



Potato Progress

Research & Extension for the Potato Industry of
Idaho, Oregon, & Washington

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The 98th Annual Meeting of the Potato Association of America

Date: Tuesday July 29, 2014 (or attend the whole conference, July 27-31)

Location: The Davenport Hotel, Spokane, Washington

POTATO GROWERS, PRODUCERS, and INDUSTRY: you are invited to attend the 98th annual meeting of The Potato Association of America at The Davenport Hotel, Spokane, WA, July 27-31, 2014. This is a rare opportunity for the Northwest Potato Industry -- Washington only hosts this event once every 10-15 years. The annual PAA meeting is an event where scientists from around the world address many current potato research and production topics. We have scheduled a special one-day registration, referred to as 'INDUSTRY DAY' on Tuesday, July 29 for growers, producers and all support industry personnel. Growers and industry personnel are also welcome to register for the whole conference. See the website for more information regarding the annual meeting:

<http://www.cm.wsu.edu/ehome/paa2014/133932/>

Industry day talks will be focused on applied research topics. There will be presentations about several important potato diseases and their control, fertilizer usage and production management, potato storage and temperature stress, as well as many other applied topics. Check the website for an updated program as the conference nears. This is a unique opportunity to talk with many of the world's premier potato scientists and hear about the newest research discoveries.

Early-bird registration for this one-day event is \$125 for growers and industry; the registration includes breakfast, lunch, an evening BBQ, snack breaks, and the entire speakers' sessions during the day. Price increases to \$155 after May 2. Growers and industry personnel who wish to register for the whole conference must pay the whole conference registration fees (early-bird = \$465 for PAA members or \$565 for non-members, see description on web for more information). Be sure to book your hotel room early as The Davenport fills quickly in the summer. This is a great chance to increase your knowledge of the crop we all enjoy...POTATOES! See you there.

Revisiting Beet Leafhopper Damage in the Columbia Basin

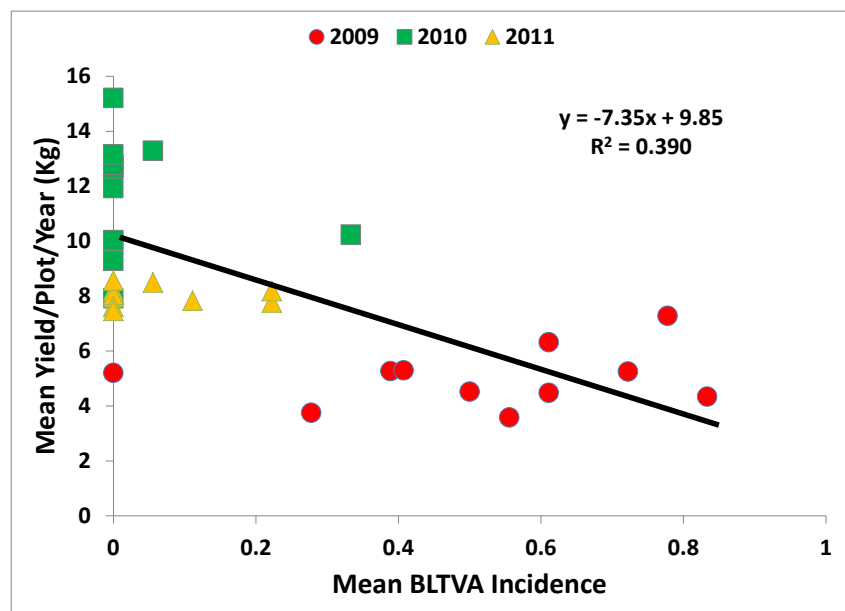
Silvia Rondon, Alexzandra Murphy, Robert Cating and Philip Hamm
Oregon State University, Hermiston Agricultural Research and Extension Center

Potato purple top disease is caused by a phytoplasma known as Beet Leafhopper Transmitted Virescence Agent (BLTVA), which is vectored by the beet leafhopper (BLH). BLH is one of our unique pests in the Columbia Basin agro-ecosystem; though they are also found in some areas in California. During the 2013 season, several sample submissions to the HAREC Plant Pathology Lab were positive for BLTVA. In addition, large scale testing of individual tubers from 73 circles/fields has shown that 38% had cases of BLTVA ranging from 5% to more than 50% in some cases. Large scale testing continues and these numbers are likely to change as data are collected.



Quantifying the damage caused by BLTVA and the insect vector has been challenging year after year. The OSU Irrigated Agricultural Entomology Program in Hermiston has developed a comprehensive study since 2009 to tackle the applied aspect of studying this insect/phytoplasma issue. The main objective of the present study was to provide a more accurate assessment of the impacts of BLTVA on yield in the Columbia Basin.

In 2009-2011, potato plants at different growth stages were exposed to varying densities (one BLH per plant, low; two BLH per plant, medium; five BLH per plant, high) of BLH in a screen house located at the Hermiston Agricultural Research and Extension Center in Hermiston, OR. Releases occurred at the following growth stages: vegetative, tuber initiation, tuber bulking, and maturation. Disease incidence was monitored weekly and yield was assessed. In general, it was found that increasing rates of disease incidence correlated with decreasing yields; moreover, greater yield losses were observed with later BLH release times. There was a mean decrease in yield of 0-12% at a density of one BLH per plant, 6-19% at two BLH per plant, and 6-20% for five BLH per plant. These general trends in yield loss suggest that economically relevant damage may occur at levels as low as one or two potentially-infective BLH per plant in the Columbia Basin.



For a complete version of this research, please visit <http://link.springer.com/article/10.1007%2Fs12230-013-9335-y>. Murphy, A.F., S.I. Rondon, R. Marchosky, J. Buckham and J. Munyaneza. 2013. Evaluation of beet leafhopper transmitted virescence agent damage in the Columbia Basin. *Am. J. Pot. Res.* 90: DOI 10.1007/s12230-013-9335-y

BLH/BLTVA Facts

- Purple top disease is characterized by shortened internodes, curling and purpling of the foliage, aerial tubers (see figure, below). The foliar symptoms associated with BLTVA resemble several other diseases, including zebra chip, psyllid yellows, aster yellows, or *Potato leafroll virus*.



- Beet leafhoppers feed on weed hosts through the fall, winter and spring. The preferred hosts for BLH are not potatoes, but weed species, including redstem filaree (top left), Russian thistle (top right), tumble mustard (bottom left) and flixweed (bottom right).



- During the hot summer months these weed hosts naturally senesce, forcing BLH into irrigated crops, mainly potatoes. The nature of this migration is unknown.
- Beet leafhopper populations are monitored throughout the season using yellow sticky cards. The recommendation is to set sticky cards 5-10 feet from the edge of the field, and to change the cards at least once a week. If you need help identifying BLH, contact your local extension agent.

Conclusions and questions

This research demonstrates that BLH populations infected with BLTVA can reduce potato yields in the Columbia Basin. A low density of BLH at the infectivity rate of approximately natural populations can

result in an average of 3% yield loss. Medium BLH pest-pressure and high BLH pressure can result in an average of 12% yield loss. Although not statistically significant economically relevant damage may occur, infection later in the season could have a greater impact on yield which might explain the outcome of the 2013 season. Future research is necessary to clarify the relationship between potato yields and the timing of BLTVA infection. As BLH populations are highly mobile and variable, more research is also required regarding their migration within the Columbia Basin. We are uncertain about whether outbreak populations in a particular field originate on nearby weeds, or in remote desert scrubland. It will certainly be interesting to monitor BLH movement into commercial fields.

For more information visit <http://oregonstate.edu/dept/hermiston/silvia-rondon>.

Up-Coming Field Days

Idaho

University of Idaho, Aberdeen

Snake River Pest Management Research Tour, June 24, 8:00 am – 1 pm.

University of Idaho, Kimberly

Snake River Pest Management Research Tour, June 25, 8:00 am – 1 pm.

Oregon

Oregon State University, Ontario

Malheur Experiment Station Weed Research Tour, June 10, 8:30 am

The tour will feature weed management studies in onion, sugar beet, corn, and potato.

Pesticide recertification credits will be offered. A complementary lunch will be served starting at noon.

Oregon State University, Hermiston

Potato Field Day, June 25, 8 am – lunch time.

Washington

Washington State University, Othello

Potato Field Day, June 26, 8:30 am – lunch time.

USDA Agricultural Research Service, Prosser

Field Day, Paterson, July 9, 8:30 am – noon.

The site, sponsored by AgriNorthwest, is located 5 miles east of Paterson, WA off highway 14. The tour will feature current research projects on potatoes (nutrient management, psyllid management, weed control, disease control, phosphorus fertilizers from anaerobic digester systems, and vine kill treatments for baby potatoes), dry bean germplasm improvement, switchgrass production for biofuel, and agronomic assessment of a green pea/canola rotation.

Northwest Potato Research Consortium

A Cooperative Effort of the Potato Commissions of ID, OR, & WA

Current Projects -- Growing year 2014, Commission fiscal year 2014-15

In February 2012 the state potato commissions in Washington, Idaho, and Oregon officially launched a new cooperative effort in research, referred to as the Northwest Potato Research Consortium. The aim of this Consortium is to increase cooperation and efficiency of the research programs funded by the three potato commissions that total about \$2 million annually. It will also work toward a comprehensive research results reporting process that aims to get useful information to the growers and industry members who need it. The Northwest Potato Research Consortium has one staff, Andy Jensen, as Manager, who is essentially a shared employee of the three potato commissions. He is directed by a Consortium board of nine members, three persons representing each commission.

This past winter was the first fully integrated and cooperative research review and funding cycle that the three potato commissions have undertaken. The great majority of the research and extension dollars available in each commission for the coming fiscal year was allocated through this cooperation. Proposals were received in December of 2013 from throughout the Northwest potato research community. These were then reviewed and prioritized by each potato commission's research committee. The Consortium board then used the three sets of priorities from the commissions to build a set of funding recommendations for approval by the commissions. This process concluded last month with the final potato commission approval of the slate of recommended projects.

A detailed list of the approved projects has been created and can be found on the <http://nwpotatoresearch.com/> website under the “Current Projects” link.

For questions or comments about any of the listed projects, or about the Northwest Potato Research Consortium, please contact Andy Jensen at any time (ajensen@potatoes.com, 208-939-9965).

Time to Clean Up Cull Piles and Spills

In *Potato Progress* Volume VII, No. 2 we discussed the importance of cull piles and spilled potatoes in disease and pest issues for the commercial crop. Cull piles and other waste potatoes pose little or no threat during the winter, but with the growing season underway and the crop emerging, it is past time to clean up cull piles and maintain good sanitation around storages and other places where it might be tempting to pile culls. Some of the problems associated with cull piles, such as late blight, are community problems and must be handled by the whole community working together.

Rhizoctonia Canker and Black Scurf

See also: <http://www.nwpotatoresearch.com/>



Rhizoctonia Stem Canker



Stem lesions or cankers caused by *Rhizoctonia* on a potato stem. These usually occur near the soil line.

Foliar symptoms can also develop when lesions occur on stems. Often numerous stems will arise from the leaf axils near the base of the plant, giving the plant a bushy appearance.



Severe stem cankers can lead to production of tubers on aerial plant parts.



Girdling of underground stems can lead to curled and purplish apical leaves.

General Information

Causal Agent: *Rhizoctonia solani*

Biology and Dispersal: Pathogen of potatoes everywhere. Infection of young plants is encouraged by cool soil. *Rhizoctonia* is easily and commonly moved on seed tubers. Disease in the field is initiated by both soil-borne and seed-borne inoculum. Infected sprouts can be killed, leading to delayed emergence and weak plants. Triggers for formation of sclerotia, called black scurf, on daughter tubers are not well-understood.

Idaho Potato Commission (Phone: 208-334-2350)