



# Potato Progress

Research and Extension for Washington's Potato Industry

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## Late Blight Expectation in the Columbia Basin for 2009

Dennis A. Johnson and Philip B. Hamm, Plant Pathologists, WA State University and OR State University

The probability that late blight will occur this season in the Columbia Basin is less than 50%. This probability is based on the annual forecast from the Columbia Basin Late Blight Forecasting Model. This year's estimate is the lowest late blight probability since 1993, when the model was first developed. Actual incidence and severity of late blight will depend on frequency of rainfall this summer and whether or not infected seed tubers were planted. Not having treated seed with a curzate or mancozeb type fungicide such as Evolve, Maxim MZ, or Tops MZ will also increase the risk of late blight. These seed treatments are effective in reducing transmission of late blight from infected seed.

Protectant fungicides for late blight are not recommended at this time. **However, it is extremely important that potato fields be monitored regularly throughout the season for late blight.** Any late blight or suspected late blight should be reported to and then confirmed by either Dennis Johnson or Phil Hamm. The general locations (specific location not needed) of infected fields need to be made known to other growers on the information lines so that the disease can be most efficiently managed. Late blight is best managed on a regional basis because the disease is capable of spreading rapidly and is potentially very damaging.

Stay in touch with the Late Blight Information Line (1-800-984-7400 for WA and 1-800-705-3377 for OR) for modifications in the fungicide application schedule and the current late blight situation. The website <http://classes.plantpath.wsu.edu/dajohn> also has recent information on late blight and other potato diseases. AgWeatherNet also is providing the forecasts (<http://weather.wsu.edu/awn.php> then go to "AWN Models", then go to "Potato Late Blight").

The following should also be done to manage late blight:

1. Avoid over-watering (and planting around the pivot which leads to over-watering).
2. Design pivots to avoid irrigation overlaps.
3. Destroy refuse tubers.
4. Volunteer potatoes in all fields should be managed, particularly in those fields that had late blight in them one of the last two years. These volunteers have a high potential of being sources of late blight.
5. Monitor fields for late blight, particularly potatoes growing near the center pivot, low wet areas, near leaking irrigation lines or near pivot wheel tracks with accumulated water. Contact us if you see or suspect any late blight infection.

The Columbia Basin forecasting and management system relies on growers and field representatives to monitor fields and let us know what is happening. This increases the sample size and provides a low-cost program for growers. To be effective, we need to know when and where (general location) late blight first appears in the Basin.

Good luck this growing season!

# WSU Potato Field Day – June 26, 2009

Located at WSU Othello Research Unit

(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 Visit Seed Lot Trial

## Concurrent Session I: Potato Cultural Practices Field Tour

- 10:15 am **Money for nothing and your chips for free**  
*Jeanne Debons* – Potato Variety Management Institute, Bend, OR
- 10:30 am **Screening for phytonutrient-rich baby potatoes**  
*Roy Navarre* – USDA/ARS – Prosser
- 10:45 am **Strategies for Increasing Seed Productivity – Specialty & Russet Cultivars**  
*Rick Knowles, Lisa Knowles, Jake Blauer* – WSU, Pullman
- 11:00 am **Physiology of Mottling & Other Postharvest Disorders**  
*Daniel Zommick, Lisa Knowles, G.N.M. Kumar, Rick Knowles* – WSU, Pullman
- 11:15 am **Screening for Low-Input Cultivars: Four In-Season N Rates Applied to Eight Potato Cultivars**  
*Mark Pavek, Zach Holden, Chris Hiles, Rudy Garza, Josh Rodriguez* – WSU, Pullman
- 11:30 am **Alturas and Premier Russet In-Season Nitrogen Rates for Maximizing Potato Profits**  
*Chris Hiles, Mark Pavek, Zach Holden, Rudy Garza, Josh Rodriguez* – WSU, Pullman
- 11:45 am **Effects of Management on Tuber Maturity & Processing Quality**  
*Rick Knowles, Mark Pavek, Chris Hiles, Lisa Knowles, Zach Holden* – WSU Pullman

12:00 pm - 1:30 pm **HOSTED LUNCH**

## Concurrent Session II: Potato Pest Management Field Tour

- 10:15 am **Money for nothing and your chips for free**  
*Jeanne Debons* – Potato Variety Management Institute, Bend, OR
- 10:30 am **Potato Insect Pest Survey for the Columbia Basin: Aphids, Tuberworm, and Leafhoppers**  
*Carrie Wohleb* – WSU – Grant & Adams Counties
- 10:45 am **Research aimed at managing soil borne diseases of potato**  
*Tom Cummings, Dennis Johnson* - WSU, Pullman
- 11:00 am **Effect of infected seed on Verticillium wilt and black dot**  
*Dennis Johnson, Tom Cummings* – WSU - Pullman
- 11:15 am **Insect pathogen suppression of Colorado potato beetles**  
*Randa Jabbour, Bill Snyder* - WSU, Pullman

11:30 am - 1:30 pm **HOSTED LUNCH**

## Concurrent Session III: Irrigation Application Efficiency Workshop

- 10:15 am **Uniformity and Application Efficiency of Irrigation Systems. Obscure but Significant Costs**  
*Troy Peters, WSU – Prosser, Leigh Nelson, USDA-NRCS, Tom Hoffmann, WSDA – Moses Lake*

***The workshop will introduce the concept of distribution uniformity, the causes of poor irrigation system performance, and economic and ecological ramifications of poor distribution uniformity.***

***Topics to be discussed:*** measures of irrigation efficiency; distribution uniformity: What is it, why is it important, and how it is measured; factors that affect distribution uniformity; process of determining distribution uniformity; corrective measures to improve distribution uniformity; effect of poor distribution uniformity on operational costs; measuring water flow rate of an irrigation system using an ultrasonic flow meter; demonstration of flow rate and distribution pattern of properly and malfunctioning sprayheads and pressure regulators; effect of poor distribution uniformity on environmental degradation; evaluate irrigation system integrity for chemigation applications; conducting site assessments to determine field suitability for chemigation; and common problems with chemigation

12:15 - 1:30 pm **HOSTED LUNCH**  
*CCA and pesticide recertification credits have been applied for (WA, OR, ID)*

# Potato Insect Pest Survey for the Columbia Basin of Washington Aphids, Tuberworm, and Leafhoppers

Washington State University Extension and the Washington State Potato Commission have joined efforts to conduct a regional potato insect pest monitoring program that targets green peach aphid, potato tuberworm, and beet leafhopper. Fields across the Columbia Basin are monitored weekly, and the results are communicated to potato growers via a phone-in hotline and a website: <http://potatoes.wsu.edu/survey/PotatoInsectSurvey.html>. These insect monitoring efforts present a regional snapshot of insect populations, and are not meant to replace insect monitoring activities by growers and fieldmen in individual fields.

Hotline: (888) 673-6273

## Summarized Report for May 22-29, 2009

We are beginning to find beet leafhoppers (BLH) in traps near potato fields around the Columbia Basin. In the Lower Columbia Basin, BLH counts ranged 0-26 per trap and averaged (7.9). In the Upper Columbia Basin, BLH counts ranged 0-7 per trap and averaged (1.3).

Beet leafhoppers are the only known vector of BLTVA, which causes a disease commonly known as purple top. BLH populations in the Columbia Basin usually begin to build in late May and increase through June. Now is the time to closely monitor BLH populations, because most BLTVA infections occur early in the season (the first eight weeks of plant growth). Treatment thresholds have not been established for BLH in potatoes, but we know that the risk for BLTVA infection increases as the number of BLH increase. If you are finding more than 40 BLH per week in your traps, it may be time to get worried. We recommend that every grower deploy at least two yellow sticky traps around the margins of each potato field to monitor BLH. Follow the link to "IPM Guidelines for Insects and Mites in Potatoes" for more information about monitoring BLH and managing BLTVA (p. 23-32): <http://www.potatoes.com/pdfs/PNWPotatoIPM2008.pdf>.

No potato tuberworm moths were found in the project traps this week.

For more information about the potato insect pest survey contact:

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## Insecticidal Activity of Insect-Specific Fungi for the Potato Psyllid: Development of Bioassay Techniques, Effect of Fungal Species and Stage of the Psyllid

Lerry Lacey

USDA, ARS, Yakima Agricultural Research Laboratory, Wapato, WA

The potato psyllid is a pest of potato, tomato, and some other solanaceous vegetables and has recently also been incriminated in the transmission of a bacterial pathogen resulting in a serious disease known as "Zebra Chip". Although there are several reports of fungal pathogens in other psyllids, there are none from the potato psyllid, nor have any fungi been evaluated against it. Five isolates of insect-specific fungi, one *Beauveria bassiana*, two *Metarhizium anisopliae* and two *Isaria fumosorosea* were evaluated against potato psyllid on potato leaves under ideal conditions for the fungi (high relative humidity for 24 hours; 77°C) followed by incubation in low relative humidity. With the exception of concentration-effect studies, all other applications were made using 10 million spores per milliliter in a 2 milliliter aqueous suspension resulting in coverage of 180 spores per square millimeter for *I. fumosorosea* and 145 spores per square millimeter for *M. anisopliae*. All isolates except *B. bassiana*, produced 95-99% corrected mortality in adults 2-3 days after application of spores and 90-99% in nymphs 4 days after application. The corrected mortalities for adults and nymphs treated with *B. bassiana* were 53 and 78%, respectively 4 day after application. The commercially produced Pfr 97 isolate of *I. fumosorosea* and F52 isolate of *M. anisopliae* were used for evaluation of the effect of nymphal age and concentration of conidia on mortality. A concentration of 10 million spores per milliliter produced 88 to 94 % and 95 and 95% corrected mortality in 1st instar nymphs and late 3rd instars treated with *I. fumosorosea* and *M. anisopliae*, respectively. The two isolates were evaluated for insecticidal activity against 3rd instar potato psyllid using 100 thousand, 1 million and 10 million spores per milliliter. Corrected % mortality produced by *I. fumosorosea* Pfr 97 ranged from 83 to 97% and that of *M. anisopliae* F52 was 88 to 95% at these concentrations. Results of our laboratory studies indicate that the isolates of fungi in our study offer promise for control of potato psyllid. Field trials of these and other insect-specific fungi are planned for the near future.

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## Mark Your Calendars

OSU Potato Field Day – June 24, 8:30 am, OSU Hermiston. Contact:

<http://oregonstate.edu/dept/hermiston/>

WSU Potato Field Day – June 26, 8:30 am – 1 pm, Othello Research Unit, Hosted lunch.

Contact: Mark Pavek, 509-335-6861, [mjpavek@wsu.edu](mailto:mjpavek@wsu.edu).

**Centennial Celebration!** OSU Hermiston Agricultural Research and Extension Center, June 30, 2:00 - 8:00pm. Contact: HAREC station at 541-567-8321.

WSU Mount Vernon NWREC Field Day – July 9, 4:00 – 7:00 pm, Washington State

University Mount Vernon NWREC. Contact: Don McMorran, 360-428-4270,

[donaldm@co.skagit.wa.us](mailto:donaldm@co.skagit.wa.us).