

Canadian Agri-Science Cluster for Horticulture 3



Update to Industry

Semi-Annual – Spring 2022

Activity title:

Canadian Potato Variety Evaluation **16B** (Manitoba Fresh Market)

Name of Lead Researcher:

Dr. Tracy Shinnars-Carnelley, Peak of the Market Ltd.

Activity Objectives (as per approved workplan):

The objective of this research was to evaluate the yield and quality parameters of red-skinned/white flesh, yellow, white, russet, and creamer potato varieties and assess their potential as fresh market varieties for Manitoba.

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

In 2021, 45 potato varieties were evaluated at the Peak of the Market Research Site located in Winkler Manitoba. The trial included red-skinned/ white flesh, yellow, white, russet, and creamer types, as well as the industry standards. The trial was established and managed by type i.e. reds, yellows, creamers, and where possible agronomic practices were suited to the type of variety. Specifically, the in-row plant spacing, fertility, top-killing, and harvest dates were managed for each type. One limitation for the 2021 was access to water for irrigation. Although the site is irrigated, the water source was depleted by July 9, so the varieties experienced extreme heat and dry soil conditions for much of the bulking period. The trial received a total of 2.5" of irrigation that was applied between June 24 and July 9. This supplemented the rainfall of 7.9" received from planting (May 18) through until top killing (September 3), for a total of 10.4" of water.

The varieties evaluated in this trial were provided by private breeders, Agriculture and Agri Food Canada, breeder's Canadian agents, and variety developers. The gross yield produced by the 21 red varieties ranged from 311 cwt/ac – 658 cwt/ac, with seven of the entries yielding over 500 cwt/ac. The standards Dark Red Norland and Wisconsin Norland yielded 559 and 485 cwt/ac, respectively. Fenway Red, at 658 cwt/ ac, was the only red entry that had a gross yield significantly higher than the standards. Cristina, Red Endeavor, AR2017-08, Roko, and Red Prairie all produced gross yields comparable to Dark Red Norland. Russetting and silver patch continue to be the most prevalent defects on the red varieties, with incidence ranging from 0-68% for russetting and 0-72% for silver patch. Silver patch has not yet been described in the scientific literature, but it is a skin blemish that is silvery in appearance but does not form distinct lesions like silver scurf or black dot. The cause of silver patch is unknown, and to date, no pathogens have been isolated from affected tubers. In multiple years of variety evaluation, dark Red Norland sports (phenotypic variants) of Red Norland consistently have the highest incidence of this defect, and this was the result again in 2021.

The 10 yellow varieties evaluated yielded between 450 cwt/ac – 593 cwt/ac, with the industry standard, Musica, yielding the highest. AC Canada Gold also yielded well at 553 cwt/ac and was not significantly different than Musica. Musica, Colomba, and Constance were the most attractive entries; while skinning and black scurf were the prominent defects observed on some of the yellows. Overall, the yield in this category was lower than it has been in previous years of the trial, and this is attributed to the extreme heat and drought experienced in Manitoba in 2021. In particular, Alaska Gold suffered from heat stress and produced deformed tubers and heat runners.

The five russet varieties evaluated yielded between 327 cwt/ac – 437 cwt/ac, with the top performer being Innovator (437 cwt/ac) which was significantly higher yielding than the industry standard, Goldrush (394 cwt/ac). These varieties also had an attractive appearance suitable for the fresh market. Pomerelle was included in the trial because it has been identified as a “dual” purpose variety, however, tubers produced in 2021 were very long, making it unsuitable as a fresh pack variety.

Eight white varieties were evaluated in the 2021 trial. The yields in this category ranged from 216 cwt/ac – 659 cwt/ac. Audrey (659 cwt/ ac) and Volare (634 cwt/ac) had significantly higher yields than the other white entries. Skinning, russeting, and black scurf were the common defects noted on the whites after washing.

AAC Red Viola was the only creamer included in the trial this year. It is a very attractive round creamer with a smooth dark red skin. Although the total yield was 225 cwt/ ac, the agronomics in this trial were not designed to maximize the yield for creamer production, and this should be considered when reviewing the performance of this variety.

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

The 2021 variety entries were highlighted during the Peak of the Market field day on August 12, 2021. Also, the final report was presented on February 1, 2022, as part of the Peak of the Market Research Reporting Virtual Winter meeting series.

COVID-19 Related Challenges:

COVID-19 did not impact the field trial activities of this project. The report was delivered virtually, and although the data was reported and photographs shared, there was no in-person opportunity to showcase washed samples from the trial.

Key Message(s):

Growers are very interested in evaluating and identifying new varieties that have improved yield, quality, or other agronomic or nutritional attributes compared to the current industry standard varieties. Trials like this allow for efficient evaluation and comparison of many varieties from different breeders or developers and help to increase the likelihood of identifying varieties with potential for production in Manitoba. In a stressful year like 2021, this trial also provides knowledge of varieties that perform well, with respect to both yield and quality, under extreme heat and drought conditions.

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