

# **Canadian organic research group SWOT analysis**

**February 23, 2009**

**Produced for the Organic Agriculture Centre of Canada by**

**Strategic Vision Consulting Ltd.**

Strategic Vision Consulting Ltd. makes no representation or warranty as to the potential outcomes stated within this report. Strategic Vision Consulting Ltd. assumes no liability whatsoever for damages suffered by the Canadian organic sector or any third party for any reliance on the outcomes or any actions taken on the basis of this report.

## Table of Contents

Opportunities .....	4
Social .....	4
<i>The organic vision and philosophy</i> .....	4
<i>Health issues</i> .....	4
Technological .....	4
<i>Extension</i> .....	4
<i>Inputs</i> .....	4
<i>Nutrient value</i> .....	5
<i>Unproductive land</i> .....	5
<i>Miscellaneous</i> .....	5
Economic.....	5
<i>Growth</i> .....	5
<i>Industry structure, infrastructure and resources</i> .....	5
<i>Markets and marketing</i> .....	5
<i>The economic impact of conventional agricultural practices</i> .....	6
Environmental .....	6
Political/legal/regulatory.....	7
<b>Strengths.....</b>	<b>7</b>
Social .....	7
Technological .....	7
Economic .....	7
<i>Industry structure, infrastructure and resources</i> .....	7
<i>Branding and integrity</i> .....	7
<i>Supply of goods, production industry size and expansion in production</i> .....	7
<i>Markets and marketing</i> .....	7
Environmental .....	8
Political/legal/regulatory.....	8
<b>Weaknesses.....</b>	<b>8</b>
Social .....	8
Technological .....	8
<i>Research capacity, and the knowledge base</i> .....	8
<i>Commercial access to technology and inputs</i> .....	8
<i>Extension of technology to the organic sector</i> .....	8
<i>Production capacity and product quality</i> .....	8

Economic .....	8
<i>Industry structure, infrastructure and resources</i> .....	8
<i>Supply of goods, production industry size and expansion in production</i> .....	9
<i>Markets and marketing</i> .....	9
<i>Financial resources</i> .....	9
<i>Miscellaneous</i> .....	9
Environmental .....	10
Political/legal/regulatory.....	10
<i>National mission, vision and standards</i> .....	10
<i>Regulatory and institutional obstacles, including marketing boards</i> .....	10
<i>Certification and the accreditation of certifying bodies</i> .....	10
<i>Inconsistent regulation of the term “organic”</i> .....	10
<b>Threats.....</b>	<b>10</b>
Social .....	11
Technological .....	11
Economic .....	11
<i>Industry structure, infrastructure and resources</i> .....	11
<i>Supply of goods, production industry size and expansion in production</i> .....	12
<i>Markets and marketing</i> .....	12
<i>Financial resources</i> .....	13
Environmental .....	13
Political/legal/regulatory.....	13
<b>References .....</b>	<b>14</b>

In a SWOT analysis, Strengths and Weaknesses address *internal* organizational factors while Opportunities and Threats address factors that are external to the organic sector. This SWOT analysis will focus on the potential for the organic sector to take advantage of macroenvironmental opportunities by investing in Canadian research and extension. Existing strengths within the research community will allow the Canadian organic sector to capitalize on opportunities quickly. The research community will also have to assess its weaknesses and determine the extent to which it wishes to invest in areas in which it is weak. This will depend on the opportunity and the relative position of competing nations. Should the organic sector invest in research in order to compete, or are the competitors so strongly entrenched in a market that it would be difficult to catch up in a cost effective manner. This SWOT audit will allow the organic sector to scrutinize its strategic objectives and then to create a clear picture of the research issues that the sector must address to achieve the objectives.

## Opportunities

It is expedient to examine strengths, weaknesses, opportunities and threats using the five categories from the STEEP analysis: Social issues, Technological issues, Economic issues, Environmental issues and Political-legal-regulatory issues. Social, technological, economic, environmental and political-legal-regulatory strengths that will help the organic sector meet its top three strategic goals are outlined in the following sections. Opportunities identify areas that the organic research community could exploit through targeted research.

### Social

#### *The organic vision and philosophy*

- The consumer is focussing more on the procurement of locally grown food and associates local with organic.
- Organic consumers share a vision and a philosophy.<sup>1</sup>
- Consumers of organic food products see organic farmers as principled.
- The organic sector is socially responsible in that it supports fair labour practices.<sup>2</sup>
- The accountability behind organic certification contributes to consumer confidence and loyalty.
- There is an emerging pattern of social consciousness among consumers.<sup>3</sup>
- Agricultural environmental degradation and industrial development have raised public awareness of organic agriculture and increased support for organic principles and practices.<sup>4</sup>
- A number of organizations support the Certified Organic movement and are interested in collaborating on projects of mutual interest.<sup>5</sup>
- Public sentiment against genetically modified (GM) crops supports the organic sector

### Health issues

- Many fear pesticides, and stories in the popular press continue to remind the public that pesticides can have an adverse effect on health. Numerous stories about the incidence of rare cancers in pastoral settings where farmers use copious volumes of pesticides have captured the public's attention.<sup>6</sup>
- The public is increasing concerned about ageing, pollution and genetically modified organisms (GMO) and these issues are changing the way the consumer thinks about food and agriculture.
- Consumers are putting a higher value on health and environmental sustainability.<sup>7</sup>
- Health professionals and environmental groups are supportive of organic principles and practices.<sup>8</sup>

### Technological

#### *Extension*

- Abundant regional and international production, pest management, input and product development research could benefit organic producers.<sup>9</sup>

#### *Inputs*

- Producers lack of organic inputs such as certified organic seeds and transplants, plant and animal breeds appropriate for organic production.<sup>10</sup> This is an opportunity to create an organic producer service industry.
- Processors require a supply of specialised certified organic inputs such as rennet for cheese makers and alcohol for tincture manufacturers, among other products, and most are not available locally.<sup>11</sup> This is an opportunity to create a service industry for processors.

*Nutrient value*

- Scientists have declared many fruits and vegetables healthier if grown organically.<sup>12</sup> Fruit can contain higher levels polyphenols and antioxidants, as well as higher levels of vitamin C and may be nutritionally superior to conventionally produced fruits and vegetables.

*Unproductive land*

- Organic farming is a profitable enterprise and may be a panacea for poor soil quality in some growing regions.<sup>13</sup>

*Miscellaneous*

- Scientists have not documented the effect that GM crops could have on neighbouring plant communities.<sup>14</sup>

*Economic**Growth*

- The organic sector has grown consistently at 10 to 20 percent annually.<sup>15</sup>
- Organic farming is one of the fastest growing segments in agriculture.<sup>16</sup>
- The organic retail food sector is consolidating and merged operations and continuing to increase in size.<sup>17</sup>
- Between 2000 and 2006, the growth in organic farmland in Latin America, Asia and Africa was in the triple-digits.<sup>18</sup>

*Profitability and financial stability*

- Market demand for organic products is strong and there is good support for price premiums in some markets.<sup>19</sup>
- Many organic producers have smaller operations that focus on extremely profitable niche markets.<sup>20</sup>
- Longer rotations that are more typical of organic operations reduced the risk of a failure of the farming operation in any given year and reduced variability in net financial returns.<sup>21</sup>

*Government support*

- Governments are more proactive about addressing issues of food safety and food security as well as water quality and supply.<sup>22</sup>
- Provincial governments are investing in organic production by investing in export financing in order to bolster international trade.

*Industry structure, infrastructure and resources*

- Small beverage manufacturers claim that supplies of raw materials are scarce, but supply lines are improving.<sup>23</sup>

*Markets and marketing*

- The global market for organic food and drinks had gross revenues of US\$40B in 2006.<sup>24</sup>
- Countries with consumers with high disposable are driving demand for organic products.<sup>25</sup>
- The countries of the G7 account for over 80 percent of total organic sales.<sup>26</sup>
- Consumers in Japan, Taiwan, and Hong Kong have substantially increased their consumption of organic products and are willing to pay premiums on products that meet their needs.<sup>27</sup>
- The countries of Singapore, Switzerland and the US lead in global demand for organic food products.<sup>28</sup>
- Organic foods have moved successfully from speciality and health food retail outlets into mainstream supermarkets.<sup>29</sup>
- Food traceability is an increasingly important issue with consumers and organically produced food products are simpler to trace.
- Improvements in the quality of organic commodities have motivated market growth.<sup>30</sup>
- There is demand for locally produced organic commodities because a high proportion of organic food products are manufactured with imported organic raw materials.<sup>31</sup>
- Data on market trends, volumes and pricing information for producers would stabilise pricing and allow producers to respond to changing market conditions; however, organic product volumes may have to rise substantially to justify the cost incurred in collecting the required data.<sup>32</sup>
- The organic sector is well suited to marketing systems that are outside of the realm of traditional shopping and allow producer to consumer contact.<sup>33</sup>

- There is a trend towards organic wines.<sup>34</sup> Premium flavour and the power of antioxidants are driving this trend.
- Mass communication facilitates the development of links between commodity buyers, producers and processors in global markets.<sup>35</sup>
- The conversion of conventional farms and food businesses to organic should bring a myriad of resources to the organic sector.<sup>36</sup>
- Retailers are responding to demand from consumers for “ethical” products.<sup>37</sup>
- The organic sector has the opportunity to exploit the concept of environmental marketing.
- Manufacturers are creating new organic products to meet increasing demand for organic foods and beverages. For example, Anheuser-Busch is currently test-marketing an organic beer called Wild Hop Lager in California.<sup>38</sup>

#### *The economic impact of conventional agricultural practices*

- Agricultural practices contribute to water quality problems.<sup>39</sup> Acute problems are associated with spills and chronic problems are related to excess nutrient runoff into streams and other bodies of water. The annual cost to the US is estimated at \$2.6 billion (B).
- The cost of pesticide damage to US natural capital is \$3.70/kg of active ingredient (a.i.)<sup>40</sup>. In 2000, the US used 1.234 B pounds of pesticide a.i.<sup>41</sup> This equates to damage to natural capital in the range of \$4.57B. Using the US figure for damage to natural capital suggests a global impact of almost \$19.8B (based on global a.i. usage of 5.351B pounds.<sup>42</sup>)
- External costs of production for conventional agricultural products are three times those of organically produced commodities, making organic farming a pollution abatement and mediation strategy.<sup>43</sup>
- It can be less expensive to pay conversion subsidies to producers farming around a lake than to pay for remediation for a clean polluted lake.<sup>44</sup>
- Off-farm benefits for the mitigation of soil and watercourse degradation exceed the cost of on-farm soil conservation<sup>45</sup> – suggesting that society should pay at least some of the costs of on-farm conservation efforts.
- Some Canadian jurisdictions have invested in on-farm pollution abatement initiatives aimed at protecting the water supply.<sup>46</sup> This concept has not been extended to the adoption of organic farming methods.<sup>47</sup>
- Prince Edward Island fish kills have been associated with labelled farm applications of azinphos-methyl, carbofuran, chlorothalonil, endosulfan and mancozeb to potatoes.<sup>48</sup>

#### *Environmental*

- The International Panel on Climate Change (IPCC) has outlined a need to reduce emissions such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide N<sub>2</sub>O from agricultural production systems.<sup>49</sup> Organic farming, from a systems point of view, reduces emissions and meets IPCC requirements.<sup>50</sup> The key is a multifaceted cropping system that uses green manures, intercrops and leguminous crops to reduced dependence on synthetic fertilizers and pesticides and fertilizers, among other practices.
- Compared with conventional farming, organic farming stores more carbon (C), does not require the input of synthetic nitrogen (N) and pesticides (which emit deleterious compounds), eliminates non-biological N<sub>2</sub>O emissions, does not digest manure anaerobically (which emits methane), consumes less energy and water and has higher percentages of farm acreage in perennial crops and shelterbelts.<sup>51</sup>
- Organic farming systems use 65 percent less energy than conventional.<sup>52</sup>
- Organic systems have much higher root masses than conventional systems and 1.6 times more bound CO<sub>2</sub>, which is associated with leguminous crops.<sup>53</sup>
- Organic systems have more active soil microflora and greater assimilation of CO<sub>2</sub> compared to conventional systems where less CO<sub>2</sub> is bound up in soil organic matter (OM).<sup>54</sup>
- Longer rotations with leguminous plants in organic systems produce greater organic C sequestration, improve soil physical properties and cut N losses in half compared with conventional systems.<sup>55</sup>
- In terms of net Global Warming Potential (GWP) using CO<sub>2</sub> equivalents (g/m/year) no-till systems are the best (14), followed by organic (41), low-input (63) and lastly, conventional tillage systems (114).<sup>56</sup>
- Longer rotations that include legumes leave farms with a greater capacity to withstand drought.<sup>57</sup>

**Political/legal/regulatory**

- The EU parliament would like to create a maximum allowable limit for accidental contamination by GMOs.
- International organizations charged with setting standards are investigating organic agriculture as a model
- Public sentiment against GM crops presents potential social partnerships that may help impose a moratorium on the introduction of new GM crops, support the labelling of GM foods and effect policy changes at a national level.<sup>58</sup>

**Strengths**

The strengths of the organic research infrastructure will support the organic sector in meeting its strategic goals.

**Social**

- The organic sector has a tradition of volunteerism, self-help and self-determination.<sup>59</sup>
- Organic sector philosophy and practices address consumers' interests in health and wellness, the environment and animal welfare.<sup>60</sup>
- Volunteers are a strong resource in the growth and development of various organic associations.<sup>61</sup>
- The volunteer base in organic associations is increasing, suggesting that members value their organization's activities and accomplishments.<sup>62</sup>
- The organic community shares information on labour programs.<sup>63</sup>

**Technological**

- The organic community shares information on equipment and technologies.<sup>64</sup>
- Canadian research facilities are increasingly receptive to organic research; however, the onus is on the organic sector take the initiative in collaborating with institutional researchers and providing the background information required to conduct organic research.<sup>65</sup>
- On-farm research co-ordinated and shared within and between certification agencies has proven effective in developing production techniques and new approaches to production.<sup>66</sup>

**Economic***Industry structure, infrastructure and resources*

- The producers of organic crops, processors and handlers belong to flexible organizations that meet their members' needs and facilitate communication within the organic community.<sup>67</sup>
- Infrastructure is in place that provides information and assistance to prospective organic producers.<sup>68</sup>

*Branding and integrity*

- The organic sector brands its products with certification symbols.
- Certified organic producers can assure consumers of the integrity of their product.
- The diversity in crops and livestock in organic producers' operations increases revenue streams and financial resiliency.<sup>69</sup>

*Supply of goods, production industry size and expansion in production*

- The number of certified organic farms is steadily increasing in some provinces.<sup>70</sup>
- The number of certified processors, handlers and traders of organic food products is increasing in some provinces.<sup>71</sup>
- New organic processing businesses continue to emerge and continue to meet ever-evolving consumer needs.
- The organic sector has diversified crop and livestock production that can meet the needs of a range of consumer preferences.

*Markets and marketing*

- The organic sector has linked its marketing systems directly to consumers.<sup>72</sup>
- A high proportion of organic sales are direct sales to the consumer and offer a high return to the producer.
- Quick responses to changing market preferences allow producers to move quickly out of declining markets and into trendier and/or more profitable markets.
- The organic sector has multiple marketing channels that include the boxed delivery of produce, farmers' markets, packing plants, product brokers and distributors, among others.<sup>73</sup>

- The organic community shares information on local market volume requirements.<sup>74</sup>

### *Environmental*

There are no environmental issues to consider.

### *Political/legal/regulatory*

- Farmers, environmentalists and consumer advocates can take on large corporations and win in the regulatory arena. As an example, Monsanto Company has been forced to take Genetically Modified (GM) Roundup Ready alfalfa off the market while the United States Department of Agriculture conducts a court-ordered environmental impact study.<sup>75</sup>

## **Weaknesses**

Deficiencies in infrastructure of the organic sector that could impede the achievement of the stated goals include:

### *Social*

- The organic sector tends not to support a “think big” mentality because it is often not consistent with the principles of organic production.

### *Technological*

#### *Research capacity, and the knowledge base*

- The sector lacks an adequate production knowledge base.<sup>76</sup>
- The knowledge base for organic processing is limited – even more so than the knowledge base for organic production.<sup>77</sup>
- Organic agricultural issues tend not to be addressed by the larger agricultural research institutions.
- The conventional research community tends not to be well informed on certification standards and the associated production limitations.<sup>78</sup>

#### *Commercial access to technology and inputs*

- Certified organic crop production has grown faster than the plant breeding and seed production industries.<sup>79</sup> Nonorganic perennials require a one-year transition period. Some organic plant and seed varieties are in short supply. Organic standards require certified organic transplants, but not certified organic seed, for the production of commodities.
- Livestock producers do not have a sufficient supply of organic animals and birds.<sup>80</sup>
- Livestock producers do not have suitable breeds of animals and birds for organic production.
- Plant and animal breeding has not focused on characteristics suited to organic production.
- Organic growers have difficulty accessing heritage seed in commercial quantities.<sup>81</sup>

#### *Extension of technology to the organic sector*

- There is a lack of research and extension support for organic farmers, especially during the transition phase from conventional to organic systems.
- Some products are difficult to produce organically because production aids are lacking.<sup>82</sup>

#### *Production capacity and product quality*

- Present and future demand for organic products is greater than the ability of producers to supply products.<sup>83</sup>
- Product consistency, adequacy of volume and regularity of supply are key production issues.

### *Economic*

#### *Industry structure, infrastructure and resources*

- Organic field crop producers tend to produce more product than can be consumed at the local level and need to be exported from the production region to the consumer.
- Overly taxed voluntary organizations are working to develop the organic sector but have insufficient resources to further their expertise and capacity.
- Organic storage, packing and transport facilities are lacking.
- There are an insufficient number of food processors and processing facilities.
- Lack of local storage for organic produce limits the capacity of producers to extend the marketing season and take advantage of higher seasonal prices.<sup>84</sup>



- Organic livestock producers have limited access to certified organic slaughter facilities.<sup>85</sup>
- Given the lack of Canadian organic infrastructure, it is sometimes easier to export organic crops than to identify domestic customers, even though Canadian demand for organic products exceeds supply and the Canadian suppliers cannot often meet the needs of the domestic market.
- Many organic farmers and consumers of organic food products use alternative food distribution systems that tend to be focused on horticultural and small animal products.
- Relationships between organic producers and consumers are more difficult to create in regions where infrastructure accommodates predominantly bulk commodities.
- Successful economic interactions between organic producer and consumers occur where government or non-governmental agencies help create market spaces or create physical or virtual linkages. These are currently lacking.
- There are too few certified processors to manage the level of production but insufficient supply to justify the construction of new facilities.<sup>86</sup>

#### *Supply of goods, production industry size and expansion in production*

- Lack of distribution infrastructure hampers the expansion of the organic sector
- Manufacturers are creating new organic products to meet increasing demand for organic foods and beverages. For example, Anheuser-Busch is currently test-marketing an organic beer called Wild Hop Lager in California.<sup>87</sup> While Anheuser-Busch's plans could drive the production of organic beer, even smaller organic brewers have to deal with inconsistent supplies of raw materials.

#### *Markets and marketing*

- Organic markets are immature markets, supply is lagging behind demand, the infrastructure required to facilitate the efficient and affordable movement of goods is lacking at both domestic and international levels.<sup>88</sup>
- The uneven development of organic markets by regions and by commodity is creating a situation in which retailers and food service companies are loath to buy Canadian organic food products.<sup>89</sup>
- Many organic markets are “immature” – due to insufficient supply and the absence of real and virtual venues where buyers and sellers can interact.<sup>90</sup>
- Because of the diversity of products handled on many organic farms, many organic operations cannot or do not wish to operate in mass markets.<sup>91</sup>
- Organic food suppliers may not be able to meet the quality, quantity and price expectations of institutional customers such as hospitals, municipal governments, penal institutions or universities.<sup>92</sup>
- The organic sector has no formal means of disseminating market information on prices, volumes and market conditions.<sup>93</sup> Producers may share information on a local basis but there is no mechanism for price discovery at the national or international level.
- It is difficult for new growers to acquire land and allow the time required to transition conventional land to land that meets the requirements for organic farming.<sup>94</sup> The sector may need to develop a means of assisting retiring organic farmers in the transfer of land.
- Cultivars of fruits and vegetables suitable for organic production may not be well known by the general public and marketing new cultivars is a challenge.<sup>95</sup>
- The organic sector has not emphasized the fact that it is based on principles of good stewardship of nature
- Producers need better information on market opportunities and access to marketing tools to facilitate increases in production.<sup>96</sup>

#### *Financial resources*

- Lack of core funding for organic associations has been a challenge for the organic sector.<sup>97</sup> The mandate of various organic associations is broad and as membership increases, responsibilities increase and demands for service become more difficult to meet.

#### *Miscellaneous*

- Many Canadian organic producers grow bulk commodities and depend on Canada's reputation as a global trader.
- Organic farmers and clusters of consumers have successful economic relationships where physical distances between the farmers and the consumers are not great.
- The principles of organic production lead many to think that larger farms and intensive agriculture may not be options in a “true” organic world

## Environmental

- There are no environmental issues to consider.

## Political/legal/regulatory

### *National mission, vision and standards*

- The Canadian organic sector does not have a national mission or vision, nor are its activities focussed on achieving national objectives.
- National standards for organic only apply to interprovincial trade, not trade within a province. Only the provinces of British Columbia and Québec have provincial organic standards.
- The Canadian government lags behind those of competing nations in putting forward initiatives that would help the Canadian organic sector evolve into a more competitive global force.
- Provincial groups are implementing and developing local strategic plans – and a national effort has been absent.<sup>98</sup> The organic sector will lose opportunities and may be penalized without a national initiative.
- There is no consistent national government policy for the organic sector. The government needs to regulate transgenics and the word “organic” and there is a need for federal financial and export policies that govern the organic sector.<sup>99</sup>

### *Regulatory and institutional obstacles, including marketing boards*

- Regulatory obstacles hinder farmer conversion to organic systems as well as market development.<sup>100</sup> These obstacles can range from marketing board jurisdiction to sanitation requirements that are irrelevant organic producers and processors or a Canadian regulatory system that permits genetic pollution to occur in the environment.<sup>101</sup>

### *Certification and the accreditation of certifying bodies*

- Canada has only minimum standards for organic production and processing, processing standards are short on detail and the sector has to police itself since there are no federal or provincial resources for inspection and enforcement.<sup>102</sup>
- There is no clear process for revising organic standards on a regular basis.<sup>103</sup>
- There is some question about the credibility of the Canadian certification system.<sup>104</sup>
- The organic sector and the federal government have not agreed on the need for a Canadian voluntary standard to be referenced in regulations.<sup>105</sup> This will have to occur before the international community accepts Canadian organic products.
- There is a need for the Standards Council of Canada (SCC) to accredit organic certifiers.<sup>106</sup>
- Canada's organic sector does not have a system for accrediting certifiers in place and ongoing issues are creating uncertainty as to whether the international community will be confident in Canadian accreditation.<sup>107</sup> The absence of a mandatory legal standard for accreditation may be a barrier to international trade.

### *Inconsistent regulation of the term “organic”*

- In Canada, organic food products do not have to be “certified,” forcing certified organic producers to compete with less costly “organic” products.<sup>108</sup>
- The term “organic” is open to interpretation and creates confusion among consumers.
- The EU and the US require all locally produced and imported organic products to at least meet *their* standards. This is not the case in Canada and only Québec has legislation outlining minimum standards for organic food products.<sup>109</sup>
- In the US, farmed salmon may be excluded from U.S. organic standards since farming *carnivorous* fish in open net-cage systems violates core organic principles.<sup>110</sup> However, farming *non-carnivorous* is not in violation of core organic principles. These types of discrepancies in details could create confusion in the marketplace.

## Threats

The organic sector has little influence over threats to its industry, but must be aware of issues that could compromise its success. Many threats to the organic industry take the form of FUD. Businesses often use FUD, or Fear, Uncertainty and Doubt to undermine their competitors’ initiatives. The organic sector seems to devote considerable resources responding to FUD – which is exactly the response that those creating the FUD are hoping to elicit.

Issues that qualify as FUD include:

- The perception that organic farming methods will not provide enough food to feed the world.
- The perception that organic food is not as safe as conventionally produced food.
- Misinformation generated by those ignorant of the organic sector and what it represents.

These are not true threats to the organic sector and will not be included in this section. Conditions external to the organic sector that could impede the achievement of its three main goals include:

### *Social*

- A growing trend towards certification suggests that producer integrity is an issue, where the integrity of the producer used to be a hallmark of organic production.
- Pockets of intensive organic production are not in keeping with the principles of organic production, even though the food produced in these regions is certified organic.
- Consumers are fickle and may choose to move away from organic food products.
- There is insufficient appreciation of the broad public benefits of organic food and farming.
- Organic associations are increasing demands on their volunteer base.<sup>111</sup>

### *Technological*

- If consumers stop purchasing organic food products, governments could choose to reduce funding for research on organic food products.
- Over-concentration of demand for organic food products in a few wealthy countries could put the industry in a fragile state, as local shortages force consumers to scour the globe for organic food and food ingredients.<sup>112</sup>
- With increasing demand for food, there is pressure to intensify farming operations. This is not consistent with organic farming principles and methods.
- The EU has a requirement that composted manure used to fertilize food crops must not come from livestock fed GM crops.<sup>113</sup>
- Producers cannot use manure from non-organic operation for compost, creating a shortage of compostable material.<sup>114</sup>

### *Economic*

#### *Industry structure, infrastructure and resources*

- The Canadian food industry is highly concentrated and retailers and food service companies have extensive market power.
- Mergers and acquisitions among domestic retail food operators have put pressure on warehousing, distribution and merchandising systems and have restricted the development of new product lines.
- As conventional food processors, distributors and retailers purchase organic operations, there is a fear that the consolidated entity may not be able to combine the interests both the conventional and the organic food sectors. While the organic sector is clear on what constitutes “organic agronomy,” it is somewhat less clear about what “organic distribution” would entail.
- The concentration of ownership in organic production and distribution systems has reduced margins as larger companies have increased the level competitiveness in the organic sector.<sup>115</sup>
- Centralized purchasing has reduced the capacity of retail food operations to source domestic production.
- The retail food industry requires paybacks and slotting fees for shelf access, and many smaller operators may not have the resources to compete at this level.
- Retail food operators that are not affiliated with large retailers are under pressure to cut costs and compromise quality, which discourages the introduction and maintenance of organic product lines priced to reflect the cost of production.
- Smaller organic producers find it challenging to access larger markets through the conventional food sector because retail and food service operations have extensive control over their operation, charge for shelf space and use centralized purchasing systems.<sup>116</sup>
- It is a challenge for smaller operators and independent farmers and processors to introduce new products at the retail food level.
- There is consolidation in the organic sector in at the processing, distribution and retail level.
- The organic food sector is slowly integrating into mainstream food networks.<sup>117</sup>

- Larger stores are moving into the organic retail business and these organizations are pressuring organic suppliers to lower their prices.<sup>118</sup>
- The conversion of conventional farms and food businesses to organic operations could be a threat if the traditional organic sector retains no influence over pricing policy in mainstream markets.<sup>119</sup>
- Very large retailers have ordered high volumes of organic products on a one-time basis but have never reordered organic products and have backed away from aggressive plans to offer additional organic food products

#### *Supply of goods, production industry size and expansion in production*

- As organic production expands, new entrants to the market could reduce profit margins.<sup>120</sup>
- Price premiums for organic food could drop as volumes of organic food production increase.<sup>121</sup>
- As organic production expands, retail grocery chains and institutional food services could capture more value from the value chain, reducing prices paid to primary producers.<sup>122</sup>
- It is difficult to convince conventional farmers to switch to certified organic production due to a transition period that may take three years.<sup>123</sup>
- Expanding production is difficult without a good knowledge base in organic agriculture
- Only 1.5 percent of all farmers in Canada are organic farmers.<sup>124</sup>
- Canadian organic acres are increasing slowly but the number of organic farmers is not increasing.<sup>125</sup>
- The number of organic farmers is declining in some provinces.<sup>126</sup>
- Canadian producers only grow less than one percent of Canada's organic food.<sup>127</sup>

#### *Markets and marketing*

- Given relatively low adoption levels to date, the extensive benefits of organic farming systems are not yet very visible. Organic food and farming is more than simply a niche market to be developed and there is growing evidence that adoption of such systems produces multiple environmental, social and financial benefits.
- Organic sector participants have strong local market niches but little brand loyalty.<sup>128</sup> Market niches could erode if large corporations enter the organic market.
- A fair-trade movement tracks goods across supply chains and provides independent, third-party verification of the origin of food products.<sup>129</sup> The organization TransFair Canada holds Fair Trade Certified rights in Canada. This designation complicates the message to the socially conscious consumer of organic products.
- Agricultural producers are embracing third party certification and labelling programs to target specific food quality issues among consumers unwilling to pay a premium for organic products.<sup>130</sup> This causes confusion in the marketplace and makes it more difficult for consumers to understand the differences between certified organic food products and other types of certification.
- The sector faces potential threats from transgenics and from certification schemes limited to specific claims such as “environmentally friendly” or “pesticide free.”<sup>131</sup>
- There is a trend towards the consumption of locally grown food – and these food products are not necessarily organic
- Conventional food markets emphasize cosmetic quality characteristics that producers can only meet if they invest in expensive equipment such as post-harvest handling vegetable field chillers.
- Consumer fixation on cosmetic characteristics tends not to be matched with an equal interest in the nutritional characteristics of organic food, where organic producers may have an advantage.
- Strong consumer demand for organic products is not linked to local market sources.<sup>132</sup>
- Large, conventional food industry players are interested in organic products but do not necessarily purchase or promote local produce.<sup>133</sup>
- As organic primary producers increase sales to large food distributors and retailers that have converted from conventional to organic systems, they risk jeopardizing their unique connection to the consumers of organic food products.<sup>134</sup>
- The marketing of some domestic organic products suffer because imports are priced more competitively
- Domestic buyers that have experience predominantly with the conventional food products and are often are unwilling to pay prices that reflect the cost of production
- Eighty percent of organic food sales occur in countries with only 12 per cent of all organic farmland in the world.<sup>135</sup>
- Organic processors cannot use ingredients contaminated with GM material which restricts the variety of inputs that can be used.<sup>136</sup>

- EU and Japanese markets do not allow food contaminated with material from GM crops.<sup>137</sup>
- Local Canadian markets are increasingly unreceptive to food products contaminated with material from GM crops.<sup>138</sup>
- Genetically modified (GM) crops have contaminated many agricultural areas and are no longer suitable for organic production.<sup>139</sup>
- Land that becomes contaminated with GM crops cannot be sold as organic land and there is a risk that this land could be decertified.<sup>140</sup>
- Public Canadian institutions such as hospitals, municipal governments, penal institutions and universities have not expressed an interest in, nor have they explored the potential to access organic food products.

#### *Financial resources*

- There is a lack of financial support for organic farmers, especially during the transition phase from conventional to organic practices.<sup>141</sup>
- Agricultural institutions that provide support, such as credit, grants and information, tend not to be familiar with organic farming and see organic operations in a negative light relative to conventional operations.
- Organic production needs to add value to the Canadian economy in terms of Gross Domestic Product, (GDP) otherwise the government may choose not to support the industry.

#### *Environmental*

- Organic farms have higher emissions of CO<sub>2</sub> from composting manure and tillage, and N<sub>2</sub>O from nitrogen fixing crops and crop residues than conventional farms.<sup>142</sup>
- Conventional operations fix more C in shoots and harvested material than organic systems.<sup>143</sup>

#### *Political/legal/regulatory*

- Each country has its own standards for organic products, making the export of organic food products from Canada a challenge.
- Selling organic products into a range of markets is difficult because differing national standards impede international trade.<sup>144</sup> North America, Europe and Asia are becoming increasingly segregated as organic markets increase in size.
- All Australian organic food will have to pass a national standard due to widespread fraud and misleading claims by growers and manufacturers.<sup>145</sup>
- The East African Organic Products Standard (EAOS) is the second regional organic standard in the world.<sup>146</sup> The nations of Burundi, Kenya, Rwanda, Tanzania and Uganda are committed to promoting organic agricultural production in East Africa.
- There is some question about the credibility of the Canadian certification system.<sup>147</sup>
- A whole food certification initiative is in progress that will create another category of food products that may compete directly with organic food products.
- The EU did not appeal a World Trade Organisation (WTO) ruling that it illegally blocked GM food imports.<sup>148</sup>
- The WTO found the EU guilty of operating a *de facto* moratorium on GM food products and breaking global trade rules.<sup>149</sup>
- France has authorised field trials for genetically modified organisms (GMO) despite the submission of 26,306 comments in a public consultation.<sup>150</sup>
- The French government will write EU rules on GMOs into its national laws rather than face fines from the EU if it does not adopt European GMO rules.<sup>151</sup>
- Organic producers and marketing boards are running into jurisdictional conflicts.<sup>152</sup>
- Some organic products will not be accepted due to regulatory constraints. For example, selling raw unpasteurized organic milk and cream is in violation of Ontario's Milk Act.<sup>153</sup>

## References

- <sup>1</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>2</sup> Lifestyles of Health and Sustainability. 2007. *New certification program to recognize socially responsible business practices*. Retrieved September 29, 2008 from <http://www.lohas.com/articles/100233.html>
- <sup>3</sup> Chernos, S. 2006. *Fair-trade advocates gaining momentum*. Business Edge (Ontario) September 19, 2008. Retrieved September 28, 2008 from <http://www.businessedge.ca/article.cfm/newsID/14239.cfm>
- <sup>4</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>5</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>6</sup> Mittelstaedt, M. 2006. *Pesticides are what is killing our kids*, Globe and Mail, December 6, 2006. Retrieved September 28, 2008 from <http://www.theglobeandmail.com/servlet/story/RTGAM.20061206.wxcancerenviro06/BNStory/cancer/home>
- <sup>7</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>8</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>9</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>10</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>11</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>12</sup> Fletcher, V. 2007. *Kiwi fruits are better if organic*. Daily Express (UK), March 26, 2007. Retrieved September 28, 2008 from <http://www.express.co.uk/posts/view/2761>
- <sup>13</sup> Africa News Network. 2007. *Chemicals giving way to organic farming in South Africa*. Retrieved September 28, 2008 from <http://africanagriculture.blogspot.com/2007/04/chemicals-giving-way-to-organic-farming.html>
- <sup>14</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)



- 
- <sup>15</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>16</sup> United States Department of Agriculture – Economic Research Service. 2008. *Organic production*. Retrieved September 28, 2008 from <http://www.ers.usda.gov/Data/Organic/>
- <sup>17</sup> thestar.com. 2006. Organic grocer buys Quebec distributor. Retrieved September 28, 2008 from <http://www.thestar.com/article/162048>
- <sup>18</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>19</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>20</sup> Hart, L. 2007. *Polish canola rescues organic market*. Farm Business Communications, March 14, 2007. Retrieved September 28, 2008 from <http://www.gene.ch/genet/2007/Apr/msg00070.html>
- <sup>21</sup> 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. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 29, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>22</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>23</sup> Philadelphia Daily News. 2006. *Going organic . . . will consumers hop on Busch's bandwagon?* Philadelphia Daily News, July 6, 2006. Retrieved September 29, 2008 from [http://findarticles.com/p/articles/mi\\_km4470/is\\_/ai\\_n16586535](http://findarticles.com/p/articles/mi_km4470/is_/ai_n16586535)
- <sup>24</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>25</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>26</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>27</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>28</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>29</sup> Chernos, S. 2006. *Fair-trade advocates gaining momentum*. Business Edge (Ontario) September 19, 2008. Retrieved September 28, 2008 from <http://www.businessedge.ca/article.cfm/newsID/14239.cfm>
- <sup>30</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- <sup>31</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>32</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>33</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>34</sup> Bouchard, C. 2007. *I'll have a glass . . . and make it organic*. Taste T.O., April 7, 2007. Retrieved September 29, 2008 from <http://www.tasteto.com/2007/04/07/ill-have-a-glass-and-make-it-organic/>
- <sup>35</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>36</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>37</sup> Chernos, S. 2006. *Fair-trade advocates gaining momentum*. Business Edge (Ontario) September 19, 2008. Retrieved September 28, 2008 from <http://www.businessedge.ca/article.cfm/newsID/14239.cfm>
- <sup>38</sup> Philadelphia Daily News. 2006. *Going organic . . . will consumers hop on Busch's bandwagon?* Philadelphia Daily News, July 6, 2006. Retrieved September 29, 2008 from [http://findarticles.com/p/articles/mi\\_km4470/is\\_/ai\\_n16586535](http://findarticles.com/p/articles/mi_km4470/is_/ai_n16586535)
- <sup>39</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>40</sup> Pretty, J. *et al.* 2000. *An assessment of the external costs of UK agriculture*. Agricultural Systems 65:113-136. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>41</sup> United States Environmental Protection Agency. 2007. *2000-2001 pesticide market estimates: usage*. Retrieved September 30, 2008 from [http://www.epa.gov/oppbead1/pestsales/01pestsales/usage2001.htm#3\\_1](http://www.epa.gov/oppbead1/pestsales/01pestsales/usage2001.htm#3_1)
- <sup>42</sup> United States Environmental Protection Agency. 2007. *2000-2001 pesticide market estimates: usage*. Retrieved September 30, 2008 from [http://www.epa.gov/oppbead1/pestsales/01pestsales/usage2001.htm#3\\_1](http://www.epa.gov/oppbead1/pestsales/01pestsales/usage2001.htm#3_1)
- <sup>43</sup> Pretty, J. Centre for Environment and Society, University of Essex, personal communication, July 2000. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>



- 
- <sup>44</sup> 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. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 30, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>45</sup> Stonehouse, D.P. et al. 1997. *Holistic approaches to natural resource management and environmental care*. *Journal of Soil and Water Conservation* 52:22-25. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 30, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>46</sup> Loeffler, A. 1999. *Strategies for the development, implementation and monitoring of agricultural nonpoint source pollution control programs in Ontario*. Ministry of the Environment, Toronto. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 30, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>47</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>48</sup> 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. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 30, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>49</sup> IPCC Working Group II. 1996. *Technologies, policies and measures for mitigating climate change*. IPCC, Geneva. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>50</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>51</sup> 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. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>52</sup> A report summary was prepared by Ulrick Kopke and Guido Haas for New Farmer and Grower, Spring 1996. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>53</sup> A report summary was prepared by Ulrick Kopke and Guido Haas for New Farmer and Grower, Spring 1996. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>

- 
- <sup>54</sup> A report summary was prepared by Ulrick Kopke and Guido Haas for New Farmer and Grower, Spring 1996. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>55</sup> Drinkwater, L.E. *et al.* 1998. *Legume-based cropping systems have reduced carbon and nitrogen losses*. Nature 396:262-265. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 29, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>56</sup> Robertson, G. P. *et al.* 2000. *Greenhouse gases in intensive agriculture: contributions of individual gases to the radiative forcing of the atmosphere*. Science 289:1922-1925. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>57</sup> 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. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 29, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>58</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>59</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>60</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>61</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>62</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>63</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>64</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>65</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>66</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- 
- <sup>67</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>68</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>69</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>70</sup> Cariboo Press. 2006. *Local organic delivery service tops in B.C.* Cariboo Press, December 13, 2006. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20December%202006.htm#section2>
- <sup>71</sup> Cariboo Press. 2006. *Local organic delivery service tops in B.C.* Cariboo Press, December 13, 2006. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20December%202006.htm#section2>
- <sup>72</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>73</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>74</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>75</sup> Reuters. 2007. *Monsanto asks court to allow sale of GMO alfalfa*. Retrieved September 28, 2008 from <http://www.washingtonpost.com/wp-dyn/content/article/2007/03/24/AR2007032400779.html>
- <sup>76</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>77</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>78</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>79</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>80</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- <sup>81</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>82</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>83</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>84</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>85</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>86</sup> Gina Teel. 2006. *Growing Pains: The organic food industry in Alberta is caught in a classic catch-22*. Calgary Herald December 17, 2006. Retrieved September 28, 2008 from <http://www.canada.com/calgaryherald/news/calgarybusiness/story.html?id=7ee07678-2106-4e16-b969-3afead08c251&p=1>
- <sup>87</sup> Philadelphia Daily News. 2006. *Going organic . . . will consumers hop on Busch's bandwagon?* Philadelphia Daily News, July 6, 2006. Retrieved September 29, 2008 from [http://findarticles.com/p/articles/mi\\_km4470/is\\_/ai\\_n16586535](http://findarticles.com/p/articles/mi_km4470/is_/ai_n16586535)
- <sup>88</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>89</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>90</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>91</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>92</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>93</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- <sup>94</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>95</sup> Craig, Bill. 2007. *The challenges facing organic apple production in Atlantic Canada*. Retrieved September 28, 2008 from [http://www.organiccentre.ca/Extension/ext\\_organic\\_apple\\_atlantic.asp](http://www.organiccentre.ca/Extension/ext_organic_apple_atlantic.asp)
- <sup>96</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>97</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>98</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>99</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>100</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>101</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>102</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>103</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>104</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>105</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>106</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>107</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>



- 
- <sup>108</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>109</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>110</sup> Fish Farmer. 2007. *Environmentalists call for salmon exclusion from organic standards*. Retrieved September 28, 2008 from [http://www.fishfarmer-magazine.com/news/fullstory.php/aid/982/Environmentalists\\_call\\_for\\_salmon\\_exclusion\\_from\\_US\\_organic\\_standards.html](http://www.fishfarmer-magazine.com/news/fullstory.php/aid/982/Environmentalists_call_for_salmon_exclusion_from_US_organic_standards.html)
- <sup>111</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>112</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>113</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>114</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>115</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>116</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>117</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>118</sup> Gina Teel. 2006. *Growing Pains: The organic food industry in Alberta is caught in a classic catch-22*. Calgary Herald December 17, 2006. Retrieved September 28, 2008 from <http://www.canada.com/calgaryherald/news/calgarybusiness/story.html?id=7ee07678-2106-4e16-b969-3afead08c251&p=1>
- <sup>119</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>120</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- 
- <sup>121</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>122</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>123</sup> Gina Teel. 2006. *Growing Pains: The organic food industry in Alberta is caught in a classic catch-22*. Calgary Herald December 17, 2006. Retrieved September 28, 2008 from <http://www.canada.com/calgaryherald/news/calgarybusiness/story.html?id=7ee07678-2106-4e16-b969-3afead08c251&p=1>
- <sup>124</sup> Canadian Organic Growers. 2007. *Organic imports satisfy Canadian consumer demand*. From the Manitoba Cooperator, March 15, 2007. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20April%202007.htm#section1>
- <sup>125</sup> Canadian Organic Growers. 2007. *Organic imports satisfy Canadian consumer demand*. From the Manitoba Cooperator, March 15, 2007. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20April%202007.htm#section1>
- <sup>126</sup> Canadian Organic Growers. 2007. *Organic imports satisfy Canadian consumer demand*. From the Manitoba Cooperator, March 15, 2007. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20April%202007.htm#section1>
- <sup>127</sup> Canadian Organic Growers. 2007. *Organic imports satisfy Canadian consumer demand*. From the Manitoba Cooperator, March 15, 2007. Retrieved September 28, 2008 from <http://www.cog.ca/e-news/COG%20E-News%20for%20April%202007.htm#section1>
- <sup>128</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>129</sup> Chernos, S. 2006. *Fair-trade advocates gaining momentum*. Business Edge (Ontario) September 19, 2008. Retrieved September 28, 2008 from <http://www.businessedge.ca/article.cfm/newsID/14239.cfm>
- <sup>130</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>131</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>132</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>133</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>134</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)

- <sup>135</sup> Food and Drink Europe. 2006. *Global organic sales soar but supply is strained*. Retrieved September 28, 2008 from <http://www.foodanddrinkeurope.com/Consumer-Trends/Global-organic-sales-soar-but-supply-is-strained>
- <sup>136</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>137</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>138</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>139</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>140</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>141</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>142</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>143</sup> A report summary was prepared by Ulrick Kopke and Guido Haas for New Farmer and Grower, Spring 1996. Cited by MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>144</sup> Heller, L. 2006. *Differing organic standards impede international trade, report*. Food Navigator USA, November 30, 2006. Retrieved September 30, 2008 from <http://www.foodnavigator-usa.com/Financial-Industry/Differing-organic-standards-impede-international-trade-report>
- <sup>145</sup> Burke, K. 2006. *Tighter code for organic food*. The Age, November 24, 2006. Retrieved September 30, 2008 from <http://www.theage.com.au/news/national/tighter-code-for-organic-food/2006/11/23/1163871550051.html>
- <sup>146</sup> United Nations Conference on Trade and Development. 2007. *New standard for East African organic products to be launched at Tanzanian conference 28 May – June 1*. Press Release, May 24, 2007. Retrieved September 30, 2008 from <http://www.unctad.org/Templates/webflyer.asp?docid=8421&intItemID=4431&lang=1>
- <sup>147</sup> MacRae, R., R. Martin, A. Macey, R. Beauchemin and R. Christianson. 2002. *A national strategic plan for the Canadian organic food and farming sector*. Retrieved September 28, 2008 from <http://www.certifiedorganic.bc.ca/programs/coi/reportfinal-1.pdf>
- <sup>148</sup> EurActive.com. 2006. *EU accepts trade ruling on GMOs*. Retrieved September 30, 2008 from <http://www.euractiv.com/en/trade/eu-accepts-trade-ruling-gmos/article-159918>



- <sup>149</sup> EurActive.com. 2006. *EU accepts trade ruling on GMOs*. Retrieved September 30, 2008 from <http://www.euractiv.com/en/trade/eu-accepts-trade-ruling-gmos/article-159918>
- <sup>150</sup> BioPortfolio. 2007. *France allows 13 GM trials for 2007; to adopt EU rules by decree by end-March*. BioPortfolio, March 21, 2007. Retrieved September 30, 2008 from [http://www.gmofoodforthought.com/2007/03/news\\_agricultural\\_biotechnolog\\_3.html](http://www.gmofoodforthought.com/2007/03/news_agricultural_biotechnolog_3.html)
- <sup>151</sup> BioPortfolio. 2007. *France allows 13 GM trials for 2007; to adopt EU rules by decree by end-March*. BioPortfolio, March 21, 2007. Retrieved September 30, 2008 from [http://www.gmofoodforthought.com/2007/03/news\\_agricultural\\_biotechnolog\\_3.html](http://www.gmofoodforthought.com/2007/03/news_agricultural_biotechnolog_3.html)
- <sup>152</sup> Certified Organic Associations of British Columbia. 2002. *British Columbia Organic Sector – Initiative Strategic Plan, 2002/03 - 2004/05*. Retrieved March 10, 2008 from [http://www.certifiedorganic.bc.ca/programs/osdp/COABC\\_Strategic\\_Plan\\_2002\\_Short.pdf](http://www.certifiedorganic.bc.ca/programs/osdp/COABC_Strategic_Plan_2002_Short.pdf)
- <sup>153</sup> CBCnews.ca. 2007. *Got raw milk? Don't share, Ontario dairy board warns farmer*. Retrieved October 1, 2008 from <http://www.cbc.ca/consumer/story/2007/01/15/milk.html>