Agriculture Research and Development

Asparagus Varietal Trial

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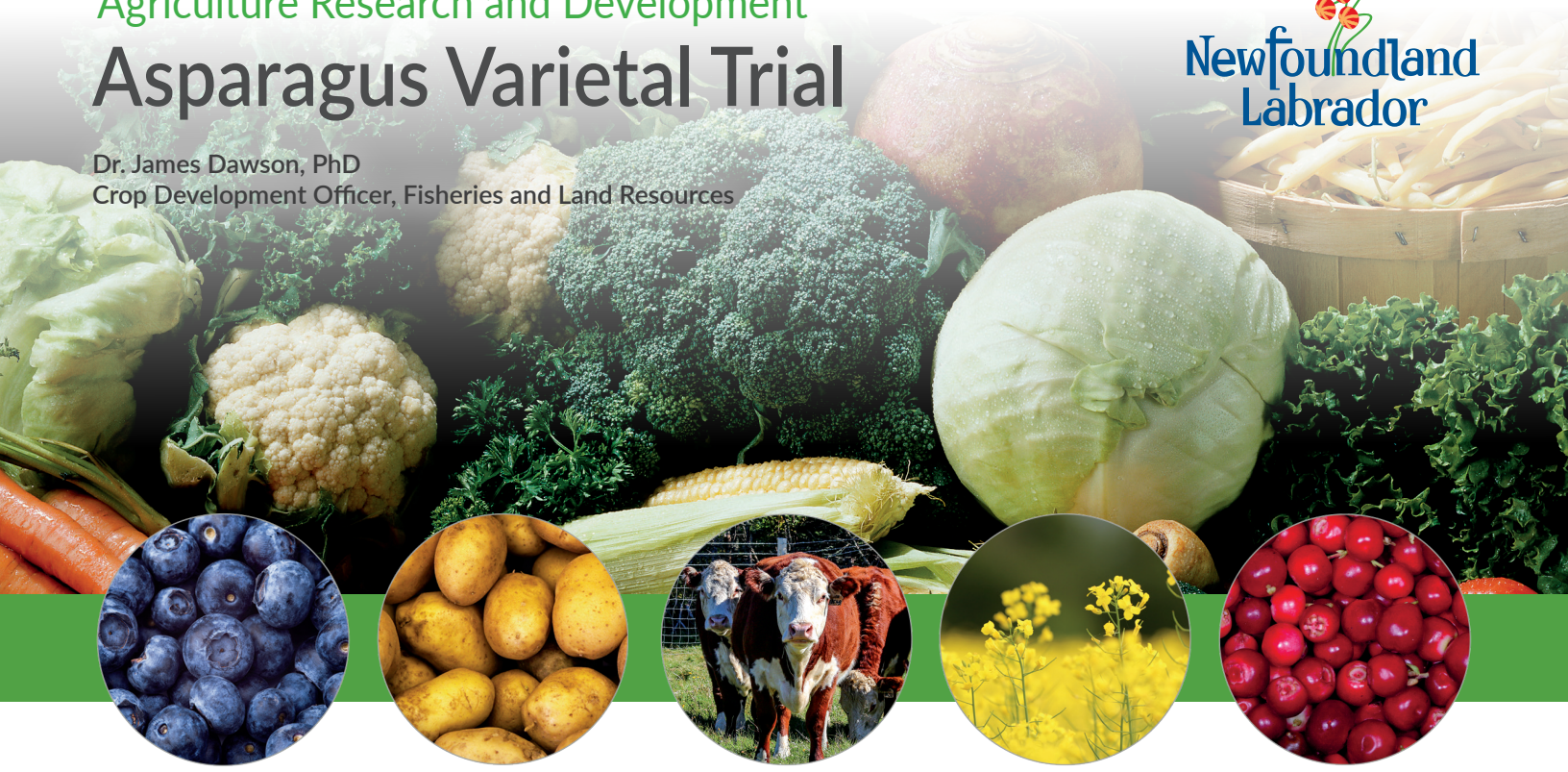

Project Objectives

The objective of this project is to evaluate the adaptability of selected asparagus genotypes to growing conditions in Newfoundland and Labrador.

The main objectives for this varietal trial are to determine which asparagus genotypes establish most rapidly, generate the greatest marketable yield, and survive the conditions of the Newfoundland and Labrador winter.

The demand for Newfoundland and Labrador vegetable produce is increasing and the market is demanding diversity in the crops produced in the province. To aid the vegetable production sector, new vegetable crops need to be trialed in the province.

Asparagus is a high-value, early-season crop that possesses traits conducive to production in Newfoundland and Labrador. Asparagus is a perennial vegetable crop, adapted to temperate climates. The plant is cold hardy, produces harvestable yield early in the season, and has a marketable value of between $6,000-9,000 per hectare. Plants can remain productive for 15 to 20 years if managed properly.

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Asparagus spears (stems before the emergence of leaves) are a good source of vitamins A and C, as well as potassium. Asparagus is also low in calories, with 90 grams per spear providing 18 kilocalories (Health Canada 2008).

The major production area for asparagus in Canada is in southern Ontario; major cultivars grown in that region are 'Guelph Millennium' and 'Jersey Giant.' Most asparagus consumed in the Province of Newfoundland and Labrador is produced in the southern United States and Mexico.

To date there are no studies investigating the adaptability of asparagus cultivars to the province's growing conditions. To bridge this knowledge gap, an asparagus varietal trial is being conducted at the Western Agriculture Centre: Agriculture Research Station in Pynn's Brook.

Background

Asparagus differs from most vegetable crops because it is a fairly long-lived perennial plant. Mature, productive asparagus plants represent a very reliable source of early season income to vegetable producers.

- Perennial plant with an expected productive life of 15 to 20 years;
- Requires two to four years of growth before first harvest;
- One of the first vegetable commodities to be harvested in the season (spring);
- Harvest period for mature plants can be up to six weeks;
- High value of approximately $6,000-$9,000 per hectare; and
- Highly nutritious in vitamins A and C as well as potassium.

The first two to four years of asparagus establishment are critical for the productivity and yield of the mature stand. Young asparagus plantings can suffer from weed competition, inadequate soil moisture, and/or low soil fertility. It is also highly detrimental to over-harvest plants during the first years of establishment.

After the last harvest of the season, asparagus should be lightly cultivated to both control weeds and incorporate fertilizer. Care must be taken to not damage the root system of the asparagus during these activities.

Technical Details

- Eight cultivars of asparagus (Table 1.1) were planted in the spring of 2017;
- Thirty plants of each genotype were used in the trial;
- Pynn's Brook - sandy loam soil, pH 5.8 (before liming with 110 kilograms per hectare of dolomitic lime stone), medium inherent fertility;
- Fertilized with 55, 110 and 110 kilograms per hectare of nitrogen, phosphorous and potassium respectively; and
- Five-foot spacing between rows, one foot within row, planted in 15-centimeter furrow.

Table 1. Cultivars Assessed in Asparagus Varietal Trial

Cultivar	Origin	Short Description
Jersey Knight	Jersey Asparagus Farms	F1 hybrid, tolerant of Fusarium rots
Jersey Giant	Jersey Asparagus Farms	F1 hybrid, cold and Fusarium tolerant
Millennium	University of Guelph	F1 hybrid, all male, cold tolerant, Canadian standard
Walker Deluxe	Walker Seed	F1 hybrid, 98 per cent male, generally outperforms Jersey series in overall performance
UG 0202	University of Guelph	Trial cultivar*
UG 20	University of Guelph	Trial cultivar*
UG 005	University of Guelph	Trial cultivar*
UG 001	University of Guelph	Trial cultivar*

* used with permission from Asparagus Growers of Ontario

2017 Year 1 - Preliminary Results and Observations

- Asparagus showed good emergence from bare-rooted second-year crowns, with average emergence rates around 85 per cent;
- Exception was Walker Deluxe, which showed poor emergence (60 per cent) and vigor;
- Jersey series outperformed all male hybrids genotypes
- Jersey Giant showed the best emergence and vigor during first year's growth;
- No major pest or disease problems were detected in the first year; and
- Varieties will continue to be monitored for establishment, vigor and resistance/susceptibility to pest and disease, but will also be monitored for winter hardiness and marketable yield for seven to eight years.

Recommendations

- Asparagus has potential as an early-season, perennial vegetable crop in Newfoundland and Labrador;
- Early observations indicate Jersey series shows best establishment and vigor in the soil and climatic conditions at Pynn's Brook;
- Plant asparagus in light (sandy) soil classes and avoid heavy (clay) soils;
- Irrigation may be required for early (first two years) establishment; and
- Weed control is essential in the establishment years; use shallow cultivation to ensure root system is undamaged.

Agriculture Industry Benefits

- Diversifies the agriculture industry;
- High-value crop;
- Harvest in spring can provide needed on-farm cash flow during an important (expensive) period in the season;
- Management intensity is reduced after year four; plants can still provide high yields for up to 15 years after establishment;
- Reliable crop, reduces the importance of early-season weather as plant does not need to be seeded annually; and
- Asparagus spears are a good source of vitamins A and C and a good source of potassium.

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