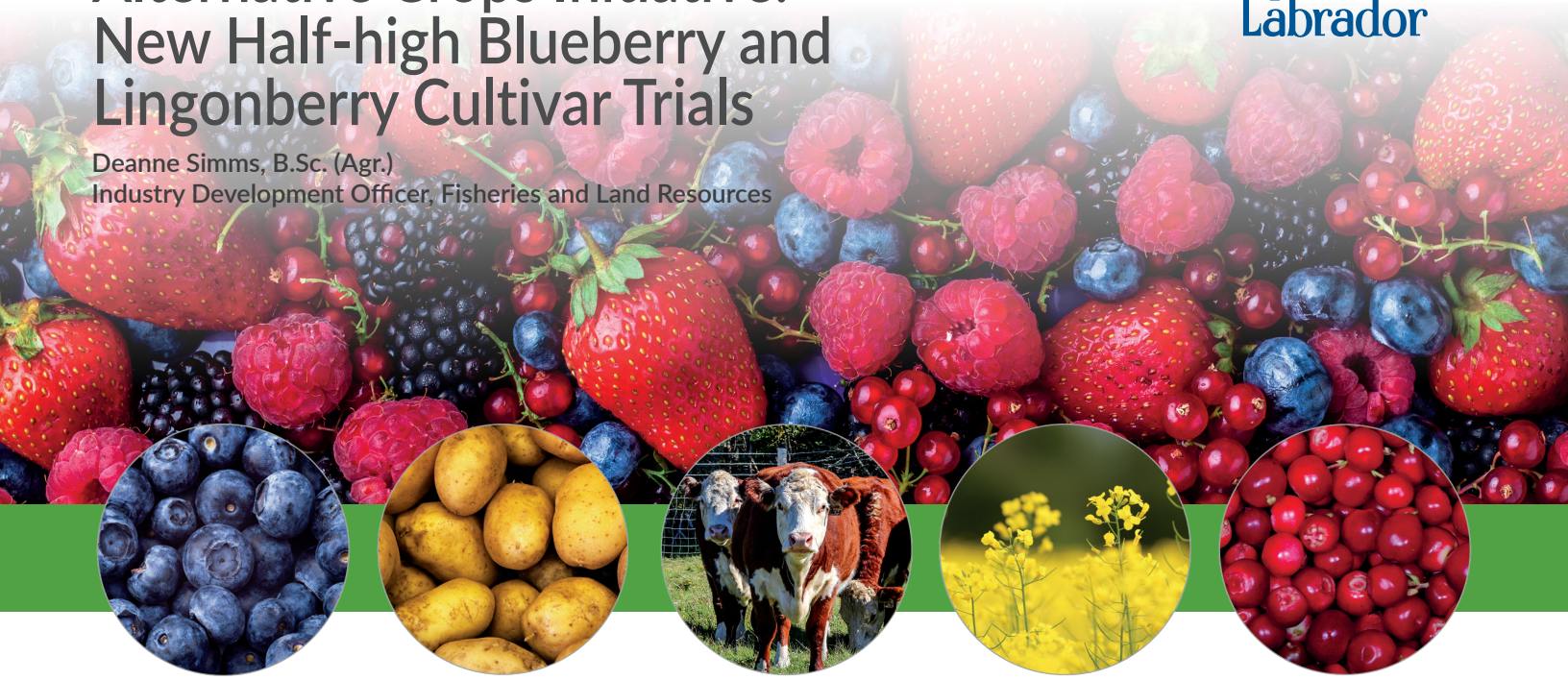
Agriculture Research and Development

Alternative Crops Initiative: New Half-high Blueberry and Lingonberry Cultivar Trials

Deanne Simms, B.Sc. (Agr.)
Industry Development Officer, Fisheries and Land Resources



Project Objectives

The overall goal of this project is to expand the fruit industry in Newfoundland and Labrador. The objective of this study is to evaluate the agronomic performance of new cultivars of half-high blueberry and lingonberry in an effort to identify those best for commercial production in the province.

Newfoundland and Labrador's climate is very favorable to the growth and production of wild berry crops such as blueberry and lingonberry (partridgeberry). Both types of berries are well adapted to our weather and acidic soil and are known to be exceptionally high in antioxidants. Predictably, the demand for berries and other small fruit, both wild and cultivated, has increased substantially in the past two decades because of their known health benefits.

The wild lowbush blueberry plant (**Vaccinium angustifolium**) is the most abundant species growing in Newfoundland and Labrador. The wild lingonberry shrub (**Vaccinium vitis-idaea**), better known as partridgeberry in Newfoundland and redberry in Labrador, also grows abundantly throughout the province and is traditionally harvested from unmanaged natural stands.

The Department of Fisheries and Land Resources has partnered with Agriculture and Agri-Food Canada (AAFC) to develop and research new, cultivated blueberry and lingonberry plants in efforts to create commercial industries. Dr. Samir Debnath (AAFC, St. John's) has been breeding new cultivars of half-high blueberry and lingonberry by crossing non-native commercial varieties with local native blueberries and lingonberries found throughout various regions of the province.

Conceivably these new varieties could retain the characteristics of both the non-native commercial type and the native type, meaning they may have the same health and taste characteristics of the wild berries while retaining the berry size and firmness of the cultivated types. Following the multi-year study, the best cultivars will be selected and then propagated on a large, commercial scale and limited quantities made available to interested growers.

August 2018

Background

Commercially cultivated lingonberry or blueberry production has not been established in the province. Those farms that are growing cultivated varieties of blueberry remain small with fewer than 100 plants, and cultivated lingonberry is virtually non-existent.

Native lowbush blueberry and lingonberry cannot be cultivated and can only be managed from wild stands. There are significant challenges with managing wild stands in Newfoundland and Labrador. The rocky terrain and general topography make crop management and mechanical harvesting very difficult. These new cultivars of blueberry and lingonberry will be locally cultivated and can be easily managed, thus making it a crop suitable for commercial production.

Technical Details

Half-high Blueberry Trials

Evaluation sites are located in central Newfoundland at the Centre for Agriculture and Forestry Development in Wooddale and on the west coast at the Western Agriculture Centre: Agriculture Research Station in Pynn's Brook.

Agriculture and Agri-Food Canada (AAFC), St. John's Research and Development Center provided 1,021 new cultivars (and two controls) of half-high blueberry for the department to evaluate agronomic performance on a field scale. These were planted in Wooddale in a one-acre field with nine rows having 120 plants each for a total of 1,080 plants. Plants were spaced one meter apart within rows, and rows were three meters apart. Planting was completed in July 2013 and irrigation was installed.

At the Western Agriculture Centre: Agriculture Research Station site in western Newfoundland, 336 new cultivars and two controls of half-high blueberry were planted at two separate fields in June and July of 2013. The same field design was followed as above and drip irrigation was installed.

A minimum of eight inches of peat was added to each plant and nitrogen was applied each spring at a rate of approximately 30 grams per plant. Six inches of mulch (wood shavings) was applied on top of rows.

Agronomic assessments are being conducted on each cultivar and include monitoring of fruit yield, color (based on four scales of color), firmness (berry firmness by touch) and size, plant vigor (a measure of the overall health), disease resistance, winter hardiness, and growth rate.

Lingonberry Trial

In 2013, 32 new cultivars of hybrid lingonberry plants were provided by AAFC to the department for a research trial in Pynn's Brook. These plants were crosses of native lingonberry and European varieties.

In 2014 the focus was on plant production through rhizome propagation. This provided sufficient material to conduct a replicated field trial. The site was prepared in 2015 and planting began in the same year and was completed in 2016. Cultivars were replicated within a row and spaced eight inches apart. There were 32 rows representing 32 cultivars, and rows were set three meters apart. Sussi and Sanna were used as the controls with three rows of each planted. In 2017 peat and mulch/wood chips were applied to each row. Data collection will begin in 2018.

Preliminary Results

Half-high Blueberry

Yields were collected in 2015, 2016 and 2017; however, the full agronomic assessment did not begin until 2017.

The following table identifies the top 10 producing cultivars for 2017. Agronomic assessments being conducted on each cultivar include fruit yield, color (based on four scales of color), firmness (berry firmness by touch) and size, plant vigor (a measure of the overall health), disease resistance (data not yet available), winter hardiness (data not yet available), and growth rate (Table 1). Preliminary results indicate variation between cultivars.

Table 1: Agronomic assessments of the top 10 producing new cultivars of half-high blueberries.

Plant ID	Total Yield (g)	Average 10 berry weight (g)	Firmness	Color	Plant Height (In.)	Plant width (In.)	Plant Vigor (1-10)
R6P#3	1933	10.7	7	MB	17	28	8
R9P#10	1782	8.7	7	BL	18	31	3
R7P#20	1578	8.0	8	BL	18	30	5
R2P#2	1519	8.0	8	BL	14	34	3
R3P#18	1492	11.0	7	DB	22	27	8
R1P#14	1456	9.7	8	BL	16	26	3
R2P#11	1446	7.7	7	BL	22	26	6
R9P#82 Control	1425	11.0	8	DB	21	23	5
R7P#3	1399	13.3	6	DB	25	33	7
R5P#51	1387	9.7	4	DB	22	30	5
R4P#12 Control	1386	6.3	8	DB	17	26	8
R4P#38	1383	10.3	9	DB	18	34	8
R3P#8 Control	610	13.0	7	LB	24	36	7

Firmness: 1-10 (10 being firmest); Color: LB- Light Blue, MB-Medium Blue, DB-Dark Blue, BL-Black; Plant Vigor: 1-10 (10 being best)

Recommendations (Half-high Blueberry)

New half-high blueberry cultivars with native traits will be recommended following the multi-year trial assessment. If interested in current commercially available cultivated half-high blueberries, the following recommendations can be made:

- Two applications of nitrogen are recommended: once at bud swell and again at petal fall;
- The addition of peat to soil prior to planting is recommended to lower pH to promote root growth and retain moisture;
- Mulch is required for weed control and water retention; and
- Irrigation is required. One-two inches of water is required per plant per week.

For more info please contact:
Sabrina Ellsworth, M.Sc., P.Ag.
Manager, Agricultural Research

Fisheries and Land Resources
Agriculture Production and Research Division
Fortis Building, P.O. Box 2006
Corner Brook, NL A2H 6J8
709.637.2089
sabrinaellsworth@gov.nl.ca