



Wake up Call: California Drought & B.C.'s Food Security

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Highlights

- The current drought levels in California are a wake up call that B.C. needs to become more self-reliant to secure our access to healthy food for our future.
- Drought has persisted in California over the past three years, with the majority of the state in “extreme” or “exceptional” drought, the two worst categories.
- In 2010, **67%** of B.C. vegetable imports came from the U.S., over half of which were produced in California, including **95%** of all broccoli and **74%** of all lettuce.
- Price increases of between **20%** and **34%** have been predicted for a variety of fruits and vegetables across North America this year due to the drought in California.
- Between July 2013 and 2014, produce prices in B.C. have increased between 5.7% and 9.6%. If these trends continue for the next five years price increases of 25%-50% are predicted for many fruits and vegetables, adding an extra \$30-\$60 to the average B.C. household's monthly grocery bill. For example: If broccoli was \$2.36/lb the assumption is that if prices increase by 25% each year for five years, a pound of broccoli could cost up to \$7.
- In B.C. vegetable crop production fell by **20.4%** between 1991 and 2011, with significant decreases in several staple crops. The on-going drought in California underscores the need to increase B.C.'s food self reliance, especially in regards to vegetables and fruits that B.C. is able to produce locally, yet has become dependent on California and other locations for.
- For B.C. to have a resilient and secure food system that ensures access to affordable, healthy food in the midst of global challenges such as climate change, more must be done to support a local food system that increases food self-reliance, which also has other benefits.
- With further support for and investment in the local food economy the \$2.8 billion in total farm gate sales in B.C. in 2012, could potentially support up to \$9 billion circulating in the local economy.ⁱ
- If the average B.C. household was to spend **50%** of its grocery budget on local food, up to an extra \$6,457 per family would circulate in the local economy.
- Putting under-utilized small parcels of land near cities into production has the potential to play a significant role in meeting local consumption of vegetables and fruit six months of the year.ⁱⁱ

2014 California drought takes water levels to new lows

B.C. currently gets 67% of its imported vegetables and 44% of its imported fruits from the United States, over half of which is from California.ⁱⁱⁱ With the last 30 months being the driest on record in California, the state's dependence on moving water is making it, and everyone who depends on it for food, vulnerable.

California is one of the most productive food producing regions in the world. The state accounts for over half of the fruits and vegetables grown in the United States, significant portions of which are sent around the world, including to British Columbia. The majority of the state is in the midst of 'extreme' or 'exceptional' drought, the two worst categories. The maps (Map 1) from the U.S. Drought Monitor show just one snapshot of how the record lows over three years have impacted drought levels across the state increasingly over the past year. The drought is proving to be so devastating not only because of lack of precipitation, both as rain and snow, over the past 3 years, but also in how it has led to the depletion of groundwater, water sources located between the earth's surface usually accessed through wells. **Agriculture uses approximately 80% of California's water supply**, and as drought persists pressures from urban and industrial uses increasingly compete with the use of water for food production. Farmers are increasingly pumping water onto crops from groundwater sources, depleting aquifers, which is not viable in the long-term.^{iv}

Praying for rain?

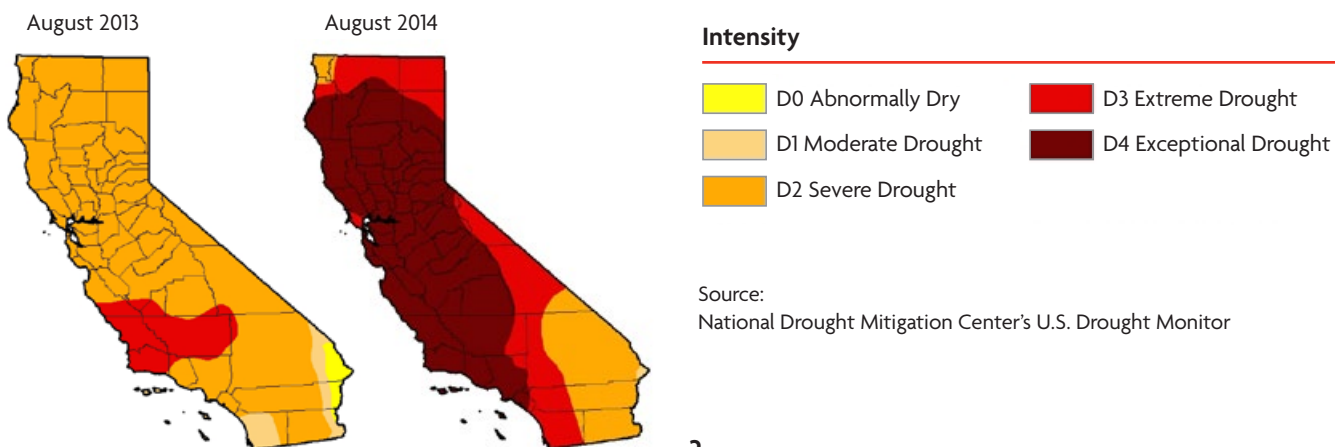
While more rain could be seen in 2015, it would likely not be enough. Even a year of heavy rainfall is unlikely to replenish the areas that supply the majority of California's water. The essential buffer against droughts in California is the state's supply of ground water, which is being seriously depleted this year. Richard Howitt and researchers from the University of California, Davis have forecasted that a number of years of increased rain and decreased pumping are likely to be needed to replenish the state's water supply. With the impacts of climate change on increasing variable weather patterns, it is hard to imagine California becoming less susceptible to drought.

Impacts on food production

With the availability of water so low after three years of drought, farmers are having to make hard choices. Many farmers who grow annual crops – those that have to be replanted every year – have planted fewer acres to ensure there's enough water to bring the crops they plant all the way market. Many have had to focus on their highest value crops, especially those that are perennials, which produce every year without being replanted such as 'permanent' tree crops. The United States Department of Agriculture has stated that, "owing to higher production costs, insufficient water, or both, producers may opt to reduce total acreage, driving up prices not just this year but for years to come." (USDA Economic Research Service, California Drought 2014: Farm and Food Impacts).

Consumers can expect to pay more for food later this year and in coming years because fewer acres of land are being planted, crop yields are shrinking and California's ability to buffer drought is decreasing. **With climate change forecasts predicting more frequent and extreme droughts, it's questionable whether California will be a reliable production zone by 2050, especially in the way that it currently produces for so many outside of the state.**

Map 1 – Drought Levels from August 2013 to August 2014



B.C.'S reduced local production and increased dependence

In light of serious drought in California, both current and anticipated, British Columbians should be aware of two negative trends. The first trend is the reduced production in B.C. **The overall area in vegetable crop production has decreased by 20.4% over the 20 years between 1991 and 2011, with much more significant decreases in several staple crops** (Graph 1). This has gone hand in hand with and increased dependency on imports, particularly from California, including importing many crops during when they are in season here.

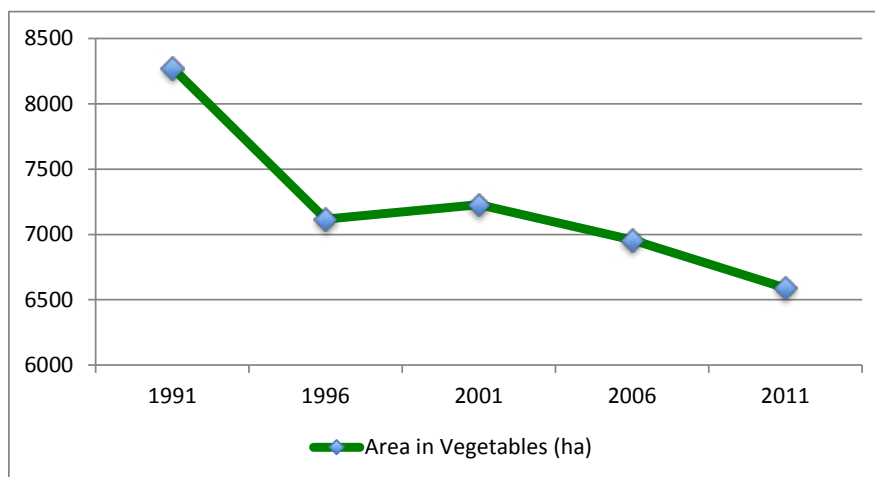
There is a complex mix of factors that has contributed to the declining crop production in B.C. over the last two decades or more. We have seen an increasing focus on a food system that is sourcing food from much further afield. Cheaper imports from other agricultural regions with longer seasons and/or cheaper labour conditions, California being a notable example have made it harder for farmers to compete. Alongside declining production there has also been a shift from producing for domestic markets towards producing for export. Government direction has supported this and has largely been geared towards agricultural production for foreign markets. A recent example of this is the significant efforts of representatives from provincial and federal

governments to engage in a trade mission to China to increase exports of cherries, blueberries and other agricultural products in the coming years.^v **The dependence on a supply of food available from imported sources ultimately has led to decreased production and decreased self-reliance.** This decrease in production for local markets was all done based on the assumption that high production levels in California, and other areas like it, would continue in perpetuity. This is an assumption that appears to be increasingly fragile.

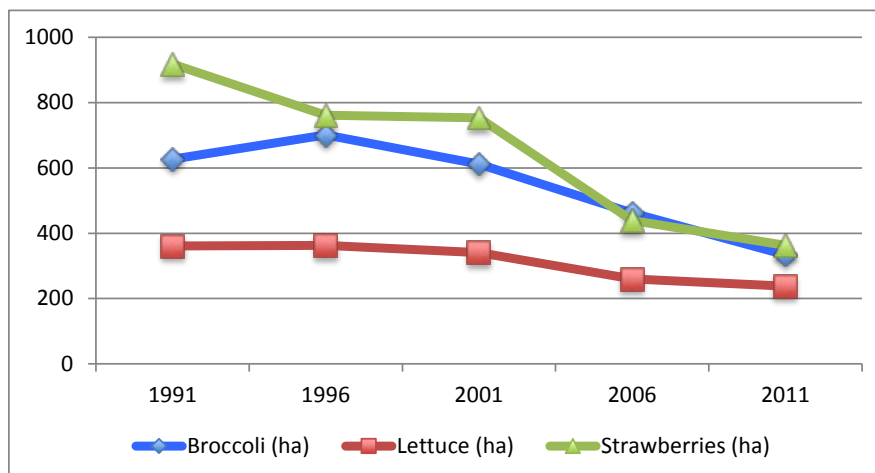
The trend in two important staple vegetable crops, broccoli and lettuce, showed **decrease in production of 52% in the case of broccoli and 34% in the case of lettuce between 1996 and 2011** (Graph 1). **In 2010, 67% of B.C. vegetable imports came from the U.S., over half of which is produced in California.**^{vi}

Strawberries are an example of another crop that has been grown in larger volumes in B.C. in the past that we have now become much more reliant on California for. If we walk into the grocery store, even in the height of the season when B.C. strawberries are at their peak, we can clearly see evidence of this. **The farmland area devoted to strawberry production has seen huge reductions, over 60% in the twenty years between 1991 and 2011** (Graph 1). In 2009, 42% of Canadian fruit imports came from the U.S., over half of which was produced in California.^{vii}

Graph 1 – Declining Trend of Area in Crop Production in B.C.



Source:
2011 Census of Agriculture:
British Columbia Highlights



Rising food prices

The second unsettling trend is the increasing food prices caused by reduced supply from California due to drought. It is extremely hard to make forecasts and direct associations between the drought and food prices here in B.C. given the complexity of our current global food system. However many experts are forecasting increased food prices well beyond the borders of California. Professor Timothy Richards of the W. P. Carey School of Business at Arizona State University has **estimated increased prices for a variety of fruits and vegetables, including increases this year of up to 34% for lettuce and 22% for broccoli.** University of Guelph economics professor Sylvain Charlebois suggested that the price of food products imported from California could increase by as much as 20 per cent. For the average household in B.C. that would equate to an increase in the range of an extra \$22 to \$39 per month on fruits and vegetables.^{viii}

While price increases of that degree have not been recorded yet in Canadian statistics such as Statistics Canada's Consumer Food Price Index, they should raise concerns of what is likely to come. **In B.C. a price increase of 9.6% for fruit and 5.7% for vegetables between July 2013 and July 2014 (see Table 1) has been documented.**^{ix} This is significantly above usual levels of year-over-year inflation, which was 2.1% over the same period. In comparison, that's 4.5 times as high of a price increase in the past year for fruits and 3.9 times as high for vegetables, compared to the average percentage increase annually since 2002.

The U.S. Department of Agriculture's Economic Research Service has forecasted similar price increases. Since the latest data is from July the full extent of the California drought is still likely yet to be seen, potentially accounting for some of the differences between Richards' and Charlebois' predictions, and what has been seen in produce aisles so far. There is also fear that low exchange rates could exasperate food price increases even further. **If these trends continue for the next five years, it would not be surprising to see price increases of 25-50% for many fruits and vegetables, adding an extra \$30-\$60 to the average B.C. household's grocery budget each month.** Paying over \$7 for a crown of broccoli might not be too far off.^x While the more significant predictions of increased food prices have not yet been seen, now is the time to take action before it is too late.

Table 1 - Food Price Increase from July 2013 to July 2014 (British Columbia)

	July 2013	July 2014	July 2013 - July 2014
	(2002 prices = 100)		% change
Fresh fruits	123.5	135.3	9.6
Fresh vegetables	116.2	122.8	5.7

Source: Statistics Canada Consumer Price Index

\$7 for a crown of broccoli?

Broccoli and lettuce are two crops that demonstrate the vulnerability of how our food system is currently structured. Both are common staples that we consume in significant amounts and that we have largely become reliant on California for.

In 2010, 67% of B.C. vegetable imports came from the U.S.^{xi}, over half of which is produced in California. The state accounts for a staggering 95% of all broccoli and 74% of all lettuce produced in the U.S. in 2012.^{xii} Extremely large proportions of both broccoli and lettuce are regularly produced in San Joaquin Valley and Central Coast district, two areas where drought conditions have been at exceptional levels, the worst category, for the longest. The two crops are extremely heavy feeders in terms of water requirements, broccoli estimated to require over 20L of water per head and lettuce over 13L, two of the most demanding of all crops. Over the past 30 years we have seen a decline in vegetable production in B.C. more broadly, with broccoli and lettuce being no exception (Graph 1). Between 1996 and 2011, we have seen a significant decrease of area in production provincially, a reduction of 52% in the case of broccoli and 34% in the case of lettuce. Due to a complex interplay of several of these and other factors the prices of both crops are some that are predicted to be affected the most, broccoli with up to a 22% price increase and lettuce up to 34% this year alone.^{xiii} If these trends continue, paying \$7 for a crown of broccoli or \$3.50 for a head of lettuce could be a reality in the five years.

While it is true that many large retailers have global distribution systems that give them access to foods from other parts of the country and throughout the world, it is also the case that water supplies are dwindling worldwide, so reliance on other locations to supply significant portions of our need is equally fraught with vulnerability. **As water becomes scarce in more regions and the climate becomes more variable, a system based in any substantive way on large volumes of imports will continue to be vulnerable and more unpredictable, with food price spikes a likely result.**

A perfect storm for increasing local food production and consumption in B.C.

As should now be clear, with deepening impacts of climate change, including the increased likelihood of future droughts, it looks extremely unlikely that California will be able to serve as the 'fruit bowl' of North America in the way that it has in the recent past. For B.C. to have a resilient and secure food system that ensures access to affordable, healthy food in the midst of global challenges such as climate change more must be done to increase self-reliance, the ability to meet more of our own food needs. This is especially the case for many of the crops, like broccoli and lettuce, which we currently import from California even when they can be produced seasonally here in B.C.

A much cited 2006 report on B.C.'s food self-reliance published by the Ministry of Agriculture and Lands has estimated that B.C. farmers produce 48% of all foods consumed in B.C.^{xiv} What this percentage factors in is the volume of foods that are produced in B.C. and the volume of foods that are consumed. What it doesn't tell us is what percentage of the food that is produced in B.C. is consumed in B.C., leaving out the redundant trade of items being exported and imported. Despite its limitations it does give us an estimate of the potential if more of the local supply was directed towards local markets.

When comparing current production to recommendations for dietary consumption outlined in Canada's Food Guide to Healthy Eating, B.C.'s food self reliance drops to 34%. This is equivalent to **B.C. only being self-reliant for a healthy diet for four months of the year.** This is due primarily to both the fact that the largest production shortfall is in local fruit and vegetables, much of which we are dependent on California for, and that British Columbians tend to consume less fruits and vegetables than recommended.

In light of this, efforts need to be increasingly put not only on simply increasing local food production, but also on ways to increase consumption of locally produced food, especially when in season. This will need to involve some shift in consumer consumption habits to be better suited to items that are available in season locally.

Benefits of a more local food system

The good news is that if appropriate action is taken, a more local and self-reliant food system has the potential to provide more affordable, healthy food as well as other benefits including contributing to local economies, creating more jobs and reducing transportation-related greenhouse gas emissions. A more local food economy is a great way to capture as much benefit as possible for local economies.

As an example, a 2008 report from the Ministry of Agriculture and Lands documenting the economic impact of agriculture in Abbotsford has noted that the agriculture sector in Abbotsford supports 11,300 full time equivalent jobs and \$1.8 billion in annual expenditures within the local economy (Ministry of Agriculture and Lands, The Economic Impact of Agriculture in Abbotsford, 2008). Abbotsford is a key node for food processing and other agriculture activities, which increases the ripple effect that agriculture has on jobs and annual expenditures. **With total farm gate sales of \$2.8 billion provincially in 2012, agriculture in B.C. could support up to \$9 billion in annual expenditures if there were similar filling in on the value-added businesses,** based on extrapolating from economic impacts of agriculture in Abbotsford (2012 British Columbia Agrifood Industry Year in Review).

Increasing value-added processing and opportunities for consumers to purchase locally produced foods increases the local economic multiplier effect, which is how many times dollars are recirculated within a local economy before leaving through the purchase of an import. There are numerous studies that show the impressive potential multiplier effect of local food systems across Canada and the U.S. The baseline that is commonly referred to that has come out of the work of Ken Meter of the Crossroads Resource Centre in Minnesota, who has carried out numerous studies in a variety of different contexts, is that buying local food has a multiplier effect of 1.4-2.6 throughout the wider local economy. **If the average B.C. household was to spend 50% of its grocery budget on local food, up to an extra \$6,457 per family would circulate in the local economy.** At a broad scale the economic impacts of this would be substantial.

Increasing the purchasing of locally produced food also has the effect of reducing transportation-related greenhouse gas emissions, which according to Christopher Weber and H. Scott Matthews account for 11% of food's greenhouse gas emissions.^{xv} Local Food Plus, a Canadian organization, has calculated that if **10,000 people shift just \$10 a week for a year, the result is reductions in greenhouse gas emissions equal to taking almost 1,000 cars off the road.**

Under-utilized small parcels of land near cities, where there is access to irrigation and markets, have the potential to play a significant role in providing vegetables and fruits for local consumption. Dr. Kent Mullinix and colleagues from Kwantlen Polytechnic University have undertaken an analysis of the food production and economic potential of under-utilized parcels in Surrey as a case study. **They have concluded that these lands, if put into production, could satisfy 100% of 25 crops^{xvi} for six months of the year based on current consumption levels.^{xvii}** These crops are many of the same crops, including broccoli and lettuce, that we are currently reliant on California for even during the summer months.

Responding to the wake up call

The current drought levels in California could be the wake up call that B.C. needs to become more self-reliant and secure our access to healthy food for our future. But action must be taken. A recent public opinion poll commissioned by the Real Estate Foundation and Vancouver Foundation demonstrates that public support is there. **Some 92% of respondents indicated that it is very important to them that B.C. produces enough food so we don't have to depend on imports from other places and 80% are concerned about dependence on other countries for our food security.^{xviii}**

The combination of soils, climate, water resources and accessibility to markets is exceptional. The viability of agriculture is critical and requires security of our arable land base, as well as access to water, which policymakers and planners at all levels of government need to ensure. More energy needs to be given to initiatives, both public and private, that work to increase local production, support new farmers accessing land, and transition under-utilized parcels of zoned agriculture lands into active production. Efforts to support value-added businesses, those which change or transform a product from its original state to a more valuable state, and increase the local processing, storage and distribution capacity are critical to ensure locally grown food gets to local markets and more dollars circulate within our local economy. Public institutions, businesses and individuals can shift their purchasing of local, seasonal food to support the development of a more local food system, increasing resiliency in the face of climate change. **This is a wake up call for an issue that is facing all of us, and therefore all of us need to be involved in the solutions.**

Want to eat more locally-grown, seasonal food?

Here are a few tips to help you incorporate more locally grown food into your diet:

- **Learn what is available seasonally in your area.** Look for locally grown products that have been preserved through freezing or canning, and are available throughout the year. Visit the [FarmFolk CityFolk](#) website for information and resources on what's in season around the province.
- **Plan a few meals each week that incorporate key local, seasonal ingredients.** There are a number of great seasonal cookbooks available, and Internet searches including the ingredients you want to incorporate work too.
- **Buy local fruits and vegetables when they are at their peak.** During peak season, produce will not only be its most fresh and delicious, but also the price will often be less too.
- **Learn how to properly store fresh fruits and vegetables,** so that your best intentions are less likely to end in creating food waste. Reducing the fruits and vegetables going bad won't only save you money, it will also save the energy and natural resources used to produce, and dispose of, wasted food. To learn how to properly store fruits and vegetables, visit the [Canadian Produce Marketing Association's home storage guide](#) for fresh produce.
- **Experiment with different ways to preserve** to take advantage of the abundance for later in the year. Probably the simplest way to have access to local fruits and veggies during the winter months is to fill your freezer. Canning and dehydrating are also great ways to preserve the harvest. Crops such as winter squash, potatoes, garlic and onions can also be stored for several months in cool places.
- **Ask for local produce at your grocery store and consider visiting your local farmers market.** Get to know the produce manager at your local grocery store and don't be afraid to ask for local produce, communicating your value in supporting a more local food system. Head to your community's farmers market and don't be afraid to talk to the farmers as they'll often have tips on how to incorporate their products into your meals. For locations and hours of your local farmers market, visit the [BC Farmers Market Association](#) website.
- **Consider joining a community supported agriculture program.** These programs enable you to purchase a share in a season's worth of produce at the beginning of the growing year, supporting farmers when they incur most of their costs. Throughout the season you receive a weekly supply of seasonal food. Consider it a weekly lesson on what's available each week and an opportunity to experiment with different ways of incorporating local, seasonal products into your meals. To learn more about community supported agriculture programs in your area, visit the [FarmFolk CityFolk](#) website.
- **Support local restaurants and other food outlets that promote a sustainable local food system when eating out.** Look for mentions of local product on the menu and other materials from the business. If you don't see anything mentioned don't be shy to ask specifically, especially about items you know that are in season locally. You might be surprised to find out what businesses are already doing. If they aren't using local ingredients, it is possible that they will take your interest to heart in the future.

Remember it doesn't have to be all or nothing. It's about consistently making small steps to shift towards supporting a more sustainable local food system.

Endnotes

- i Based on calculations if there were similar development of the value-added businesses as has been documented in Abbotsford, based on extrapolating from economic impacts of agriculture in Abbotsford (Ministry of Agriculture and Lands, The Economic Impact of Agriculture in Abbotsford; 2012 British Columbia Agrifood Industry Year in Review).
- ii Mullinix et al., Beyond protection: Delineating the economic and food production potential of underutilized, small-parcel farmland in metropolitan Surrey, British Columbia, 2013.
- iii Agriculture and Agri-food Canada, A Snapshot of the Canadian Vegetable Industry 2010; Agriculture and Agri-food Canada, A Snapshot of the Canadian Fruit Industry 2009.
- iv Richard Howitt and colleagues from the University of California, Davis found that Central Valley farmers are pumping groundwater to replace about 75% of the water they've lost due to not getting their usual allocations coming from the system of transporting water from the mountains because it simply isn't there. Howitt et al., Economic Analysis of the 2014 Drought for California Agriculture, 2014.
- v B.C. Government Newsroom, "B.C.'s Agrifoods reputation grows stronger in China." June 25, 2014.
- vi Agriculture and Agri-food Canada, A Snapshot of the Canadian Vegetable Industry 2010.
- vii Agriculture and Agri-food Canada, A Snapshot of the Canadian Fruit Industry 2009.
- viii Statistics Canada, Average household food expenditure.
- ix Statistics Canada Consumer Price Index.
- x Based on prices from Mullinix et al, 2013. and 50% price increase over five years.
- xi A Snapshot of the Canadian Vegetable Industry 2010
- xii USDA Economic Research Service, California Drought 2014: Farm and Food Impacts.
- xiii Timothy Richards, Arizona State University.
- xiv B.C. Ministry of Agriculture and Lands. B.C.'s Food Self-Reliance: Can B.C.'s Farmers Feed Our Growing Population? 2006.
- xv Christopher Weber and H. Scott Matthews, Food Miles and the Relative Climate Impacts of Food Choices in the United States. 2008.
- xvi The 25 crops include: asparagus, beets, bell peppers, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, Chinese cabbage, cucumbers, garlic, green beans, kale, lettuce, pak choy, pears, pumpkins, radishes, snow peas, spinach, sweet corn, tomatoes, turnips, yellow onion and zucchini, plus honey and lamb.
- xvii Mullinix et al, 2013.
- xviii McAllister Opinion Research, B.C. Public Attitudes Towards Agriculture and Food 2014.