, examining corn, soybean, wheat systems reveal that longer rotations involving legumes leave farms better able to withstand drought¹⁹. One series of studies from the University of Nebraska showed that the longer rotations reduced the risks of suffering through a bad year, and less variable net returns²⁰. These longer rotation systems have performed consistently as well or better than short corn - soybean rotations. This result appears to be due to some combination of root development and soil tilth. Organic matter, especially in more loamy soils, can improve soil aggregation. Aggregation creates more pore space for root movement. The traditional view is that the kind of organic matter is less significant than the quantity, but it is the more digested organic matter fractions that appear to be significant for these processes - microbial gums and mucilages, low molecular weight fulvic acid molecules, and fats and waxes²¹. Farming systems that favour these organic matter components do better.

2.3. Adopting organic farming builds consumer confidence by not using products, practices and processes seen to be controversial by some consumers.

Organic farming and food processing standards²² do not permit a number of products and practices perceived to be risky by many consumers:

- Synthetically compounded pesticides - some 50 million kg of pesticides are applied annually in Canada²³. Almost all pesticides believed to have potentially negative health impacts on humans are not permitted in organic production. Consequently, residues of production pesticides are almost always lower in organic foods²⁴. However, organic farmers are unable to control atmospheric deposition of airborne pollutants; consequently, organic food is not residue free²⁵.
- Fertilization - in contrast to conventional farmers, organic farmers are not permitted to use uncomposted or unaerated manure, except under very specific circumstances. The composting process reduces pathogen levels and leaching of nutrients.
- Animal rearing practices - growth hormones are not permitted, and animals must be fed a diet for which their digestive system is adapted. Consequently, the digestive conditions associated with elevated *E. coli* 0157:H7 levels do not normally occur on organic farms²⁶. Mycotoxin levels in animal feeds are no higher than in conventional agriculture, and some European studies have found lower levels in organic than conventional milk²⁷. Standards do not permit the use of antibiotics, unless the life of the animal is in jeopardy. Most standards then require that the animal be removed from the organic stream, although some permit its return following an extended withdrawal period. As a result, it is not possible for production practices to create antibiotic resistant bacteria.
- Synthetic preservatives and additives, and irradiation - the use of synthetic preservatives and additives is severely restricted, largely to materials derived from naturally occurring substances. Food irradiation is not permitted.
- Genetically engineered organisms and products derived from them - these are not permitted in organic farming or food processing, except in cases where no organic sources exist, and conventional ones may be inadvertently contaminated.

2.4. Adopting organic farming can reduce financial pressures on farmers.

That organic agriculture systems are usually more profitable than conventional is not widely appreciated by policy makers.

In organic systems, from worldwide evaluations²⁸:

*Plant yields are on average 10% below and animal product yields on average 20% below conventional systems²⁹. These results have occurred almost entirely without the support of institutions normally involved in agricultural development. Yields in organic systems continue to rise as understanding of them grows and as more money is devoted to research. These increases are not always as great as those under some conventional systems, but occur at much lower environmental costs³⁰.

*Gross margins are at least as good, if not better than, systems under conventional pesticide regimes. Three factors usually account for these positive income results. First, operating costs may be up to one third lower, particularly for energy, chemicals, and drugs. Second, where premium prices are available, the likelihood of a superior net income situation is even greater. Finally, many organic farmers achieve higher net income by making more direct links with consumers which allows them to capture a greater percentage of the consumer dollar³¹.

2.5. Adopting organic farming can decrease the need for government farm payments.

Such economic benefits have significant implications for governments. Direct payments to farmers are down dramatically this decade. Many of these reductions are appropriate in that the payments acted as disincentives to the transition to more sustainable practices³². However, on average, net farm income for farmers continues to worsen, and vulnerability to more erratic market and climatic conditions is increasing, putting more pressure on the safety net system.

Although a good safety net system is important, governments should help to create the conditions to improve farm financial health and lower financial risks. Organic farming can create these conditions. They are at least as, if not more, profitable than conventional systems as well as less vulnerable to climate variability³³. In general, they have a greater capacity to resist both wet and dry conditions. This occurs because these systems rely on building soil organic matter levels to ensure optimum health for crops and greater pest resistance. The side benefit is both greater moisture retention capacity during dry years and better soil tilth for improved drainage during wet ones. As well, these systems tend to be more diverse, providing more revenue streams. Reduced yields or revenues in one crop/product are less likely to penalize the operation as dramatically as in systems where financial health is dependent on a limited number of crops. Overall, these farming systems are less likely than many conventional farms to suffer yield and revenue losses that would trigger safety net payments³⁴.

The investigations attempting to analyse the impact of a major shift to organic agriculture have

been methodologically controversial, underscoring the need for more study in this area³⁵. However, existing studies have concluded that significant benefits would result from the shift, including improved food quality, enhanced environmental and human health, higher net farm income, and lower government subsidy payments and crop storage costs³⁶. European governments have drawn related conclusions – that supporting the conversion to organic agriculture significantly reduces their public farm program expenditures³⁷. A very conservative estimate is that 46% of direct support payments to organic farmers are recouped by reductions in support payments for other measures that would have had to be paid were they not organic farmers³⁸. This estimate does not include all the other less direct savings described in this section.

2.6. Adopting organic farming can help with rural community revitalization.

The federal government's efforts to improve rural community viability would be complimented by organic farming. A variety of studies suggests that sustainable agriculture³⁹ can contribute significantly to rural vitality⁴⁰. A Nebraska study of an agriculture-dependent community concluded that if more farms were following sustainable practices, total family income would more than double, compared to a scenario where all the farms remained in conventional practices. The property tax base would be larger. More would be spent on supplies, utilities, feed, veterinary expenses, charity, food and personal care products⁴¹. Less, however, would be spent on agrichemicals, fuel, hired labour, livestock purchased for resale, seed, taxes and interest.

A study of four communities in the US Midwest found those with more sustainable agriculture practitioners had a greater capacity to mobilize community resources for local development, including more active participation in local government, the creation of new community economic development structures and new businesses. This result was attributed, in part, to the problem solving and self-reliance skills of sustainable agriculture practitioners⁴². Using data from farm-level studies, Lockeretz⁴³ concluded that lower production levels in sustainable systems may reduce economic benefits for farming communities in the short term. However, because a greater percentage of the value of production remains in the community, greater long-term financial benefits might result from sustainable systems, particularly as production methods improve.

A North Dakota study concluded that some economic sectors would be enhanced (transportation, utilities, business services, and non-metal mining), but others would decline (construction, professional services, finance, retail trade, agricultural processing). A better infrastructure for new marketing, processing and storage needs would ensure that the overall benefits were positive⁴⁴. Because many communities lack products and services required by sustainable farmers, significant local economic opportunities are lost⁴⁵.

In summary, widespread adoption of organic farming and food processing and distribution offers significant opportunities to solve many problems currently facing the agriculture sector.

3. The national vision for the Canadian organic food and farming sector

Vision statements

1. The Canadian organic sector is a major component of the Canadian food and agriculture system

Key target outcomes to achieve the vision:

- Organic comprises 10% of domestic retail sales by 2010⁴⁶;
Subsectoral targets: basic vegetables: 15%; fruit: 5%; grains and pulses: 15%; oilseeds: 5%; dairy: 15%; beef: 10%; eggs: 10%; chicken: 5%; pork: 2%; sheep: 10%; aquaculture: 2%⁴⁷.
- 35% of Canadian retail organic food sales are of domestically produced organic product⁴⁸
- 10-15% of all restaurants and caterers in Canada use organic ingredients in their menus.
- 15% of Canadian farmed acreage is organic by 2010, to account for the need to increase domestic supply relative to current demand/domestic supply ratios⁴⁹.
- Total organic exports remain stable, reflecting the emphasis on expanding domestic markets

2. Organic farmers are able to make a reasonable living as farmers

Key target outcome:

- over half of organic farming families are satisfied with the amount of income generated by the farm and no organic farmers have zero or negative net farm income⁵⁰

3. Organic foods are accessible and affordable for all sectors of the population in all regions

Key target outcomes:

- the retail price index for organic is within 15 % on average of conventional food for all commodity sectors⁵¹; in setting this target, we presume that a series of forces operating over the next few years - changes to distribution, erosion of direct and indirect subsidies to the food sector - will cause conventional food prices to move closer to their "real" price which is higher than currently, so the reduced price spread will not solely be a result of falling organic food prices
- all basic foods can be obtained organically in every region of Canada
- cooperative and alternative distribution mechanisms that provide organic food at prices below retail are available in all provinces

4. The organic processing sector is vibrant

Key target outcomes:

- organic processed goods represent 10% of the processed goods sector⁵²
- over 50% of organic processors express satisfaction with firm income and ROI averages 15%⁵³
- organic processing firms are functioning in all basic commodity sectors (using AAFC definitions, in biscuit, bread and bakery, brewing, dairy, feeds, flour, fruit and vegetable, meat, poultry and fish, snack food, soft drink, wine), and represent at least 1% of the processed food market place

5. The adoption of organic farming systems contributes to rural revitalization

Key target outcomes:

- in communities with at least 10% of farmers practicing organic agriculture, there is a discernible increase, relative to the period before conversion, in:
 - participation in civic organizations;
 - the number of farm workers⁵⁴
 - new small business startups supporting the needs of organic farming and processing
 - new entrants to farming and/or retention of the next generation in a family operation

4. Key challenges currently facing the industry

4.1 Introduction

4.1.1. Summary overview of the Canadian organic sector and consumer attitudes towards organic⁵⁵

Production⁵⁶

The total number of certified producers in 2000 was 3108, a 34% increase from 1999. The most dramatic increase was in Saskatchewan, up 83% from 1999⁵⁷, and preliminary reports for 2001 suggest increases continue to be as dramatic. The number of certified producers increased by 55% in Alberta and 50% in PEI. The percentage of organic farms in each province generally lies between 1% and 2%.

Total certified acreage in 2000 is estimated at 840,000 acres or 340,200 ha. This figure does not include wild rice lakes, which add at least another 35,000 acres or 14175 ha. About 60% of this area is in hay and pasture. This represents a little less than 1% of crop and pasture acreage in the country. Statistics Canada reports that organic farms account for 1.9% of the commercial fruit area under production and 1.6% of commercial vegetable production. Organic grain production, especially in Saskatchewan, is the fast growing organic commodity sector. Quebec has

experienced dramatic growth in organic milk production, up almost 250% from 2000 to 2001. Organic production remains low in oilseeds, fruit, beef, pork, chicken, and fish. It now appears that organic canola production will be reduced to negligible acreage because of widespread contamination from GE canola. For provincial data, see Anne Macey's report in the winter 2002 issue of Eco-Farm and Garden.

Processing and handling⁵⁸

Processor and handler numbers continue to increase, up 15% from 1999 to 323 when all categories of handlers are combined. These include on- and off-farm processing, distributors, retailers, and brokers. The largest category is grain-related processing - seed cleaning operations, mills, cereals and bakeries. Although processing occurs in most categories, the number of firms, or trade volume is low in most.

Markets

The Canadian market is ten years behind the U.S. and Europe, although information from a variety of sources suggest that growth rates have picked up significantly the past 2 years, largely from external market demand. Supermarkets have picked up organic foods (mostly a few selected produce items and now packaged products) in the last two or three years, but Canada's largest supermarket chain, Loblaws, introduced its private label "PC Organics" only a year ago and there are reports of 30% growth in their sales. Quebec's three major retailers all have plans to significantly expand their organic offerings. The most successful supermarket natural foods chain in the U.S., Whole Foods Market, is now planning to open a number of stores in Canada (beginning in Toronto this year), as is Wild Oats, one of its competitors in the US. Canada's market share for organic is in the 1 to 2% range, with estimated sales at \$800 million (Canadian).⁵⁹ The vast majority (85-90%) of these sales are imported products from the USA.⁶⁰ Clearly, Canada is behind Europe and the United States in the development of organic foods, and has the opportunity to support much more domestic production.

In 1999, conventional foods represented the lion's share of retail food sales (by dollar of sales) at 94%, with natural foods at 6% (including organic foods as a subset of 1.8%). With an annual growth rate of 12% to 14%, natural foods are expected to achieve a 10% market share by 2005, including a 4.4% organic foods market share (with a growth rate of 20% per annum). This compares to the very modest expected growth rate of 3% to 4% for conventional foods⁶¹.

While once the exclusive domain of "health food stores", natural foods will increasingly become a part of supermarket offerings, as the major chains attempt to appeal to the growing market segment of health conscious consumers. Over the past few years, mainstream supermarkets have offered organic foods (particularly produce), although the quality, selection and price have been unattractive to most of their shoppers.

Now, Canadian supermarkets are stepping up their appeal to health conscious consumers by following a U.S. trend – marketing "whole health" products⁶². This strategy involves grouping products into five categories: 1) natural and organic foods, 2) natural remedies and vitamins, 3)

over-the-counter remedies, 4) self-care devices, and 5) pharmaceuticals⁶³. Loblaws, has gone one step further by introducing fifty-plus “PC Organics” products.

Consumer attitudes to organic

Worldwide, consumers are attracted to organic food for two basic reasons -- they perceive organic food to be more healthy and better for the environment. The core support for organics is amongst affluent, well-educated, health conscious consumers. Demographic and income shifts have increased the size of this market segment. And like all food products, consumers are looking for taste, appearance, freshness, convenience and price.

The explosive market growth in natural and organic foods is in part a response to the growing concern consumers have regarding pesticides in the foods they eat. During the late 1980's and early 1990's consumer concern about chemicals in food increased dramatically, with seventy-six percent of Canadians being very or somewhat concerned⁶⁴.

Awareness of certified organic food (as that guaranteed to be grown without chemicals) over the same period more than doubled in frequency (from 34% to 78% of consumers)⁶⁵. Consumers' have also shown their understanding of the link between the food they eat and their family's health⁶⁶. In 1997, Rhythm Communications interviewed thirty Toronto supermarket shoppers (83% women) on behalf of the World Wildlife Fund⁶⁷. They expressed an exceptional level of concern regarding pesticides in their food. Sixty percent rated their concern ten out of ten, with an average rating of 9.0 out of ten for the full sample. The reasons for their very high level of concern, in their own words: “unhealthy, causes cancer, poison, long term effects, very dangerous.” They are even more concerned about the food their children eat - a rating of 9.5 out of ten. Some organic shoppers also make the link between personal health and environmental health. For them, buying organic represents an integrated set of values that they wish to express in their food purchases. The Hartman Group of Seattle believes that shoppers with these kind of values may represent 7% of the US market place⁶⁸, but whether that figure holds in Canada is unclear.

This concern for children is one of the determining criteria for organic food shoppers. Although the consumer data on this is not conclusive, it appears that for families with children under 12, economic status of the family may be less important. For families without young children, economic status is a more important determinant of interest in organic food (e.g., aging baby boomers).

Industry Consolidation

Over the past four years, global retail food chains have been concentrating ownership at a rapid rate. “Annual sales of the world’s twenty largest food retailers have increased from US\$600 billion to more than US\$850 billion.”⁶⁹ European countries have the highest levels of concentration, with Sweden topping the list with its three largest retailers (two being co-operatives) taking 95% of food sales⁷⁰. The main motivating factors for corporate concentration are: earnings growth (i.e. profits), maintaining high stock valuation, better returns to scale

through increased buying power with suppliers, and spreading the cost of expensive IT systems.

Corporate concentration in Canadian food retailing is not far behind Europe with over fifty percent of sales controlled by three companies. In the United States, there is less concentration, with thirty percent of the market controlled by the three largest players. And this doesn't tell the whole story, all of these companies are vertically integrated to varying degrees, controlling farms, processing companies, wholesalers, and even finance companies.

The natural and organic food markets are also moving in this direction, with mass market retailers and processors jumping on the band wagon. In the United States, where most of the organic produce is grown and packaged products manufactured, corporate concentration is aping the conventional industry. For example, five giant farms control one half of California's \$400 million (US) organic produce market⁷¹. Food conglomerates like General Mills (owns Cascadian and Muir Glen, and 7 organic mills), Gerber's, Heinz, Dole, Kellogg's, Mars, ConAgra, ADM, and others, have all begun marketing organic food brands. Seventy-percent of the US retail organic milk market is controlled by Horizon Organic Inc.,⁷² a publicly traded company listed on the NASDAQ in 1998 (which also owns two large dairy farms and purchases milk from over two hundred co-ops from California to Maine)⁷³. And, as stated earlier, fifty percent of organic food sales in the US are now funneled through mass market retailers.

Cooperative distribution

Like Canada, the co-operative movement in the United States was the pioneer in natural and organic foods, and co-operatives remain important players (although less so). In the 70's and early 80's, US co-ops and buying clubs were the market leaders with over 50% market share⁷⁴. The three hundred retail food co-ops remaining in the US have total sales of \$700 million (US), which represents a shrinking 4% to 5% market share of the US natural food market.

In Canada, the situation is much different. There are very few natural food co-ops in the country, and only a few new ones developing, mostly in BC. The original Alliance of Natural Food Co-ops of Canada was set up in 1987, and now only two of the five founding members remain as co-operatives – another example of private business consolidation in the natural foods industry.

4.1.2. The international context and how it may affect the development of the organic sector⁷⁵

The growth in demand for organic food has been "a particularly bright spot on the agricultural horizon in recent years."⁷⁶ With an annual compounded growth rate of 20-25% per year in the United States, Canada, the European Union and Japan, organic food represents the fastest growing product category in the food business⁷⁷.

In North America, the United States leads Canada in the development of organic foods. U.S. retail sales grew from \$1 billion in 1990 to \$7.8 billion in 2000⁷⁸. Almost one-third of the U.S. population, currently buys organically grown foods, and over half of all organic products are now purchased at conventional supermarkets⁷⁹. Of 1,000 U.S. shoppers polled, 67% said their

primary store provides natural or organic foods, and 37% said they have looked for and purchased organic foods⁸⁰. There are now, however, significant organic and natural food retail chains in the US, including Wild Oats and Whole Foods Markets who, between them, have over 200 outlets and sales of around \$1 billion US annually. Seventy-five percent of Americans are concerned about food quality, and 66% say organic is not a fad, and will be purchased more in the future⁸¹. The small current market share held by organic foods (currently less than 2%) is expected to quadruple by 2010⁸².

Dollar sales of organic food in the European Union are similar to the United States, but market share is in the 2 to 3% range⁸³. Denmark has the most developed organic system, thanks to its sophisticated government support system for domestic organic production -- with 25-30% of milk produced organically, and the highest per capita consumption of organic food in Europe⁸⁴. It is expected that European sales of organic foods will double in the next four years to \$16 billion U.S.⁸⁵ The number of organic farms in Europe grew from 6,300 in 1985 to more than 100,000 in 1998, and is expected to represent 10% of all agricultural land in Western Europe by 2005⁸⁶. Some countries and regions have already surpassed that target, including some provinces of Germany (30%). Austria (15%) and Italy (up to 25% of its farmed area under organic cultivation).

The Japanese organic food market was estimated at \$3.7-4.5 billion Cdn in 2000, with growth rates of 15% annually predicted for the next few years. Canadian officials believe the Japanese market represents significant export opportunities in all product categories for Canadians⁸⁷. China also has a major focus on 'green' food, some of which is certified organic. ".... it is obvious that the Chinese government and some consumers are placing great emphasis on environmental and health issues for food production."⁸⁸ Currently China is fulfilling this market with domestic production, and if this development continues, China could become a major exporter.

The International Federation of Organic Agriculture Movements has data from 105 countries that shows growth in organic farming revenues of one hundred percent in the past three seasons from US\$10 billion to \$20 billion, and is expected to reach US \$100 billion by 2010⁸⁹.

4.2. Market challenges

The Canadian organic market is immature, meaning that it is in a state of rapid evolution, with many new players, and lacking the infrastructure that characterizes more mature markets. Some of the key challenges are:

4.2.1 Insufficient domestic supply to meet domestic demand

In most commodities and regions, supply is insufficient to meet domestic demand. Although interest in organic in the farm sector is quite high, there are a number of barriers to conversion, both real and perceived, that must be overcome for rapid expansion of the grower base (see

below for more). The exception would be in some of the major export commodities such as grains and beans where supply is sufficient, and excess is exported. In some cases, given existing infrastructure, it is simpler for sellers to export than to identify domestic customers, so the needs of the domestic market may not always be met with Canadian supply. Also, domestic buyers, especially those whose main market is conventional product, often are unwilling to pay prices that reflect costs of production, so this causes some organic producers to look for international markets and forego domestic ones. Domestic supply is also compromised by cheaper priced imports.

4.2.2 Difficulties connecting buyers and sellers

In immature markets, it is common for buyers and sellers to spend a lot of time finding each other. This is partly due to insufficient supply and partly to the absence of "spaces", both real and virtual where buyers and sellers can connect. Although some of such spaces exist, they do not exist for all region - commodity combinations. In many cases, there is also a need for markets that are not commodity specific, given the diversity of products from many organic farms. These market places are needed particularly for small firms that do not wish to operate in the mass market.

4.2.3 Difficulties penetrating and sustaining mainstream markets

The Canadian food industry is characterized by a high level of corporate concentration and extensive market power for retailers and food service companies. At a retail level, this power is expressed in a number of ways, including requiring paybacks and slotting fees to obtain shelf access⁹⁰. This situation makes new product introductions difficult for smaller and independent farmers and processors. As well, recent mergers and acquisitions in the domestic retail sector have put more pressure on warehousing, distribution and merchandising systems, restricting the willingness of some retailers to develop new product lines. The drive to centralized purchasing has reduced capacity to source products domestically. The corporate pressure to keep their supply costs as low as possible usually means that companies that do have contracts with the dominant retailers find they are under constant pressure to cut their costs and compromise quality.

4.2.4 Feasibility of alternative markets such as CSAs, farmer's markets and public sector food buyers

The realities of the dominant food market place drive many farmers and eaters to alternative food distribution systems. Such markets usually focus on horticultural and small animal products. In some areas of the country they are quite well developed, usually when the physical distance between farmers and a cluster of consumers is not great. Their greatest successes are usually found where government or non-governmental agencies play some kind of animating role, helping to create market spaces or linking growers with consumers. In other parts of the country, particularly those regions where the agricultural infrastructure is designed around bulk

commodities, they are less well developed.

The ability of public institutional food markets - hospitals, municipal governments, universities, penal institutions - to support the development of the organic sector has not been well explored in Canada. There have been some successes in the US and Europe. The challenges are significant, however, since many institutions have contracts with large food service companies and do not employ provisions in tendering calls that would encourage purchase from regional organic suppliers. Some public institutions may be willing to consider such provisions, at least on a pilot basis. The key challenge for organic suppliers will be whether they can meet the quality, quantity and price expectations of these institutional markets.

4.2.5 Regulatory and institutional obstacles, including marketing boards

A suite of regulatory obstacles have a depressing effect on farmer conversions and market development. In some instances, these are overt - for example, a marketing board does not permit an organic marketing channel or takes legal action against organic producers. In other cases, they are more subtle. For example, provincial animal, crop and processing sanitation requirements are sometimes irrelevant to organic producers and processors, yet they must comply with them, adding unnecessary expense. With those marketing boards that do support organic streams (e.g., some provincial milk marketing boards, the Canadian Wheat Board), the situation is decidedly better, although there remains some debate regarding the most desirable mechanisms of support. Agricultural institutions, unfamiliar with the concepts and practices of organic farming and processing, frequently view farm operations unfavourably relative to conventional operations and therefore do not provide appropriate supports (e.g., credit, grants, information) to the operation. The GE food and crop regulatory system in Canada is also a major threat to the organic sector since it allows genetic pollution to occur. Most notably, the organic canola industry is now likely defunct because of GE canola gene flow, and there are widespread fears in the organic sector about loss of organic wheat, and even organic grain farming in its entirety since organic farmers depend heavily on wheat to maintain good rotations, if GE wheat is approved.

4.2.6 Difficulties meeting retail and processor quality requirements

Many organic farmers and processors have learned how to produce consistently high quality products that meet market requirements. Given the almost total absence of research and extension support for organic management and food quality, progress to date has been impressive, but with more support more can be done. In addition to the knowledge gap, the conventional market place's fixation with largely cosmetic quality characteristics places additional pressures on organic farmers and processors. Many of these pressures can only be met by investing in expensive capital equipment (e.g., post-harvest handling equipment such as vegetable field chillers), investments that are largely unaffordable for most organic producers. Unfortunately, the fixation with cosmetic characteristics is not matched by interest in nutritional ones, an area where organic farmers and processors have a potentially significant advantage⁹¹.

4.2.7 Domestic and international consumer confidence in certification

Canada now has minimum standards for organic production and processing, although the processing standard contains little detail. Other than in Quebec, where the LOI SUR LES APPELLATIONS RÉSERVÉS - LRQ A20.02 has been implemented, these are not, at this point, enforceable in any specific way, since it is only through the general fraud provisions of the federal Food and Drugs Act that these standards have legal authority. As well, given the absence of federal and provincial inspection and enforcement resources, it remains the role of the sector to be self-policing. An additional concern is the absence of a clear and affordable process for revising the standard in a timely and regular fashion, although a process is currently underway with AAFC. Without all these elements in place, confidence in Canadian certification systems may be in question. There remains debate between the organic sector and the federal government about the need for the Canadian voluntary standard to be referenced in regulation for international acceptance of Canadian organic product, although the Canadian General Standards (CGSB) Board is now examining the possibility of an "easily-referenced-in-regulation" standard in case that is deemed important. Given the current situation, accreditation of certifiers by the Standards Council of Canada (SCC) appears to be essential.

4.2.8 International accreditation

Related to the problems outlined in the previous section, Canada's systems for accrediting certifiers is not fully in place. Although some provinces are well advanced (Quebec, BC), others are relying on the national accreditation initiative. The federal government has committed funds to assist certifiers with accreditation costs through the Standards Council of Canada. Despite this support, it is likely there will be a shakeout amongst certifiers, likely resulting in some loss of certifying bodies in some regions, and potentially higher costs for those applying for certification. Consequently, some debate remains about the merits of this approach and whether it will generate international confidence in accreditation. Accreditation of certifiers by the Standards Council of Canada will be essential, according to AAFC, and will compensate for the voluntary nature of Canadian standards. AAFC believes it will be able to negotiate equivalency agreements with Canada's major trading partners based on the current system. Some in the organic trade, however, believe that the absence of legal authority, that also makes the standard mandatory, will be a barrier to international trade.

4.2.9 Organic is being transformed by the conventional food distribution system (mergers and acquisitions, dilution of standards, suspect certification and audit trails)

Major restructuring of the organic sector is also underway, especially the acquisition of processing, distribution and retail firms by other organic firms or by the conventional food industry. In this sense, the organic sector is being forced to comply with the rules of the dominant food system and there are fears that many of the written and unwritten rules of the conventional food sector are incompatible with those of the organic one. Concretely, systems of certification and accreditation may be threatened by the conventional sector's desire to establish

rapidly a market presence and to capture the increasing market share. In a sense, the conundrum is that we now have reasonably well developed "organic agronomy", but are less clear about what "organic distribution" looks like.

4.3. Farming Challenges

The domestic supply of organic product is a key limiting factor in the development of the sector. Farmer interest has expanded dramatically in recent years, but few supports exist to help farmers interested in farming organically. Although the focus of this section is land-based farming, many of these challenges are paralleled within the aquaculture, hydroponic and greenhouse sectors⁹².

4.3.1. Lack of supports for the transition process

The transition period is usually the most daunting and risky for farmers interested in switching to organic production and there are few formal supports available to help them through it. From many farmers, the obstacles to transition are numerous, including:

- anxiety about finances while the changes are being made, including difficulties raising the money and feeling confident of the revenue stream that would result from the changes;
- worries about the labour implications;
- difficulty acquiring information that feels relevant to their operation;
- problems thinking through the sequence of changes that are necessary;
- problems obtaining suitable equipment or inputs to facilitate the changes;
- limited access to trusted advisors;
- not enough farms in the area modeling the change;
- lack of confidence that the new approach will work;
- lack of confidence in one's ability to make the changes;
- don't like the "look" of the changes (e.g., trash on the soil surface, more weeds);
- don't believe the changes represent good management;
- a belief that the changes will be stressful, either to the decision maker or the farm family;
- family traditions are not consistent with the kinds of changes being proposed;
- anxiety about changes to one's status in the community and with supporting institutions (e.g., banks, extension) if adopting techniques that are thought to be unusual

Although several small regional projects are underway to address these challenges, they are under-resourced and rely extensively on existing organic farmers operating in a voluntary capacity to make them work. Government services in this area is woefully inadequate, although recent hirings at provincial levels suggest new opportunities exist to garner support.

4.3.2. Barriers to entry of new young farmers wishing to start out organically

With an average age of farm operators at 52 years, and some 80% of current farmers looking to sell or transfer their farms in the next 10 years, agricultural faces difficult successional / intergeneration transfer issues. Many young people - both those from farm families and those not

- wishing to enter organic farming face considerable difficulties acquiring land and machinery at affordable prices. Governments in Canada are now realizing the enormity of the challenging and some have begun to develop programs. Since organic farming is frequently less capital intensive and can, depending on the operation, be more profitable on a smaller acreage, it represents a potentially less expensive avenue to enter farming, something governments have yet to fully appreciate.

4.3.3 Insufficient research on and diffusion of solutions to key agronomic problems

A search of the ICAR database of Canadian agricultural research reveals very few research projects underway that focus on organic agriculture, and fewer still of direct relevance to organic processors. Interested researchers have traditionally had difficulty obtaining funding for such inquiries. Although recent developments suggest a shift is underway (e.g., funding for the Organic Agriculture Centre of Canada), without a substantial increase in investment in research capacity, evolution of the organic sector will be impeded. On the positive side, many peer-reviewed journals now focus on organic agriculture, providing researchers with publishing opportunities, and there is more support within research institutions and universities for this kind of research. As discussed in the previous section, however, diffusion efforts and resources are weak. In addition to limited extension staff available to do the work, many are unfamiliar with the appropriate mix of diffusion approaches that will meet the learning needs of organic farmers.

4.3.4. Requirement for suitable inputs, tools and services

Current organic farmers regularly report problems obtaining inputs, tools and services that are appropriate for organic farming. For example, crop cultivars and animal breeds appropriate to their operations may be difficult to find and many farmers spend years adapting commercial cultivars and breeds to their farm. Some find that they have to import seeding or tillage equipment from Europe or adapt commercially available North American equipment. Conventional soil test labs provide only limited information of value. All these challenges slow down the development process.

4.3.5. Shortages of organic feed

A chronic problem for organic livestock producers not self-sufficient in feed is the limited organic feed market. Supply problems in the human food market have some spillover impacts on the animal feed market. Ingredients for some feed supplements are not produced organically or are in limited supply. These circumstances drive up production costs and force certification agencies to adopt standards that are not as stringent as they might like.

4.3.6. Requirement for training and educational support of organic farmers

Other than Quebec, which has for years used federal and provincial continuing education and professional development funds to offer courses on organic farming, training opportunities for

organic farmers remain limited. Many of those that do exist are offered in part by farm organizations, with some limited support from educational institutions. Colleges of agriculture within the mainstream university system in Canada still do not offer degree programs in organic agriculture, although the number offering courses has increased significantly the past few years. But, clearly, training needs of both a specialized and general category are much greater than the current supply of courses and programs.

4.3.7. Increasing downward price pressures as the organic market expands

The availability and need for price premiums has been very variable across commodities and regions. As some sectors of the organic market place mature, the price premiums that were available are declining. If the production knowledge base is developing sufficiently to reduce production costs, such declines are not necessarily a problem. However, the lack of research and extension support for organic, and the extra costs of some inputs and of marketing and distribution mean in some cases that declining price premiums are creating pressures on existing farmers. At this point, there is only minimal information available on production costs that might help growers with farm management decisions and help reduce these costs.

4.3.8. Costs and logistics of marketing and distribution

Organic farmers must often bear higher marketing and distribution costs than their conventional counterparts. There are a number of reasons why this is so, including higher per unit costs associated with low volumes, the added labour costs of identifying markets, and the absence of organizations that market organic commodities and / or provide market information services to growers. Addressing these deficiencies could substantially reduce costs for some producers.

4.3.9. Threats to organic production from chemical and GE contamination

Pesticide drift, industrial pollutants and genetically engineered plant varieties are significant threats to certified organic production in certain regions of the country. In particular, GE contamination of canola will likely kill the Canadian organic canola sector. Approval for unconfined release of GE wheat is an even more serious threat to organic farming since wheat is such a keystone crop in many organic farming rotations.

4.3.10. Suitable production inputs for organic systems

Organic producers often require different production inputs than conventional producers. In addition to different fertilizers and pest management materials, organic farmers also often use different crop varieties and animal breeds. They require ideally feeder stock from organic systems. Their equipment and machinery needs are often different. They sometimes struggle to find these production inputs, and, in some cases, such as crop varieties and animal breeds, the dominant trends of conventional agriculture often reduce their options.

4.4. Processing challenges

The organic processing sector is underdeveloped, with limited capacity for different commodities in various regions of the country. Data on the organic processing sector is currently very limited, and more information is needed to elaborate more fully what the challenges and opportunities are. The challenges outlined here limit both start ups, conversions, and expansion of existing enterprises.

4.4.1. Limited numbers of dedicated organic and co-packing facilities

There are not enough processing facilities for many commodity areas. Canada only has about 320 dedicated organic processors, handlers and retailers currently, and the majority of these are seed cleaners, millers, cereal makers and bakeries. This figure does not include conventional food processors who also co-pack organic product, such as dairies, oils and fruit products. Identifying suitable co-packing facilities is a viable short term strategy for increasing processing volumes, but is also a challenge as many conventional processing facilities are too large to shut down production to process a small organic batch at a reasonable price.

4.4.2. Undercapitalization

Chronic undercapitalization is a recurring theme in the organic processing and distribution sector, especially for start-up, small and medium sized firms. Many of the difficulties for these farms are not unique to the organic sector but characterize most firms of these categories (known in the trade as SMEs - small and medium enterprises). Since the organic sector is dominated by SMEs - with sales of less than \$100 million annually - it suffers proportionately more from these problems. Undercapitalization is the product of a number of factors: disinterested or ill-informed financial institutions and venture capitalists; lack of knowledge and resources to prepare good business plans; lack of track record for organic entrepreneurs; lack of data on the state of the organic sector and its prospects; and difficulties assuring markets.

4.4.3. Health and food safety regulations and requirements

SMEs also suffer for having to comply with health and food safety regulations and requirements usually designed for large firms. For small operators, it is expensive to meet food safety regulations and design and implement Hazard Analysis Critical Control Point (HACCP) plans., Health inspectors often do not provide technical assistance and expect operators to have sophisticated knowledge (and the associated formal education) to implement such plans and regulations. They often do not see themselves as problem solvers. For start ups, it is difficult to test market products until a fully approved facility is in place. Yet, small operators can not afford to put everything in place before developing a test market for their product. Facilities like food technology centres and incubator kitchens which can address this problem are only available in a limited number of places⁹³. Organic processors often suffer additionally because the food safety rules require they use synthetic chemicals not permitted in organic processing standards. They

often have to convince inspectors that their sanitation systems provide equivalent protection. Some organic processors, unable to comply with changing regulations, have gone out of business.

4.4.4. Lack of R&D

The lack of research characterizing the organic sector generally is even more pronounced in processing. University food science departments display even less interest in organic than do agronomy and animal science departments. The high degree of corporate concentration characterizing Canada's food and beverage processing sector means that most research is focussed on the needs of a few large firms.

4.4.5. Quality assurance

There are several dimensions to the quality assurance challenges. The first is the quality of the supply. As discussed in the farming section, not all producers have the knowledge or equipment to optimize crop and animal product quality. Consequently, what is purchased by processors may have a significant degree of dockage or may not produce a processed good of the desired quality. Depending on the size of the processing operation, quality control resources within the plant may be limited. Finally, packaging may not be optimal, depending again on the knowledge and resources of the processor.

4.4.6. Difficulties obtaining supply of certain ingredients and processing aids

Certain ingredients and processing aids are not currently produced organically or their supply is so limited that few processors can purchase them. This creates some difficulties for certification agencies who are forced to permit some non-organic materials to be used in some cases. The complexities of labeling such products also create some confusion in the marketplace and difficulties with reciprocal recognition of standards amongst agencies and nations.

4.4.7. Supply and distribution logistics, prices and costs

Because the organic market is still small, and availability of product variable, sourcing costs are significant. Transportation costs tend to be higher on a per unit basis since volumes are relatively small and sources may not be close by. Arranging transport is also often problematic, since small processors are often dependent on contract trucking, rather than having their own fleets. In some commodities, these pressures encourage processors to rely on a few external suppliers who can provide much of what they need on a regular basis at lower transaction costs. Processors (and distributors) often use the US import price as their benchmark for domestic purchasing decisions. Keeping prices in that range is often difficult for growers and brokers.

4.4.8. Limited relations with the conventional processing sector

In some regions and commodities, the fastest way to increase processing capacity is for conventional food processors to convert part or all of their operations. However, organic processors tend not to be active in mainstream processor associations, and there is little concerted "recruitment" of conventional processors underway.

4.4.9. A limited organic processing standard

Organic processing standards need to be more fully developed to both guide processors and provide consumer confidence.

4.5. Organizational capacity

4.5.1. Not enough well-resourced organizations to promote organic food and farming

Although many organizations carry out certification functions, not very many focus on organic promotion and development. Those that exist have largely regional mandates and very limited resources. They rely extensively on volunteers, especially those working in the sector already. In comparison to other areas of endeavour with significant social, economic, health and environmental benefits, the organic sector is seriously underresourced. This has several consequences, including limited ability to influence the policy arena, to collaborate with other organizations, and to engage with the conventional farm sector.

4.5.2. Variable organizational strength across regions

Organic farming organizations are reasonably well organized in some regions of the country and poorly organized in others. Strong collaborative networks exist in BC, Manitoba, Quebec and the Maritimes. In other provinces, organizations are having difficulty collaborating. To some extent, this limits the ability of regions to participate equally in national initiatives.

4.5.3. History of difficult collaboration at a national level

Although many successful regional networks have evolved, and a few organizations have operated successfully at a national level, overall, the organic sector has struggled to develop a collaborative national spirit. The reasons for this include the competitive nature of the food business, the shortage of organizational resources and the stresses on key volunteer leaders, the independent mindedness of many of the farmers and entrepreneurs that have put the sector in place, and conflicts between key leaders. The development of national standards took 12 years, in part because of these problems. This speaks to the need for a "concertation" process as has been used successfully in Quebec with the Tables Filières model.

4.5.4. Non-cooperative relations between organic farming and mainstream farm organizations

For years, conventional farming organizations ignored, marginalized or attacked organic farming. This has changed significantly the past decade as organic farmers have frequently played leadership roles in mainstream farming organizations and conventional farmers have participated in organic field days and other organic events. This hostility that characterized earlier periods is largely gone, but relations have yet to become truly cooperative. Consequently, access to decision makers and resources in the agriculture and food industry remains limited. As with any relationship, both parties obtain benefits from closer partnership and both will have to take steps to advance it.

4.6. Public image

4.6.1. Organic is under attack from the chemical and biotechnology industries as popularity rises

The public's increasing interest in organic farming has caused certain sectors of the conventional food industry, particularly the chemical and biotechnology industries, to mount media campaigns against organic food and farming. The information in the campaigns is rarely based in data, or limited data are manipulated to bolster the message. So far these campaigns have had only a limited damping effect on consumer enthusiasm but it is likely that these industries will devote increasing resources if the current level proves ineffective.

4.6.2. The broad public benefits of organic are not adequately appreciated by environmental and health organizations, professionals and policy makers

In conventional circles, organic food and farming have been viewed primarily as a niche market, serving particularly the interests of middle and upper income earners. The broader social, health and economic benefits outlined in section 2 have been poorly appreciated. Consequently, other sectors have not realized that promoting organic food and farming is consistent with their objectives and have not devoted any resources to it. This is beginning to shift, for reasons not directly related to organic farming organization advocacy work. There is significant potential now for the organic sector to gain new allies.

4.6.3. Foundations are just beginning to understand why organic should be supported

Related to the themes of section 4.6.2, established foundations have not seen organic food and farming as part of their mission. This has caused some within the organic sector to focus on developing internal streams of financing for advocacy work. This should be pursued, but many established foundations are now tentatively funding organic farming work and this needs further development.

5. The strategic plan - what is being done, what else needs to be done, by whom, by when

This section sets out the steps that will help overcome the current challenges of the sector and make the vision a reality. For each step, there is some discussion about what has already been achieved and what additionally needs to be done. The plan does not always specifically identify to whom a recommendation is targeted. It is a presumption of this strategic plan that most recommendations have multiple targets - the organic sector itself, the conventional food and agriculture sector, eaters, and different levels of government.

Framework:

The European experience developing the organic sector reveals key strategic steps that have been critical to success⁹⁴. These steps are adapted to the Canadian scene here, and then some discussion on the extent to which these steps have been implemented in Canada and what else needs to be done. The Canadian experience of implementing these steps will be different than in Europe, but the steps themselves provide a framework for strategic action.

Step 1. Establish an organic "community", with certification systems and symbols.

Situation in Canada:

There is an organic community in Canada, led by about 40 certification bodies⁹⁵ and a dozen or so organizations promoting organic farming. Certification and audit systems are well developed, and for the most part, reciprocal agreements and collaboration exists amongst certifiers. Most certifiers have established symbols. However, important as certifiers are to the integrity and control of the term organic, it does not necessarily make sense to have farming, processing and oversight functions represented solely through certifiers. Consequently, several regions of the country, including BC, SK, MN, QC and the Atlantic have functioning networks that include a wide range of interests within the organic sector.

What else needs to be done:

1. Relations between certification bodies are not always cordial, to the overall detriment of the sector. As a result, not all regions have functioning organic networks. Such rifts must be healed, so that effective regional networks can be put in place. Viable regional networks are a requirement for effective national action. These networks should include representatives of farmers, processors, certifiers, retailers, researchers, extension specialists and any organizations that can speak directly to the interests of organic food consumers.
2. Certification bodies often operate with limited paid staff, stretching thin their volunteer networks. Fees paid by farmers may not really cover operating expenses, yet increasing fees is not necessarily an option if the goal is to attract as many farmers as possible to organic certification. There is a need to for certifiers to collectively devise a strategy that places them on more firm financial footing, requiring perhaps a nationally organized workshop with funding from a variety of sources to develop such a strategy. As part of this discussion, the question of

certification and accreditation fees, and who should pay them (farmer, government and possible additional contributions), can be considered. Amalgamation of certifiers could also be part of the discussion.

Step 2. Assure political recognition of standards and certification

Situation in Canada:

National recognition at a federal level has been a slow process, starting in the late 80s with recognition of a definition enforceable under the general provisions of the Food and Drugs Act, and leading to the adoption of a national standard in 1999. Now, an accreditation process is underway through the Standards Council of Canada, with partial funding provided by Agriculture and Agrifood Canada. One organization has now received accreditation.

What else needs to be done:

1. A process must be established to implement regular revision of standards. The organic sector is currently developing an internal national mechanism for recommending agreed up changes to the standard. Through this mechanism, unified recommendations can be offered on a regular basis to the federal government or whatever authority it so designates to revise the standards. At this point, AAFC "has contracted for an assessment of the Canada Standard in comparison with world standards. AAFC is prepared to assist the Canadian organic community to renovate the standard to make it "the best in the world." This must be in conjunction with the Canadian General Standards Board. AAFC will look at all options to facilitate the standard renovation process. The AAFC is looking for a national consensus for standards changes. AAFC encourages dialogue but will not be involved in the standard revision process. There is a will to make it a better (more efficient than the initial effort) process. AAFC would like to have the standard finished by the end of summer 2002.... AAFC is preparing to negotiate equivalency agreements with the EU, Japan and the US as soon as the Standards Council of Canada endorses the new standard."⁹⁶
2. Standards must be referenced under specific regulations of the Food and Drugs Act to increase legal enforcement provisions with specific financial penalties for transgression. As part of the referencing process, the standards should become mandatory, so that if someone wishes to use the term organic on product, it must be certified by an accredited certifier. The costs borne by certifiers in complying with a mandatory measure must, however, be reasonable and in line with accreditation costs of Canada's major trading partners.
3. More resources must be devoted to enforcement to protect the integrity of organic standards.
4. A single national symbol system for the organic sector needs to be implemented. The European experience is that one national symbol is critical to building consumer awareness. It doesn't matter necessarily if it is a private or government symbol⁹⁷. One option for the Canadian organic sector is to make available the Canadian symbol currently owned by the Canadian Organic Standards Board.
5. With a national symbol in place, a consumer campaign to promote it should be launched.

Step 3. Obtain financial support for transitional growers and mentoring and training payments for existing organic farmers.

Situation in Canada:

Canada has developed various successful grants programs in the past decade that reflect the belief that farmers should be supported for delivering environmental services. These have primarily been for investment in structures and equipment (e.g., manure storage, fencing of riparian areas, conservation tillage equipment) rather than in farming systems.. These programs have mostly been cost-shared and frequently have been administered by coalitions/collaboratives, including Environmental Farm Plan organizations, PMRA Working Groups, and Adaptation Councils. Although there have been pilot projects at a provincial level examining transitional credit and crop insurance schemes, there is currently no program of financial supports specifically designed to support organic farmers during the transition period.

What else needs to be done:

1. The organic sector needs to implement an advocacy plan to convince the federal and provincial governments that a net income transitional insurance program is required to help farmers through the financial difficulties associated with the transition period. The details of the plan need to be developed, but the concept is that farmers receive insurance payments, funded by the provincial and federal governments, if their net income falls below a specified level relative to their income prior to commencing the transition. The payments would cover the gap between their income during transition and the specified level. The program would cover the first 3 years of transition. Adjustments to this program would be necessary for young farmers taking over a conventional farming operation or starting a new operation, since they would not necessarily have a record of income on which to base the insurance trigger levels.
2. There will be significant roll-over of ownership in the next 10 years within agriculture and there is much debate currently about intergeneration farm transfer and about bringing new people into farming. Organic represents an interesting opportunity for many new farmers, and as provincial programs for young farmers are developed, specific supports should be targeted for organic farming.
3. The organic sector should also develop a plan to convince every existing crop insurance program in Canada that insurance payments should be based on the real market prices received for organic crops. Currently, this only happens in some provinces with some crops.
4. Research should be carried out on the degree to which organic farmers may currently be penalized by other existing income support measures. If such penalties exist, directly or indirectly, income support measures should be modified to eliminate them.
5. The organic sector also needs to advocate for a program for existing organic farmers that provides payments for their role as mentors and teachers of new organic farmers. Organizations offering mentoring and training programs should be able to apply to a government - funded granting body for money to pay existing organic farmers to carry out these functions.

Step 4. Advisory services are established to support the adoption process and to help both farmers and organic processors with quality assurance

Situation in Canada

Most provincial governments have now hired personnel with organic farming responsibilities, however, few have sufficient time or expertise to adequately support the information needs of existing and transitional organic farmers. A few organic farming organizations have established advisory services that rely largely on the voluntary efforts of existing organic farmers. Such a situation is proving largely unsustainable. Several organizations, including COG, have published valuable production handbooks. The recently funded Organic Agriculture Centre of Canada will provide supports to provincial specialists and provide a range of on-line information and training resources that will help with these problems.

For processors, there is little targeted specifically to the organic sector, although some processors have taken advantage of existing conventional programs.

What needs to be done:

1. Very successful advisory services have been established in Europe. These need to be studied in detail and their lessons applied to the different provinces of Canada, with the objective of presenting feasibility studies on the structure, partnerships and funding arrangements to establish advisory services in each province. Attention should be paid particularly to horticultural advisory services, and beef, hogs and chicken.
2. Formal training programs for conversion advisors are needed, as are regionally appropriate guides and manuals that will support the transition process.
3. To support the advisory services, an effective relationship is required between the services and researchers at agricultural schools, so that research needs are properly identified and projects undertaken. This also means that government research funding agencies must be engaged. A network of demonstration and research farms (both working and research centre farms) across the country would greatly facilitate generation of new and useful knowledge, and the organic sector needs to develop a full proposal to the federal and provincial governments on how to make this happen, based in part on the successes of this model in Europe.
4. Successful services for the small, medium enterprise (SME) processing sector (including microprocessors) have been developed in Europe. The lessons of these systems need to be learned and applied to the Canadian scene so that a proposal can be developed to establish such a service.

Step 5. Enlist the positive involvement of conventional farm, extension and research organizations in organic farming development. Explore opportunities to use local institutions concerned about issues related to organic farming to generate supports.

Situation in Canada:

Organic farmers are generally no longer marginalized in their communities and in farm organizations. Although most participate primarily in organic farming organizations, some have

had significant leadership positions in mainstream farm organizations, commodity groups and marketing boards. Other than Quebec and BC, organic farming organizations have not had formal institutional relationships with conventional farm organizations. Many organic farmers and farm organizations do have affiliations with local and regional institutions that are interested in the broader social and environmental benefits that can come with organic farming adoption. There is significant room to explore these kinds of relationships to advance organic, especially at the local and regional level.

There is now a network of researchers who investigate matters related to organic farming, although institutional and funding supports have been limited. The Organic Agriculture Centre of Canada has a mandate to advance organic farming research.

What else needs to be done?

1. Strategic plans are needed to placing organic farmers in leadership positions in conventional farm organizations, commodity groups, and marketing boards.
2. A bi-annual forum that draws people from the conventional and organic sectors to discuss issues of mutual interest would create an avenue for on-going discussion.
3. A system is needed to link research needs of farmers with researchers across the country. Such a system has existed for years within the conventional agriculture sector.
4. Mechanisms for sharing the successes of collaborations with local and regional organizations and institutions would advance organizational activity across the country. Although such entities differ from region to region, there are often bodies carrying out similar functions that can be engaged in organic farming development, based on successes in other regions.

Step 6. Hasten the development of organic markets

Situation in Canada:

Although some regional bodies have taken on the task of market planning at a regional and provincial level, no organization is currently providing such services at a national level. The key challenge is to build a more coordinated supply chain.

What needs to be done:

1. Processor and distributor transition programs financed by the federal and provincial governments, must be put in place. Tax credits for organic processing start ups could be considered part of the transitional support program. Loan funds are also a possibility worth exploring⁹⁸.
2. As part of new start up supports, especially for microenterprises, facilitate the establishment of incubator kitchens across the country.
3. The processing sector needs a national business plan that companies can use to establish consulting relations with business development consultancies. This plan should include, identification of "orphaned" processing facilities that could be used for new organic processing startups, and should have a microprocessor support component.

4. Advocacy plans are needed to convince food science departments in Canadian universities of the needs of the organic food sector
5. A forum is needed to work with mainstream retailers and processors on the overall vision for the organic sector and its strategic development, to address imports; e.g., strategic direction of the sector towards those commodities currently in high demand but low domestic supply, dealing with quality specifications. This forum should also propose measures to coordinate supply amongst producers and distributors as part of efforts to favour domestic production. As part of this, funds should be allocated to hire cooperative organization expertise that helps build cooperative production and marketing capacity that would respond to retailer and manufacturer requirements for stable and abundant local supplies. Opportunities for marketing organic products on a seasonal basis to attract consumers who may respond to in-season specials should be investigated.
6. There is a need to strategically build consumer awareness of the personal and societal benefits of organic foods and farming with media campaigns that target certain misconceptions, enhance weak regions and commodities, and enlist consumers in efforts to shift conventional retail behaviour and government supports. Where significant opportunities for expanding local production and distribution exist, launch buy local organic campaigns modelled on the successful campaigns that have been used in different regions of Canada for local conventional products.
7. An organization should spearhead research on options for improving post-harvest handling within the organic distribution chain.
8. Amendments to food grading standards should be explored so that organic farmers are not unduly penalized (loss of marketable yield) by grading standards that encourage growers to use pesticides. The amendments, though, should not be implemented in such a way that they compromise consumer interest in organic foods.
9. Identifying key public sector institutional purchasers whose organic purchasing can drive market development and public profile for the sector is a critical need.
10. There is need of services that provide current prices for organic products. This is already done on a regional basis in some parts of the country and needs to be national in coverage.
11. Regional market facilitators are needed to link buyers and sellers within regions. Some NGOs and institutions are already playing this function, but it needs more consistent support for regional markets to grow.

Step 7. Develop coordinating and advocacy institutions to advance organic

Situation in Canada:

Most provinces have organic food and farming organizations, and these have in some provinces successfully influenced the planning and development of the sector. One organization has a national presence, but resources are too limited at this point, and representation insufficiently broad, to take on all the planning, development and advocacy functions required to advance the sector nationally. A proposal to create a national organic entity to address revisions to standards is currently under discussion. Some environmental organizations are now expressing a desire to support the development of the organic sector, but they are not in a position to make it their

primary work.

What else needs to be done?

1. The key area of work is national planning, development and advocacy. The sector needs a body to serve as a national coordination and implementation entity for the organic sector. A coalition structure appears to be most desirable. One organization would have to provide the "backbone" for the coalition. One model is that such an organization "hosts" the coalition by lending its name (and hopefully charitable number) to fundraising efforts and by providing office space and facilities for the coalition staff person. The staffperson, however, reports to the coalition, not to the host organization. The coalition acts as an umbrella structure for all the organizations that want to participate. Its membership would be other organizations. The mission of this coalition would explicitly be service to its membership regarding planning, development and advocacy, and it would have no functions directly related to commerce. It would be broader in mission than a traditional trade association since its members would represent much more than the industry. Its scope of activities would include building research and development, changing government policies, programs and regulations, improving extension and advisory services, growing consumer awareness and confidence in organic, and international relations⁹⁹. The coalition would not speak in its name, but rather would help all the organizations who wish to participate on any given issue to speak harmoniously. So the staff person would essentially be a support to all the organizations wishing to collaborate. Collaboration on any one project would be voluntary. As many organizations as wanted to sign on would do so. However, for all members of the coalition, there would have to be broad agreement on the plan of action to be undertaken. The coalition would have an executive committee so the staff person had a group to bounce things off of on a regular basis. The coalition would have an annual meeting to elect officers, work on strategic plans, etc. A structure like this can be funded with a salary and some communication money and office supplies.

2. A national organic organization capacity building program, funded through established mechanisms for voluntary sector development, needs to be established, one that helps local and regional organizations develop their expertise and financial stability.

3. The organic sector must convince the federal government to establish and fund a national "Organic Foods Council" with a mandate to encourage, plan, monitor and assess the opportunities to develop Canadian organic food production, to formulate proposals for additional activities and to comment on standards for the control of production, marketing, storage, transport, labelling, distribution and retailing of organic goods. This body would function somewhat like a national "table filiere". The membership question, and how people become members, requires further study, but a composition like what follows is indicative of the intent of this proposal. Note that the coalition described under #1 would not be a member, but many of the coalition member organizations would likely have representatives.

- 1 from organic farming networks in each province/ territory (13?) (the assumption here is that we'd end up with a mix of backgrounds - some people from certification bodies, some from advocacy or educational organizations)

- 1 from the federal government, likely a senior official from AAFC
- 1 from the provinces and territories representing the others, likely a senior provincial agriculture department official
- 1 from a national environment group
- 1 from an organization that can speak to consumer concerns
- 1 from university research or training
- 1 from a mainstream farm organization
- 1 from mainstream manufacturing
- 1 from mainstream retailing
- 5 from organic processing, representing each of the regions and a mix of commodities
- 5 from organic retailing, representing each of the regions and a mix of commodities
- 5 from organic distribution, representing each of the regions and a mix of commodities
- 1 from marketing boards

6. Developing organizational action plans and commitments

If this plan receives widespread acceptance, it is hoped that organizations will identify specific tasks they are willing to take on to implement the plan. We anticipate that these organizational discussions will take place over the next 6 months. Although funding for this first phase of plan development ends in March 2002, organizational commitments will be collected by Ralph Martin of the Organic Agriculture Centre of Canada at Nova Scotia Agricultural College. These organizational commitments will guide the project steering committee and other collaborators in the development of subsequent funding proposals and plan implementation.

To assist organizations with discussions about their commitments to the national strategic plan, here are some possible questions/instructions to consider. If organizations can prepare a short written report using the following framework, the task of compiling all received information will be made easier.

1. Identify current organizational activities related to the proposed strategic actions. For each relevant strategic action, please briefly identify the current activities. If you believe your activities are at odds with the strategic actions in the plan, please identify why.
2. If your organization has a strategic plan, please identify how your future planned activities might intersect with the national strategic plan.
3. Please identify those strategic actions that you are willing to take a lead role on in 2003, and what resources you may be willing to provide for that task. In your discussion of resources, identify existing resources, or ones you believe you could successfully obtain in a funding proposal. Also identify strategic actions for which you are willing to play a support role in 2003.
4. Please identify whether your organization has the capacity to provide the "backbone" for the national coalition proposed in step 7.

7. Concluding remarks

Recent events and forces are providing the Canadian organic sector an unprecedented opportunity to build on earlier efforts and systematically plan its own future. Markets, governments, and the conventional agriculture sector show a greater willingness to help advance the organic sector. A spirit of collaboration is returning to the organic sector after some years of discord. There is a mood of respect for diverse approaches to organic sector development, yet a desire to proceed with agreements of the majority on some specific and general issues. This plan will hopefully carry this spirit of collaboration to reality.

Endnotes

1. Pretty, J. *et al.* 2000. An assessment of the external costs of UK agriculture. **Agricultural Systems** 65:113-136.
2. Pretty, J. Centre for Environment and Society, University of Essex, personal communication, July 2000.
3. Schmid, O. 1994. Agricultural policy and impacts of national and regional government assistance for conversion to organic farming in Switzerland. *In*: N.H. Lampkin and S. Padel (eds.). **The Economics of Organic Farming: an international perspective**. CAB International, Wallingford, Oxon, UK. Pp. 393-410.
4. Stonehouse, D.P. *et al.* 1997. Holistic approaches to natural resource management and environmental care. **Journal of Soil and Water Conservation** 52:22-25.
5. Loeffler, A. 1999. **Strategies for the development, implementation and monitoring of agricultural nonpoint source pollution control programs in Ontario**. Ministry of the Environment, Toronto.
6. McRae, T. *et al.* (eds.) 2000. **Environmental Sustainability in Canadian Agriculture: report of the agri-environmental indicator project**. AAFC, Ottawa.
7. N₂O emissions (1996) = 120 Ktonnes; CH₄O emissions (1996) = 1074 Ktonnes
8. McRae, T. *et al.* (eds.). 2000. **Environmental Sustainability of Canadian Agriculture: report of the agri-environmental indicators project**. Agriculture and Agrifood Canada, Ottawa.
9. Agriculture and Agrifood Climate Change Table. 2000. Reducing Greenhouse Gas Emissions from Agriculture: Options Paper. National Climate Change Secretariat. **Publication #: 2028/E**
10. Agriculture and Agrifood Climate Change Table. 2000. Reducing Greenhouse Gas Emissions from Agriculture: Options Paper. National Climate Change Secretariat. **Publication #: 2028/E**
11. Manure emissions = 20 Mt CO₂ equivalents (1996)
12. IPCC Working Group II. 1996. **Technologies, Policies and Measures for Mitigating Climate Change**. IPCC, Geneva.
13. For a sampling of reviews, see Arden-Clarke, C. and Hodges, R.D. 1987. The environmental effects of conventional and organic/biological farming systems. I: soil erosion with special reference to Britain. **Biological Agriculture and Horticulture** 4:309-357; Arden-Clarke, C. and Hodges, R.D. 1988. The environmental effects of

conventional and organic/biological farming systems. II: soil ecology, soil fertility and nutrient cycles. **Biological Agriculture and Horticulture** 5:223-287; Arden-Clarke, C. 1988. The environmental effects of conventional and organic/biological farming systems. IV: farming system impacts on wildlife and habitat. Research Report RR-17. Political Ecology Research Group, Oxford, UK; de Vries, G.J.H. *et al.* 1998. **Ecological Sustainability of Agriculture and Horticulture - A Comparison of 'organic' and 'Milieukeur'**. Centre for Agriculture and Environment, Utrecht, The Netherlands; Haas, G., Wetterich, F. and Köpke, U. (2001) Comparing intensive, extensified and organic grassland farming in southern Germany by process life cycle assessment. **Agriculture, Ecosystems & Environment** 83(1/2) 43-53; Pretty, J.N *et al.* 2000. An assessment of the external costs of UK agriculture. **Agricultural Systems** 65:113-136.; Pretty, J.N. and Ball, A. 2001. **Agricultural Influences on Carbon Emissions and Sequestration: A Review of Evidence and the Emerging Trading Options**. Centre for Environment and Society and Department of Biological Sciences, Occasional Paper 2001-03. University of Essex, UK

14. Composting and tillage are sometimes offered up as reasons why organic farming should not be supported as a greenhouse gas mitigation strategy. Frequently, fuel usage for tillage is highlighted by organic farming critics. Fuel use increases relative to no-till operations is usually a relatively part of total farm greenhouse gas fluxes (Robertson, G.P. *et al.* 2000. Greenhouse gases in intensive agriculture: contributions of individual gases to the radiative forcing of the atmosphere. **Science** 289 (15 Sept):1922-1925). But, to produce a gain in carbon storage, a management practice or system must (a) increase the amount of carbon entering the soil as plant residues or (b) suppress the rate of soil carbon decomposition. What's critical is that the carbon enter at a rate that exceeds the decomposition rate. Organic farmers generally add so much more organic C and a more diverse range of materials relative to conventional and no-till operations. There is evidence that adding diverse materials with suitable C:N ratios also creates a more stable pool of organic material. Cf. Willson, T.C. *et al.* 2001. Biologically active soil organic matter fractions in sustainable cropping systems. **Applied Soil Ecology** 16:63-76.

15. A summary of the report was prepared by the authors Ulrick Köpke and Guido Haas and reported in **New Farmer and Grower** Spring 1996.

16. Liebhardt, W.C. *et al.* 1989. Crop production during conversion from conventional to low-input methods. **Agronomy Journal** 81:150-159; Drinkwater, L.E. *et al.* 1998. Legume-based cropping systems have reduced carbon and nitrogen losses. **Nature** 396:262-265

17. Robertson, G.P. *et al.* 2000. Greenhouse gases in intensive agriculture: contributions of individual gases to the radiative forcing of the atmosphere. **Science** 289 (15 Sept):1922-1925.

18. Wander, M.M. 1998. Tillage impacts on depth distribution of total and particulate organic matter in three Illinois soils. **Soil Science Society of America** 62:1704-1711; Needelman, B.A. 1999. Interaction of tillage and soil texture: biologically active soil organic matter in Illinois. **Soil Science Society of America** 63:1326-1334.

19. Welsh, R. 1999. **The economics of organic grain and soybean production in the US mid-west**. PSPR#13. Henry A. Wallace Institute for Alternative Agriculture, Beltsville, MD.

20. Helmers, G.A. *et al.* 1986. An economic analysis of alternative cropping systems for east-central Nebraska. **American Journal of Alternative Agriculture** 1:153-158.

21. MacRae, R.J. and Mehuys, G.R. 1985. The effect of green manuring on the physical properties of temperate-area soils. **Advances in Soil Science** 3:71-94.

22. See, for example, standards with international relevance developed by the International Federation of Organic Agriculture Movements (IFOAM). <http://www.ifoam.org>

23. Estimates from World Wildlife Fund - Canada. http://www.wwfcanada.org/satellite/prip/factsheets/PRIP_PesticidesManagement.pdf

24. See studies reviewed in FAO. 2000. **Food safety and quality as affected by organic farming**. Twenty Second FAO Regional Conference for Europe, Porto, Portugal, July 2000.
25. See for example Woese, K. *et al.* 1997. A comparison of organically and conventionally grown foods – results of a review of the relevant literature. **J. Science of Food and Agriculture** 74: 281-293.
26. FAO. 2000. **Food safety and quality as affected by organic farming**. Twenty Second FAO Regional Conference for Europe, Porto, Portugal, July 2000.
27. FAO. 2000. **Food safety and quality as affected by organic farming**. Twenty Second FAO Regional Conference for Europe, Porto, Portugal, July 2000.
28. MacRae, R.J. *et al.* 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198; Stanhill, G. 1990. The comparative productivity of organic agriculture. **Agriculture, Ecosystems and Environment** 30:1-26; Lampkin, N.H. and Padel, S. (eds.). 1994. **The Economics of Organic Farming: An international perspective**. CAB International, Wallingford, Oxon, UK.; Pretty, J.M. 1995. **Regenerative Agriculture**. IISD, London.
29. **Note:** yields relative to conventional systems are dependent on the intensity of conventional production. Consequently, in intensive culture in Europe, relative yields are often below these levels. In extensive systems in North America and Australia, yields are frequently equivalent or higher. See Padel, S. and Lampkin, N.H. 1994. Farm-level performance of organic farming systems: An overview. *In:* N.H. Lampkin and S. Padel (eds.). **The Economics of Organic Farming: an international perspective**. CAB International, Wallingford, Oxon, UK. Pp. 201-219.
30. Padel, S. and Lampkin, N.H. 1994. Farm-level performance of organic farming systems: An overview. *In:* N.H. Lampkin and S. Padel (eds.). **The Economics of Organic Farming: an international perspective**. CAB International, Wallingford, Oxon, UK. Pp. 201-219.
31. MacRae, R.J. *et al.* 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198; Lampkin, N.H. and Padel, S. (eds.). 1994. **The Economics of Organic Farming: an international perspective**. CAB International, Wallingford, Oxon, UK.
32. MacRae, R.J. *et al.* 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198; MacRae, R.J. *et al.* 1990. Policies, programs and regulations to support the transition to sustainable agriculture in Canada. **American Journal of Alternative Agriculture** 5(2):76-92.
33. Drinkwater, L.E. *et al.* 1998. Legume-based cropping systems have reduced carbon and nitrogen losses. **Nature** 396:262-265; Welsh, R. 1999. **The Economics of Organic Grain and Soybean Production in the Midwestern United States**. Henry A. Wallace Institute for Alternative Agriculture, Washington; MacRae, R.J. *et al.* 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198.
34. Girt, J. 1992. **The Environmental Impact of Farm Support Policies in Ontario**. Report to the Policy Committee, Ontario Round Table on Environment and Economy. January, 1992.
35. Lockeretz, W. 1989. Comparative local economic benefits of conventional and alternative cropping systems. **American Journal of Alternative Agriculture** 4:75-83; Madden, J.P. and Dobbs, T.L. 1990. The role of economics in achieving low input farming systems. *In:* C.A. Edwards *et al.* (eds.). **Sustainable Agriculture Systems**. Soil and Water Conservation Society, Ankeny, IA. Pp. 459-477.

36. MacRae, R.J. *et al.* 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198.
37. Lampkin, N.H. and Padel, S. 1994. Organic farming and agricultural policy in Western Europe: An overview. *In*: N.H. Lampkin and S. Padel (eds.). **The Economics of Organic Farming: An international perspective**. CAB International, Wallingford, Oxon, UK. Pp. 437-456.
38. Lampkin, N. *et al.* 1999. **The Policy and Regulatory Environment for Organic Farming In Europe: Organic Farming in Europe: Economics and Policy**, Volume 1. University of Hohenheim, Stuttgart, Germany.
39. The studies referenced in this section do not necessarily differentiate between organic farmers and other forms of sustainable production.
40. Lasley, P. *et al.* 1993. Is sustainable agriculture an elixir for rural communities? **American Journal of Alternative Agriculture** 8:133-139; Bird, E. *et al.* (eds.). 1995. **Planting the Future: developing agriculture that sustains land and community**. Iowa State University Press, Ames.
41. Kleinschmidt, L. *et al.* 1994. **Community impacts of sustainable agriculture in Northern Cedar County, Nebraska**. Center for Rural Affairs, Walthill, Nebraska.
42. Flora, C.B. 1995. Social capital and sustainability: agriculture and communities in the Great Plains and Corn Belt. **Journal Paper #J-16309**, Iowa Agriculture and Home Economics Experiment Station, Ames Iowa.
43. Lockeretz, W. 1989. Comparative local economic benefits of conventional and alternative cropping systems. **American Journal of Alternative Agriculture** 4:75-83.
44. Northwest Area Foundation. 1994. **A Better Row to Hoe: the economic, environmental, and social impact of sustainable agriculture**. Northwest Area Foundation, St. Paul, MN.
45. Goreham, G.A. *et al.* 1995. Community trade patterns of conventional and sustainable farmers. *In*: E. Bird *et al.* (eds.). **Planting the Future: Developing an agriculture that sustains land and community**. Iowa State University Press, Ames. Pp. 131-146.
46. If organic foods represent 1-2% currently, with a 25% annual growth rate, it is feasible to be in the 10% range by 2010. Note that most growth rate estimates were developed prior to the economic downturn associated in parts with the events of September 11 and beyond. Whether they remain realistic estimates depends in part on the shadow cast by those events.
47. Using actual annual retail sales by major product categories in grocery and grocery supermarket banner stores (AC Nielsen and AAFC, http://www.agr.gc.ca/food/consumer/mrkreports/acnielsen/acnielsen/tables/consum_exp_e.html), these percentages / commodity would average out to 10% of total retail sales.
48. This means that domestic supply must grow at a faster rate than total domestic demand, since it is estimated that 85-90% of current consumption is of imported organic foods. Statistics Canada estimates that annual retail food and non-alcoholic beverage sales are about \$55 billion. If organic sales are 10% of that, then total organic retail sales are about \$5.5 billion. For this target to be met, the total retail value of domestic organic production has to equal about \$2.2 billion. Current organic sales are estimated to be about \$800 million. At current estimates of 15% of domestic organic sales met by domestic organic production, retail sales of domestic organic product have to rise from about \$120 million to \$1.9 billion. Over 10 years, retail sales of domestic organic product have to average 30-35% growth

49. This assumes that marketable yield of organic product increases, on average, over time as more knowledge about organic systems is acquired. As well, given the relative importance of the commodity-specific retail targets, acreage growth will be important across all commodity areas, and the dominant position of organic pasture lands in current acreage statistics will have to be lessened. Assuming a rough correspondence between growth in domestic retail sales and growth in acreage, then if organic acreage is currently at about 840,000 acres (about 1%), acreage would have to grow to about 13.5 million acres, roughly 15% of total current acreage.

50. According to Statistics Canada, only 20% of Canadian farmers had over 50% of their total family income coming from farming and 44% of farmers had zero or negative net farm income in 1995 (<http://www.statcan.ca/english/censusag/apr26/can2.htm>). In the conventional farming sector, average net farm income was about \$20,000 in 1996 (<http://www.statcan.ca/english/censusag/can.htm>). The 1996 average return on investment in conventional farming was about 3% (<http://www.statcan.ca/english/censusag/can.htm>). For organic farmers to be satisfied, there would need to be significant improvement in these conventional figures. Note as well that the average organic farm would have substantially lower equity and debt in land, buildings, machinery, equipment, livestock and poultry than is currently held by the average conventional farmer and in many sectors organic farmers are able to improve their net income with lower capital investment relative to when they were conventional producers.

51. In many regions and with many foods, the retail price difference is less than 15%. There are no nationally available figures, but on average, the industry guesstimate is that a standard package of foods would cost about 25% more if organic. Note that this price differential won't on its own assure accessibility. Some studies show that an organic diet is available at retail prices equivalent to conventional foods when consumers also change their diet and purchase cooperatively.

52. There are a number of ways of measuring this. By firms, the organic sector is already on its way to 10% since there are approximately 300 processors and handlers and Canada has about 3000 processing firms (not including handlers). By value of production, the requirements are higher since 30% of firms ship 90% of the value of shipments. By value of shipments, 10% = \$4 billion for the organic sector (<http://www.agr.ca/food>).

53. According to Statistics Canada, a rule of thumb is 50% gross margin in conventional food processing, from which expenses are subtracted to obtain before tax income. Then income tax is deducted to result in after-tax income. This is the figure that would be used to pay dividends from and calculate ROI (investment being the combination of equity and debt used to finance the business). So, to hazard a guess, average ROI would likely be in the 5 to 15% range.

54. Jules Pretty has summarized estimates from admittedly limited data that on-farm job multipliers in organic agriculture are an additional job per farm relative to conventional on-farm labour requirements (Pretty, J. 1998. **The Living Land**. Earthscan Publication, London.)

55. Russell Christianson and Anne Macey made major contributions to this section. The section also makes extensive use of research carried out and reported by Robert Beauchemin in a paper, "The Organic Market", presented to the 11th Management Conference, MAPAQ Estrie, January 2002.

56. This section is summarized from an upcoming report: Macey, A. 2002. Organic farming in Canada: statistics for the year 2000. **Eco-Farm and Garden** Winter 2002.

57. Without wild rice harvesters, the increase is 64%.

58. These numbers have also been compiled by Anne Macey. It is possible some handlers may be certified by more than one agency so actual numbers may be lower than indicated.

59. United States Department of Agriculture, Attache Report. 1997. **The Organic Food Market in Canada**; Drake, J. 2001. Growing, Growing . . . **Canadian Grocer** Jan/Feb 2001.
60. United States Department of Agriculture, Attache Report. 1997. **The Organic Food Market in Canada**; Drake, J. 2001. Growing, Growing . . . **Canadian Grocer** Jan/Feb 2001.
61. Data compiled from multiple sources, including: The Canadian Grocery Industry. 1997 **Canadian Grocer**; Motes, J. 1999. **Organic Foods: Major Opportunity or Perpetual Market Niche**. McLean VA, November 1999; **Natural Foods Merchandiser**, New Hope Publications, December 1999; and Canadian Health Foods Association, 1999. Note: These figures do not include mass merchandisers, club stores, drugstores and bakeries, with an additional \$14 billion in grocery sales in 2000, bringing the total to \$70.6 billion.
62. Foote, D. 2001. Wholehealth. **Canadian Grocer**, June:39-40.
63. Hasulo, S. 2000. The whole story on whole health: why supermarkets are starting to pump up their wellness offerings. **Canadian Grocer** March 2000 (on-line). <http://www.cdngrocer.com>.
64. Anon. 1995. Tracking Nutrition Trends. **Imprint** September 1995.
65. Original data from the Organic Marketing Coalition, 1988 and 1989 and Origins Co-operative, 1994.
66. Original data from the Organic Marketing Coalition, 1988 and 1989 and Origins Co-operative, 1994.
67. A sample of thirty provides an 85% confidence level. In other words, you can be confident that there is a statistical difference between categories when there is a difference of fifteen percent or more.
68. The Hartman Group. 2000. **The Organic Consumer Profile**. The Hartman Group, Seattle. January.
69. Diekmeyer, P. 2001. Are Canada's Retailers Ripe for the Pickin'?, **Canadian Grocer**, June:20-23.
70. Diekmeyer, P. 2001. Are Canada's Retailers Ripe for the Pickin'?, **Canadian Grocer**, June:20-23.
71. Pollan, M 2001. How organic became a marketing niche and a multi-billion dollar industry. Naturally, **The New York Times Magazine**, May 13, 2001.
72. Pollan, M 2001. How organic became a marketing niche and a multi-billion dollar industry. Naturally, **The New York Times Magazine**, May 13, 2001.
73. Horizon Organic Dairy, October 11, 2001. <http://www.horizonorganic.com/>
74. Novak, M. and Southworth, G. 1999. Building a Controlled Label Program, **Co-operative Grocer Online**, #82, May-June 1999. <http://www.cooperativegrocer.com/>
75. Russell Christianson is the lead author in this section.
76. U.S. Department of Agriculture, Foreign Agricultural Service. 2000. **AgExporter** June 2000.
77. The recent global economic downturn associated with the events of September 11 could have an impact on these projections.
78. Myers, S. and Rosie, S.L. Facts and Stats - The Year in Review. **Organic and Natural News** December 2000.

79. Myers, S. and Rosie, S.L. Facts and Stats - The Year in Review. **Organic and Natural News** December 2000; The Hartman Group. 2000. **The Organic Consumer Profile**. The Hartman Group, Seattle. January 2000; ACNeilson's **Homescan Consumer Panel**, 1998.
80. Food Marketing Institute. 2000. **Trends in the U.S.: Consumer Attitudes and the Supermarket 2000**. FMI, Washington.
81. Roper Starch Research, quoted in Peterson, T. 2000. Climbing on the Organic Gravy Train. **Business Week** August 21, 2001. <http://www.businessweek.com>.
82. Peterson, T. 2000. Climbing on the Organic Gravy Train. **Business Week** August 21, 2001. <http://www.businessweek.com>.
83. International Trade Centre UNCTAD/WTO. 1999. **Organic Food and Beverages: world supply and major European markets**. October, 1999.
84. Norfelt, T.F. 2000. **Organic Agriculture in Denmark**. Center for Organic Agriculture, Copenhagen, Denmark. June 21, 2000.
85. Reuters Business Insight. 1999. 100% organics in 2004 - a US\$15.9bn segment. **Reuters** November 1999 (info@rbi-reports.com)
86. Lampkin, N., quoted in Ames, P. 1999. Organic Food Boom: 10% of European Farms will be Organic by 2005. **Associated Press** December 27, 1999.
87. Market Research Centre and the Canadian Trade Commissioner Office. 2001. The Organic Food in Japan. Department of Foreign Affairs and International Trade. January 2001. <http://sea.agr.ca/info/asia/e3208.htm>.
88. Twyford-Jones, P. and Doolan, R. 1998. **The International Market for Organic Food**. Rural Industry Business Services, Department of Primary Industries, Queensland, January 1998, page *viii*.
89. Bernard Geier, CEO IFOAM, from a speech at Guelph University Organic Conference, January 2001.
90. This is not generally an issue for smaller firms.
91. Although the evidence favouring the nutritional benefits of organic vs. conventional foods is not definitive, there is enough evidence that organic foods offer health and nutrition benefits beyond what conventional foods provide to warrant much more extensive inquiry. The most compelling research involves feeding organic vs. conventional diets to test animals. Although the reasons why are unclear, these studies show, amongst animals fed an organic diet, a reasonably consistent pattern of improved reproductive performance and lower infant morbidity and mortality relative to test animals fed a conventional diet. Studies examining the nutrient levels of organic vs. conventional foods are much less consistent, likely due to the enormous number of factors that can influence nutrient levels. The lead author of this report has assembled a list of over 50 English language peer-reviewed studies that in totality suggest there is a relationship to be explored.
92. These sectors also have some unique problems which we do not address here.
93. Toronto Food Policy Council. 1995. Stories of Food Microenterprises and Implications for Community Economic Development. **TFPC Discussion Paper #5**, Toronto. http://www.city.toronto.on.ca/health/tfpc_discussion_paper.htm

94. Michelsen, J. *et al.* 2001. **Organic farming development and agricultural institutions in Europe: a study of 6 countries.** Organic Farming in Europe: Economics and Policy Volume 9. University of Hohenheim, Stuttgart, Germany.

95. Due to on-going consolidation, the precise number is unclear.

96. Gilbert Parent (AAFC), as cited in the meetings of a conference call on revising the national standard held Dec. 12, 2001

97. Rundgren, G. 2002. Organics in Europe: lessons for North American agriculture. Presentation to the Guelph 2002 Organic Agriculture Conference, Jan. 24-27.

98. This approach is also relevant to farmers. A preliminary proposal from the Social Investment Organization has already been developed (contact mike.driscoll@sympatico.ca).

99. A number of cross - cutting action plans would need to be developed and implemented and it would make sense for this coalition to take a lead role. For example, the sector appears to need:

1. A coordinated media action plan - organic as public service
2. A coordinated research action plan
3. A national training framework for professionals and farmers
4. A plan to identify business and cooperative organization expertise that the organic sector can use at reasonable rates (use existing granting structures and policies for business plans, product development, market research support funded through provincial and federal agriculture departments)
5. Financing innovations action plan - clearly, many of these strategies will require innovative financing initiatives. Several have been proposed, including the Farm Credit card by John Wilcox.