

# Results from 2015 Variety Trials

by **Ryan Barrett**

Research & Communications Coordinator  
PEI Potato Board

The process of evaluating new varieties is a continual research effort for most potato-producing regions, and Prince Edward Island is no different. The Board has been involved for many years in trials of new varieties to assess their suitability to production here on the Island. In addition, we have started assessing the viability of new varieties for potential international markets, as well as exploring the suitability of existing varieties for new production systems.

The summaries provided in this article provide a good overview of the key results from each trial. Those wishing to see the full reports can visit our Growers Site on the PEI Potato Board website to download a PDF version of the research report.

## **AAFC / CHC Cluster Trial: Harrington Research Farm, PEI**

The Prince Edward Island Potato Board sponsors an annual variety trial with Agriculture and Agri-Food Canada as part of the CHC National Cluster Project. This past year, a total of 33 cultivars were evaluated: 22 newly released cultivars, 6 cultivars from the AAFC Accelerated Release (AR) program, and 5 standard cultivars for comparison purposes. These cultivars were grouped into five categories: Fresh market Reds, Fresh Market Yellows, Fresh Market Russets, Chip, and clones of Russet Burbank.

Each cultivar was planted in 25 foot long single rows, with four replicates per cultivar in a randomized complete block design. The trial was planted on May 29th, 2015, with

vines desiccated on September 21st and 25th and then harvested on October 13th.

Our thanks to David Main and his crew at the Harrington Research Farm for conducting this trial for us.

### **Fresh Market Reds**

In this category, the top performing cultivars for total yield and Canada #1 yield were AR2014-04 at 378 cwt/acre, Fenway Red at 394 cwt/acre, Colorado Rose at 385 cwt/acre, and Elmo at 387 cwt/acre, which all statistically outperformed the standard, Norland (at 304 cwt/acre). No evidence of hollow heart was seen in any variety. The Baby Rose cultivar had by far the largest number of tubers per plot, but more than half of the tubers were of a small grade size, potentially of use as a "creamer" variety. Red cultivars were planted at 10 inch spacing.

### **Fresh Market Yellows**

All of the new release cultivars outperformed the standard variety (Yukon Gold) for total yield in this trial; however, not every cultivar excelled when it came to Canada #1 grade. The top varieties for Canada #1 yield



*Left: Electra (yellow-fleshed)  
Right: AR2014-11 (red skinned)  
Photos from 2015 Variety Trial at  
Harrington Research Farm, AAFC.*

were Electra (269 cwt/ac Canada #1, 437 cwt/ac total yield), Lanorma (269 cwt/ac Canada #1, 389 cwt/ac total yield), and Actrice (266 cwt/ac Canada #1, 318 cwt/ac total yield). None of the cultivars had hollow heart, and cull percentage did not vary greatly among the eight yellow cultivars. Yellow cultivars were planted at 10 inch spacing.

**Fresh Market Russets**

In this category, the top performing cultivar was Dione, with total yield of 357 cwt/acre and Canada #1 yield of 314 cwt/acre. This compares favourably with the standard variety, Goldrush, at 322 cwt/acre total yield and 235 cwt/acre for Canada #1 yield. Also outperforming Goldrush for Canada #1 yield was Ivory Russet, at 245 cwt/acre. There was some hollow heart evident in russet cultivars, with Dione having 5% hollow heart and Premier Russet showing 32.5% hollow heart in this trial. Russet cultivars were planted at 12 inch seed spacing.

**Chip**

Among chip cultivars, the only cultivar to compete with the standard (Atlantic) was Snowcrisp, which produced 285 cwt/acre of Canada #1 yield, compared with 267 cwt/acre for Atlantic. There were other cultivars that had similar total yields to Atlantic, but they tended to have larger number of potatoes classed as Small (1.5 to 2.25 inches). These cultivars included Chicago, Hilldale, and AR-2014-02. Chip cultivars were planted at 10 inch spacing.

**Russet Burbank Clones**

Again this year, we evaluated four clones of Russet Burbank; namely, the PEI Graham’s Road, Idaho, Colorado, and PEI #1 clones. There was no statistical difference in tuber count, tuber yield, hollow heart or specific gravity between the four clones.

**Climate Zone Variety Trial:  
Four Trial Locations in the United States**

This year was the second year of a variety trial funded through the Applied Research Program of the PEI Department of Agriculture’s Growing Forward 2 funding program. The primary goal of this project is to assess a number of pre-commercialization cultivars under growing conditions in four different regions of the USA which resemble global climate zones. Through this, potato breeders can determine the suitability of varieties to particular climates, as well as building a database of

production information that can be used in promoting varieties to suitable target markets.

Four trials were conducted at university research sites in:

- |                   |  |
|-------------------|--|
| 1. Florida        | Subtropical Climate, similar to Central America, Philippines       |
| 2. North Carolina | Short, stressful growing season, similar to Eastern Europe         |
| 3. California     | Mediterranean climate, similar to Lebanon, Algeria, Turkey, Greece |
| 4. Texas:         | Semi-Arid climate, similar to India, southern South America        |

Seven cultivars were selected to participate in these trials, and they were compared against standard varieties according to their target market (fresh market, chip, etc). These varieties were also part of the previously discussed trial at the Harrington Research Farm.

Two red varieties from the AAFC Accelerated Release program were evaluated: AR2014-11 and AR2014-04. AR2014-11 outperformed the standard at three out of four trial locations for both total yield and marketable yield, and also generally outperformed AR2014-04. AR2014-11 performed best at the California location, where it produced 86% more marketable yield than the standard variety. AR2014-04 also outperformed the red standard variety at three out of four locations for both marketable and total yield. This variety performed best for marketable yield in North Carolina, where it produced a 27% higher yield than the standard variety.

AR2014-09 was a fresh market yellow variety that also outperformed the standard at three out of four locations. It did particularly well in the humid climates of Florida and North Carolina, while it did not fare as well in the more arid condition of Texas. AR2014-09 produced 55% more marketable yield than the standard variety in Florida.



*A sample of the variety Snowcrisp from the California trial location.*

AR2014-02, Hilldale, and Snowcrisp were all round, white fleshed varieties which could be considered for chip or for the fresh market. AR2014-02 outperformed the standard variety (Atlantic) in California and Texas but did not fare as well in Florida or North Carolina. Hilldale was equally variable, out yielding the standard variety by 60% for market yield in California, while producing 55% less yield than the standard in North Carolina. Snowcrisp produced more consistent results, being competitive with the standard at all four trial locations.

Bristol Pride is a long white variety under consideration for either French fry or chip production. It only outperformed the standard variety at one site (California), while producing noticeably lower yields than the standard in both North Carolina and Texas.

**Starch Variety Trial  
Augustine Cove, PEI**

From time to time, there has been discussion about the possibility of processing starch from raw potatoes in Prince Edward Island. In order to properly assess whether there is economic justification to investigate this further, the Board felt that we required data to assess whether conventional varieties already available in Prince Edward Island could produce sufficient yields of dry matter and starch.

Subsequently, the Board contracted the services of Genesis Crop Systems, which in turn conducted a variety trial at Kyle Murrery Farms in Augustine Cove, PEI. A total of 14 varieties were assessed, with many of these varieties evaluated under multiple seed spacings. Plots were replicated and assessed for yield, dry matter percentage, and yield of starch. The trial was planted on June 1st and was harvested on October 25th.

In terms of total yield, varieties producing in excess of 480 cwt per acre included: Atlantic (504 cwt/ac at 6 inch spacing), Russet Burbank (504 cwt/ac at both 6 and 9 inch spacing), Ranger Russet (491 cwt/ac at 12 inch spacing), Dione (485 cwt/ac at 12 inch spacing), Marcie (489 cwt/ac at 9 inch spacing), Kennebec (482 cwt/ac at 6 inch spacing), and Navan (480 cwt/ac at 9 inch spacing). However, not all of these varieties performed as well for specific gravity, which translates to high dry matter percentages.

The threshold value that was arrived at for assessing whether a variety could be considered economically viable under a contract for starch production was 7500 lbs



*Top: Starch variety trial location at row closure.  
Bottom: Harvesting the starch variety trial.*

of starch per acre. The Atlantic, Russet Burbank, Ranger Russet, Marcie, and Navan varieties all met that threshold value on at least one spacing treatment. Atlantic had the highest starch yield (8679 lbs/acre) at 6 inch spacing, followed by Russet Burbank at 7822 lbs/acre at either the 6 or 9 inch seed spacing.

There was some variability in the results received from the lab in Manitoba that tested tubers for starch percentage, and there were some varieties that did not appear to have either the yield or dry matter percentage suitable for future evaluation.

Using data from this year's trial, the intention is to perform a second year of trials in 2016 with a smaller number of varieties but with increased replication to enhance the reliability of the data. Sincere thanks to Steve Watts of Genesis Crop Systems for this work in completing this trial in 2015.

**BDO** Assurance | Accounting | Tax | Advisory

**Jennifer Dunn, CPA CA, TEP      Patrick Trainor, CPA, CA**  
**Patrick McSweeney, FCPA, CA      Glen Murray, CPA, CA**

Charlottetown: 892-5365      Summerside: 436-2171

[www.bdo.ca](http://www.bdo.ca)