



Potato Progress

Research and Extension for Washington's Potato Industry
 Published by Washington State Potato Commission www.potatoes.com
 Andrew Jensen, Editor. Submit articles and comments to: ajensen@potatoes.com
 108 Interlake Rd., Moses Lake, WA 98837; Fax: 509-765-4853; Phone: 509-765-8845.

Volume VII, Number 16

November 30, 2007

Tests of Specialty Breeding Lines II: Effect of Early Harvest on Total Yield and Size Profiles

Charles R. Brown and Richard Quick, USDA/ARS, Prosser, WA; Steve James, Central Oregon Research and Extension Center, Oregon State University, Madras, OR; Richard Halvorson, Barry Halvorson, Dave Halvorson and Robert Halvorson, R and R Halvorson, Inc., Toppenish, WA

Specialty potatoes are by their nature destined to fill non-traditional markets. The interaction of agronomic parameters and genotype can make a difference in the cost and appeal of these potatoes to these niche markets. The Toppenish area of southern Washington is known for its early production of fresh market potatoes. Among the attributes in this rill irrigated zone is a harvest in July and rich red colored flesh in the variety Dark Red Norland (DRN). In 2007, R and R Halvorson, Inc. provided a field for exploration of specialty potato productivity in this distinctive growing environment. The specialty field was planted April 5, about one week later than the DRN and Yukon Gold (YG) planted for fresh market in the rest of the field. Good growing conditions ended with a three week heat wave and the cutoff of irrigation about ninety days after planting. This unplanned cessation of growth gave us a chance to compare a number of breeding lines grown at the USDA/ARS Systems site in 2006 during a five month season to the three month season of 2007 in Toppenish.

Specialty Potato Trial I: Halvorson Farms, Toppenish WA, 2007

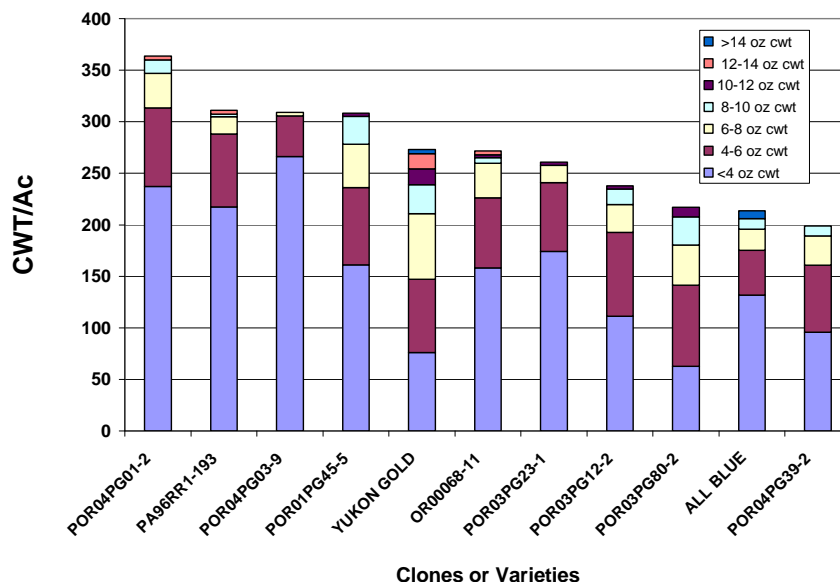


Figure 1. Yield Profile of Specialty Potato Trial I, 2007, in Toppenish.

The performance of several promising clones is shown in Figure 1. The spread of total yield ranges from 200 to 350 cwt/acre. Most clones produce the majority of the yield in less than 4 oz. sizes. Two exceptions are Yukon Gold and POR03PG80-2. In Figure 2 we observe the yields of the Trial II.

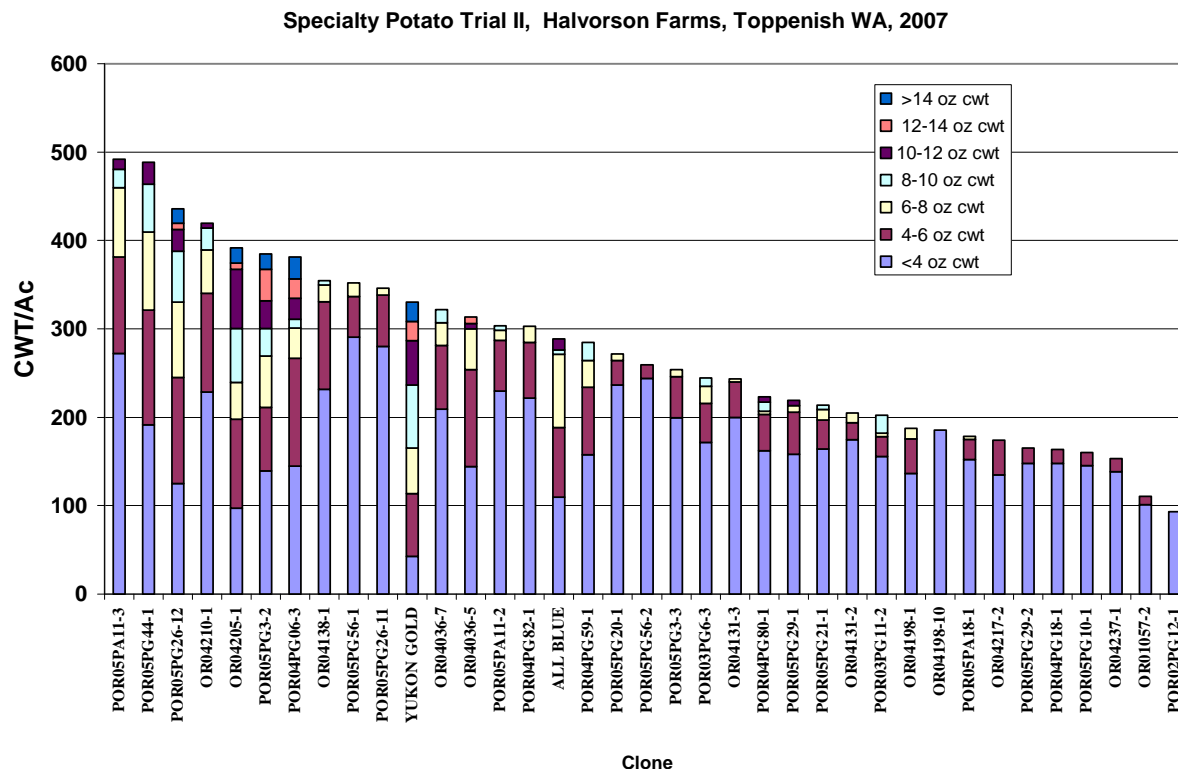


Figure 2. Yield Profiles of early generation potato breeding lines grown in Toppenish in 2007.

The materials displayed in Figure 2 are earlier in their evaluation cycles than the previous figure. It is interesting to observe that Yukon Gold is a difficult cultivar to manage toward a smaller tuber size. The flip side of this is that even with a curtailed growing period it produces larger sizes. Several other clones, OR04205-1, POR05PG56-1, and POR04PG06-3 and POR05PG26-12 had similar total yield and a range of larger sizes, with over half of the total yield above 4 ounces. Otherwise most of the breeding lines were not able to produce more than a small fraction of tubers that were above four ounces. Not too surprisingly, more time equals increased tuber sizes. However, breeding lines differ to some extent in their early development tendencies.

In Figure 3 is a comparison of a number of breeding lines and standard cultivars for their performance in 2006 at the USDA/ARS systems site, and in 2007 in Toppenish. The average total yield in Toppenish was a little more than one-third that of Paterson. Most clones responded to the curtailment of their growing season by failure to produce larger tuber sizes. Exceptions to this were Yukon Gold and POR03PG80-2, which managed to have half or more of their yield in the above 4 oz. category. The Toppenish potato district is renowned for its bright red skin potatoes. In this trial the brightness of both skin and flesh colors was excellent. In previous experiences, rich colors have been associated with high elevations and cooler temperatures. The good color here in the hot growing environment of Toppenish is an interesting and perhaps profitable phenomenon. Also the very low incidence of skin blemishes, whether caused by disease organisms or physical factors was a definite advantage. For years the growers in this area have been on the lookout for an improvement on DRN. Although high yielding attractive candidates have been tested, none of

them mature and set skin as rapidly and fully as DRN, which remains the mainstay. This may serve as a guide to selection criteria for this early production site. New germplasm must have early maturity, or have an easily managed foliage senescence accompanied by a good skin set. Our present array of promising breeding lines seems to have relatively little earliness. New germplasm should be capable of being managed to produce a heavy set of smaller tubers in order to supply a market niche that will pay a premium for the smaller potatoes. On the breeding side, this may require selecting materials that we used to discard in the early stages of our program. The breeders may need to turn to parents in their crossing programs that confer a heavy set of tubers to enrich the frequency of heavy-set types from our segregating populations.

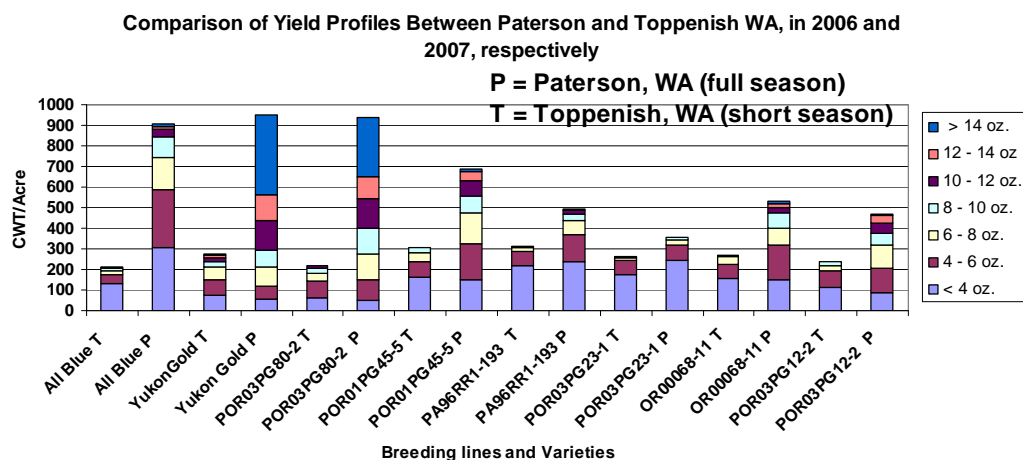


Figure 3. Comparison of yield profiles from Paterson and Toppenish, WA in 2006 and 2007, respectively.

Website Highlights: www.potatoes.com/research.cfm

We constantly try to improve the potato commission website to better serve our growers and allied industry. Some highlights of the research portion of the website are listed below.

- ▶ **Research planning and review schedule** – This document describes the way that potato commission research is planned and funded.
- ▶ **Research library** – Several hundred documents are available in this section of website, including all past potato conference proceedings, Potato Progress newsletters, and many other research and extension-related documents. These are indexed for a powerful search feature included in the website.
- ▶ **Pesticide resistance management** – This information, compiled by the National Potato Council, is an aid in the management of resistance to pesticides in weeds, diseases, and insects. Tables were recently revised.

Annual Basin Producers 2008 Pesticide Recertification Day

January 22, TRAC in Pasco

January 23, ATEC-Big Bend Community College, Moses Lake

8:30 a.m.—4:30 p.m., both locations

2008 Topics

- Pesticide drift
- Sprayer calibration, maintenance and technology
- Chemigation
- Pesticides and the Environment; Separating Hazards and Risk
- Pesticide-Related Liability
- Beneficial Insects of the Pacific Northwest

Six WSDA Recertification Credits

Lineup of quality speakers

Non-crop specific

Ideal for farm crews

Organized by
Columbia Basin Crop Consultants Association
Lower Columbia Basin Fieldmen Dealers Association

For additional information:
509-754-2011 ext.413 or amcguire@wsu.edu



Sponsors

- ★ Washington State Potato Commission ★
- ★ Bayer CropScience ★
- ★ Big Bend Community College ★
- ★ Wilbur-Ellis Company ★
- DuPont
- Western Farm Service
- The McGregor Company
- Windflow Fertilizer Inc.
- Monterey AgResources

2008 Basin Producers
Pesticide Recertification Day

Registration

Fee includes lunch if received by Jan. 12

Number of people attending _____ at \$10 per person, **total: \$_____**. Please make checks out to CBCCA (Columbia Basin Crop Consultants Assoc.) **Checks only, no cash or credit cards please**
(On-site registration \$20, lunch not guaranteed)

Name(s) _____

City _____ State _____ Phone _____

Which location do you plan to attend?

____ **Pasco**, mail check and registration form to
WSU Extension, 1016 North 4th Ave, Pasco, WA
99301-3706

____ **Moses Lake**, mail check and registration form
to WSU Extension, PO Box 37, Ephrata, WA 98823-
0037