Fresh Market Study

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Managing Today for Tomorrow

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- To Peter Rideout, Executive Director, WBPANS for his guidance throughout this study.

Sincerely,

Yvonne Thyssen-Post, P.Ag.
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1. EXECUTIVE SUMMARY

Wild blueberries are Nova Scotia's largest fruit crop in terms of acreage, production, and export value. Data reported in 2017 by the Wild Blueberry Producers Association of Nova Scotia (WBPANS) noted 41,500 acres of land in commercial wild blueberry production and more than 1000 wild blueberry producers. The estimated economic impact of the wild blueberry industry in Nova Scotia exceeds $100 million annually. The sector has experienced lower field prices in recent years following three consecutive years (2014-2015-2016) of yields well above average. The exceptionally poor field prices, well below cost of production, has caused much frustration amongst growers as they incurred continual losses.

Wild blueberries are harvested during a 4-6-week period from August into September. The whole berries are available to consumers in three forms: fresh, fresh-frozen and frozen. The wild blueberry is an extremely tender product, deteriorating with handling. Premium quality wild blueberries can keep in a refrigerator, on average one week following harvest. Fresh berries are typically harvested by walk-behind harvesters or by hand, and dry sorted, packaged and delivered to customers within 24-36 hours of harvest. Fresh berries not delivered to customers within this time frame are frozen for year-round delivery; this product is referred to as fresh-frozen berries. All fresh and fresh-frozen berries are not washed, so they maintain their natural bloom – blue pigment coating. The majority of the NS wild blueberry crop however is processed as IQF (Individual Quick Frozen). IQF berries are cleaned, de-stemmed, washed, sorted and frozen for sale and/or storage. The washing process removes the natural bloom of the berry, resulting in a reddish-purple color berry.

This study examines the Nova Scotia fresh wild blueberry market, assessing opportunity for expansion. Information was gleaned from interviews held with growers, buyers, and other industry stakeholders, as well as review of industry documents and reports.

The main conclusions drawn from this study is that expansion of the fresh market is only possible with investment into research and technology that will maintain product quality while improving product throughput. Industry must find ways to consistently maintain the quality of the berry as it sits on the vine, and to increase volume throughput from harvest to distribution without impacting product quality. This is a considerable challenge for a crop that is only available as 'fresh' for 4-6 weeks each year. As such, the economic viability of potential advancements must also be evaluated. In addition, the report specifies consideration be given to establishing grades for wild blueberries, exploring alternate packaging options, and developing marketing initiatives to promote the taste and uniqueness of the Canadian wild blueberry, telling the story of its' natural genetic variation.

The study also recommends that the industry undertake a strategic planning exercise consulting with all stakeholders to identify the priorities in todays' changing industry environment. The strategic plan is to include a work plan identifying who does what, when and how. WBPANS, with its limited resources, can't be expected to execute all action items. Their responsibility lies in ensuring the plan is implemented and making necessary adjustments as things change.

2. INDUSTRY OVERVIEW

Wild blueberries (*Vaccinium angustifolium*) is Nova Scotia's largest fruit crop in terms of acreage, production and export value, and has been recognized as the provincial berry since 1996. The estimated economic impact of the wild blueberry sector in NS exceeds $100 million annually, employing thousands both seasonally and year-round. In 2017, exports of frozen wild blueberries were worth $65.9 million. The berries grow naturally in the Maritime Provinces, Quebec and the state of Maine, USA. Data reported by the Wild Blueberry Producers Association of Nova Scotia (WBPANS) for 2017 noted 41,500 acres of wild blueberry land in commercial production; 20,750 acres harvested each year in the two-year crop management cycle; and more than 1000 wild blueberry producers with 200-300 commercial farm enterprises primarily in wild blueberry management (WBPANS, 2017 Economic Overview). The farm gate value of the crop however has decreased in recent years due to three consecutive years of bumper crops (2014-2015-2016), resulting in low field prices. In 2014 NS farm cash receipts for wild blueberries were $38.2 million, where field price to producers was $0.55/lb., compared to 2017 where field price dropped to $0.20/lb., providing estimated farm cash receipts of $10 million. The 2019 crop is estimated at 40 million pounds (Perennia), well below the floating 5-year average of 51.8 million pounds, and field price to producers currently stands at $0.45/lb. In the last two years, provincial production decreased primarily due to poorer weather conditions, and growers changing management practices by reducing inputs and choosing to harvest less acreage due to the low field prices. This lower production however contributed to reduced inventories in storage, resulting in improved field price for 2019.

Wild blueberries are available fresh, locally during the harvest season in August and September, about a 4-6-week window across the province. With good management practices and proper post-harvest handling at the grower level, fresh wild blueberries will keep on average one-week in the refrigerator following harvest. It is important that the berries are not washed until they are ready to be consumed, as wet berries spoil more quickly. Frozen wild blueberries however are available year-round and will keep up to two years in the freezer.

The fresh market typically secures a higher price than the frozen product. In the market today, there are two types of frozen product: what growers refer to as fresh-frozen or fresh pack, and the IQF (Individual Quick Frozen) product. The main difference between the two products is that fresh-frozen berries are not washed, they are dry sorted, manually via a conveyor belt cleaning line and frozen usually within 24 hours of harvest. Because the fresh-frozen berries are not washed they maintain their natural 'bloom', the blue pigment coating on the skin of the berry. IQF berries are cleaned, de-stemmed, washed, sorted and frozen for storage/sale. IQF is the process used by the large processors in the Maritimes as it permits rapid processing of large volumes of berries. Quick freezing (IQF) of the berries produces small ice crystals which don't damage cell and tissue fibers. However, the washing process removes the natural bloom of the berry, resulting in a reddish-purple colored berry. Slow freezing results in larger ice crystals, damaging the food fibers, eliminating it as an option for freezing the washed berry.

2.1 Regulatory

Food businesses selling into the retail market or to a third person must comply with several regulatory requirements. The ultimate goal of all the regulations is

to make Canada's food supply safer by focusing on prevention and traceability. The Safe Food for Canadians Act (SFCA) became law in November 2012, and the corresponding regulations, Safe Food for Canadians Regulations (SFCR), came into force on January 15, 2019. The SFCA and SFCR combine a number of Acts, providing one set of rules for all food businesses in Canada. The SFCA and the SFCR have important implications for wild blueberry producers, receiving stations and processors beginning with the 2020 crop year. The SFCA and SFCR outline requirements for SFC licenses, preventive controls, preventive control plans and traceability. The requirements that each business has to meet in 2020 and 2021 depends on three criteria: what activity they conduct (growing, harvesting, packing or processing); where they sell their product (within NS, outside NS but within Canada or outside of Canada); and size of their business (annual gross sales). Peter Burgess, Wild Blueberry Specialist with Perennia, prepared a summary document of the SFCR requirements for the blueberry sector in March 2020. This factsheet is included in the Appendix A for information purposes. The SFCR are federal regulations but businesses also need to abide by the provincial laws stipulated in the NS Fresh Fruit and Vegetable Regulations.

CanadaGAP is a food safety program for companies that produce, handle and broker fresh fruits and vegetables. The program certifies that an operation has a system of procedures in place to minimize the risk of product contamination. Some operations implement the good agricultural practices at the farm level but choose not to become CanadaGAP certified due to the added costs.

The regulatory requirements that growers must comply with to sell safe food beyond direct to consumer, are fairly complex and costly to implement. Perennia

has a number of quality and food safety resources on their website (www.perennia.ca) that can assist growers in determining what they need to do to achieve compliance. The Safe4Market booklet is a detailed and comprehensive resource for primary producers, processors and storage facilities.

2.2 Purpose of Study

The objective of this study is to examine the Nova Scotia fresh wild blueberry market, it's strengths and weaknesses from both the grower and buyer perspectives, and to assess opportunities and challenges to expand and/or enhance the fresh market.

2.3 Study Procedure

This project was directed by a steering committee consisting of representatives from WBPANS as well as the provincial Department of Agriculture. Funding was provided to WBPANS through the Building Tomorrow Fund to hire a consultant to conduct the study. Thyagrissen Consulting Limited was the successful business contracted to do the work, with Yvonne Thyssen-Post, P.Ag. being the individual commitment to the project. The steering committee worked with the consultant in defining goals, project approach, identifying industry personnel and growers, and clarifying desired outcomes. Peter Rideout, WBPANS Executive Director, was the lead contact for the steering committee.

The steering committee agreed that the best approach to secure input from growers and buyers was to conduct personal interviews. With guidance and approval from the steering committee an interview guide was prepared outlining appropriate questions to collect the necessary information.

The Consultant was provided with a list of 22 growers who were selling fresh wild blueberries. They were initially notified of the study through the WBPANS newsletter. In December 2019, the Consultant contacted the growers via email requesting an interview. A copy of the interview guide approved by the committee was also forwarded. The email was followed up with phone calls to arrange suitable times for the in-person interviews. Personal interviews were held with 14 growers between January and March 2020. Numerous attempts were made to connect with the remaining growers without success.

Six buyers of wild blueberries were also contacted through email, ranging from retailers to wholesalers. Telephone numbers were not provided and so response from the buyers was limited. In light of the current global situation with the Covid-19 pandemic, it is understandable that responding to the email requests regarding this study is not their first priority. However, by the end of March, discussions were held with Adam Donikian of Sobeys, Laurie Jennings of Masstown Market, and Greg Connell, Nurture Atlantic. An interview was also held with Peter Burgess, Wild Blueberry Specialist with Perennia, based on his experience and knowledge of the industry.

Upon project initiation, the Consultant requested all previous studies, reports and strategic plans that would be relevant for this study. Aside from website links, the only document received was a recently completed study "A Topline Review of the Nova Scotia Wild Blueberry Farmgate Pricing levels – Past, Present and Future" (April 2019). As this study proceeded, it became evident that WBPANS had undertaken numerous other efforts to study consumer habits and assess the market for wild blueberries. Additional documents were provided by Greg

Connell of Nurture Atlantic in March 2020. These included summaries of three research initiatives undertaken in 2017 by his company for WBPANS. These research efforts validated the recommendations and directions that Nurture Atlantic presented at the WBPANS AGM in 2017, 2018, and again in 2019. Mr. Connell also provided copies of the respective PowerPoint presentations he made at the AGM's.

Findings from the personal interviews with growers, buyers and other industry stakeholders, were compiled and analyzed. Recommendations were developed from the study findings as to how best to move the industry forward. These were consolidated into a draft report that was submitted to the steering committee for review in April 2020. Initially the plan was to present the findings to a focus group of growers and buyers to seek further direction, however with the Covid-19 pandemic, that step has had to be postponed. In the meantime, feedback secured from the steering committee on the draft report will be incorporated into a final report and submitted for approval.

3. STUDY FINDINGS

Efforts to estimate the volume of fresh wild blueberry sales through this study were not successful. Some growers were unwilling to disclose sale volumes, while others didn't have the numbers readily available. Reporting some but not all would present an inaccurate picture, therefore no numbers are being reported on quantities sold. That being said, it can be stated with some level of confidence that some growers have decreased fresh sales in recent years, while others,

primarily smaller growers, have entered into the fresh market as a way to mitigate the market price drop, with the hopes of improving their returns.

3.1 The Product

Wild blueberries are an extremely perishable product; they bruise easily and their

shelf-life is typically 2-3 days from harvest. Storing the berries in a refrigerator can extend the shelf-life perhaps to 5-6 days, but only if the product is of premium quality going into the refrigerator. Achieving premium quality in wild blueberries is an onerous task requiring meticulous attention at each phase from the field until the berries are purchased by the consumer. Wild blueberries also have a short harvest season, ripening within a narrow window, with the entire crop being harvested in a 'single pass'. This combination of short season, single-pass harvesting and perishability, creates some serious limitations in selling the berry as a fresh product.

The wild blueberry is more delicate than the highbush blueberry which has a tougher skin. Field location, clone mixture, timing and method of harvest, cooling, cleaning/sorting, packaging and distribution all impact berry quality. Quality can be negatively impacted at each phase as the berries are handled, resulting in a product that will not present itself well to the end-user.

3.2 S.W.O.T. Analysis

The information gleaned from the grower interviews is presented in the next few sections in the form of a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. The findings are presented in bullet format, starting with the internal strengths and weaknesses of the fresh wild blueberry and the industry as a whole. With these in mind, along with the global picture and consumers desires for food and food products, opportunities and challenges are identified regarding potential outcomes.

Strengths

- Product features include nutritional value, high levels of anthocyanins (blue pigment), naturally 'wild' plants, natural genetic variation, taste, and texture. Because the wild blueberry is naturally established and pollinated, there are many different clones within a field and between fields, making it the 'only' such diverse product with each berry having its own unique taste and texture.
- Premium quality – a premium quality fresh wild blueberry is described as a product free of debris, skin damage and imperfections; firm, blue skin, with no visible signs of dehydration; free of disease and insects. Achieving a premium quality product is challenging, but doable. It requires meticulous attention to every detail from production to consumption. Growers who sell in the fresh market must achieve the quality standards to be successful.
    - Field selection - producing a quality fresh product starts with field selection, selecting the fields that typically produce a firmer berry, minimal 'black-colored' berries, and with relatively level topography to reduce the amount of debris harvested.

- Time of harvest is critical as the berries must be dry to minimize damage, therefore harvesting for the fresh market can only be done within a narrow window during optimum weather conditions.
- Harvesting - most growers pick the berries using a walk-behind harvester or hand-rake to minimize bruising. A few growers use a

mechanical harvester to which they have made numerous adjustments to reduce damage to the berries. Regardless of which method is used for harvesting, the operator can 'make or break' the berry quality depending on how they handle the machine and the berries. Time from harvest to packaging and delivery to the customer should be within 24 hours to maximize quality.
- Harvesting container - the type of container that the berries are placed in during harvest also affects quality. Harvesting containers varied between growers, from plastic bins to wooden bins, but all growers indicated the importance of limiting the volume in the container to avoid squishing and/or overheating of the berries.
- Cooling of the berries – most growers use some form of ventilation to remove the field heat from the containers once they arrive at the cleaning line. Growers reported using different cooling options: fans via a tunnel ventilation system to direct air through the berries, circulating fans or a cooler unit.
- Cleaning/sorting - all growers interviewed, clean the crop using a conveyor belt system with 3-6 workers manually removing the poorer

quality berries as well as any debris that wasn't removed by a blower/fan system. Most growers interviewed were using the Maine Blueberry Equipment Company' cleaning line but most also reported that they made alterations to the system to improve berry quality and minimize damage.

  - Packaging is critical since the berries sweat if they are not cooled adequately, and therefore the packaging must be vented.
  - Delivery of the berries to the market/consumer occurs within 24-36 hours of harvest. Delivery for the most part was using a half-ton truck with no special cooling capabilities. A few growers selling larger volumes of fresh berries were using a reefer truck for delivery. In cases where fresh product was delivered to retailers, growers who were successful with maintaining product quality, limited the volume delivered to one day of sales. These growers also worked with the Produce Manager to understand how best to handle the berries. At the retail level this entails not cooling the berries because when they move to the floor the temperature variation causes them to sweat; not stacking the boxes; and not displaying them in a warm area, all of which will cause the berries to bleed.

- Some growers provide custom cleaning services to other blueberry growers, spreading the cost of their overhead investment by generating additional income. This approach also decreases the investment required of the 'smaller grower' to enter the fresh market.
- Central freezer storage capacity provided by Knol Farms in Oxford, NS. This service was used by many of the growers interviewed. Fresh berries which

were not sold within 24-36-hours of harvest, were frozen, enabling these growers to extend the season and sell the berries throughout the year as what they term fresh-frozen berries. The central freezer service provides another market option especially for the smaller growers because individually they could not afford to invest in such infrastructure.

- U-Pick operations, although very few farms offer this option, it provides another route for consumers to purchase fresh product. Managing/controlling pickers in a field with a complete canopy (no rows, single pass crop), makes this approach challenging. In addition, the remote location of most blueberry fields limits U-Pick as a marketing option.
- Fund raisers - selling 5 lb. boxes of fresh wild blueberries as a fund raiser for schools, community groups and youth organizations has worked well.
- The market for organic blueberries is growing according to existing growers as they can sell whatever they can produce. There are only a few certified organic growers of wild blueberries in NS. However, there is some misunderstanding in the terminology. There are growers who are not certified organic, but use the terminology 'reduced inputs' or 'no spray'. The consumer doesn't necessarily know the difference between the different management processes.
- Pricing - although influenced by what the large processors pay, the return per pound is significantly higher with prices ranging from $15 to $20/5 lb. box, and $24-26/5 lb. box for certified organic wild blueberries.
- Value-added products: a variety of value-added products are currently being made by growers, including jams, baked products, blueberry juice syrups, organic puree, and steamed juice. Most of the value-adding was pursued by

the ‘smaller growers’ in limited quantities and sold direct at the farm gate or at Farmer Markets.

Weaknesses

- Inconsistent, poorer quality berries: as previously indicated, quality is impacted at every step from field to fork. All growers indicated a range in the product quality. There are no grade standards established for wild blueberries however lower quality berries influence sales. The natural genetic variations within and between fields makes it challenging to have consistent quality product in terms of taste and appearance.
- Short season: wild blueberries are ripe within a 3-6-week window across the province, flooding the market with product for a short period of time.
- Extremely perishable product with a short shelf-life, that can be further impacted by many factors. Shelf-life of a premium quality berry is 5-6 days from harvest, and therefore fresh product must be delivered to the consumer within 24-36 hours of harvest.
- Shrinkage on the cleaning lines range from 10-30% depending on berry quality. The crop is harvested in a single pass, meaning berries are at various stages of ripeness. Harvesting, whether hand-raking, or using a walk-behind or mechanical harvester, can result in damage to the berries. These factors increase the waste (shrinkage) as berries that do not meet premium quality are removed from the cleaning line.
- Demand for fresh product is limited as sales are primarily through Farmer Markets.

- High demand of labour, investment and time commitment during the 3-6 weeks of annual harvest. Growers who serve the fresh market typically handle all aspects from production, cleaning, sorting, packaging, distribution and marketing within this short period.
- Product cleaning/sorting is currently being done using a conveyor belt system requiring people to manually remove debris and lower quality berries. This is a labour-intensive phase, and labour is becoming increasingly difficult to secure. In the eastern areas of the province, the crop matures a few weeks behind the central area. This conflicts with the return to school making access to labour even more challenging. One larger grower experimented with a color sorting machine during the 2019 season. This machine was leased for the season at a cost of $50,000 but the results were appealing. However, the color sorting machine costs $250,000 to purchase, a huge investment for a short season and one that is totally out of reach for smaller growers.
- Packaging: There are differences of opinions as to what is the best packaging for fresh wild blueberries. Majority of grower's use the 5 lb. cardboard box, with a lid; some are one-piece, others are two-piece. The two-piece box where the lids is separate is harder to handle, often requiring an elastic to secure the lid in place and avoid spillage. A couple of growers also sell berries in a 2.5 lb. cardboard box. Opinions differ on whether the cardboard boxes are best wax-lined or not. Boxes should be vented to decrease the probability of berries sweating. The 10 lb. cardboard box is simply too hard to maintain quality as the berries end up being squished, and it is especially hard for seniors to handle and to freeze the berries. Some growers use pint-size clam shell packaging which works well if the berry is of superior quality and

consumed within 5-6 days. Pint-size green cardboard containers were used by growers selling at Farmers Markets, although there were some issues with spillage because there are no lids. Retailers will not accept boxes without lids for this reason. Organic growers were using a more expensive compostable quart size container with a bio-degradable lid which seemed to work well.

- Pricing in the fresh market is largely influenced by what the large processors charge. The majority of growers indicated their fresh price has not changed in recent years, and they sell their fresh-frozen product for the same price as fresh.
- Produce Managers/retail staff don't know how to best handle fresh berries, and growers felt the volume of fresh blueberries going into the retail sector has shrunk. Growers who were successful in selling to retailers spend significant effort developing a relationship with the Produce Manager in each store, educating them in proper handling and limiting the volumes purchased to one-day of sales. Retailers central desk ordering system doesn't work well for fresh blueberries because of warehousing delays and volume ordering preferences. Both practices delay the time from 'field to fork' which negatively impacts product quality.
- Product distribution with each grower responsible for delivery of their fresh berries to the customer/buyer. This is both expensive and time consuming. Since most deliveries are made using a half-ton truck with no cooling capabilities, it limits the distance that can be traveled to maintain quality.
- Direct sales of berries to customers at the farm gate or at Farmers Markets do not require proof of food safety/traceability practices and licensing. Selling berries into the retail market require compliance with many Canadian Food

Inspection Agency (CFIA) regulations, all of which are costly to implement and require third party auditing. Many smaller growers can't justify the cost of such audits for a 3-6-week season.

- Labour intensive: for the fresh market most of the processes (from harvesting, cleaning, sorting, packing and delivery) require manual labour and securing adequate number of workers is becoming increasingly difficult. Blueberry farms are located in the more rural areas of the province where there is typically a smaller labour pool.
- Growers lack business/production knowledge. Growers commented that past government programs have focused on increased production, not on taste, value-added, marketing or innovation support. The lack of production information is especially relevant to organic production.
- Value-added products: to produce any volume requires substantial investment in equipment and provincial/federal licensed processing facilities. Growers had experimented with products such as puree for breweries and wineries but were challenged with not using any preservatives as it kills the action of yeast in the brewing process. Others had expressed interest in producing dehydrated products but again the investment in equipment is prohibitive.
- Consumer purchases of wild blueberries at the retail level are influenced by price point and quality, and as such they compete with highbush blueberry purchases. The highbush blueberry is available year-round in smaller packaging, providing a better price point, and value compared to wild blueberries in 5 lb. boxes available for a short period of time.

Opportunities:

In light of the strengths and weaknesses identified by stakeholders throughout this study, numerous opportunities can be identified to expand and/or improve the fresh wild blueberry market.

- Expand organic production. Organic growers feel there is an opportunity to expand their fresh markets as they can easily sell everything they currently produce. Increased sales could be achieved by investing in research for organic production, expertise to assistance growers in improving the crop, cooperative learning efforts, collaborating on inputs to reduce cost per unit, collaborative marketing efforts to promote organic and inform the consumer on the different production terminologies.
- Establish a quality grading standard for fresh wild blueberries. This would facilitate uniform quality standards for the product which could enable the establishment of central cleaning, sorting and packaging facilities. Investment in one central facility with higher volume throughput reduces the overhead investment per unit. Quality uniformity would also open opportunities for central facilities for value-added production.
- Hands-on workshops/information sessions where growers can share their experiences and procedures for fresh product from harvesting to distribution.
- Freezing the fresh product extends the season beyond the 3-6- week period, providing consumers with blueberries year-round. Promoting the fact that fresh blueberries are available year-round in the frozen section is needed to educate consumers. The fresh-frozen product is very different in appearance

than the frozen IQF product as the 'bloom' remains intact; it has more eye appeal.

- Target marketing efforts beyond local/provincial borders, promoting sales to more affluent areas (ex. GTA) may attract consumers who have more disposable income and are prepared to pay premium prices for a premium product. The challenge is that the berries would need to be processed meeting all the regulatory standards for inter-provincial sales. The large investment would require a significant volume of production in order to be feasible; if it were fresh product, the berries would have to be processed efficiently such that they could land in GTA by Day 2 following harvest. Selling berries to the western provinces presents logistics with transportation, however growers spoke of exploring options through the LTTLS (less than truck load shipments) option, and establishing connections between grower and smaller health food stores/outlets. Growers felt there were opportunities to introduce wild blueberries to other Canadian provinces where it is not well known.
- Target 'niche' markets focused on the uniqueness of wild blueberries - stop selling it as a commodity and focus on taste, nutrition, health attributes (particularly in the skin), high levels of anthocyanins, and natural genetic variations in the field. For example, Farm Boy in Ontario appreciates the uniqueness of the fresh-frozen product with the bloom on; this product is appealing to the eye – it has that "Buy Me Look" (Millen, 2020).
- Conduct research into extending the shelf life: expanding to off-shore markets is limited primarily due to the perishability, extreme short shelf-life of the fresh wild blueberry. Research would be needed to find ways to extend the

shelf life, seek better packaging, cooling and distribution methods to transport the fresh berry while maintaining the superior quality. An opportunity may exist in Europe where they are being challenged to find labour to harvest the bilberry – maybe there is an opportunity to sell into that market?

- Packaging could be modernized perhaps with a better cardboard, environmentally friendly product. A smaller size quart or pint container with a lid, that is vented so the berries don't sweat and quality can be sustained, is another option. All packaging requires a lid for ease of handling and food safety purposes. Consumers buy with their eyes; smaller pack sizes will open up different uses, causing consumers to make an impulse purchase rather than the 5 lb. box which is an intentional purchase with a planned use.
- Invest in technology to efficiently increase production and process line efficiency without damaging the berry, and/or reduce demand for labour. There are several areas where this investment may be useful:
    - Laser sorting according to color, speeds the process of cleaning and reduces the need for manual labour. With a cost of $250,000, large volumes of throughput are required to warrant the investment for a laser color-sorter. Perhaps there is an opportunity to share such machines with other agricultural sectors like the cranberry industry? Or perhaps to have a central sorting facility consolidating production from many growers under one brand?
    - Improve the mechanical harvester to pick blueberries without damaging the berry.
    - Apply specialized storage technology, similar perhaps to controlled atmosphere (CA) storage technology used for apples, to increase the

shelf-life of the fresh product. Apparently, this technology is currently being used to extend the shelf-life of highbush blueberries in the Annapolis Valley, NS.

- Develop relationships with Produce Managers, educating them on proper handling of wild blueberries and the need to limit delivery volumes to amounts that can be sold within one day in order to maintain quality.
- Growers selling fresh product as fund-raisers felt there is opportunity to expand this market, if there was a way to extend the season and eliminate some of the bottlenecks in the 'field to fork' supply chain.
- Increased capacity to freeze fresh wild blueberries. Growers who are located in close proximity to Knol Farms are renting freezer space to hold fresh berries over the year in a frozen state enabling them to service customers year-round. The custom freezer concept seemed to work well for these growers. However, there are other growers that are located further away, making that option prohibitive in terms of travel time and costs.
- Access labour by sharing the foreign labour workforce brought in by non-blueberry farms, extending their employment term in the province.
- Value-added research: opportunities exist to exploit the health benefits of the wild blueberry such as nutraceuticals (powder form), health foods, cosmetics/soaps, dehydrated puree in the form of a fruit roll-up, organic freeze-dried product, etc. However, value-adding requires extensive investment first in research, development, production and marketing. Should this be an industry investment supported by government funding?

Challenges (Threats):

This study revealed many opportunities to expand the sale of fresh wild blueberries, and more so the fresh-frozen product. However, with each opportunity, challenges are evident, none that cannot be overcome with dedicated leadership, investment, commitment and cooperation. What is presented in this section are some of the bottlenecks limiting further development of the industry.

- Producing a premium-quality product, consistently and economically: the wild blueberry is a very tender berry, with an extremely short-shelf life. Many factors affect product quality:
    - Different crop management is required when producing for the fresh market compared to the IQF market. Current harvesting technology actually damages the berries and decreases efficiency throughput of the cleaning process by harvesting much debris. The crop canopy is low to the ground, and as such the machines pick up soil, sticks, rocks, bear dung, etc. Should the fertility and disease management practices for fresh product be the same as frozen since it is more difficult to hide defects with fresh products?
    - Extremely narrow harvest window of one month across the province, with single pass harvesting. Ideal weather is required; cool, dry conditions meaning no dew or excessive heat. With climate change and more extremes, the harvest window will likely be further affected.
    - Developing technology to increase throughput and minimize handling of the berries at each step from harvest, cleaning, sorting, packaging to

distribution without affecting the berry condition. The technology has to be economically viable for the crop and the short-season. Is there technology available that can be adapted from other crops?

- Extending the shelf-life through improved storage technology, packaging, and distribution technology. CA storage is being utilized for the highbush blueberry industry. Is there an opportunity to apply that technology to the wild blueberry industry? Is the cardboard box the best option for preserving berry quality?
- Product inconsistencies resulting from the diverse natural genetic variations of the crop, and the variable handling and storage techniques across the sector. Timing of harvest and location will affect product flavor, while product handling and storage affect the condition of the berry and therefore the shelf-life.
- Research/technology to prevent sweating of the berries upon harvest, whether it is determining the best procedures or developing cooling and distribution technology. Is the sweating of the berries resulting from timing of harvest or is it something that can be mitigated by proper cooling upon harvest and handling to distribution? Optimum harvesting and handling techniques should be determined, and appropriate, economical technology should be developed.
- Product distribution: the remote location of most wild blueberry farms presents challenges in distributing the product to the customer in a timely manner. Primarily growers are responsible for product delivery, and increasing sales requires more time and attention as well as added costs. As most growers use half-ton trucks for product delivery, there is

greater risk of decline in product quality. Laurie Jennings owner of Masstown Market reported tremendous sales of fresh wild blueberries with no quality issues and customers eager to buy the fresh product. The two predominant factors cited were premium quality product from the grower (which is only a few kilometers away), and daily delivery of fresh product sometimes, two to three times per day during peak season.

- Exporting fresh product out of country is extremely challenging without interventions and product innovation to extend the shelf-life beyond the 5-6 days.
- Cost of value-added innovations, in terms of research, equipment/facilities, and market development. Each phase requires significant investment, time and effort.
- Short, concentrated season – the fresh wild blueberry season is only 3-6 weeks in length. To justify making substantial investment in overhead to produce and sell ONLY fresh product is difficult to substantiate without finding alternate uses for the same overhead, spreading the investment over the remaining 11 months of the year.
- Lack of clarity as to terminology for organic, no-spray, etc. The consumer is mis-led/uneducated on the distinction between certified organic, reduced inputs or no-spray claims. The terms are used interchangeably which is confusing.
- The power/monopoly/influence held by the vertically integrated grower/processors in the industry. Individual growers do not have the

financial resources to compete with well-established, vertically integrated corporations. The challenge is in creating an alternate market(s).

- Jealousy within the industry and a lack of willingness to cooperate and share is a major stumbling block which holds the industry back.
- Wide selection of substitute products – there are many other alternative berries/fruits for consumers to choose from, many of which are available fresh year-round. The highbush blueberry has increased production, it is a larger berry which is more appealing to the 'eyes', and is available year-round in smaller see-through packaging.
- Unlevel playing field (unfair advantage) with other provinces like Quebec and New Brunswick where provincial governments are providing substantial support for the development of the wild blueberry industry.

4. CONSUMER RESEARCH

Several discussions were held with Greg Connell of Nurture Atlantic who was contracted by WBPANS in 2017-2019 to conduct 'consumer' research initiatives. Their efforts included three research initiatives via Desktop & Online, Consumer intercepts and focus groups (in collaboration with Denton Antony, St. FX). It is worthy to note the main findings from their research efforts:

- Fruit is the 2nd largest frozen food growth category,
- The consumer has an appetite for fresh/frozen snack foods as centre of store food trends indicated major expansion in three categories that apply to wild blueberries: snack foods, snack fruit & nuts, and frozen fruit,

- The largest influencer of purchase is convenient packaging, followed by low/no/reduced sugar. Economy (price) was the 2nd lowest influencer of five that were studied; it is more about value than actual price.
- Canadians make purchase choices that are convenient, that is, quick to prepare. The association can be drawn to wild blueberries which require no cutting, no peeling, and if frozen, no washing, upon purchase.
- Wild blueberries fit six out of seven shopper decision drivers identified in the BrandSpark Canadian Shopper study: value, trust, performance, enjoyment, and health convenience. The only decision driver where wild blueberries lacked was innovation.
- Centre of store vs perimeter: centre of store typically includes the produce section and consumers tend to make 52% of their purchases planned; 35% impulse. Perimeter of store typically includes the frozen products where planned decisions account for 65% of purchases; impulse purchases 25%. The point to be taken from this is that consumers do spend a lot on impulse sales, therefore demonstrating/sampling fresh or frozen product can have significant impact on impulse sales. Departments influenced by impulse purchases as well as planned purchases include snacks, refrigerated, beverage, packaged and fresh, all relevant to the wild blueberry product.
- Shoppers focus their choices on brands with which they have had positive past experiences and trust is developed sooner if they are exposed to the experiences of other customers via reviews.
- Consumers don't know the difference between highbush and lowbush blueberries, or that lowbush has double the levels of antioxidants.

Nurture Atlantic presented these research findings at the 2017 WBPANS AGM. Dr. Denton Anthony, Marketing Consultant and Professor at St. Francis Xavier University conducted two focus groups where participants conducted product sampling comparisons, and fresh wild blueberries were found to excel in their taste and health features over highbush blueberries.

The main conclusions that can be drawn from the research conducted is that there is consumer appetite for the following: Canadian grown, health & wellness, taste, consume as an ingredient, small packaging, fresh fruit, frozen fruit, quick & easy and convenience. The wild blueberry accentuates all of these. Understanding the consumer, their purchasing habits and decisions, needs and wants is a critical component of successful sales and marketing campaigns.

5. THE ROLE OF WBPANS

As part of this study, growers were asked to indicate what they felt the role of WBPANS should be? Growers identified a huge number of roles and responsibilities and effort was made to streamline them into themes with descriptors below each theme.

- Provide services and support to all growers - small, large, organic, conventional as well as all product types – fresh, fresh-frozen and IQF.
    - Facilitate small grower cooperation
    - Maintain open lines of communications
    - Establish a receiving station on Cape Breton Island to handle the berries from that end of the province more effectively

- Education
    - Organize educational opportunities for all production schemes
    - Focus on achieving quality, not production volume
    - Promote/streamline the regulatory requirements for selling blueberries into the retail/wholesale market
    - Inform growers of available funding programs and how to access them
- Government support for industry
    - Secure financial assistance for growers to comply with food safety standards and regulations; technologies to improve their current operations regarding product quality, cleaning/sorting line efficiency, cooling technology, packaging products, etc.
    - Secure funding for innovation for those who have already invested in the industry, and need financial support to be able to make it happen
    - Secure grants for biodegradable packaging
    - Advise government on appropriate funding programs for the industry, and ensure that growers have direct input into program development
    - Assist with the logistics of shipping smaller loads across Canada via the LTTLS (less than a truck load service) of fresh-frozen product
    - Lobby government to:
        - Remove tariffs for shipping product overseas
        - Address AgriStability program issues; develop risk management programs that are suitable for industry
        - Address unlevel playing field in Quebec and NB
        - Provide Extension and research expertise

    - Support research for product quality enhancements and market development, value-added, etc.
    - Secure interest-free, non-secured loans for experienced growers
- Marketing
    - Promote wild blueberries for their uniqueness
    - Tell the 'wild blueberry story'
    - On-the-ground effort to convince restaurants to use wild blueberries in their products/meals
    - Provide up-to-date recipes for today's life style
    - Create awareness of organic wild blueberries
    - Blueberry harvest festival is a great promotion venue, but needs to be spread around the province
    - Develop brochures
    - Develop additional wild blueberry markets
- Research and knowledge transfer
    - Regarding product quality improvements
    - Marketing in a changing environment
    - Value-added opportunities

This is a long list of expectations and yet WBPANS currently only has two part-time employees, the Executive Director and the Office Administrator. The current role of WBPANS is documented by the Association as follows:

> "The Wild Blueberry Producers Association of Nova Scotia was established in 1970 to promote the growth and development of the province's wild blueberry industry. The Association maintains linkages to government

agencies, provincial and national agricultural organizations, as well as domestic and international customers and consumers. The Association's key areas of promotion include:

Industry Growth and Development: To support and build producers' sustainable production efficiency, competitiveness and profitability.

Research & Innovation: To direct and support an active and robust scientific research program to ensure the productive sustainability and economic competitiveness of the provincial and regional wild blueberry industry.

Market Development: To build and maintain world-wide demand and value for wild blueberries through a strong and effective global marketing and health research program." (Nova Scotia Wild Blueberry Industry, Economic Overview, 2017)

In light of the changing status of the industry where supply exceeds demand, should the role of WBPANS adjust to the changing industry? WBPANS cannot be all things to all people especially with only two staff members. It should provide industry leadership through the Board of Directors and as such perhaps a long-term strategy for the future of the industry ought to be a priority.

6. CONCLUSIONS AND RECOMMENDATIONS

The wild blueberry industry is changing! For the last 30-40 years the industry has been in a phase of development and growth. Substantial research, technological advancements and financial investments have been directed to increasing

production, with great success. Processors have capitalized on producing an IQF berry enabled by mechanical harvesting of the crop and efficient processing of large volumes. The market developed has been primarily around exporting the IQF wild blueberries as an ingredient in food products. Production advancements have been magnificent, to the point that supply exceeded demand when the industry experienced three consecutive bumper crop years. The principles of supply-demand are at play: low supply relative to demand, earns a higher market price; supply exceeding demand, earns a lower market price. Growers are frustrated with field price as they require between $0.45 to $0.50/lb. to cover costs of production and prices have been well below that in recent years. However, when selling in a commodity market with a surplus of inventory, sellers have limited influence over market price; they are typically price takers, not price setters. Some growers have reduced crop inputs while others have decided to harvest only a portion of their lands in an effort to minimize losses. These practices however are counterproductive to expanding the market as they decrease quality and decrease production in the long-term.

The current industry circumstances should be an eye-opener that change is needed! Further development of the industry will require pursuing 'niche markets' that do not compete with the well-established IQF berry market, but rather focus on taste, quality, and the uniqueness of the wild blueberry. The recent low field prices have resulted in more growers venturing into the fresh market, in an effort to improve their profit margins.

The purpose of this study was to examine the fresh market and to assess its' potential for further development. The study found that the fresh market is

definitely more challenging to fulfill as noted by the many bottlenecks reported in the study. The fresh wild blueberry differs in appearance to the IQF berry in that it maintains the 'natural' look because the fruit loom remains intact. Producing a quality product consistently however requires a tremendous amount of manual labour, limiting the volume of throughput because the processes are time consuming, inefficient and costly. The solution to expanding the fresh market starts with focusing on berry quality, striving to maintain the condition of the berry as it exists in the field on the vine. The tenderness of the wild blueberry is such that touching it, damages the fruit. The current processes used within industry from harvest to distribution provide ample opportunity for possible berry damage. The question to be asked is can the processes be improved to maintain the quality using technology/innovation, at a cost that is economically viable? If the process can be streamlined, while maintaining a quality berry, there is opportunity to expand the fresh market and opportunity to add value along the supply chain, increasing profit margin per unit. Freezing the fresh product into what industry refers to as fresh-frozen product, extends the season, making the product available year-round. The opportunity is available to expand sales of both products, if the challenges can be overcome. Consequently, the following recommendations are proposed:

6.1 Recommendation #1

WBPANS to undertake a strategic planning exercise for the 'changing' wild blueberry industry. The planning exercise should involve consultation with all industry stakeholders including all growers - small to large acreage; fresh, fresh-frozen and frozen product; value-added; organic and conventional production; processors; industry suppliers of services and inputs; as well as buyers of wild blueberries. The planning exercise should clearly define the role of WBPANS and consider the following priorities to assisting the future development of the wild blueberry industry:

- Enhancement of Product Quality:
    - The challenges identified in this report, to preserve the 'quality' of the fresh wild blueberry. With efforts directed to addressing the quality issues and enhancing processes to increase throughput, an expansion in the fresh market can be attained. This will require research, investment and commitment from all industry stakeholders. The economics of improvements/advancements must be evaluated throughout to assess viability of such investments.
    - An industry-led approach to developing 'grades' or quality standards for fresh wild blueberries would go a long way to ensuring only premium quality product reaches the market place as fresh product. Producing quality wild blueberries consistently is an essential component to market expansion, and quality defects are very difficult to conceal in the fresh and fresh-frozen products. Establishing quality standards could also enable the establishment of centralized cleaning, packing, and

distribution facilities, minimizing the investment per grower, improving the viability of fresh market option.

  - Industry to explore different packaging options for fresh product, especially smaller sizes, of see-through packaging as consumers typically buy with their eyes as they seek value. Selling in the 5 lb. box is still appealing to some customers and that market should be filled as long as it generates return.

- Marketing initiatives: use the information gleaned from the various research studies previously undertaken to 'tell the story' of the uniqueness of the wild Canadian blueberry, including the following:
  - Canadian wild blueberry using the maple leaf to depict Canadian recognized for its quality and value.
  - Health benefits, taste, and natural genetic variation.
  - Fresh-frozen product as the availability of 'fresh' year-round.
  - Organic product for its features.
  - Value and appeal of the bloom, nature's way of protecting the fruit.
  - Produced on marginal lands, barrens that are not able to sustain much other growth and as such contribute positively to the environment.
- Education:
  - Produce Managers and their staff on handling of fresh wild blueberries.
  - Work with chefs on using wild blueberries in foods; most don't know the difference between highbush and lowbush.
  - Conduct product sampling at local retail outlets as many consumers don't know the true taste of wild blueberries, and don't differentiate

them from highbush blueberries. Also share product endorsements from consumers who have experienced wild blueberries.

- Lobby Government for financial support to develop a more sustainable and viable industry:
    - Assist those who have already invested in the industry to improve product quality and expand their markets.
    - Broaden the focus of programs on technologies that enhance taste, value-added, and innovation rather than production only.
    - Staff and funding for extension and research services to develop organic production as well as fresh and fresh-frozen wild blueberry products.

6.2 Recommendation #2

An integral component of strategic planning is the work plan outlining in general terms who does what, when and how. WBPANS as an industry association represents its members and directs its efforts to create an environment where members can best succeed. The Board of Directors provides guidance but they are not responsible for implementing solutions for individual growers or businesses. Entrepreneurial skills are needed to expand the wild blueberry market – assessing the industry from a business point of view; understanding the market, the consumer and targeting the opportunity. The skill sets required to implement a marketing plan are very different from those required to implement a research or production plan. WBPANS currently has two part-time staff members, an Executive Director and Office Administrator. Neither individual can be everything to everyone. Implementing the strategic plan will entail identifying how best to address the priorities and when skill sets are not available in-house, the expertise should be contracted.

6.3 Recommendation #3

Follow through with recommendations that are made from studies and accepted by the Board/industry. WBPANS has commissioned numerous studies in the past but recommendations do not appear to have been executed. Studies have identified potential to develop markets for wild blueberries within Canada. Several supporting marketing efforts were established such as the Canadian Wild Blueberry logo, website and social media venues, but they are not being exploited as a marketing tool. It is important to recognize the skills within the organization and the limitations; however, spending money on a study and not following through with the recommendations is a waste of money. Implementing the recommendations of a study requires follow-up effort from the Association to identify and employ the best approach to put them into action. If this next step is not pursued, the benefits are not realized from the study. For example, with marketing initiatives that have been recommended, the Association should ask how can they best be achieved? Is there merit in contracting with a private company that has the expertise, or is there merit in considering a multi-provincial or national marketing organization representing growers from the Maritimes, Quebec and Ontario, to promote Canadian wild blueberries? The Board of Directors and staff are responsible for finding the best approach to implementing the plan of how best to assist industry.

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APPENDIX A

The Safe Food for Canadians Regulations (Perennia)

The Safe Food for Canadians Regulations

The Safe Food for Canadians Act (SFCA) and the Safe Food for Canadian Regulations (SFCR) were developed to strengthen and consolidate the following acts: Canada Agricultural Products Act; Fish Inspection Act; Meat Inspection Act; and Consumer Packaging and Labelling Act as it relates to food. The goal of the SFCA and SFCR is to provide one set of regulations for all food businesses in Canada and to make Canada's food supply safer by focusing on prevention and traceability. The SFCA and SFCR outline requirements for:

- SFC licences
- Preventive controls
- Preventive control plans
- Traceability

Please note that the SFCR are federal regulations and businesses must also meet the provincial **Nova Scotia Fresh Fruit and Vegetable Regulations**[1].

Which SFCR requirements you need to meet depends on a couple of factors:

- What activity you conduct (e.g. grow, harvest, pack, process, etc.)
- Where you sell the product
    - Within the province of Nova Scotia (intraprovincial trade)
    - Outside the province of Nova Scotia but within Canada (interprovincial trade)
    - Outside of Canada (export)
- Size of business (i.e. gross annual food sales)

How to Get Started

1. The first step is to determine which requirements you need to meet by reviewing the **Fresh Fruit or Vegetables (FF&V) Timelines** and the **Fresh Fruit and Vegetable (FF&V) Specific Requirements.** Determine which activities you conduct in the first column and move across the row to determine which requirements you need to meet.

    E.g. If you grow or harvest fresh fruit or vegetables for interprovincial trade you do not require a licence; you may require a preventive control plan (PCP) as of January 15, 2020, depending on gross annual food sales (required if sales are greater than $100,000), and you do require preventive controls and traceability as of January 15, 2020.

2. Secondly, you will need to learn what these requirements mean:

SFC Licence

Some food businesses will require a licence to conduct their activities. Licences help CFIA better identify food safety risks, communicate important food safety information, and take enforcement actions. Determine if you need a licence by using the FF&V timeline or **CFIA's Licensing Interactive Tool.**

- Typical activities that require a licence include processing, treating or preserving FF&V for export or interprovincial trade, packaging and labelling FF&V in a field for export or interprovincial

[1] Bold text correspond to links on attached resource sheet

trade where the FF&V will not be further processed at a licenced facility, or packaging and labelling in a facility for export or interprovincial trade.

- You will not require a licence for activities such as growing, harvesting, applying agricultural chemicals and pesticides, culling and sorting, fumigating, curing, washing with an antimicrobial agent, cooling during harvest, rinsing to remove organic matter, or trimming to remove inedible parts.

Preventive Controls

Preventive controls, also known as prerequisite programs, are the steps or measures taken to prevent, reduce or eliminate food safety hazards related to the environment and operation. Examples include good agricultural practices you may already have in place such as sanitation, employee hygiene, pest control, and preventative maintenance.

Preventive Control Plan (PCP)

A **preventive control plan**, similar to a HACCP plan, is a written document prepared, kept, maintained and implemented by a food business. The difference between a HACCP plan and a preventive control plan is a PCP describes how food hazards are controlled and how to meet the requirements for the humane treatment of food animals during slaughter activities and the requirements for consumer protection and market fairness (e.g. labelling, packaging, and grading).

Traceability

Traceability means being able to trace the product one step backwards (supplier) and one step forward (consumer) to allow easy identification and retrieval of potentially non-conforming product.

Lot code refers to a code that can be used to identify a lot that was manufactured, prepared, produced, stored, graded, packaged or labelled, under the same conditions. A lot code can be numeric, alphabetic or alphanumeric.

Examples:

- Production date
- Best before date
- Establishment number
- SFC licence number
- Fresh fruits or vegetables may also use a harvest date, grower identification number, GPS coordinates, growing region such as province but not country
- Any other code that may be used for traceability purposes

3. Once you become familiar with the requirements, conduct a self-assessment using the **SFCR self-assessment template** to identify which requirements you do not meet and begin working on them.

Labelling Requirements: Consumer Prepackaged vs. Prepackaged

Consumer prepackaged foods are sold solely to consumers in their final packaging and are not repacked. All consumer prepackaging must have these **labelling requirements**:

[1] Bold text correspond to links on attached resource sheet

- Common name of product (e.g. Blueberries, Frozen Blueberries)
- Net quantity (e.g. 150 g)
- Name and principal place of business (e.g. XYZ Farm, 123 Blueberry Lane, NS)
- List of ingredients (only if multi-ingredient; single ingredient are exempt)
- **Grade**
- Lot Code (e.g. JUN 14, F1 – Harvest date of June 14, 2020, from Field 1)

Prepackaged foods are sold to an organization for further manufacturing or food service and can be repackaged. This includes foods packaged in shipping or other bulk containers that are sold only at levels of trade other than retail. This includes shipping containers and master containers. Prepackaged foods have the same labelling requirements as consumer prepackaged but the type height/legibility may vary.

CanadaGAP (Good Agricultural Practices)

CanadaGAP is a food safety program for companies that produce, handle and broker fruits and vegetables. It is designed to help implement and maintain effective food safety procedures within fresh produce operations. If you have CanadaGAP implemented, you meet 99.5% of the Safe Food for Canadians Regulations. You will need to meet consumer protection requirements such as, grading, labelling, weighing, etc. to be 100% compliant.

For an **overview of CanadaGAP** and how to begin the certification process, visit their website. There are **manuals** and additional **resource tools** available for free download on their website and can be a valuable resource when you are not ready to be certified but want to implement good agricultural practices at your farm.

How Can Perennia Help?

Perennia has a variety of **quality and food safety resources** on our website including fact sheets, links to helpful resources, and the Safe4Market booklet 'A Quality and Food Safety Guide for Primary Producers, Processors, and Storage Facilities'.

We also have the **Agri-Food Accelerator Program** which can provide funding to assist clients with the development and implementation of food safety programs (i.e. PCP, CanadaGAP).

If you have any questions, please contact one of our Quality and Food Safety Specialists.

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[1] Bold text correspond to links on attached resource sheet