



Potato Progress

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

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More about Beet Leafhoppers in the Columbia Basin

Silvia I. Rondon and Alex F. Murphy

Since 2002 the Columbia Basin potato industry has experienced periodic, major outbreaks of purple top disease. This disease is characterized by curling and purpling in the upper foliage of the plant, virescence of the foliage and flowers, aerial tubers, and a proliferation of stems or leaves (i.e., witches broom). The phytoplasma, which is transmitted mainly by the beet leafhopper *Circulifer tenellus* Baker (Hemiptera: Cicadellidae), is called Beet Leafhopper-Transmitted Virescence Agent (BLTVA). BLTVA has a wide host range and can also have negative impacts on other crops, including radishes and tomatoes. Foliar symptoms caused by BLTVA can be confused with the symptoms caused by zebra chip, aster yellows, psyllid yellows, and *Potato leafroll virus*.

Approximately 30% of the beet leafhoppers in the Columbia Basin carry the phytoplasma, although the infection rate may range from 9-35%, depending on locality and year. Beet leafhoppers prefer to feed on annual weeds rather than potatoes. During most of the year, these annual weeds are green, and provide a superior habitat for beet leafhoppers compared to irrigated crops. However, during hot summer months, many weeds die and dry out, forcing the beet leafhoppers into irrigated crops, including potatoes.

The objective of the present study is to establish trends in beet leafhopper populations in the Columbia Basin, and identify abiotic environmental variables that might have a significant impact on population levels the following season.

Methodology

- Data were taken from the trapping network coordinated by Oregon State University (<http://oregonstate.edu/dept/hermiston/trap-reports>) and Washington State Potato Commission. Traps were placed near the edge of commercial potato fields, often in the weedy margins. Traps were collected and replaced weekly, as well as the insects counted.





- Mean beet leafhopper counts for each site in the summer and fall of each year were mapped using GPS coordinates and the GPS Visualizer Utility. The mean numbers of beet leafhoppers captured at each site over the whole year were compared in order to determine the distribution of beet leafhoppers and their ideal habitats in the Columbia Basin.

Results

- Beet leafhopper populations appear to be significantly influenced by elevation and temperatures during the preceding seasons.
- Beet leafhopper populations are greater when the previous fall or winter temperatures are high, particularly at lower elevations.
- During extreme temperatures, snowfall provides a form of refuge or insulation for winter annuals, and in turn, overwintering beet leafhoppers.
- Another inference from these results is that perhaps fall and overwintering conditions have the most prominent influence on beet leafhopper populations.
- Precipitation would prolong the survival of annual weeds in the area and possibly stimulate germination of additional host plants.
- Beet leafhopper populations may be relatively localized within the Columbia Basin.
- Finally, these results provide evidence that the current beet leafhopper control practices are justified, though they highlight the need for both regional and field-level insect monitoring.

For more information about this topic contact Silvia Rondon, Extension Entomologist Specialist

The entire publication can be found at <http://www.bioone.org/doi/abs/10.1603/EN12033>

Population Dynamics of the Beet Leafhopper (Hemiptera: Cicadellidae) in the Columbia Basin as Influenced by Abiotic Variables

Alexzandra F. Murphy, Silvia I. Rondon, and Andrew S. Jensen
 Environmental Entomology 2012 41 (4), 768-775

2013 WA Commercial Seed Lot Pick Up & Trial Information

Info also available each year at: www.potatoes.wsu.edu

Commercial potato seed samples are requested for the 2013 Washington Seed Lot Trial. **Two hundred whole (single drop) seed is an acceptable sample size, or 50 lbs of 4 oz single drop seed.**

**Requested: 50 lbs of 2-4 oz whole seed, no seed treatments.
We want a representative sample - if applicable, include a
representative amount of ROTTEN TUBERS!**

(Seed over 6 oz is not acceptable)

A representative sample is needed. 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 pick up 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 pick up 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 pick up. For all alternative pick up locations or questions please call Mark Pavek at 509-335-6861 or Zach Holden at 509-335-3452.

PICK UP DATES ARE ONE DAY PRIOR TO THE PLANTING DATES BELOW

The planned seed lot planting dates for 2013 are:

1st (Early)	March 26
2 nd	April 9
3 rd	April 23
4th (Late)	May 7

2013 Potato Field Day - Thursday June 27

This year’s virus reading of the seed lots will take place on June 11 and 25.



(208) 334-2350

Root-Knot Nematodes

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



(509) 765-8845



Tuber symptoms of Columbia root-knot nematode. Severe external symptoms on the left (large galls), compared with more typical symptoms on the right (much smaller galls).



The female nematode is actually pear-shaped and fits inside the 0 on a penny.

Female nematodes in tuber flesh cause discolored spots.



Management Information

1. Synthetic nematicides and soil fumigants are important and often necessary tools for nematode management in potatoes due to very low market tolerance for damage.
2. Crop rotation strongly affects nematode population size in the field. Each nematode species has a different host range. Therefore, sample and identify nematodes from each field and design crop rotations that will limit population growth.
3. Various green manure and cover crops can reduce nematode populations.
4. Prevention is also important: plant only certified seed tubers, and avoid moving soil from infested to uninfested fields.
5. Weed management between potato crops is also critical. Some weeds are good hosts for root-knot nematodes.



(503) 239-4763