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 VIII, Number 5 *April 22, 2008*

Resistance to Black Dot in Potato

Nadav Nitzan[1], Tom F. Cummings[2], Dennis A. Johnson[2], Dallas Batchelor[3], Chris Olsen[4] and Charles Brown[1]
[1] USDA/ARS, Prosser; [2] WSU, Pullman; [3] Weather Or Not, Pasco, and [4] L.J. Olsen, Inc., Othello

Black dot is caused by the fungus *Colletotrichum coccodes*. The disease can decrease tuber yield weight of susceptible cultivars between 16 and 30% due to early death of the crops. Black dot can affect the appearance of the tubers due to grey-brown blemishes (Fig.1), reducing tuber quality for the fresh market. The tuber blemishes are most prevalent on white and red skin cultivars and are often mis-diagnosed as silver scurf. In storage the epidermis of the infected areas lose flexibility and cracks form through which water evaporates, shrinking the tuber. Blemishes on russet skin cultivars are often not as severe but can still be troublesome.

The black dot fungus can colonize tubers on the surface, in the stolon end, or in a combination of both. On the surface the fungus is prevalent as sclerotia, and in the stolon end the fungus colonizes the vascular tissues as hyphae. The fungus is introduced to non-infested soils mostly by infected potato tubers. It becomes soil-borne as infected plant debris carrying sclerotia (Fig.2) is left in the field.

The disease develops from either the soil-borne or the tuber-borne inocula, which are the major sources of inoculum. Inoculum may also be air-borne as sclerotia disseminated by wind, or as spores splashed onto leaves or stems by irrigation water. Among the three inocula sources, soil-borne is the more aggressive causing higher disease severities than tuber or air-borne inocula.

Infections of potato plants usually initiate on roots and stolons. The infection takes place relatively early in the season without evident symptoms of chlorosis or necrosis on the foliage. As potato plants enter the tuber bulking stage (growth stage 4) and the foliage starts to senesce the fungus spreads into the aboveground stems and colonizes the plant. At the end of the season sclerotia become visually evident on roots, stolons, and stems, and blemishes may be present on tubers.

A breeding program was initiated in 2006, screening potato selections (clones and commercial cultivars) for resistance to black dot. To evaluate disease, stem disks were removed from the aboveground stem at different heights, and a disease severity index was calculated. To standardize the screening Russet Burbank was chosen as the susceptible standard and all selections were contrasted to R. Burbank. Selections with disease severities lower than Russet Burbank were considered resistance.

In 2006, thirty-six potato selections were tested for black dot resistance in a commercial field near Moses Lake. The plants were exposed to the natural inoculum that was present in the field. Nineteen selections were more resistant to black dot than Russet Burbank (Fig. 3). These selections progressed to the next season and were retested in 2007 in Moses Lake (Fig. 4). Summit Russet, PA98NM38-1, A00681-7 and A0012-5 were resistant to black dot both years (Figs. 3 & 4) indicating the presence of resistance to black dot in potato germplasm. Currently, the resistant selections are retested in Moses Lake the third year, and greenhouse studies are in progress in attempt to develop a rapid screening technique that would hopefully correlate with the results from the field.

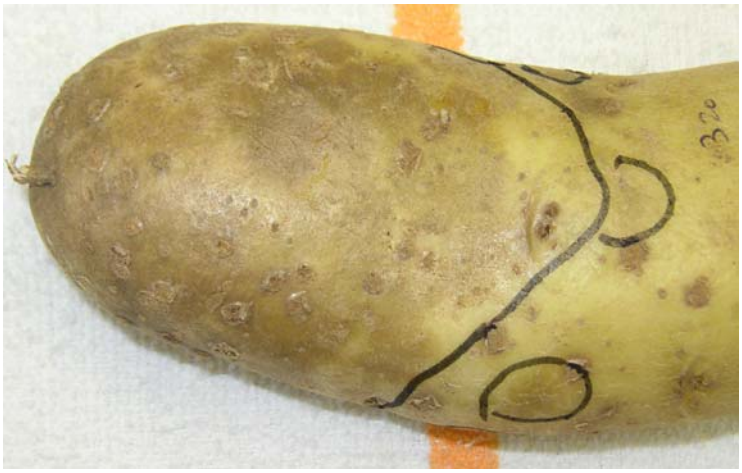

Fig. 1. A Shepody tuber with blemishes (circled areas) caused by black dot.

Fig. 2. Potato stem covered with black dot sclerotia.

Leafhopper Identification and Trapping Workshop, May 15th, Moses Lake, WSPC Office

On May 15th, the potato commission will host an insect identification workshop focusing on leafhopper trapping for purple top management. We will have a brief presentation on leafhoppers and beet leafhopper in particular. The bulk of the session will be informal instruction on leafhopper trapping and identification using actual traps from the field to help people learn what is needed to conduct their own leafhopper monitoring. We will also be distributing trapping supplies to Washington potato growers who attend.

Date and Time: May 15th, 2:00 - 4:00 pm
Place: Potato commission office – 108 Interlake Road, Moses Lake

For questions or comments, contact Andy Jensen at 509-765-8845 or ajensen@potatoes.com.

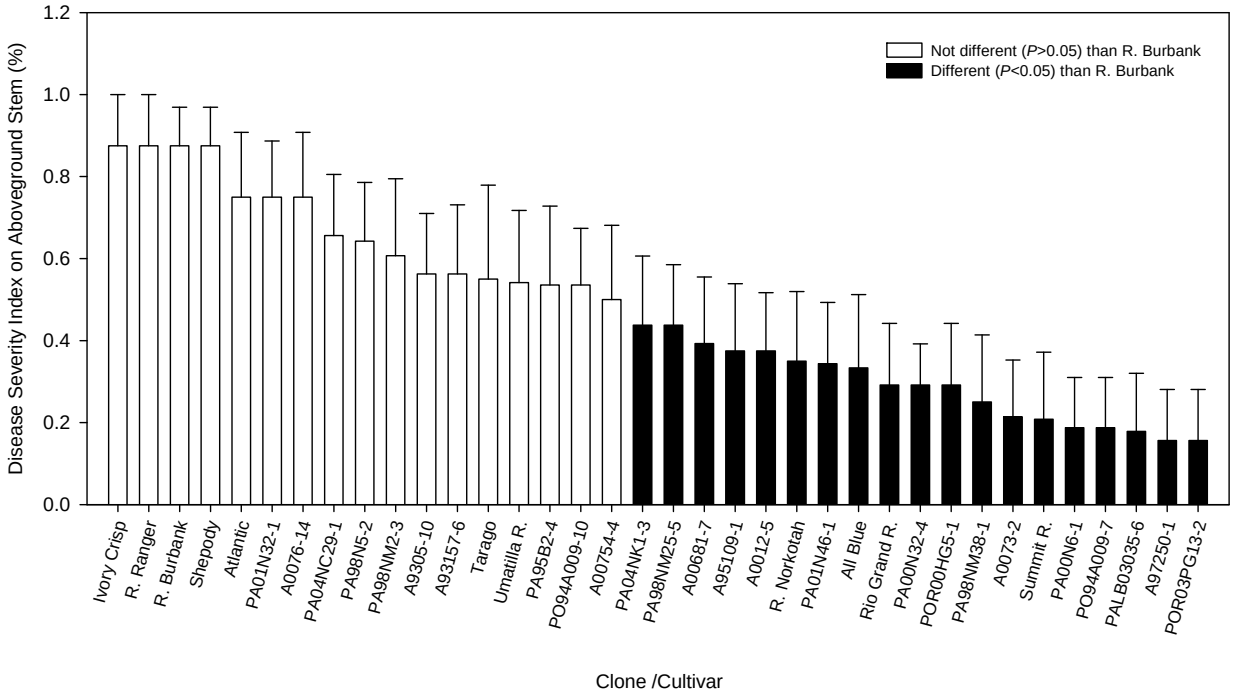

Figure 3. Disease severity on potato selections tested for black dot resistance in 2006 in a commercial field near Moses Lake. Selections represented by black bars had less disease than the standard susceptible cultivar R. Burbank using Fisher's least significant difference. Error bars represent the standard error of the mean.

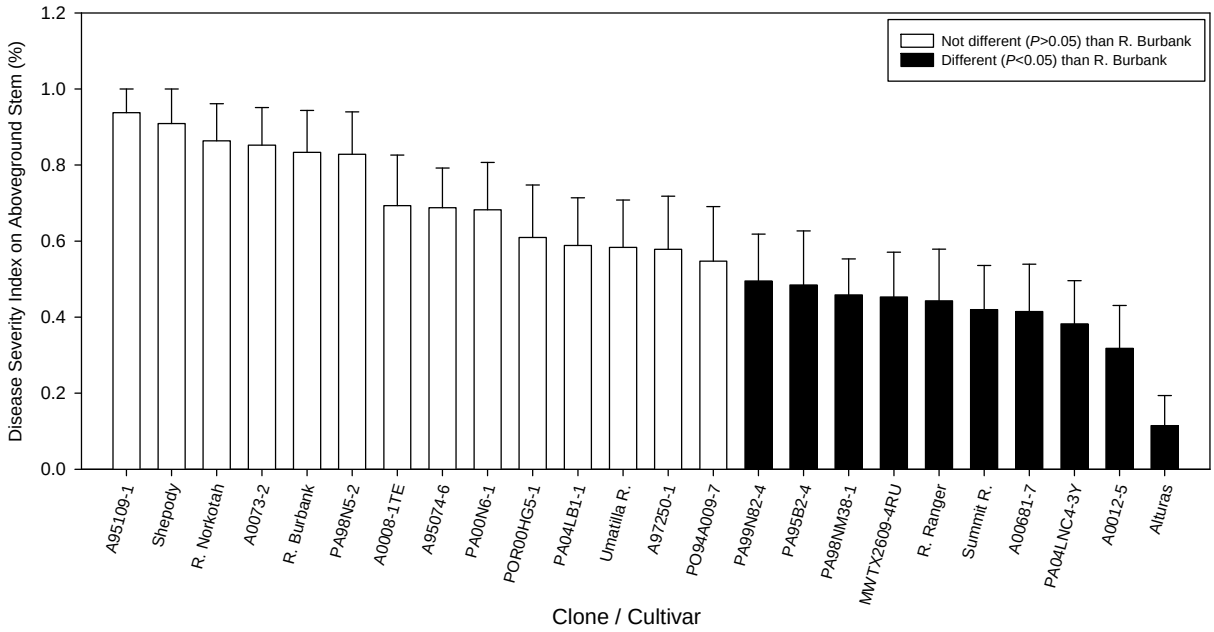

Figure 4. Disease severity on potato selections tested for black dot resistance in 2007 in a commercial field near Moses Lake. Selections represented by black bars had less disease than the standard susceptible cultivar R. Burbank using Fisher's least significant difference. Error bars represent the standard error of the mean.

2008 Commercial Seed Lot Trial Information

Mark Pavek 509-335-6861, Zach Holden 509-335-3452
Tim Waters 509-545-3511 (Benton/Frankin County WSU Extension)
Carrie Huffman Wohleb 509-754-2011 (Grant/Adams County WSU Extension)

Commercial potato seed samples are requested for the 2008 Washington Seed Lot Trial. **Two to three hundred whole (single drop) seed is an acceptable sample size, or 50 lbs of 4 oz single drop seed.** This seed should not be treated with insecticide or fungicide. Seed tubers need to be uniformly small (not larger than 4 oz) because no seed cutting is done and a cup-type planter is used. A sample that represents the entire seed lot received is most desirable. Sampling the first (or last) 300 seed from the truck is not likely to provide a representative sample of the lot. Sample tags may be obtained by calling the Potato Commission at 509-765-8845.

Your assistance with collection and drop off of seed samples is needed. Seed samples may be taken to the WSU Othello Research Unit (509-488-3191); located on Booker Road ¼ mile south from State Highway 26 and about five miles east of Othello. For sample pickup and any questions regarding the seed lot trials please call:

South Basin: Tim Waters (509-545-3511), Mark Pavek (509-335-6861), or Zach Holden (509-335-3452).

North Basin: Carrie Huffman Wohleb (509-754-2011), Mark Pavek (509-335-6861), or Zach Holden (509-335-3452).

In the North Basin, one seed "drop-off" has been established. It is located at Qualls Ag Labs (Mick Qualls, 509-787-4210 ext 16) on the corner of Dodson Road and Road 4; come to front office between 8 am and 5 pm. Please call the numbers below to arrange additional pickup sites. Samples will be picked up at 2:00 pm the day before each planting date (below) to be included. Growers planting in early March should drop their samples off at the Othello Research Center or store the samples and call the numbers below for pickup. For all alternative pickup locations or questions please call Mark Pavek at 509-335-6861 or Zach Holden at 509-335-3452.

The remaining seed lot planting date for 2008 is: May 6.

PICKUP DATE IS ONE DAY PRIOR TO THE PLANTING DATE ABOVE

This year's virus reading of the seed lots will take place on June 10 and 24.

The 2008 Potato Field Day is scheduled for Friday June 27.

Potato Conference to Move to Tri-Cities for 2009

At a special meeting on April 10th, the Washington State Potato Conference board voted unanimously to relocate the 2009 conference and trade show to the Three Rivers Convention Center in Kennewick, Washington. **The board also set the event dates for January 26-28, 2009.** The conference board is made up of industry members from throughout the Columbia Basin. This relocation of the event will allow the conference program and the trade show to be in the same building. Please watch this newsletter and other outlets for more information on the 2009 conference.