



WASHINGTON STATE
UNIVERSITY
EXTENSION



INTEGRATED PEST MANAGEMENT FOR POTATOES

BY THE NUMBERS

- More than 100 weekly pest alert reports written.
- 20 presentations about the regional insect sampling network to stakeholders in the Columbia Basin.
- 7 field days and 2 workshops demonstrated insect sampling methods and insect identification.

2014

ISSUE

For decades potato growers needed frequent pesticide sprays to meet the very low damage thresholds mandated by their customers, but lately they have faced increasing scrutiny for this. Potato buyers such as McDonald's, Sysco, and Walmart now require growers to justify each pesticide application and document their use of integrated pest management (IPM) practices. Consequently, potato growers are transitioning from pest management based mainly on routine applications of broad-spectrum pesticides to an approach that integrates pest monitoring, conservation of natural predators, cultural controls, and use of selective pesticides.

To make this transition and continue to produce potatoes of the highest quality, potato growers need guidance in using IPM methods. This includes learning to recognize natural predators, how to deploy traps for monitoring pests, and how to select and apply pesticides for optimal results. Potato growers also need help predicting when and where pest outbreaks will occur so they can mitigate damage to their crop.

In the past ten years, emerging problems with three unfamiliar insect pests (potato tuberworm, beet leafhopper, and potato psyllid) have presented significant challenges to potato growers in the Columbia Basin of Washington and Oregon. Each of these pests has caused yield losses and economic damage resulting from the insects feeding, and, in the case of beet leafhoppers and potato psyllids, from the plant diseases they spread to potatoes. Growers must learn how to manage these newer pests, while continuing to control the usual array of insect pests.

RESPONSE

WSU Extension has operated an insect sampling network in the Columbia Basin of Washington since 2009 to monitor potato pest populations and report current information about population size and location to potato growers. The sampling network began by targeting aphids, beet leafhoppers, and potato tuberworms. Potato psyllid monitoring was added in 2012 following a major outbreak of zebra chip disease, which is spread by this insect. Each year, 40 potato fields are monitored weekly from April to October using sampling methods developed for each of the targeted pests: shaking plants over a collection bucket for aphids; yellow sticky traps for beet leafhoppers and potato psyllids; and sticky traps with pheromone lures for potato tuberworm moths.

In 2009, WSU Extension added insect monitoring results to the [Potatoes at WSU website](#). In 2010, weekly alerts via email were added as a faster way to communicate results to busy potato growers.



QUOTES

"It consolidates a lot of regional information for convenient viewing."

"I like the emails because I don't need to look up a website or make a phone call."

"I rely on the pest alerts to aid me when scouting fields to be more aware of potential problems. They are a valuable resource."

GRANTS & DONORS

- Washington State Potato Commission (2009-2015): \$148,000
- USDA-NIFA Risk Assessment and Mitigation Program: (2009-2012)
- WSU CAHNRS Internal Grants Program (2013-2014): \$50,000
- USDA Export Development Program: Technical Assistance for Specialty Crops (2013-2015): \$105,000

Each *Potato Pest Alert* summarizes the week's sampling results and recommendations for pest management. Alerts include maps showing insect population densities for the region, which are color-coded based on historical pest density levels. Graphs of seasonal insect population trends, images of pests and the diseases they spread, and hyperlinks to further information are also provided. Alerts also include updates about late blight and other diseases that may be present.

IMPACTS

The potato industry's response to WSU Extension's regional insect sampling network and *Potato Pest Alerts* has been very positive, with more than 600 subscribers. Subscribers were surveyed in February 2013. When asked why they subscribe, most said they like to see regional insect monitoring data (93%). Many said information about where and when pests are showing up helps them know what to look for in their own fields. Respondents also indicated that they read the alerts for information about new pests and diseases (82%), late blight information (72%), pest management advice (50%), and help on insect scouting (49%). All respondents agreed that *Potato Pest Alerts* help minimize pest outbreaks by providing timely information that can be acted on before pests become established.

Most potato managers report increased scouting for aphids when alerts indicate that aphids have been detected nearby (71%). Many report timely and more effective insecticide applications to control aphids because of regional monitoring information (50%). More than 30% indicated fewer insecticide applications to control aphids because of regional aphid information, while only 2% reported more insecticide applications.

In 2011, zebra chip, a new, devastating disease spread by the potato psyllid, was identified in Washington and cost Washington growers more than \$1 million in losses that year. Potato psyllid monitoring was added to the insect sampling network in 2012, and growers were notified via *Potato Pest Alerts* as soon as potato psyllids were detected. They also were provided IPM-based recommendations. These and other related efforts helped the potato industry manage this new pest-disease complex, contributing to the elimination of significant losses from zebra chip in Washington in 2012 and 2013.

Banner image courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org.