Ontario Goes Organic: How to Access Canada's Growing Billion Dollar Market for Organic Food

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Section 4

6. 15-year Outcomes

- About 5343 organic farmers would be producing organically in all major commodities (go to http://www.oacc.info/Docs/OntarioOrgStrategy/TargetOOS_Statistics_sheet1_june26-06.pdf for details)
- Based on comparisons of the financial performance of organic vs. conventional operations[1], most of these farmers would do better financially in organic production.
- Organic production would occur on about 900,000 acres of land, and some 1.4 million animals would be reared organically (go to http://www.oacc.info/Docs/OntarioOrgStrategy/TargetOOS_Statistics_sheet1_june26-06.pdf for details)
- These farmers would reduce fertilizer applications by about 43 million kg[2], pesticide applications by about 296000 kg active ingredient[3] (8% of pesticides applied on studied crops in 2003), and 7079 kg of antibiotics consumed in animal feed (for details, go to: fertilizers http://www.oacc.info/Docs/OntarioOrgStrategy/TargetOOS_Statistics_sheet2_june26-06.pdf; pesticides
- Antibiotics http://www.oacc.info/Docs/OntarioOrgStrategy/AvoidedMedicatedFeed.pdf [4]
- Financial savings would amount to about $18.3 million in saved fertilizer applications and $9.1 million for pesticides (see URLs above for details).

- Implementation of this plan would capture 51% of Ontario's organic consumption, up from the currently estimated 15%, and boost organic production to 10% of agricultural acreage within 15 years. Organic retail sales would then comprise 5.3% of the total food and beverage retail market in Ontario (see Appendix 5 for details).
- Organic farming would be making significant contributions to environmental improvements, including reducing agricultural pollution to water bodies and improving nutrient management. The degree to which this would occur in the short term is dependent on the concentration of organic farms within various locales.
- Based on US studies of communities with significant percentages of sustainable producers, at 10% of the landscape, organic farming could also be making significant contributions to rural community revitalization[5]
- A significant increase in new processing capacity would be achieved and since food processing has one of the highest economic multipliers among industrial sectors[6], this would contribute significantly to Ontario economic activity
- It is clear from the evolution of environmental stewardship in farming that once certified organic production has reached 10% on the landscape, many important environmental practices will also have been progressively implemented on non-organic operations. In this sense, organic producers contribute to "raising the bar" across all farming sectors. Indirect environmental benefits of organic adoption will likely equal or exceed direct ones.

7. Conclusions

To be successful, a full package of initiatives must be implemented. This programme would cost the provincial government about $50 million over 15 years. The net total programme costs would be significantly lower than $50 million since farmers would have saved almost $28 million in synthetic chemical inputs and received premium organic prices for most of their goods sold. This will unavoidably reduce pressures on the farm financial safety net system and government costs[7].

Additionally, this programme contributes significantly to eliminating the long-term externalized costs of current approaches to agriculture, conservatively estimated at $145 million annually or $2.18 billion over the 15 year life of the programme. Not all those costs will be saved within 15 years, but this exceedingly modest investment in organic production, representing only 2.3% of these externalized costs, will generate savings in externalized costs far beyond this one-time investment.

Appendices:

Appendix 1 - Growth rates in organic agriculture worldwide[8]

Jurisdiction	Growth rates	% agric. output	% land area or farms	% food sales	Sales
Global	20% (production) over 10 years[9] 23% (market) in 2000.		0.4% land area[10] 23 million ha		$19 billion US from major markets
OECD	15-30% (market)[11]	0.08		<2% (2000)[12]	
US	30% / year (land area certified), 91-97[13] 20%/yr over decade (market)	0.2[14]	Area: 0.2%	3% fresh produce sales[15]	$9.5 billion (2001)
Mexico	140% (land in production), 96-98[16]		Area: 0.1%		$70 million US, 1999[17]
Canada	10-20% sales over the next 10 years		0.6%	1.5-2%	$650 million US

Europe	30%/yr since 1998 (production) Dairy sales 26% in 2001[18] Projected: 10-20% of production by 2010[19]		Farms: 1%[20] Area: 3%[21]		$9 billion US (2001) 20-30 billion Euro projected retail sales for 2010[22]
Austria			Area: 11.3%	2-2.5%	$325-375 million US
Sweden			Area: 6.3%,	1.5-2%	
Switzerland			Area: 9.7%	3.2-3.7%	
Germany	Fruit sales 8%/annum recent years; vegetable sales 15% [23] 16% land area (2001)		Area: 3.7% Target: 20% by 2010[24]	1.7-2.2%	
Denmark			Area: 6.5% Target 12% [25]	2.2-2.7%	
Netherlands			Area: 1.9% (2001)[26] Target: 10% by 2010[27]	1-1.5% Target: 5% of market share by 2004[28]	
France			Area: 1.4%	1-1.5%	

UK	30-50% past few years (market), 29% (area)[29]		Area: 3.9% (2001)[30]	1.5-2%	Imports: 70% of primary produce sales, conventional only 25%[31]
Japan			Area: 0.9% certified organic[32]	<0.5%	$250 million US (2000)
New Zealand			Area: less than 0.5% (2002)[33]	<0.5%	Exports: less than 1% of total agricultural exports[34]
Australia			Area: 2.3% Farms: 1.4%	<0.5%	

Appendix 2 - Estimates of regional transition activity
(based on 2005 area seed estimates for field crops, 2004 area harvested estimates for fruit and vegetables, dairy shipments 2005, beef cows 2005, total sheep and lambs 2005, as reported by OMAFRA)

Commodity	**Top 3 counties in which farm transitions will likely occur for selected commodities**
Field crops	
Hay & alfalfa	Grey, Bruce, Simcoe
S. wheat	Wellington, Stormont-Dundas-Glengarry, Prescott-Russell
W. wheat	Lambton, Chatham-Kent, Huron
Barley	Bruce, Grey, Huron
Oats	Timiskaming, Renfrew, Prescott - Russell
Corn for grain	Huron, Oxford, Stormont-Dundas-Glengarry
Corn for silage	Wellington, Huron, Perth
Soybeans	Lambton, Chatham-Kent, Essex
Edible beans	Huron, Oxford, Middlesex,
Mixed grain	Grey, Perth, Wellington
Vegetables	
Potatoes	Simcoe, Dufferin, Brant
Carrots	Simcoe, York, Kent
Tomatoes, field	Kent, Essex, Haldiman-Norfolk
Beans	Middlesex, Brant, Huron
Sweet corn	Middlesex, Lambton, Perth
Cabbage	Haldiman-Norfolk, Hamilton-Wentworth, Essex
Fruit	
Apples	Grey, Haldiman-Norfolk, Essex
Grapes	Niagara, Essex, Hamilton-Wentworth
Strawberries	Haldiman, Durham Simcoe
Dairy	Oxford, Perth, Wellington
Beef	Grey, Bruce, Renfrew
Sheep	Grey, Bruce, Simcoe

Appendix 3 – Yield reduction averages relative to conventional production during 3-yr transition to organic in Ontario (comparison with a small to medium sized conventional operation)[35]

Commodity	Yr 1	Yr 2	Yr 3	5-10 years
Field crops				
Pasture	0	0	0	same
Hay & alfalfa[36]	0.10	0.05	Same as conv.	Same as conv.
S. wheat	0.30	0.20	0.10	0.05
W. wheat	0.30	0.20	0.10	0.05
Barley	0.30	0.20	0.10	0.05
Fall rye	0.20	0.10	0.05	Same as conv.
Oats	0.20	0.10	0.05	Same as conv.
Buckwheat	0.30	0.20	0.10	0.10
Corn for grain	0.30	0.20	0.15	0.10
Corn for silage	0.20	0.15	0.10	0.05
Canola	0.50	0.40	0.30	0.20
Soybeans	0.30	0.20	0.15	0.10
Flax	0.45	0.30	0.15	0.10
Edible beans	0.30	0.20	0.15	0.10
Other field crops	0.30	0.20	0.10	0.05
Vegetables				
Potatoes	0.40	0.30	0.25	0.20
Other roots	0.40	0.30	0.25	0.20
Tomatoes - field - greenhouse	0.40	0.30	0.25	0.20
Cucumbers - field - greenhouse	0.40	0.30	0.25	0.20
Leguminous	0.40	0.30	0.25	0.20
Sweet corn	0.40	0.30	0.25	0.20
Cole crops	0.40	0.30	0.25	0.20
Leafy vegetables	0.40	0.30	0.25	0.20
Tree fruits	0.50	0.40	0.30	0.25
Small fruits	0.50	0.40	0.30	0.25
Dairy[37]	0.20	0.15	0.10	0.10
Beef[38]	0.20	0.15	0.10	0.10

Chicken[39] **- meat** **- eggs**	0.35 0.35	0.30 0.30	0.25 0.25	0.20 Daily wt. gain 20 vs. 25 dz
Turkey	0.40	0.30	0.25	0.20
Pork[40]	0.50	0.45	0.40	0.30
Sheep[41]	0.10	0.05	0	0

Appendix 4 - Case studies of transition risk offset and environmental payments[42]

Total estimates for 3 year transition period plus one-time environmental service payment 3 years after certification

Apple production[43]

Transition payment
10 ha apple trees x $1297.99 = 12979.99

Environmental payment
10 ha x $22.25 = 222.50

Total: $13202.49

Mixed vegetable production (excluding potatoes)

20 ha operation, 12 ha in vegetables, rest in cover crops
Transition payment
12 ha x 2099.49 = 25193.88

Environmental payment
12 ha x $22.25 = $267.00

Total: $25460.88

Cash cropping

300 ha operation with 63 ha in winter wheat, 114 ha in grain corn and 123 ha in soybeans

Organic conversion:
75 ha in winter wheat x $37.37 = 2802.75
90 ha in grain corn x $63.98 = 5758.20
90 ha in soybeans x $43.20 = 3888.00
45 ha in alfalfa / grass hay[44] x $6.75 = 303.75
Total: $12752.70

Environmental payment
300 x $22.25 = $6675.00

Total: $19427.70

Dairy[45]

Conventional:
100 ha operation
9 ha in winter wheat
6 ha in barley
17 ha grain corn
10 ha silage
8 ha soybean
42 ha hay
8 ha pasture

63 dairy cows

Alter organic transition[46]**:**
100 ha and 57 dairy cows
Transition payment

9 ha winter wheat x $37.37	=	336.33
6 ha barley x $25.10	=	150.60
10 ha grain corn x $63.98	=	639.80
8 ha soybeans x $43.20	=	345.60
55 ha hay x $6.75	=	371.25
12 ha pasture x 0	= 0	

57 dairy cows x $214.83 / animal alter 3 years = $12245.31

Environmental payment
100 ha x $22.25 = $2225.00

Total after 3 year transition, plus environmental services payment = $16313.89

Appendix 5 - Determining the size of the organic market after 5 and 15 years

Pinpointing the size of the organic food market is difficult because of limited data. By looking at the issue from a number of angles, and using what limited numbers are available, we derive some estimates for use in this study.

1. Total organic market - Organic food is an estimated $1.3 billion market in Canada. If Ontario's percentage of the total food and beverage market holds, then the Ontario organic food market should be about $270 million. Another way to look at this is to assume that 1% of the Ontario food and non-alcoholic beverage retail market is organic, then the organic portion = 26.5 billion[47] / 100= $265 million. So, these numbers roughly line up.
2. Organic farm gate revenue - Macey (2003) conservatively estimates Ontario farm gate revenue at a minimum of $25 million, but this is widely viewed as unrealistically low, so we assume a farm gate revenue value of $30 million.
3. The current ration of organic production for domestic vs. export markets – In the conventional food market, the traditional ratio between farm gate value and retail value is 3.23 ($26.5 billion / $8.2 billion). If we take the total organic market size at $265 million and divide that by 3.23 = $82 million in domestic farm gate organic sales if the entire market was provided by domestic production. However, the estimate is that only 15% is from domestic production, so that would mean only $12.3 million in farm gate revenue going towards the Ontario market.. That represents about 40% of current total farm gate revenue ($30 million), so it would appear that the about 40% of current organic production goes to the domestic market and 60% goes for export..
4. Estimating how much organic farmers contribute to the total organic retail market after 5 and 15 years - This $8.2 billion in total farm gate revenue comes from about 60,000 farms for an average farm gate receipt / farm of $137,000 / farm. Since we're projecting lower conversion ratios in livestock and smaller farm operations undertaking the conversion, we'll assume an average farm receipt / farm return for organic producers of $85,000[48]. After 5 years, with 978 organic producers, they'd generate $83.1 million in farm gate sales. Let's assume that the domestic/export production ratio shifts somewhat to 60% domestic / 40% export over this period. This would mean $49.9 million would be allocated to domestic markets. After multiplying by 3.23, the domestic contribution would be $161.2 million. If we conservatively assume a 15% growth rate in organic retail sales over the first 10 years of the programme, and 10% in the last 5 years, then the organic market would amount to 533 million after 5 years, so Ontario producers would be providing about 30% of the total. After 15 years, we'd anticipate approximately 5343 organic operations, for farm gate receipts of $454 million. $273 million goes for the domestic market (up from $12.3 million, or roughly a 20 fold increase). Multiplying by the traditional ratio of 3.23 would translate to $0.88 billion in organic retail sales from Ontario producers. This is feasible, if we project that some significant percentage of organic exports are progressively diverted to the domestic market and that many new organic farms focus on Ontario markets. Using te market growth rates described above, it then becomes a $1.73 billion organic market by the end of year 15. So Ontario's share of retail sales would shift from 15% to 51% over this period.

5. Calculating the organic percentage of the total retail market after 5 and 15 years - Assuming growth rates in the overall food market at 1.5%[49], then the entire food market would equal $28. 6 billion after 5 years and $32.6 billion after 15 years. Organic would represent 1.9% of the total retail market after 5 years 5.3% of the total market after 15 years.

Endnotes

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[1] For reviews of the economics of organic production, see **Error! Main Document Only.**MacRae, R.J. *et al*. 1990. Farm-scale agronomic and economic conversion to sustainable agriculture. **Advances in Agronomy** 43:155-198; Stanhill, G. 1990. The comparative productivity of organic agriculture. **Agriculture, Ecosystems and Environment** 30:1-26; Lampkin, N.H. and Padel, S. (eds.). 1994. **The Economics of Organic Farming: An international perspective**. CAB International, Wallingford, Oxon, UK.; Pretty, J.M. 1995. **Regenerative Agriculture**. IISD, London; Stockdale, E.A. et al. 2001. Agronomic and environmental implications of organic farming systems. **Advances in Agronomy** 70:261-327; Lotter, D.W. 2003. Organic agriculture. **J. Sustainable Agriculture** 21:59-128

[2] Fertilizer estimates are derived primarily from OMFRA recommendations for medium soil test results. Fertilizer prices are based on the **Ontario Farm Input Monitoring Project Survey # 4 - October 5, 2005** Economics And Business Section, Ridgetown College

[3] Pesticide savings are derived primarily from McGee, B. et al. 2004. **Survey Of Pesticide Use In Ontario, 2003 Estimates of Pesticides Used on Field Crops, Fruit and Vegetable Crops, and Other Agricultural Crops** (http://www.agcare.org/uploadattachments/pesticide%20survey%202003%20final%20report.pdf), with corrections for pesticides permitted in organic production such as sulphur and Bt. Pesticide costs are provided on a use weighted basis, using data from the **Ontario Farm Input Monitoring Project Survey # 4 - October 5, 2005** Economics and Business Section, Ridgetown College. Since not all pesticides are listed in that survey, we used the ones available which generally accounted for 80% of the AI applied, except for fruits and vegetables where they accounted for more like 66%.

[4] Canadian data derived from a US study (Benbrook, C. et al., 2003. **Hogging it: estimates of antimicrobial abuse in livestock**. Union of Concerned Scientists, Washington, DC) where we compared feed regulations in Canada and the US and made adjustments for antibiotics not permitted in Canada, or differences in permitted rates. We assumed US numbers for percent of animals treated, but substituted Ontario numbers of animals as per transition targets.

[5] See summaries of US studies in **Error! Main Document Only.**MacRae, R. et al. 2004. **Does the adoption of organic food and farming systems solve multiple policy problems? A review of the existing literature**. Report funded by the Canadian Agriculture and Rural Develop (CARD) Program of Agriculture and Agrifood Canada. Organic Agriculture Centre of Canada, Truro, NS.

[6] See Bendavid – Val, A. 1991. **Regional and Local Economic Analysis for Practitioners**, 4th edition. Praeger, New York.

[7] We only account for this in one programme element, the transition risk offset programme.

[8] Source (unless otherwise indicated): Youssefi, M and Willer, H. (Ed.). 2003. The World of Organic Agriculture: statistics and future prospects. SOL and FiBl, Germany and Switzerland. http://www.soel.de/inhalte/publikationen/s/s_74.pdf

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11 Hallam, D. 2003. The organic market in OECD countries: past growth, current status and future potential. In: OECD (ed.). **Organic Agriculture: sustainability, markets and policies**. CABI Publishing, Wallingford, UK. Pp. 179-186.

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14 OECD Secretariat. 2003. Conclusions. In: OECD (ed.). **Organic Agriculture: sustainability, markets and policies**. CABI Publishing, Wallingford, UK.Pp. 9-12.

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[35] For most field crops, the assumption is that the transition does not start from a forage crop

[36] Assumes that conventional farmer managed pasture without excess fertilization

[37] Assumes herd reduction and increased acres to accommodate increased pasture and hay production

[38] Assumes integrated operation, birth to slaughter, no feedlots, major yield declines are associated with reduced weigh gain. http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex3458/$file/420_830-3.pdf?OpenElement

[39] Assumes floor operations. http://www.acornorganic.org/pdf/poultryeggsprofile.pdf

[40] Most difficult comparison: assumes small independent hog operation with most feed produced on the farm. Assumes that 100 sows/1000 market hogs vs. 100 sows/ 2000 market hogs in conventional operation. Transition focuses on 6.5% of Ontario operators roughly in this size range. Farrow to finish

[41] Assumes most conventional sheep operations are low input, so differences largely due to stocking rates and yield reductions from changes in de-worming agents. Meat only.

[42] Derived primarily from Statistics Canada, 2001 Census of Agriculture data

[43] Derived from OMAFRA data on the apple industry

[44] Sold to livestock operations

[45] Derived from CDC, DFO, UGuelph. 2005. Ontario Farm Dairy Accounting Project (OFDAP): Annual Report 2004. http://www.milk.org/pdf/publications-odfap_report.pdf and Statistics Canada 2001 Census of Agriculture.

[46] Derived from **Error! Main Document Only.**Ogini, Y. et al.. 1999. Comparison of organic and conventional dairy farms in Ontario. **American J. Alternative Agriculture** 14:122-134.

[47] McGee, B. 2004. Selected Ontario Economic Indicators in Current Dollars, 2004. http://www.omafra.gov.on.ca/english/stats/food/indicators.html

[48] With 487 current organic farmers, the average farm gate receipts would be about $76000.

[49] http://www.agr.gc.ca/spb/rad-dra/publications/effexp/effexp_e.pdf