

Canadian Agri-Science Cluster for Horticulture 3



Update to Industry

Semi-Annual – Fall 2021

Activity title:

16A: Variety Evaluation

Name of Lead Researcher:

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Names of Collaborators and Institutions:

AB: Chandra Singh, Lethbridge College; Michele Konschuh, University of Lethbridge; Parkland Seed Potatoes;
 BC: Heather Meberg, BC Agriculture in the Classroom, University of the Fraser Valley;
 MB: Dr. Tracy Shinnars-Carnelley, Peak of the Market; Darin Gibson, Gaia Consulting Ltd.
 ON: Dr. J. A. Sullivan and Vanessa Currie, University of Guelph; Ontario Potato Board;
 PEI: Mary Kay Sonier, PEI Potato Board; David Main, AAFC Charlottetown; Real Potatoes;
 QC: André Gagnon, Progest Inc. 2001.; Sophie Massie – Progest Inc. 2001; Kristine Naess – CRLB
 SK : Jazeem Wahab, AAFC Saskatoon

Activity Objectives (as per approved workplan):

This activity aims to enhance the profitability and sustainability of the Canadian potato industry by identifying superior selections that can be produced more efficiently than current potato varieties in major production areas. Evaluations included: adaptation; yield performance (total and marketable); external and internal quality; cook quality; and visually-rated reaction to pests and disease as compared to industry standards when grown under regional conditions at 8 trial sites across Canada. Evaluations were performed on three market types including; French Fry, Fresh Market and Chip types.

For April 1, 2021 - March 31, 2022 fiscal year:

- Production of breeder's selection seed at Benton Ridge Substation (NB) and distribution to cooperators (40-80 clones)
- Production of breeder's selection seed at Vauxhall Substation (AB) and distribution to cooperators (20-40 clones)
- Conduct Adaptation trial in NB (in coordination with NB Ag)- (60-120 clones)site TBD
- Conduct Adaptation Trial in Saskatchewan--(30-60 clones)Outlook site
- Coordination of national trials and collection of data from all trial sites
- Data analysis and report
- Cooperators meeting to review the data

*Note: An amendment has been put in to adjust the number of clones listed in the objectives to numbers that reflect the modernization efforts to have fewer, better quality selections in the National Adaptation Trials.

Research Progress to Date (use plain language, not to exceed 500 words):

In 2021, 31 selections and 8 checks were grown at 8 sites across Canada the locations included; Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan and Alberta with demonstration sites at all

locations and British Columbia. This year, because of the continuation of the pandemic, not all trial sites had a field day and those that did had a modified version to what has been done in the past.

The AAFC Potato Breeding Program continued with the two tiered trialing system at all National Potato Variety Trial (NPVT) locations. Selections in Tier 1 were in their first year of the National trialing system at 8 sites (Charlottetown, PEI; Wilmot, New Brunswick; Sainte-Croix, QC; Elora, ON; Winkler, MB; Carberry, MB-French Fry selections only; Outlook, SK; Brooks, AB). The Tier 2 selections were grown at the same 8 locations described above with two replicates for a second year of testing. Due to an extreme drought in 2020 at the Benton, NB seed farm, some of the selections had one rep at the sites because of the seed shortage. Twenty-three Tier 1 selections, 8 Tier 2 selections were trialed with 8 check varieties. This included French Fry, Chipping and Fresh Market types.

In addition, early generation material was distributed to sites in Ontario and Alberta to gain information about how the selections would perform at sites outside of New Brunswick and to gain feedback from industry on the selections earlier in the pipeline. Fresh Market, Chip and French Fry selections were grown in AB, whereas Chip and Fresh Market selections were grown in ON, and all market types were grown in NB.

Seed was distributed and trials were planted at all sites following commercial production practices common in the local area with a few delays due to weather. The variable growing conditions at each location are allowing for evaluation of varieties under a wide range of environments. The season was very hot and dry in the West (MB, SK, AB, and BC). The western sites have irrigation, but the Winkler, MB site ran low on irrigation water. At the Eastern sites, temperatures were seasonal with a few timely rains.

To date, the agronomic field data has been collected such as emergence, mid-season vigours and maturity ratings. The trials have all been harvested and most have been graded.

Extension Activities (presentations to growers, articles, poster presentations, etc.):

Most of the field day extensions activities were canceled or reduced this year because of COVID-19. In British Columbia, a socially-distanced field day was had with over 100 attendees that was spread out over a 6 hour period. New Brunswick and Ontario also had a last minute socially distanced field day. Manitoba and Quebec did not have a field day, but opted to invite a few local industry members to see the selections. The field days are an important part of showcasing the selections to industry.

COVID-19 Related Challenges:

As mentioned above, one of the key COVID-19 related challenges has been scheduling and holding field days. Many sites were reticent to schedule field days before they knew what the impacts of the fourth wave were or what the provincial requirements for gatherings and/or proof of vaccination would be. In addition, the pandemic prevented AAFC sites from having a field day to get industry feedback on the pre-National Trial selections. Some sites also had some COVID related labour issues that have caused some delays in data collecting, harvesting and/or grading. However, all sites were planted, harvested and will be graded with the appropriate data collected and the activity is progressing well.

Key Message(s):

These trials are important for industry stakeholders to observe selections and review regional data for promising new varieties. The value-chain nature of the trial and efforts to provide data as required for each stakeholder will result in the uptake of new varieties for the Canadian potato industry. So far this year, 7 sole variety license agreements have been signed for new varieties from the Accelerated Release Program.

The AAFC National Potato Breeding Program is focusing its efforts to work in unison with all stakeholders to increase the value of the program and to make the new commercialization model relevant to the various market classes of the Canadian Potato Industry.

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