

ACORN  
FRUIT & BERRY  
MARKET  
ANALYSIS  
2013

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## Introduction

Where the Northern Hardwood forest and the Boreal forest meet, the diverse Acadian forests of Atlantic Canada provide a habitat that supports a vibrant diversity of edible fruit crops. The First Nations peoples of this region enjoyed a remarkably diverse diet of wild fruits. Wild blueberry, cranberry and raspberry have been domesticated, cultivated, and have become pillars of the horticultural sector in Atlantic Canada. Immigration of peoples from similar northern climates has resulted in the introduction of additional cold hardy fruit crops and knowledge to produce marketable yields. Lesser known wild fruits are gaining attention as wild foraging has become trendy in recent years. Will we regain the diverse diet of native fruits that our First Nations peoples enjoyed? Can we continue to expand the diversity of cold hardy fruit grown in the Atlantic region? Can we grow more fruit using Certified Organic management techniques? This market analysis sought to collect data from fruit growers in Atlantic Canada, specifically New Brunswick and Prince Edward Island, assess the opportunities and challenges for growth in the organic fruit sector and provide recommendations based on these findings.

### Regional Overview

Atlantic Canada's commercial fruit and berry industry was built on the European introduction of the apple in Nova Scotia's temperate Annapolis Valley, and today has expanded greatly through the cultivation of two native plants, wild (low bush) blueberry and cranberry. Cultivated wild blueberry covers the largest land area of fruit production in Atlantic Canada, trailing over 35,000 hectares of glacial barrens. In the last three decades, wild blueberry cultivation has significantly outpaced all other fruit production in this region. Over 2400 hectares are devoted to apple orchards, predominantly based in Nova Scotia's Annapolis Valley with additional production areas in New Brunswick and Prince Edward Island. Commercial cranberry bogs account for 600 ha of cultivated fruit crops with strawberry following at 550 ha. Cold hardy grapes have just recently emerged as a cultivated commercial fruit crop in the Atlantic region, with new and expanding vineyards accounting for over 300 ha of fruit production. Raspberry accounts for 114 ha. Nova Scotia has lead Atlantic Canada in diversified tree fruit production with 125 ha dedicated to pear, plum, peach and cherry production. Then there is 60+ hectares of 'other' fruit, as reported in the 2011 Census of Agriculture. 'Other' fruit may include currants, gooseberries, haskap, sea buckthorn and hardy kiwi. The opportunities to grow a wide diversity of fruit in this region is climactically possible, however other limitations and challenges are restraining the specialty fruit sector.

# Methodology

This market analysis sought to answer the following questions:

- What fruit crops are being grown in Atlantic Canada- specifically, New Brunswick and Prince Edward Island?
- What is the average yield of these crops?
- What fruit is grown using Certified Organic management?
- What are the limitations to growing Certified Organic fruit in this region?
- What technologies/infrastructure have fruit farmers made investments in, including pest management, harvest technologies and post-harvest handling/storage?
- Is organically grown fruit being processed, or value added on farm or sold to a processor?
- What marketing opportunities are being utilized?

The questions were posed through 20 personal interviews, 20 telephone conversations and 20 email queries.

Additionally, at the 2013 ACORN Conference, a round table networking session of fruit growers and stakeholders discussed the following:

1. Networking: How can we continue to build/maintain the ACORN Fruit & Berry Network?
2. Education: What educational components does the Organic Fruit/Berry sector require to promote growth and success?
3. Technical Research: Where should we direct the focus of our Agricultural researchers?
4. Market Development: What are the needs of your sector?
5. Request to complete Market Analysis questionnaire

# Results

As members of the ACORN Fruit & Berry Network were interviewed throughout the year, the largest number of respondents indicated that they have an interest in growing organic fruit (15 responses), but are not currently growing any fruit crop. Ten (10) respondents were growing certified organic fruit or are in transition to Certified Organic. Some members (5) were growing fruit using conventional management techniques, and were interested in reducing their inputs by utilizing organic methods. Several respondents (3) were growing fruit without conventional inputs, but did not wish to pursue organic certification because of the time and expense of certification and they were happy with the established markets for their fruit. A group of (2) respondents grew certified organic fruit, but were not planning to re-certify because of lack of market opportunities. Independent retailers (5) indicated that they would buy local, organic fruit, but it was simply not available. Six (6) processors indicated that they were interested in purchasing/processing organically grown fruit in the future. Consumers were not formally interviewed at this time.

Many respondents did not reply or only partially replied to the survey questions. The results from the surveys did not prove to be statistically viable. The low response rates may be because the fruit crops are planted, but not yet producing a commercial crop, yield data from pick-your-own/u-picks were not recorded, cash sales of fresh fruit were not recorded, the grower did not completely understand the question, or the grower chose not to reveal their farm information.

## ACORN Fruit & Berry Market Analysis 2013

The ACORN Conference Round Table Discussion revealed responses from sixteen participants who were growers, extension specialists or industry stakeholders. Participants were divided into three groups and worked together to answer the questions provided. All of the responses were posted for participants to review and discuss. Participants were encouraged to highlight the responses that were particularly important to their sector, or to the Organic sector as a whole. Participants were not limited in their votes, but were encouraged to vote for the responses that were most important to them.

Below is a summary of the responses provided during the round table discussions. Only the responses that received at least one vote were included in this summary.

### Networking

- ACORN to continue to source funding to support a Fruit & Berry Network Coordinator by applying for a “new idea” (8 votes)
- Newsletter coordination (1 vote)
- Form regional groups that meet regularly to discuss growing/marketing organic fruit (9 votes)
- Utilize ACORN website to
  - maintain a database/contact list of fruit/berry growers (9 votes)
  - post a map of organic fruit growers (5 votes)
  - host a chat forum for organic fruit growers (4 votes)

### Education

- Participants requested that ACORN maintain a database of resources, specifically, up-to-date pest management, cultivars, equipment (7 votes)
- Growers host informal open-farm-days and welcome other Fruit & Berry Network members to visit their operations (9 votes)
- ACORN organize webinars (9 votes)
- Funding for Educational Mission travel (5 votes)
- Training on how to conduct market research (5 votes)
- Practical teach-out or hands on work day training (6 votes)
- Support for mentoring opportunities (ACORN Grow-A-Farmer program) (3 votes)

### Technical Research

- Identify cultivars and management systems best suited for organic production with a focus on cold hardy varieties, variety comparisons and pest resistance (24 votes)
- Overall need to establish direct connections with research institutions and provide/index the information that already exists in an easy-access manner (searchable database) (7 votes)
- Season Extension for fruit production (4 votes)
- Pest management of Black Currant worm and pre-processing requirements (2 votes)
- Sea Buckthorn: Harvest equipment development (2 votes)
- Organic aphid management/new production system for strawberry virus management (1 vote)

### Market Development

- Determine the market potential for various crops (10 votes)

## Discussion

Respondents to the market analysis survey, personal interviews and round table discussion at the ACORN conference identified the need for on-going network collaboration of organic fruit growers. Suggestions included:

- regional grower groups
- an on-line forum on the ACORN web page
- a database of growers with details about their acreages and cultivars
- continuation of the ACORN Fruit & Berry Network e-Newsletter
- Regional volunteers to act as contact persons to represent the organic fruit sector

Many of these suggestions require significant input of volunteer time, additional infrastructure for the ACORN website that may be costly and time consuming to manage, and well-intended ideas that may receive no follow through.

Producers are very busy during the growing season and collaboration with a network is simply too onerous. Funding to continue supporting an organic fruit & berry network coordinator has not been identified. ACORN thrives on volunteer support, but asking too much of volunteers may result in burn-out and loss of participation or membership.

From the responses with growers, processors and retailers, there is an interest to expand organic fruit production in the Atlantic region, but there are barriers to establishing or increasing production. Potential fruit growers question hardiness and pest pressures for every potential fruit crop. While some research has been conducted, growers feel that the results are difficult to access, there is a lack of local/regional experience, and a limited knowledge of who is growing what fruit crop. Repeatedly, growers expressed the need for a Network Coordinator to unite the organic fruit industry. Funding is limited for ACORN to continue to fulfill this role, therefore the future of the network must be grower directed.

Four repeated themes emerged throughout 2013 that will have a substantial effect on the success or failure of organic fruit production in the Atlantic region:

1. Plant hardiness
2. Emerging pest pressures
3. Opportunities to utilize processing technology
4. Easy access to resource materials and sharing of local knowledge

Each of these themes are game changers for the fruit sector and are therefore explored in detail because of their direct effect on the organic fruit industry of this region.

### The Game Changers - Climate, Pests, Technology

Game changers are the variables that change conventional beliefs, practices and responses. In agriculture, traditionally, change tended to happen slowly, through generations, through mechanization, through immigration of peoples who brought new knowledge, through global trade that opened new markets. Today the pace of change seems to have increased, and while many of us are open to adapt to changes in technology, few are prepared for the changing natural world. In agriculture, these game changers are climate, pests and technology.

## Climate: Growing beyond the Zones

Atlantic Canada, by and large, is a harsh climate to grow tender fruiting plants. Much of Atlantic Canada experiences very cold winter temperatures that destroy dormant flower buds and sensitive graft unions, high winds cause structural damage, heavy spring and summer rain may initiate fruit rots. This is a tough place to grow commercial fruit. The presence or absence of a microclimate on a farm will significantly affect the success of fruit production. Technological advancement in climate mapping can reveal the climactic limitations of a region.

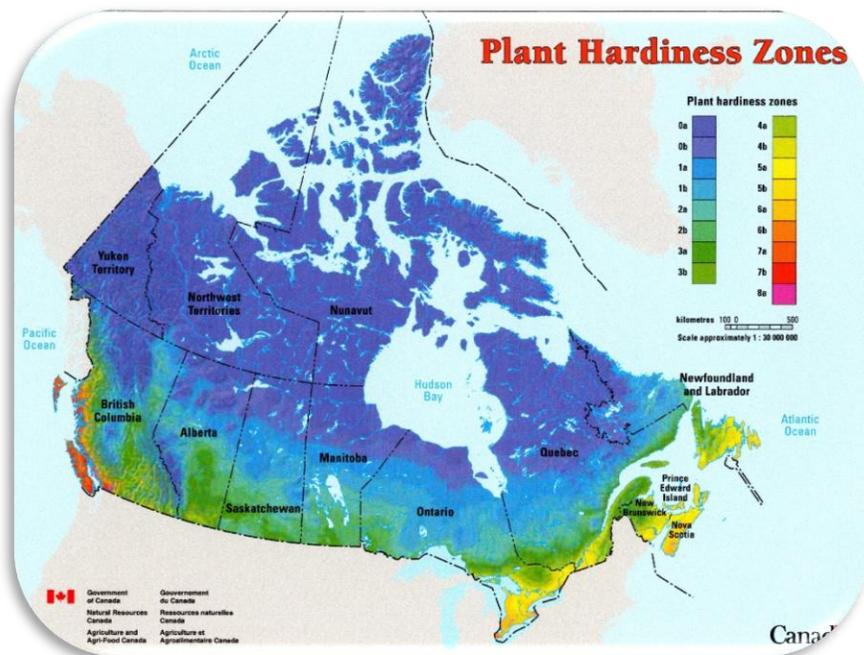


FIGURE 1 NATURAL RESOURCES CANADA PLANT HARDINESS ZONE MAP

Horticulture crops are frequently described by ‘zone hardiness’. The USDA developed the first Plant Hardiness Zone map in the 1960’s using a single variable to dictate zonal differences- minimum winter temperature. In 1967, Agriculture Canada scientists created a plant hardiness map using Canadian plant survival data and a wider range of climatic variables, including minimum winter temperatures, length of the frost-free period, summer rainfall, maximum temperatures, snow cover, January rainfall and maximum wind speed. Canadian environmental scientists have continued to adapt this map by incorporating advanced climate mapping technologies and the effect of elevation.

Natural Resources Canada is now looking beyond the zones to understand which plants are surviving in transition areas with the effects of climate change. Using indicator plants, range maps for individual species of trees, shrubs and perennial flowers have been developed. The Acadian Forest region may be highly influenced by climate change. Indicator plants will assist with benchmarking and documenting climactic change. This information will be useful for farmers, gardeners, environmental scientists and climate researchers to make decisions and predictions about plant hardiness now and in the future. Peaches and vinifera grapes in Atlantic Canada? Previous hardiness zone maps indicated those plants would not survive in this region, but farmers are growing beyond the zone with successful commercial plantings.

When a microclimate is identified by indicator plants, the findings can be reported to Canadian Forest Services to improve the data set for the Atlantic region. As more indicator plants are added to the map, the quality of the resource improves for all users.

The public is encouraged to submit their findings to: <http://planthardiness.gc.ca/index.pl?&lang=en>

## Invasive Pests: The Spotted Wing Drosophila

The global food trade has provided Canadians with affordable tropical and out-of-season fresh food. The produce section of every major grocer is as vibrant in January as it is in August. With these welcomed imports arrived an unwelcomed hitchhiker: Spotted Wing Drosophila (SWD).

The Spotted Wing Drosophila, *Drosophila suzukii*, a small 'vinegar' fly, native to Southeast Asia, was first detected in North America in August of 2008, in central California. By 2009 SWD was found in Washington, Oregon and Florida. By 2011 it was considered to be wide-spread in many American states. 2012 marked the first positive captures in Atlantic Canada, followed with an extensive monitoring and identification effort throughout the region, led by AAFC Entomologist, Dr. Deb Moreau. The capture rates have been disturbingly successful, with SWD found "everywhere we look" according to Dr. Moreau.

Spotted Wing Drosophila differs from other vinegar flies in two key areas. Firstly, the females have a serrate ovipositor, making it possible for eggs to be inserted under the skin of unripened fruit. Other drosophila cannot penetrate the firm skin of unripened fruit, and therefore lay eggs in soft, over ripe fruit. Early egg laying behaviour gives a biological advantage to SWD over other drosophila. SWD have an estimated 6-9 generations per year in northeastern North America. Secondly, unlike many fruit pests that are species specific, SWD is a generalist, utilizing multiple species of host fruit to incubate their offspring. Spotted Wing Drosophila larvae have been found in strawberry, mulberry, sweet cherry, plum, peach, pear, currant, raspberry, blackberry, blueberry, cranberry, and grape as well as numerous wild hosts.

The invasive Spotted Wing Drosophila is a major game changer for organic fruit production in Atlantic Canada. Organic management options are limited to exclusion netting and the Emergency Registration of insecticides containing spinosad or pyrethrin as the active ingredient. As always, users must check with their Certifying Body prior to implementing a pesticide management plan that includes the use of chemical crop protectants.

The ACORN Fruit & Berry Network has taken significant action to inform all members about the seriousness of this pest. ACORN had partnered with the PEI Department of Agriculture & Forestry to host a workshop on monitoring and identification of Spotted Wing Drosophila. Laminated field ID cards were produced and distributed to all members who indicated an interest in organic fruit production, in conjunction with a fact sheet. A Pest Identification article was written in the ACORN Fruit & Berry e-Newsletter and additional information was shared in the ACORN quarterly newsletters. Dr. Deb Moreau, lead entomologist from AAFC Kentville, presented her findings at the 2013 ACORN Conference. Monitoring trap materials were provided to members for monitoring their fruit crops. Education Mission dollars supported several members to attend a speaker stream on Spotted Wing Drosophila at the New England Vegetable and Fruit Conference. A pest management fact sheet will be developed and updated in the ACORN Resource guide on the website.



Photo by G. Arakelian

FIGURE 2 MALE SPOTTED WING DROSOPHILA, PHOTO BY: G. ARAKELIAN, OREGON DEPT OF AGR.

### Strawberry Virus Complex

Strawberries have traditionally been a complimentary fruit crop for mixed market gardeners and home gardeners to include with their vegetable plots. Ease of planting, maintenance and harvest made the production of strawberries desirable for small scale growers, and thus, it fit nicely with organic production. Unfortunately, a natural rise in virus levels, vectored by aphids, has resulted in a game changer for the Atlantic strawberry industry.

In 2012, several commercial fields in Nova Scotia seemed to be declining without explanation. Laboratory analysis confirmed the presence of a combination, or complex, of naturally occurring strawberry viruses including Strawberry Mild Yellow Edge Virus (SMYEV) and Strawberry Mottle Virus (SMoV).

In 2013 berry specialists in the Maritime Provinces, in partnership with federal researchers from AAFC, collected and tested samples throughout the region. The rate of infection was very high in Nova Scotia, high in Prince Edward Island, and at low levels in New Brunswick. More than two hundred fruiting acres were proactively destroyed, representing half of the Nova Scotia strawberry crop.

Historically, northern varieties of strawberries have been grown in a low virus environment. These viruses existed in the population, but not in 'epidemic' proportions. Both of the viruses, SMYEV and SMoV, are vectored by *Cheatosiphon fragaefolii*, the strawberry aphid. It is not known which factor changed in the environment that lead to the rise in infection rates, but an understanding of virus persistence and aphid biology will aid researchers and growers to develop management strategies.

Currently, horticulturists are recommending that all Maritime grown strawberries are renovated regularly and replanted with disease free stock. Organic control options are limited to isolation of fields, aphid traps for monitoring, bio-controls for aphids and consideration of Emergency Use registration of organically approved aphidicides.

The ACORN Fruit & Berry Network took action to inform its membership about the increasing virus load in strawberries. Network Coordinator, Stephanie Compton, attended regional grower meetings, communicated regularly with provincial extension specialists, and invited John Lewis, Berry Crop Specialist with Perennia, NS, to speak at the Berry Symposium during the 2013 ACORN Conference. Additionally, the ACORN Fruit & Berry Network welcomed Paul and Sandy Arnold from Pleasant Valley Farm, NY, to share their unique annual production method of strawberries. ACORN will continue to provide organic pest management strategies to its members through the pest management resource guide found on the website.

### Advanced Food Technology

Advanced food technology, including recipe development, processing, nutritional analysis and sensory evaluation in accredited laboratory facilities is a game changer to increase market share of organic fruit. Atlantic Canada is fortunate to have two world class facilities working in partnership with each other to provide clients with the greatest exposure to develop their products.

**BIO|FOOD|TECH**, Charlottetown PEI, is a food laboratory that offers practical, applied science to support farm, food and bioprocessing companies develop ideas from concept to pilot product. Facilities can be utilized for product incubation in a rental agreement.

**BIO|FOOD|TECH** is made of a three development branches:



**FOOD TECHNOLOGY**  
BIO | FOOD | TECH

**Food Technology:** New product and process development, shelf-life studies, processing equipment rental, pilot plant rental, equipment assessments, sensory evaluations, and private innovation workshops for clients.

**Bioscience Technology:** contract provider of lab and pilot plant-scale fermentation, extraction, isolation and purification services for bioactives used in pharmaceuticals, cosmetics, nutraceuticals, food products and animal health. The Bioscience Technology division helps minimize process optimization costs and will help bridge the gap between discoveries and full-scale commercialization.

**Lab Services:** On-site accredited microbial analysis to support companies' food safety systems, in-plant support and troubleshooting. On-site nutrition label service for both Canadian and United States labels. Lab Services also delivers food safety training workshops.

**Canada's Smartest Kitchen (CSK)** was established in 2009 by Holland College. The facility serves as the food product research and development arm of the Culinary Institute of Canada. Canada's Smartest Kitchen was awarded \$1.75 million in 2012 to become one of the [Natural Sciences and Engineering Research Council \(NSERC\)](#) new Technology Access Centres (TAC). *"The NSERC Technology Access Centre grants... provide five-year funding for core operations of centres established by colleges to address applied research and innovation needs of local small and medium sized enterprises, enhancing their ability to be productive and innovative. Canada's Smartest Kitchen is the only Technology Access Centre in Atlantic Canada, and one of only eight to be awarded across the country."*

### A Perfect Partnership

ACORN has reached out to both BIO|FOOD|TECH and Canada's Smartest Kitchen to understand the types of services offered by each facility and communicate these services to the Membership.

ACORN Fruit & Berry Network Coordinator, Stephanie Compton, met with Barb MacLeod, Business Development Officer, Canada's Smartest Kitchen, to discuss opportunities for product development that may be of interest to the organic fruit and berry sector. Flexible payment schedules and the options for product royalties open the door for small scale producers to utilize product development opportunities.

ACORN invited Edward Charter, Food and Bioscience Technology Manager and Mike Beamish, Certified Organic orchardist, to share their experience of working together at the 2013 ACORN Conference. Mr. Beamish had a number of value added apple products he wished to explore and utilized the facilities at BIO|FOOD|TECH to develop his ideas. Both Canada's Smartest Kitchen and BIO|FOOD|TECH are willing to work with the organic fruit sector to realize the full potential of fruit crops grown in this region. Value added products may increase market share of specialty fruit and expand the sector beyond fresh market sales. Some fruit crops, such as black currant, haskap and sea buckthorn, may be considerably more profitable after processing.



FIGURE 3 CANADA'S SMARTEST KITCHEN BANNER

# Recommendations

## 1. *Communicate Atlantic Canada's Organic Fruit Potential through On-Farm Experience*

Based on the feedback from respondents, the development of ACORN Plant Files is recommended as a means to meet some of the identified needs of the organic fruit and berry sector. The ACORN Plant Files will be static 1-2 page, peer reviewed documents, held in a searchable database on the ACORN website.

A Plant File can be developed by one individual, or by a group of growers who wish to collaborate on the document. Collaboration on this project may initiate other suggested activities from survey respondents, including informal regional groups or clubs, open farm days or grower get-togethers. This will lead to the development of a network that is grower lead, rather than coordinator lead.

The ACORN Plant Files will differ from other resource materials because they will be based on on-farm, organic production experience in Atlantic Canada, rather than controlled field trials, experience from other regions or information from conventionally managed crops. This database will be a useful resource for new entrants into organic farming, experienced farmers who plan to diversify, home gardeners and community garden organizations who plan to grow fruit using organic management. Data can be submitted to improve the Canadian Plant Hardiness Zone Map for Atlantic Canada, improving the resource for all users.

ACORN Plant Files should also be peer reviewed by regional agronomists and extension specialists to educate and inform Atlantic agricultural specialists about the strengths, opportunities and challenges of the organic fruit and berry industry. Promoting cross communication through farmers, extension specialists and agronomists may open doors to further collaboration in the agricultural community.

See Appendix A for ACORN Plant Files concept template.

The framework or 'seed documents' have been provided in Appendix B, organized into categories of plant families. The seed documents currently contain information provided to the coordinator by organic fruit growers from Atlantic Canada. The seed documents are intended as a building block to begin the ACORN Plant Files. Each file will be presented in a template and fruit growers will be encouraged to submit information for the various fruit crops they produce organically in Atlantic Canada. Authors and revision dates will be captured in the footnotes. Due to the small size of the industry, the author's information does not necessarily need to be revealed to the public, but the revision date is important for the reader to know if the information is current.

## 2. *Collaboration with Existing Agriculture Organizations to Identify Pest Management Strategies*

The organic sector of Atlantic Canada is very fortunate to have the Organic Agriculture Centre of Canada research site, based in Bible Hill, Nova Scotia. "*The Organic Agriculture Centre of Canada (OACC) conducts organic farming research and provides knowledge transfer and extension services for organic farmers.*"

To best serve the organic fruit sector, growers must communicate their needs to OACC. It is recommended that Spotted Wing Drosophila management trials be conducted as soon as possible. Management systems for June bearing strawberry to reduce virus loading may also be explored.

Emerging pest pressure from Spotted Wing Drosophila and strawberry viruses will be challenging for all fruit producers; conventional, Certified Organic, and reduced input growers alike. While the management systems will be very different, collaboration between all fruit growers will be the most efficient expenditure of time and money to identify management options. Conventional growers will be seeking Emergency Use Registration or User Requested Minor Use Label Expansion of pesticides for

these pests. Organic growers have options for pesticides that are naturally based. These pesticides will require Emergence Use Registration or label expansion from the Pest Management Regulatory Agency as well. The needs of the organic sector can be communicated through existing grower groups and associations.

### *3. Add Value to Organic Fruit*

Individual farms and grower groups can utilize the technology and talents offered by food technology specialists at facilities such as BIO|FOOD|TECH and Canada's Smartest Kitchen. These facilities have been constructed to advance Atlantic Canada's primary food industries. Product development through processing may lead to an increased market share and decreased reliance on fresh market sales. Fruit and berry growers can begin planning for some level of processing prior to investment in significantly larger plantings. Government funding is available to add value to agricultural crops.

## Conclusion

Atlantic Canada has a long history of diverse fruit production, however statistics have indicated that the diversity of commercial fruit production and numbers of farms growing fruit is generally decreasing in this region. Through discussions with organic and reduced input growers in New Brunswick and Prince Edward Island, organic farmers are seeking crops to diversify their existing farm offerings. Planned acreages include high bush blueberry, table grape, day-neutral strawberry, apple, haskap and sea buckthorn.

The fruit and berry sector has been restricted in growth due to limited knowledge of new fruit crops, local knowledge perpetuating beliefs that certain fruit is not hardy for this region, market reliance on fresh sales and lack of post-harvest handling infrastructure for certified organic fruit.

Local processors are preparing to add value to 'super fruit' including cranberry, black currant, haskap, sea buckthorn and wild blueberry. In order to insure that small scale, specialty processors are successful in their ventures, continued support from local food campaigns will be an asset to them. Consultation with food development specialists, such as Canada's Smartest Kitchen and **BIO|FOOD|TECH** will assist with adding value to Atlantic grown organic fruit.

The invasive alien pest, Spotted Wing Drosophila and the emerging virus pressures in field strawberries will fundamentally change the management strategies for organically grown fruit in Atlantic Canada. Integrated Pest Management systems for these new pest pressures have yet to be developed. Further on-farm applied research and communication to growers will be necessary in the coming years. Scientific field trials from OACC and AAFC will guide the industry in developing the best pest management strategies for organic fruit production. Pest management may significantly increase the cost of fruit production. If the market will pay a premium for high quality, organically grown fruit, enhanced pest management systems may be a cost effective investment.

The development of ACORN Plant Files will address some of the needs identified by the organic fruit and berry sector. ACORN Plant Files will form a database of on-farm knowledge, record oral history, and identify opportunities to diversify organic farms in Atlantic Canada. ACORN will continue to act as the 'Voice of Organics in Atlantic Canada', with the inputs and returns being 'farmer lead' to have the greatest impact for the organic fruit and berry industry.

## Appendix A - Sample ACORN Plant File Black Currant (Name of Plant File)

*Image - Provided by ACORN Members who will receive credit for the image(s) and give permission for ACORN and Members to use the images for promotion and education purposes*



FIGURE 4 BLACK CURRANT 'TITANIA' PHOTO BY STEPHANIE COMPTON AT SHEPHERD'S FARM, PEI

### History/Overview

*Document regional history / oral history of the crop in this region. This section could be expanded or filed separately as an historical document*

### Cultivars

*List cultivars that are currently being successfully grown in this region using organic or reduced input management, or has desirable characteristics such as disease resistance.*

*Include the physical location of each cultivar. This information can be submitted to Natural Resources Canada to improve the Canadian Plant Hardiness map for the Atlantic region.*

*Images of each cultivar can be collected and utilized by the sector for promotion and marketing.*

### Strengths

*Benefits of this crop, market share, opportunities to value add, health properties, hardiness, pest resistance, other*

### Opportunities for Organic Production

*Building on 'Strengths', this section will highlight the current demand for this product in the organic sector, opportunities for expansion, market development, season extension, and organic production techniques*

### Challenges for Organic Production

*Factors that will limit organic production, caution for new growers, on-farm experience, pest pressure, hardiness, depressed market. This category may influence future research trials.*

### Pests

*Identify diseases, insects and management systems*

### Nurseries

*A list that is recommended by growers, may promote opportunities for group-buying and highlight nurseries who supply certified organic, pest resistant, cold hardy stock suitable for organic fruit production*

### Local growers

*An opportunity for growers to list their farm in a public document as a resource for other growers to connect, for the public to source organic fruit, and for the network to expand*

### Atlantic Resources

*An area to bring attention to regional associations, clubs, field trials, and scientific research that is crop specific. Links to existing ACORN resources will be included in this file*

## Appendix B: ACORN Plant Files ~ Seed Documents

Each of the seed documents will be distributed to key stakeholders in the format described above. Stakeholders will be identified as growers (farmers or home gardeners) who are growing or have grown the described fruit using Certified Organic methods, reduced input methods, or are in transition to Certified Organic production. Submissions can be reviewed by ACORN Staff, summer students or Member volunteers, as well as other fruit growers before being posted to the ACORN Plant Files Database. The ACORN Plant Files will be working documents that will be regularly updated.

The following seed document information has been compiled through conversations between growers and the 2013 ACORN Fruit & Berry Network Coordinator, Stephanie Compton. The Seed Documents are intended for a starting point in data collection and will be expanded by stakeholders.

### Pome Fruit

Consisting of the beloved apple and the lesser grown, yet popular pear, and the nearly non-existent, mythical quince, pome fruits have a long and storied history in Atlantic Canada. Plans for increased organic pome fruit production is underway in leading Atlantic orchards.

Atlantic Stakeholders include:

- Beamish Orchard, PEI
- Point Prim Produce, PEI
- Triple Harts Farm, PEI
- HutLo Acres, NB
- Sandow Farm, NB
- Falls Brook Centre, NB
- Boates-U-Pick, NS
- Breton Fields, NS
- Embree's Tree Ripened Organics, NS
- Inglis Orchard View, NS
- Lakeville Organics Inc, NS
- Paradise Orchards, NS
- Stewart Organic Farm, NS
- Sunset Orchard, NS
- Van Meekeren Farms Ltd, NS
- Whippetree Farm, NS
- Van Meekeren Farms Ltd. NS

### Apple

Introduced to North America by European settlers in the seventeenth century, the domestic apple has a rich history in the Atlantic region, notably the Annapolis Valley of Nova Scotia, where a fruit breeding program continues at the Kentville Research Station, led by Agriculture and Agrifood Canada researchers. Apple production in Atlantic Canada has decreased in farm numbers and in acreage as revealed by the 2011 Agricultural Census, however organic apple production is slated to increase in the Maritime Provinces. Two established orchards are considering certified organic production in conjunction with their conventionally managed operations. These organic apples will diversify the product line being offered by the established orchards and they may be used for value added products including organic apple cider and organic apple cider vinegar. Processing organic fruit offers an opportunity to utilize imperfect fruit that does not meet the quality grade for the fresh market.

**Strengths:** 'romanticized' history, nostalgic memories of apple picking, a diversified cultivar selection that includes historical, disease resistant and modern varieties, extended season of harvest with early, mid-season and late 'winter' apples, well known and popular choice of fresh fruit by the local public

**Opportunities for Organic Production:** harvest via u-pick or paid labour, low post-harvest requirements, storage in climate controlled conditions at 4 degrees Celsius, various value add options including juicing, distilling, fermenting, puree, preserves and bakery filling, public demand for Certified Organic apples

Dr. Julia Reekie, tree fruit specialist with Agriculture and Agrifood Canada, presenting a compelling example of an organic Honeycrisp orchard, established for demonstration at the Kentville Research Station. While requiring intensive management, Julia and her team proved that a popular conventional apple can be produced using certified organic methods. Dr. Reekie described her field work with Honeycrisp at the ACORN Tree Fruit Symposium, 2013 ACORN Conference.

Every successful organic orchard in Atlantic Canada has selected apple scab resistant cultivars as the foundation of their apple production. While 'heritage varieties' may be popular choices in other aspects of organic farming, pest resistance should be the first factor considered when selecting cultivars of tree fruit. For a summary of recommended disease resistant cultivars, please check the ACORN Fruit & Berry References on the ACORN website.

**Challenges for Organic Production:** significant pest pressure that will require some level of integrated pest management, remove wild trees from surrounding area before planting an orchard, and consider proximity to other apple trees when selecting location. Please refer to the ACORN pest management resource guide for details on managing these pests.

#### Atlantic Resources:

<http://applesnb.ca/>

<http://www.nsapples.com/>

<http://islandapples.com/>



FIGURE 5 'FREEDOM' APPLE, CORNHILL NURSERY, NB, CANADA

## Crabapple

### Strengths

Very high in natural pectin- can be made into a jelly without added pectin- may be a valuable fruit thickening ingredient

### Opportunities for Organic Production

Because most crab apples are processed, instead of eaten fresh, their physical appearance may be important to consumers.

### Challenges for Organic Production

Similar pest pressures as Apple



FIGURE 6 'DOLGO' CRABAPPLE, PHOTO BY STEPHANIE COMPTON FROM ARLINGTON ORCHARD, PEI

## Pear

(no grower input provided at this time)

### History/Overview

#### Cultivars

#### Strengths

#### Opportunities for Organic Production

#### Challenges for Organic Production

#### Nurseries

#### Local growers

#### Atlantic Resources



FIGURE 7 'NORTHBRITE' PEAR, GREEN BARN NURSERY, QC, CANADA

## Quince *Cydonia oblonga*

The fruit that tastes like flowers is a rare treat to find growing in Canada. With a hardiness rating for Zone 5b, there is certainly an opportunity to explore production of this ancient fruit in a mixed orchard. More commonly planted, the Japanese quince, genus *Chaenomeles*, is a flowering shrub, planted as an ornamental, yet bears a similar pleasantly scented and flavoured quince fruit. Residents of Annapolis Valley, NS, lament about the historical production of quince for jelly and preserves, yet no growers exist in the ACORN Database at this time.

Flower bud injury, fireblight, borers, codling moth, curculio, scale and tent caterpillars can all cause problems in quince production. To avoid fireblight, do not use excessive nitrogen and keep pruning to a minimum. Thin out suckers in winter or early spring.<sup>1</sup>

Quince is not consumed raw, but requires bletting and processing into jam or jelly to draw out the flavours. Marketing quince fruit will require some level of public education, however a following of quince enthusiasts would assist to quickly spread the word about this rare and delicious pome.



FIGURE 8 QUINCE 'COOKE'S JUMBO' GREEN BARN NURSERY, QC, CANADA

## Stone Fruit

Comprising of tree fruit from the *Prunus* family, stone fruit include: European plums, Japanese plums, sweet cherry, sour cherry, peach, and hybrid crosses of these fruits. Stone fruits add diversity to an organic orchard, but each brings a layer of complexity to the overall management system. Japanese plum, sweet cherry and peach are less cold hardy, requiring careful consideration of climactic limitations of the site before planting.

### Atlantic Stakeholders

- HutLo Acres, NB
- Bunker Hill Farm, NB
- Inglis Orchard View, NS
- Point Prim Produce, PEI

## Plum

The European plum, *Prunus domestica*, has been successfully grown throughout Atlantic Canada and some cultivars of the Japanese plum, *Prunus salicina*, can be grown in warmer microclimates throughout this region. According to the 2011 Census of Agriculture, plum production has been decreasing in every Atlantic province. This may be because many plums are being grown in conjunction with apples, but require a significantly different pruning and maintenance schedule. Disease pressure from black knot remains high throughout Atlantic Canada, incubated in natural stands of pin cherry.

### Cultivars

### Strengths

### Opportunities for Organic Production

### Challenges for Organic Production

### Nurseries

### Local growers

### Atlantic Resources

## Sour Cherry

### History/Overview

### Cultivars

### Strengths

### Opportunities for Organic Production

### Challenges for Organic Production

### Nurseries

### Local growers

### Atlantic Resources

## Sweet Cherry

Less hardy than sour cherry, sweet cherry can be grown successfully in warmer microclimates of Atlantic Canada.

### Strengths

### Opportunities for Organic Production

### Challenges for Organic Production

## ACORN Fruit & Berry Market Analysis 2013

Cold hardiness, pest pressure from birds will require netting, fruit frequently splits as it ripens, especially after a rainfall

Nurseries  
Local Growers  
Atlantic Resources

### Peach

A tender tree fruit for this region, peaches may work in just the right micro-climate. More commonly produced in Annapolis Valley, NS, microclimates would require evaluation for hardiness

### Cultivars

Seek cultivars that are both cold hardy and disease resistant, specifically to bacterial spot.

### Strengths

An unlikely find, local, organic peaches would be eye catching at any market

### Opportunities for Organic Production

### Challenges for Organic Production

Hardiness and disease susceptibility will make organic peach production a challenge for this region. Start with a small test block.

Nurseries  
Local growers  
Atlantic Resources

## Vitis Fruit ~ Table and Wine Grape

An area of significant growth in Maritime Canada, grape production has largely expanded to meet the market demand from the emerging local wine industry.

Table grapes frequently reach #3 in market share of fresh fruit purchased in Canada, behind apple and banana. Almost exclusively, table grapes are imported from warmer climates. At the 2013 ACORN Conference, participants taste tested many varieties of cold hardy table grapes and purchased thousands of dormant cuttings to start on farm in 2014. Local, organic table grapes may become more available in Atlantic Canada in the next three to five years.

### Atlantic Stakeholders:

- Benjamin Bridge Vineyard, NS
- Bill Brook Vineyards, NS
- Green Lane Farm, NS
- L'Acadie Vineyards
- Union Square Vineyards, NS
- Elderflower Organic Farm, PE
- Nature's Bounty, PE



FIGURE 9 TABLE GRAPE DISPLAY AT 2013 ACORN CONFERENCE PHOTO BY S. COMPTON

### Table Grapes

For many years, a few varieties of cold hardy table grapes have been grown in Atlantic Canada in diverse market gardens. Compelling evidence has been presented at the 2013 ACORN Conference by Claude Gelineau, researcher and instructor of biodynamic agriculture in Quebec, Canada, that there are many unexplored cold hardy table grape varieties to be trialed in Atlantic Canada. Many selections are seedless, which is a strong consumer preference.

#### History/Overview

##### Cultivars

##### Strengths

##### Opportunities for Organic Production

Twenty organically grown cold hardy varieties were sampled at the 2013 ACORN conference, with great reviews from participants

##### Challenges for Organic Production

Bird pressure will require netting while other wildlife may require electric fencing

##### Nurseries

##### Local growers

##### Atlantic Resources

Link to Claude Gelineau's 2013 ACORN Presentation



FIGURE 10 L'ACADIE BLANC, WHITE WINE GRAPE, PHOTO BY STEPHANIE COMPTON

### Wine Grapes

An area of significant growth from the 2006 to 2011 Census of Agriculture. As local wines gain greater market share, wineries have been expanding their vineyards or purchasing locally grown grapes for processing.

#### Strengths & Opportunities for Organic Production

Market share is increasing and regional wines are winning awards nationally and internationally. Provincial grower groups have been formed to share knowledge and experience.

#### Challenges for Organic Production

Terroir is an important consideration (and constraint) of grape growing for quality wines. Every potential vineyard site must be evaluated critically before the vineyard is installed. The conditions of the site and the requirements of the grape cultivar must be compatible. Provincial laws legislate that vineyards must be adjacent to the winery for licensing, however the best winery locations are not necessarily the best sites to grow quality grapes. Organically approved fungal treatments will likely be necessary. Fruit thinning and hedging will be required to increase air circulation and reduce fungal pathogens. Bird pressure as the fruit ripens may be the most costly pest pressure in Atlantic vineyards. Bird netting is expensive and laborious.

#### Atlantic Resources

Wines of Nova Scotia <http://winesofnovascotia.ca/>

Grape Growers of New Brunswick <http://nbgrape.ca/>

## *Fragaria* Fruit ~ Early, Ever-bearing and Day Neutral Strawberry

A common way of classifying strawberries is by flower initiation based on photoperiod or day-length. In Atlantic Canada, *June bearing* strawberries are the most widely cultivated on a commercial level. Many cultivars are available for this climate. The Matted Row method of cultivation is affordable and widely used. *Everbearing* strawberries produce two or three flushes of fruit throughout the season- however overall yield is lower than June Bearing and Day-Neutral. *Day-Neutral* varieties were developed from Everbearing varieties and are higher yielding. They are cultivated in raised bed with poly mulch and drip irrigation, therefore require more infrastructure than June Bearing strawberries

### Atlantic Stakeholders:

- Windy Hill Farm, NB
- Springbrook Cranberry Inc. NB
- Bruce Family Farm, NS
- Hughes Hill Family Farm, PEI
- Westech Agriculture Ltd. PEI

### Strengths & Opportunities for Organic Production

Strawberries are well known and a popular fresh fruit choice by Atlantic Canadians who know (roughly) when to expect local fruit to be ripe and begin seeking it a local markets, farm stands and u-pick operations. The availability of early, mid-season and late cultivars extended season of harvest. Affordable plant stock, local knowledge, and increasing demand for organic fruit may make strawberries a good entry crop for growers who are looking at opportunities to diversify into the fruit sector. Strawberry production can be combined with an existing rotation of annual crops. Compared to shrub or tree fruits, the interval from planting to harvest is very short. Day-Neutral and Everbearing strawberries offer an opportunity to supply a popular fruit out-of-season. Annual production methods as outlined by Paul & Sandy Arnold at the 2013 ACORN Conference in Moncton NB, provide an opportunity to maximize land use and minimize virus loading while growing a superior crop.

### Challenges for Organic Production

As described in the 'Game Changers' section, pest pressures from virus loading and spotted wing drosophila will require changes in strawberry management systems. Paul & Sandy Arnold's annual management system may be adapted for this region. Organic straw may be difficult to source for matted row systems. Year round competition from imported fruit has cut into market share, especially when grocery chains sell imported fruit as loss leaders.

### Atlantic Resources

Nova Scotia Strawberry Blog: <http://www.novascotiastrawberryblog.com/>

PEI Strawberry Growers Association, president: Contact: Arnie Nabuurs Contact Phone: (902) 969-8040

## *Rubus* Fruit ~ Raspberry & Blackberry

Raspberry and blackberry of the genus *Rubus*, form delicate aggregate fruit on spiny or thorny canes known colloquially as 'brambles'. High returns may result from a significant investment- hand picking and a rigorous post-harvest handling regime. Unfortunately bramble fruit is a favorite host of spotted wing drosophila, which will limit organic production in the future. Further research is required for netting structures and cost-of-production using high tunnels.

### Atlantic Stakeholders

- Horse & Garden Farm, NS
- Falls Brook Centre, NB
- Good Spring Farm, NB

- Windy Hill Farm, NB
- Springbrook Cranberry Inc., NB
- Then Organic Farm, NL
- Bruce Family Farm, NS
- Emmerdale Eden Farm, PEI
- Nature's Bounty, PEI
- Springwillow Farm, PEI

### Raspberry

A common pioneer plant after woodland is cleared, our native wild raspberry is an important pollen source for wild bees, resulting in sweet, but relatively low yielding fruit along hedgerows, clearings, and roadways. Cultivated raspberries are managed in a biennial system where fruit develops on the previous year's growth and three year old canes are removed by pruning. Trellis systems are frequently employed to keep the canes upright, to ease in harvest, allow air flow between rows and improve ease of maintenance.

#### Strengths & Opportunities for Organic Production

Raspberries are a recognizable, popular fresh fruit in Atlantic Canada. The fruit are delicate, requiring careful hand harvest for the fresh market, but are also high value, paying good returns when handled and marketed correctly.

#### Challenges for Organic Production

Spotted Wing Drosophila seem to prefer raspberry over all other cultivated fruit. SWD may be moving from wild fruit to cultivated fruit as the crop ripens. This fruit requires tedious hand harvesting. Growers have reported that it is difficult to find quality hand harvest labour. Imported raspberries are available year-round, and are sometimes sold as loss leaders. Raspberries have a short shelf life. The fruit is very delicate and can easily be damaged with improper harvest, post-harvest handling and inclement weather during harvest season.

#### Atlantic Canadian Resources

Select Nova Scotia: <http://www.selectnovascotia.ca/products/raspberries>

PEI Flavours: <http://peiflavours.ca/index.php/whats-in-season/results/403/>

New Brunswick Really Local Harvest:

[http://recoltedecheznous.com/en/producer/view/harpers\\_raspberry\\_u\\_pick](http://recoltedecheznous.com/en/producer/view/harpers_raspberry_u_pick)

### Blackberries

#### Strengths and Opportunities for Organic Production

A relative to raspberries, blackberries are a high value fruit that pays good returns when harvested and handled correctly. They are high in antioxidants and are suitable for fresh or processing. Most blackberries are imported into Atlantic Canada from warmer regions, however cold hardy cultivars are productive in this region.

#### Challenges for Organic Production

Blackberries may be Spotted Wing Drosophila's second favorite host, and pest management will be the single greatest barrier for commercialized production. Blackberries are less hardy than raspberries, therefore careful consideration of the site limitations and cultivar selection are necessary for successful establishment. Many blackberry cultivars are thorny, making hand harvest unpleasant.

## Vaccinium Fruits ~ Blueberries & Cranberries

Two of our native commercialized fruit crops, cranberry and wild blueberry, are found in the genus *Vaccinium* with the introduced high bush blueberry.

### Atlantic Stakeholders:

- G&D Farm, NL
- Glenmore Industries, NS
- Inglis Orchard View, NS
- Lazy Brook Farm, NS
- Stewart Organic Farm, NS
- Springbrook Cranberry Inc. NB
- S&G Blue, NB
- Le Fruit du Château inc. / Castleberry Co. Inc, NB
- Reg Phelan Farm, PEI

### Wild/Lowbush Blueberry

Wild (low bush) blueberry crop expansion has resulted in the single largest area of growth in fruit production in Atlantic Canada, representing the largest increase in farms growing fruit and hectares of fruit production. Discussions with wild blueberry growers offer this insight: two large processors, Oxford Frozen Foods and Jasper Wyman & Sons, have established processing plants in Atlantic Canada and have established a market price that is favorable to growth of the industry. Both processing companies provide some level of field support to growers in the areas of land development, integrated pest management and custom harvesting. Cultivated wild blueberry can be insured with crop insurance, providing growers with a level of security to borrow money for farm investments. The wild blueberry industry is supported by organizations including Wild Blueberry Growers of North America, provincial associations, research chairs at Atlantic universities, a dedicated Perennia staff person and provincial agriculture extension specialists. Industry research and development is funded through a levy, applied to all harvested fruit sold to processing plants. Only a very small fraction of the wild blueberry industry is produced using certified organic practices. Most certified organic fruit is sold on the fresh market, some reduced input fruit is processed into a puree.

### Strengths & Opportunities for Organic Production

One of our native berries, found throughout Atlantic Canada. Extremely hardy plant that thrives in marginal soils. Requires low fertilizer inputs, especially when the natural fungal soils are not disturbed. Can be wild foraged.

### Challenges for Organic Production

Competition from weeds will significantly reduce blueberry yields and generally make harvesting unpleasant or challenging. Insect pest pressures are high, notably Blueberry Maggot Fly and Spotted Wing *Drosophila*- where the presence of these pests can result in total crop loss.

### Atlantic Resources

PEI Wild Blueberry Growers Association <http://www.peiwildblueberries.com/>

Wild Blueberry Producers of Nova Scotia <http://www.nswildblueberries.com/>

Bleuets NB Blueberries <http://www.nbwildblue.ca/>

### High Bush Blueberry *Vaccinium corymbosum*

A relative of the native, low bush blueberry, high bush blueberry has been expanding commercially at an incredible rate on a global scale. The fruit is significantly larger than wild (low bush) blueberry with a similar flavour and antioxidant component.

#### Strengths & Opportunities for Organic Production

Unlike wild blueberry, high bush blueberry have commercialized cultivars that can be selected based on characteristics matched to the site, including hardiness, bloom and fruiting period. Similar to other shrubby fruit, high bush blueberry are grown in beds and can be nurtured with compost and mulch for weed control. The bed system also allows for bird netting to be utilized.

#### Challenges for Organic Production

Similar to other berry crops, high bush blueberry require laborious hand harvesting to maintain a quality fresh product. Effective pollinator cultivars must be selected and the orchard laid out with the correct density to increase cross pollination.

#### Atlantic Resources

### Cranberry

Another one of our native commercial berry crops, cranberry has a long history as a health promoting super fruit. Numerous scientific studies have revealed antioxidant, anti-inflammatory and anti-cancer properties associated with phytonutrients found within this berry.

#### Strengths Opportunities for Organic Production

Highly recognized local fruit with several opportunities for value added production, including juice, preserves and dried fruit.

#### Challenges for Organic Production

Significant pest pressures, investment in bog infrastructure, limited organic inputs

#### Atlantic Resources

Springbrook Farm, NB: <http://www.springbrookcranberry.ca/>

Canneberges NB Cranberries <http://www.nbcranberries.com/>

Nova Scotia Cranberry Growers Association <http://www.nscanberry.ca/>

PEI Cranberry Growers Association

### Ribes Fruits- Currants & Gooseberries

Ribes is the family name for currant, gooseberry and the hybrid, Jostaberry. Popular as a fresh and processed fruit in Europe, 99 percent of the production remains there today. Currants and gooseberries were first introduced to North America in the 1600's with some of the first landed European settlers as an important source of vitamin C. The fruit remained popular with European immigrants, however in the early 1900's Ribes species were identified as the alternate host for White Pine Blister Rust. To protect the valuable timber industry, sweeping federal legislation in the United States of America and Canada prohibited the cultivation of Ribes fruits.

#### Atlantic Stakeholders:

- Then Organic Farm, NL
- Bruce Family Farm, NS
- Springwillow Farm, PEI
- Nature's Bounty, PEI

### Strengths & Opportunities for Organic Production:

High levels of antioxidants and vitamin C, naturally high pectin levels, opportunity to value add through juice, puree, distilled or fermented beverages. Comparatively low pest pressures, potential for mechanical harvest, two specialized harvesters already located on PEI. An excellent candidate fruit for experimentation with **BIO | FOOD | TECH** or Canada's Smartest Kitchen.

### Challenges for Organic Production/Marketing:

Berries attached to stem when harvested, Certified Organic cleaning line required to remove stem/grade fruit, not widely consumed as a fresh fruit in this region, public education is required, may be an acquired taste for consumers who try it for the first time, alternate host of white pine blister rust, insect pest pressure

### Atlantic Resources:

The Organic Agriculture Centre of Canada has conducted several field trials for organic black currant production, including Fertility Management, Mulching, Yield and Fruit Quality, Flower Removal

## Gooseberry

### Strengths & Opportunities for Organic Production

Similar to currants, this fruit is more popular in Europe than in North America, although that does not limit it as an offering on diverse fruit farms. Individual market research will be required to determine if there is demand for fresh gooseberries. The fruit can be frozen for later processing.

### Challenges for Organic Production

Again, similar pest pressures as currants, with the additional challenge- the shrubs are spiny, making hand harvesting unpleasant. The fruit are larger than currants, but have a fibrous calyx, which some people find unpalatable.

## New & Unique Fruit Crops

### Haskap ~ *Lonicera caerulea*

The University of Saskatchewan's Fruit Breeding Program, led by Dr. Bob Bors, has been the Canadian leader in developing and drawing interest to the newest commercialized northern fruit. From the honeysuckle family, this small shrub produces edible blue berries. The elongated blue fruit has remarkably high levels of antioxidants, where it is frequently labeled a 'super fruit'. The flavour is tart, frequently compared to a blueberry raspberry combination.



FIGURE 11 HASKAP FRUIT BY LAHAVE FORESTS, NS, CANADA

### Strengths and Opportunities for Organic Production

One of Canada's first ripe fruits of the summer, haskap ripen before pest levels, including Spotted Wing Drosophila, have increased to cause significant damage. The high antioxidant levels make this fruit appealing to the health food market, however it is not yet widely recognized locally as a fresh fruit option. Haskap will require continuous public education to draw market attention. Fortunately established companies, such as LaHave Forests: Haskapa, NS, Canada, have invested considerable energy into the development of this berry crop and have garnered significant public attention in the

## ACORN Fruit & Berry Market Analysis 2013

process through an informative website, open farm days, media releases and a television appearance on the Canadian production of 'The Dragon's Den'.

### Challenges for Organic Production

The attractiveness of the fruit to birds may be the single largest challenge of producing a commercial yield. Bird netting is the only method of ensuring the crop remains intact until it is fully ripe and ready to pick. The second largest challenge is hand labour: this delicate fruit will require hand harvesting to maintain quality and integrity for the fresh market. Thirdly, public education and market development will be required for this fruit to gain local acceptance in the fresh and processed sectors.

### Canadian Resources

Haskap Canada Association

<http://www.haskap.ca/>

University of Saskatchewan Fruit Program

<http://www.fruit.usask.ca/haskap.html>

LaHave Forests / Haskapa

<http://www.lahaveforests.com/>

Phytocultures Ltd.

<http://www.phytocultures.com/>

### Hardy Kiwi ~ *Actinidia arguta*

It is somewhat surprising that hardy kiwi is not grown more frequently in organic market gardens, although its popularity may be on the rise with permaculture design becoming more widely recognized in Atlantic Canada.

### Strengths & Opportunities for Organic Production

Unique fruit for this region- tastes very similar to tropical kiwi. An interesting fruit to diversify fresh market sales- hardy and prolific, can be processed into preserves, juice, fermented/distilled beverages.

### Challenges for Organic Production:

Requires investment in trellis infrastructure and several years to being to produce fruit. Male and female plants, therefore require cross pollination, may be susceptible to spotted wing drosophila. Largely unknown, therefore will require market development.

Grown locally at Corn Hill Nursery, Corn Hill, NB and Vesey's Seeds trial garden, York, PE

### SeaBuckthorn ~ *Hippophae rhamnoides* L.

**Common Names:** Sea buckthorn, Siberian pineapple, Sea Berry, Sandthorn or Swallowthorn

Native to northwestern Europe, through central Asia to the Altai Mountains to western and northern China and the northern Himalayas. China is the world's largest supplier of this 'super fruit'. A unique offering for the Atlantic Canadian region. Big Sky Ventures, New Brunswick, has installed the first commercial orchard.

### Canadian Cultivars

AC Autumn Glow

AC Autumn Gold

### Strengths & Opportunities for Organic Production

The seed and pulp of the berry are contain high levels of vitamins, particularly C, A, and E. A single sea-buckthorn berry has more vitamin C than an entire orange and more vitamin E than a carrot. It also has high levels of beta carotene, omega-3 oils, and flavonoids.

Low pest pressure, 'super fruit' distinction

Many opportunities to add value through processing.

### Challenges for Organic Production:

Thorny, challenging to harvest, public education required, very tart flavour, may not market well as fresh fruit, therefore requires investment for value adding

Diseases: verticillium wilt, scab, damping-off and fusarium wilt

### Canadian Resources:

[http://www.agr.gc.ca/cb/index\\_e.php?s1=tip-puce&s2=2012&page=0213](http://www.agr.gc.ca/cb/index_e.php?s1=tip-puce&s2=2012&page=0213)

## Goji Berry ~ *Lycium barbarum*

Goji is in the Nightshade family Solanaceae, with other familiar food crops: potato, tomato, capsicum pepper, and eggplant. Native to the Himalayas, goji are classified as a 'super fruit' because of their nutritional complex. Goji berries are high in antioxidants. The fruit can be eaten fresh, but are often dried for storage and convenience. While the bulk of the world production remains in China, it is possible to cultivate *L. barbarum* in Atlantic Canada. Several specialty nurseries and seed suppliers carry seedlings or seed in Canada. Producing local organic goji fruit may offer an interesting level of diversity for a mixed berry/fruit grower. Few local growers have experience with this plant, therefore regional production information is not currently available. The fruit is reportedly attractive to birds and insects.



FIGURE 12 'CRIMSON STAR' GOJIBERRY, SOURCE: RICHTER'S HERBS, ONTARIO, CANADA

### Cultivars available in Canada

'Crimson Star' and 'Shanghai Express'

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