Potato Progress

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

Andrew Jensen, Editor. ajensen@potatoes.com; 509-760-4859
www.nwpotatoresearch.com

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Updates on Potato Psyllid and Zebra Chip (ZC)

Potato Psyllids Found in Columbia Basin Potatoes

The first finds of potato psyllid colonizing the 2012 crop were reported this week. Two psyllids were caught in Oregon by crop consultants (Irrigon area and Hermiston area), identified by Silvia Rondon, and both tested negative (by Jordan Eggers) for the ZC pathogen Liberibacter. In Washington, a team led by Joe Munyaneza found 2 psyllids in a sentinel plot at Prosser. These psyllids, as well as a dozen specimens collected from bittersweet nightshade in the Yakima Valley, all tested negative for Liberibacter. The psyllid must have the bacteria to transmit the ZC disease. More information about psyllids and ZC can be found at http://potatoes.com/IPM-Home.cfm under recent/urgent documents.

Potato Psyllids on Greenhouse-Grown Transplants

Potato psyllids feed on many plants in the Solanaceae, including peppers and tomatoes. We (Erik Wenninger and Andy Jensen) wanted to alert industry that potato psyllids have been found on peppers being sold to consumers in southern Idaho. A sample of both psyllids and plants has tested negative for Liberibacter. It is critical to point out that the psyllid has been a difficult pest of greenhouses for many decades; therefore, psyllids on transplants sold to consumers is almost certainly nothing new. We are reporting our finds in order to directly answer a common question we have received, i.e. can transplants at major retailers be a source of psyllids or Liberibacter? We have confirmed that psyllids move about the region this way, and will continue to watch for Liberibacter.

Zebra Chip Found in Volunteers – by Phil Hamm, OSU Hermiston

A survey of two fields where ZC caused substantial damage in 2011 easily found infected volunteers (Fig. 1). These two fields were planted in corn and were surveyed prior to the application of herbicides or cultivation. In a field that grew Umatilla Russets in 2011, a maximum estimate of the number of volunteers with ZC/acre was 607, for a nearby field that grew Umatillas in 2011, the estimate was 494/ac. A third field planted in winter wheat was not easily surveyed due to the growing wheat crop but infected volunteers were also found.

Finding infected plants answers the question as to whether volunteers could be a source of the bacterium in subsequent crops. However, the importance of these volunteers as source of the bacterium must be balanced with the additional biological information known about this disease at this time.

Infected plants in corn fields

1. 2011 was exceptional for ZC in these two fields; ZC incidence approached 40% or greater. With normal psyllid control, disease incidence is unlikely to be greater than a few %. Infected volunteers would therefore be expected to be fewer in later years, or more likely, at very low numbers.
2. Infected volunteers are only sources if psyllids are present. None were found in potato fields until this week (Silvia Rondon and Joe Munyaneza), and even so, they were found at very low numbers.

3. Herbicide treatments to these corn fields and cultivation would substantially impact survival of plants already emerged with the bacterium, given their already stressed condition. So the plants likely will be dead either from these activities or be dead from the bacterium itself before psyllids find them.

Figure 1. Left: infected volunteer; Right: uninfected volunteer.

4. If emerged plants are infected and are not killed by the herbicide, will they naturally die before psyllids find them (infected plants are likely short lived)? This will be confirmed.
5. If later-emerging plants are infected, will psyllids find them given that the corn will now be much taller?
6. What about following corn harvest? Some fields are harvested early; could they be a later source of the bacterium if infected plants are still alive and visible following harvest?

This will also be investigated yet this summer.

Infected plants in wheat fields

1. Wheat fields likely do not pose a great risk at this time due to the density of the wheat except where volunteer potato plants are growing in places void of wheat plants or at the field edge.
2. Will infected plants be alive after wheat harvest and become a possible source of the bacterium? We will be surveying a number of fields following harvest. Most likely infected plants will be dead by the time of wheat harvest due to either the bacterium killing the plants and/or by herbicide applications.

The high numbers of infected plants found in the fields above are the worst case scenario, particularly since these fields were the hardest hit last year. There clearly would be infected volunteers in other fields, but numbers would be far less.

Overall, while the risk that infected volunteers clearly brings by providing a source of the bacterium in the Columbia Basin, the impact to the region is not high. If infected volunteers survive beyond the corn and wheat harvest, then the risk is much higher. Field surveys will determine survival of these infected plants as the season progresses. As always, volunteers should be controlled where possible, not only to reduce the risk due to this disease but many others.

2012 PNW Potato Insect/Mite IPM Guidelines

Each year Pacific Northwest potato entomologists prepare a set of guidelines on how best to manage insect and mite pests of potatoes. A newly updated set of recommendations has recently been released. The recommendations can be found at the *http://www.saveir-4.org/documents.html*, and http://www.nwpotatoresearch.com/IPM-Management-Options.cfm. This year's guidelines include input for the first time from University of Idaho's Mike Thornton and entomologist Erik Wenninger, as well as the Washington's Alan Schreiber, Washington State University's Keith Pike, Oregon State University's Silvia Rondon and, Andy Jensen, representing the three potato commissions of Oregon, Idaho and Washington. The 2012 guidelines have significant new additions over last year's, including:

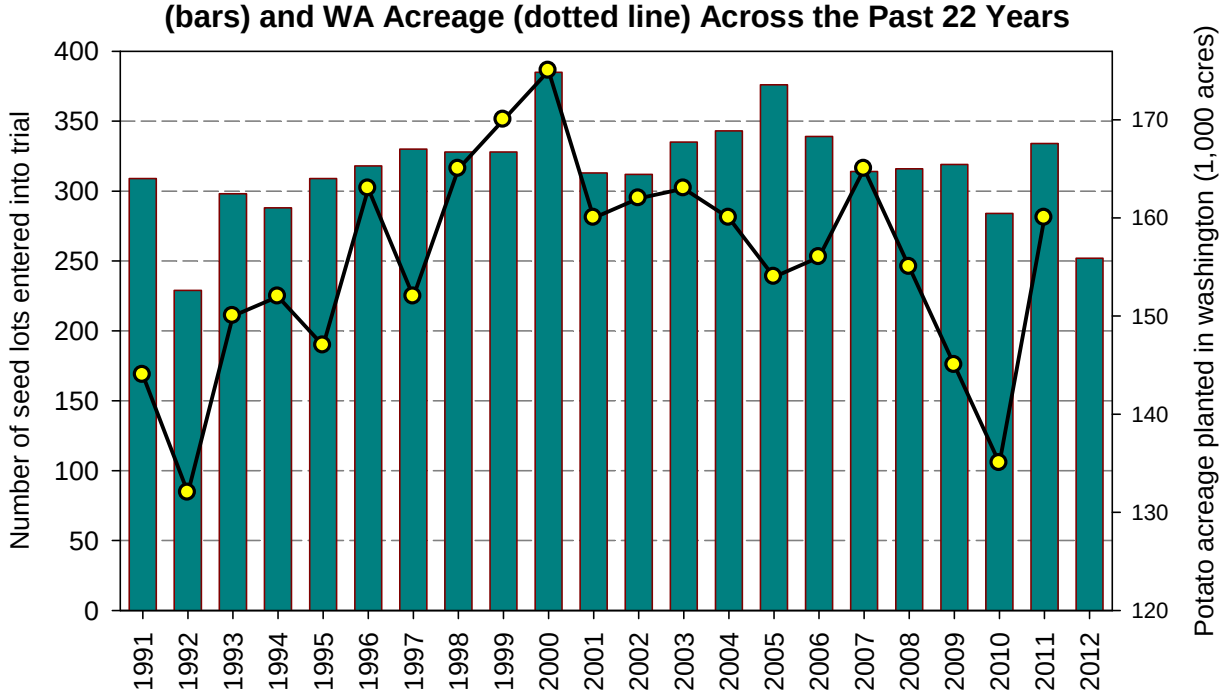
- There is now a section on how to manage thrips on potatoes, these are the first guidelines on how to deal with thrips on potatoes.
- An updated set of guidelines on how to manage potato psyllid, including a description of the pest and its lifecycle, sampling techniques, and how to control the pest.

2012 Washington State Commercial Seed Lot Profile and Potato Field Day Preview

Mark J. Pavek & Zach J. Holden
Washington State University, Pullman, WA

Despite a 3 year decline, WA potato acreage rebounded last year (2011), increasing by 25,000 acres over the previous year (Figure 1, dotted line). Acreage for 2012 has yet to be tallied. This year's seed lot sample number declined by 25% compared to last year, the lowest number since 1992. There were 252 samples submitted during 2012, compared with 334 in 2011 (Figure 1, bars). The reason for the seed lot decline has yet to be determined. It is difficult for us to predict the seed lot decline because potato acreage and seed lot number don't always correlate (Figure 1).

Figure 1. Number of Potato Seed Lots Entered into the WSU Seed Lot Trial (bars) and WA Acreage (dotted line) Across the Past 22 Years



As has been the case for many years, most seed lots originated in Montana followed by Idaho (Figure 2). The composition of the 2012 Seed Lot Trial included 25% Russet Burbank, 24% "Other" varieties, 18% Russet Norkotah, 14% Umatilla Russet, 11% Ranger Russet, 6% Alturas, and 2% Premier Russet (Figure 3). The 2012 "Other" category was composed of 26 new, non-mainstream varieties, or specialty varieties, ranging from numbered, non-released varieties to Yukon Gold (Figure 3). The "Other" category hit a record high in 2012 following more than a two-fold increase in the number of entries across the past 4 years. Umatilla Russet and Ranger Russet seed lot number remain mostly similar while Premier Russet seed lot numbers continue to trend downward.

Varieties developed by the Northwest Potato Variety Development Program/PVMI accounted for 41% (42% in 2011) of the seed lots entered into the 2012 trial and included: Premier Russet, Alpine Russet, Blazer Russet, Alturas, Ranger, Umatilla, and Gallatin Russet, Defender, Owyhee Russet, Yukon Gem, and Sage Russet.

In 2010, Washington seed providers reached a milestone by providing 100% leaf roll free (or at least undetected) seed (Figure 4); this trend did not continue in 2011. However, only one plant was found to be infected with leafroll – and it came from a Canadian seed lot. The reduction in leafroll over

the years is likely due to the use of new pesticide chemistries in the seed growing regions as well as improved certification and production practices. Rotating pesticide chemistries is important if we want leafroll to remain a non-issue. However, the neonicotinoid class of insecticides works efficiently, effectively, and has a low toxicity to mammals. Due to these reasons, they continue to be used heavily. Only time will tell if resistance to this insecticide class is seen in the C. Basin.

Figure 2. Percent of Seed Lots from each Region between 2009-12

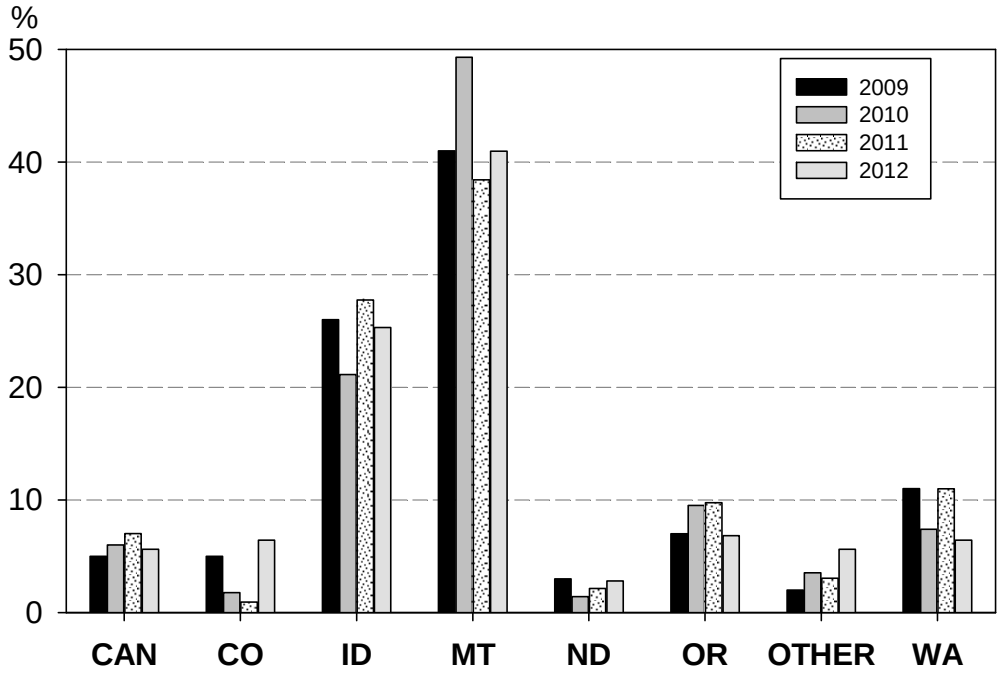
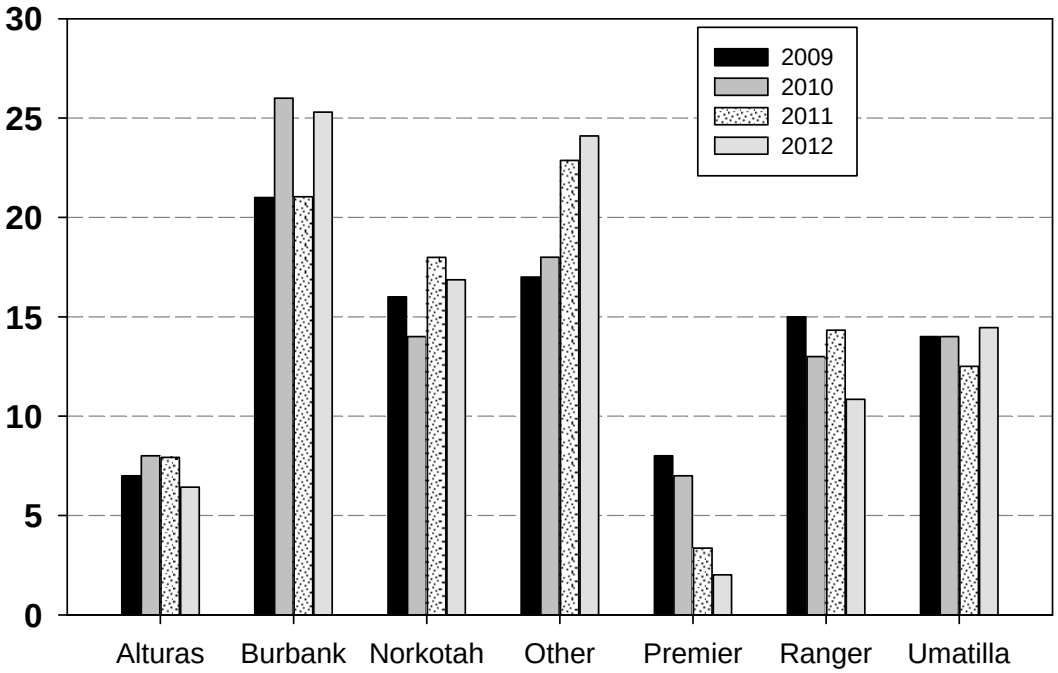
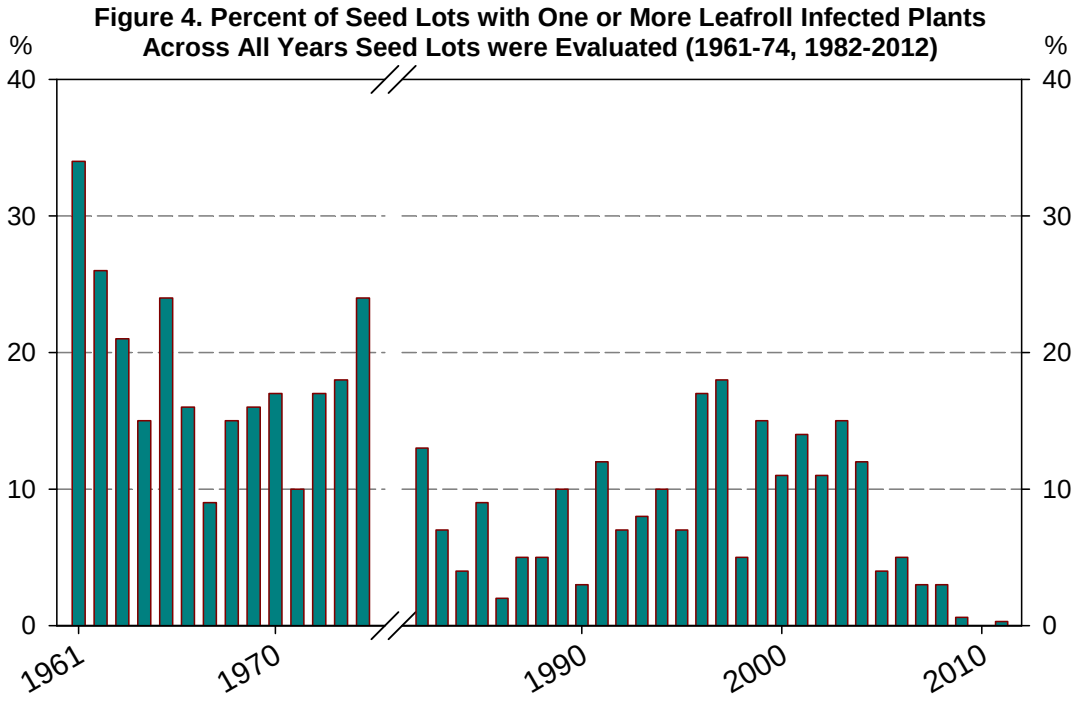


Figure 3. Percent of Seed Lots by Variety between 2009-12





The potato field day will begin at 8:30 am on THURSDAY, June 28 at the WSU Othello Research Farm (see program below). In addition to viewing the seed lots, you will be able to participate in one of two concurrent sessions. Sessions I and II will allow you to view a sample of this year's in-field research. Both sessions will offer CCA, WA, and ID recertification credits. A hosted-lunch, offered between 11:45 and 1:00, will complete the field day. The agenda, seed lot information, and a map to the research center can be found on our website: www.potatoes.wsu.edu.

Pesticide License Recertification Credits Applied For:

Commercial Seed Lot Trial Disease Results and Viewing
WA: 1 credit
ID: 1 credit
CCA: 1 Pest Management credit

Concurrent Session I: Potato Cultural Practices Field Tour
WA: 1 credit
ID: 1 credit
CCA: 1.0 Crop Management, and 0.5 Soil & Water

Concurrent Session II: Potato Pest Management Field Tour
WA: 2 credits
ID: 2 credits
CCA: 1.5 Pest Management credits

WSU Potato Field Day – Thursday June 28, 2012

Located at WSU Othello Research Unit – 1471 W Cox Rd, Othello

(6 miles East of Hwy. 26/17 Junction, On Booker Rd, ¼ Mile South of Hwy. 26)

8:30 - 9:00 am Coffee and rolls

9:00 - 10:00 am Commercial Seed Lot Trial Disease Results and Viewing, *Mark Pavek* – WSU Pullman featuring "**PVY strain typing in Othello, WA potato seed lot trials"**
by Alex Karasev – UI, Moscow, ID

Concurrent Session I: **Potato Cultural Practices Field Tour**

10:00 am **Optimizing stem number & tuber size distribution with Rejuvenate and in-row spacing**
Mark Pavek, Zach Holden - WSU Pullman

10:15 am **Fresh pack variety trial update: taste panel, yield, and economics**
Rhett Spears, Mark Pavek, Zach Holden – WSU, Pullman

10:30 am **Soil temperature during bulking & maturation affects retention of processing quality**
Daniel Zommick, Rick Knowles, Lisa Knowles, Jake Blauer – WSU Pullman

10:45 am **Methods for monitoring potato psyllids and other insect pests in the Columbia Basin**
Carrie Wohleb – WSU, Grant/Adams Counties

11:00 am **Symptoms of herbicide applications to seed potatoes**
Tim Waters - WSU, Franklin/Benton Counties, *Bill Cobb* - Cobb Consulting

11:15 am **The link between vine growth, harvest index, post-harvest quality and profits**
Mark Pavek, Rick Knowles, Lisa Knowles, Zach Holden – WSU, Pullman

11:30 am **Simplot Plant Sciences Variety Development**
Jolyn Rasmussen, Kerwin Bradley – Simplot Plant Sciences, Boise

11:45 am **Simplified irrigation scheduling using your phone or the internet**
R. Troy Peters, Sean E. Hill, and Gerrit Hoogenboom - WSU, Prosser

12:00 pm - 1:00 pm **HOSTED LUNCH**

Concurrent Session II: **Potato Pest Management Field Tour**

10:00 am **Update on the effects of powdery scab galls on yield of Umatilla Russet**
Tom Cummings, Dennis Johnson – WSU, Pullman

10:15 am **Effects of potato cultivar & fungicides on A. solani & A. alternata isolates from the PNW**
Lydia S. Tymon, Thomas F. Cummings, and Dennis A. Johnson – WSU, Pullman

10:30 am **Field performance of resistance to Columbia Root-knot Nematode with without protection**
C.R. Brown, H. Mojtahedi, J. Crosslin, R. Quick, L. Hamlin R. Castañeda – USDA-ARS, Prosser

10:45 am **Molecular control strategies against the Columbia root-knot nematode**
Axel Elling – WSU, Pullman

11:00 am **Effect of harvesting tubers from green or dead vines on resistance to storage rot pathogens**
Brenda Schroeder, Tom Cummings, Dennis Johnson – WSU, Pullman

11:15 am **Methods for monitoring potato psyllids and other insect pests in the Columbia Basin**
Carrie Wohleb – WSU, Grant/Adams Counties

11:30 am **Beneficial predators in potatoes**
Bill Snyder - WSU, Pullman

11:45 am **Farm Hot Spots connecting managers to the fields**
Bill Terry - Pierce Ag Technologies Group

12:00 pm **Simplot Plant Sciences Variety Development**
Jolyn Rasmussen, Kerwin Bradley – Simplot Plant Sciences, Boise

12:15 pm - 1:00 pm **HOSTED LUNCH**

CCA and pesticide recertification credits have been applied for (WA & ID)