

Canadian Agri-Science Cluster for Horticulture 3



Update to Industry

2020-21 – Semi-Annual

Activity title: Potato Variety Evaluation

Name of Lead Researcher:

Erica Fava, Agriculture and Agri-Food Canada

Names of Collaborators and Institutions: Chandra Singh, Lethbridge College; Michele Konschuh, University of Lethbridge; Heather Meberg, BC Agriculture in the Classroom, University of the Fraser Valley; Mary Kay Sonier, PEI Potato Board; David Main, AAFC Charlottetown; Parkland Seed Potatoes; Real Potatoes; Dr. J. A. Sullivan and Dr. K. S. Jordan, University of Guelph; Ontario Potato Board; Stuart Cairns, Potato Research Committee; Dr. Tracy Shinnars-Carnelley, Peak of the Market; André Gagnon, Progest Inc. 2001.; Sophie Massie – Progest Inc. 2001; Kristine Naess – CRLB

Activity Objectives (as per approved workplan):

To evaluate new potato selections from AAFC's National Potato Breeding Program across the country to determine the adaptability of the lines to different climatic regions. 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.

Research Progress to Date:

In 2020, 23 selections were grown at 9 sites across Canada the locations included; Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan and Alberta with demonstration sites in Alberta and British Columbia. This year, because of the pandemic, all trial sites in New Brunswick were cancelled.

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 7 sites (Charlottetown, PEI; Sainte-Croix, QC; Elora, ON-Chip selections; Winkler, MB; Carberry, MB-French Fry selections only; Outlook, SK; Brooks, AB) in duplicate replication. The Tier 2 selections were grown at the same 7 locations described above with two replicates for a second year of testing. Twenty-one Tier 1 selections were trialed with 8 check varieties and two Tier 2 selections with 8 check varieties. This included French Fry, Chipping and Fresh Market types. Trials were planted, grown and harvested following commercial production practices common in the local area.

In addition, material from Field Year 3 and 4 of the breeding pipeline was grown at trial sites in Ontario and Manitoba 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. For the Year 3 material, Fresh Market and French Fry selections were grown in MB, whereas Chip and Fresh Market selections were grown in ON. For the Field Year 4 material, all three market types were grown in MB and Fresh Market and Chip Selections were

grown in ON. Valuable information was gained at both sites from industry partners as to which selections should move forward.

All data were collected on time and as required. The season was generally very hot and dry at all sites and differences in how the selections performed were due to differences in cultural management practices and soil types.

Note: A detailed summary of results is available upon request.

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 BC, a socially-distanced field day was had with over 50 attendees. Other sites had key industry members visit the sites and reports were distributed to the invitee distribution lists. Once all data was compiled for the NPVT, the reports and clone summaries were distributed to collaborators and industry for feedback in January. Many virtual discussions were had with industry members for feedback on the selections and process.

COVID-19 Related Challenges:

The biggest set-back due to COVID-19 was the cancellation of most of the field day extension activities. These activities are key to getting feedback from the industry and connecting with others. Overall virtual meetings had fewer attendees than the previous years in-person meetings.

In addition, in an effort to reduce the presence of staff on-site, the New Brunswick trial sites were cancelled. The focus for staff in New Brunswick was to preserve the germplasm to the extent that full activities of the Breeding Program are able to resume without delay once COVID-19 restrictions are lifted. The aim has been to minimize impact on future years.

Finally, COVID-19 mitigation strategies meant that the development of a new commercialization model for promising selections was set back by approximately one year. Work on this file resumed in November of 2020 and significant progress has been made to engage the processing industry in developing the consortium pillar of this model. The goal is to have the new commercialization model available for the 2022 growing season. For 2021, it was decided that last year's material would be offered for further non-exclusive testing as well as a promising Tier 2 Chip selection.

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. Specifically, for French Fry selections, three requests were made for F14021 and five requests for VF14016 by industry partners, based on their success over multiple locations and/or their own experience trialing the material in 2020. The Fresh Market selection, F14119, was requested by 8 industry partners and the Tier 2 Chip selection, FV16324-08 was requested by 5 industry partners for further trialing.

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.

This project is generously funded through the Canadian Agri-Science Cluster for Horticulture 3, in cooperation with Agriculture and Agri-Food Canada's AgriScience Program, a Canadian Agricultural Partnership initiative, the Canadian Horticultural Council, and industry contributors.



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada



Canadian
Horticultural
Council

Conseil
canadien de
l'horticulture

The voice of Canadian fruit and vegetable growers