

MALHEUR COUNTY EXTENSION POTATO PEST MONITORING PROGRAM – 2018

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Abstract

Twenty-eight commercial potato fields throughout Malheur County were monitored for pest and beneficial insects. Traps were monitored weekly from May through the end of July when harvest began. Results were reported via email to growers and their crop advisors. Significant findings were also reported on the Pacific Northwest Pest Alert network (<http://www.pnwpestalet.net/>).

Potato psyllids were found from July 7 through the end of the season. One psyllid tested positive for the Zebra chip bacterium, which is the first detection of an infected psyllid for Malheur County. However, no Zebra chip infected plants were found in scouting of fields.

Beet leafhoppers were present throughout the growing season, and their numbers did not decline over the summer as usual. No plants infected with purple top disease (transmitted by leafhoppers) were found during this year's monitoring program.

The pest status of thrips and *Lygus* in the Treasure Valley is still uncertain. *Lygus* populations were present throughout the season, peaking from late June through July. High numbers of thrips were recorded in June and July.

The relatively large numbers of beneficial insects probably helped suppress pest populations. Large numbers of ladybird beetles and lacewings probably helped to suppress aphid populations.

OSU Extension also helped to keep growers and crop advisors up to date on other pest problems. The monitoring project provided up-to-date information that allowed growers to make more informed pest management decisions and reduce their pesticide applications in 2018.

Objectives

- Monitor populations of key potato pests across Malheur County and deliver that information on a weekly basis to potato growers, crop advisors, and other interested people in the county. Pests that were monitored included 1) potato psyllids, 2) aphids, 3) beet leafhoppers, 4) potato tuberworm moths, 5) thrips, 6) *Lygus* (a potential pest), 7) Colorado potato beetle, and other pests. Associated beneficial parasites, predators, and pathogens were monitored to assess levels of naturally occurring biological control.
- Assist growers in scouting for other pests and diseases during the growing season.
- Assist growers with identifying and addressing other crop management issues.
- Relay information to growers and crop advisors directly through email and phone contact and publish pest monitoring data in the Treasure Valley Pest Alert Network.

Procedures

Trapping stations were set at 30 potato fields in Malheur County and were monitored from June until mid-August when fields were harvested. Trapping techniques specific for the different pests were used for monitoring.

Potato Psyllid Monitoring – To aid growers in managing potato psyllids and zebra chip, yellow sticky cards were placed in potatoes fields, with four traps per field. Traps were collected and replaced weekly. Aphid and leafhopper traps were also examined for the presence of psyllids. Foliage samples were inspected for psyllid nymphs and eggs.

Beet Leafhopper Monitoring – Yellow sticky traps were placed along borders of fields to monitor beet leafhoppers, which can transmit the pathogen that causes purple top disease. Traps were collected and replaced weekly, and the numbers of leafhoppers recorded. Fields were also inspected for plants infected with purple top.

Aphids – Aphids were also monitored with yellow sticky traps.

Potato Tuberworm Monitoring – To monitor tuberworm moth populations, pheromone traps were placed along field borders. Traps were collected and replaced weekly. Pheromone lures were replaced every 3 weeks, or as needed.

Colorado Potato Beetle – Yellow sticky traps were also inspected for adult Colorado potato beetles and plants were examined for the presence of beetle larvae and egg masses.

Beneficial insects – Yellow sticky traps used for pest monitoring were also inspected for beneficial insects, in particular predatory insects, including minute pirate bugs, big-eyed bugs, lacewings, and ladybird beetles. These counts were used as an indication of the overall activity of natural enemies in a field.

Diagnostics – Psyllids were tested by Kylie Swisher’s lab (USDA-ARS Prosser/Wapato, WA) for the Zebra chip bacterium.

Other Pest and Disease Monitoring – Assistance was provided to growers and crop advisors in identifying other pest and diseases problems that they encountered.

Accomplishments

- Traps were monitored over a 12-week period from May 11 until July 28 when fields were near harvest.
- Growers and crop advisors received up-to-date weekly reports within 1 day after traps were collected. Psyllids were first found during the week of July 1–7. Populations did increase through the remainder of the season, as has been typical.
- One psyllid, caught the week of July 18, tested positive for the Zebra chip bacterium, but no Zebra chip infected plants were found (Fig. 1). The grower and crop advisor for that field were notified of the find, and all other growers and crop advisors were informed that a positive psyllid was detected in the county. A notice was also posted to the PNW Pest Alert website. Testing was conducted by Dr. Kylie Swisher, USDA-ARS, Prosser/Wapato, Washington.
- Beet leafhoppers were present throughout the growing season, with abundance highest during June, as is typical. However, we found no evidence of plants infected with potato

purple top disease (Fig. 1).

- Aphids were among the most common pests recorded and were abundant, especially from late June into July. Significant numbers of potato aphids were found during the season (4–11 per field per week), but relatively few green peach aphids were found (<2 per field per week) (Fig. 2).
- No potato tuberworm moths were found in 2018. This was the fourth consecutive year that no tuberworm moths were collected.
- The pest status of thrips and *Lygus* in the Treasure Valley remains uncertain. *Lygus* are one of the most commonly encountered insects in potato fields, with populations present throughout the season. However, area growers have not yet considered *Lygus* to be economically important. Thrips were predominately western flower thrips. Some onion thrips were also present because of the proximity of potato fields to the areas onion fields. High numbers of thrips were recorded in June and July (Fig. 3).
- The relatively large numbers of beneficial insects probably helped suppress pest populations. Large numbers of big-eyed bugs, pirate bugs, ladybird beetles, and lacewings probably helped to suppress psyllid, aphid, and thrips populations, in particular. All of the predators that were monitored are known to feed on these pests. They likely help suppress but do not completely control pest populations (Figs. 3 and 4).
- Growers were advised of other pest and disease issues reported in other parts of the PNW.

Impacts

Malheur County potato growers have been strong supporters of integrated pest management and continue to utilize information from this monitoring program. Their use of pest alert information reflects their commitment to providing consumers with safe, nutritious food. Growers were provided the latest recommendations and advice on potato psyllid management, which facilitated their pest management decisions and to better time and target pesticide applications.

Inclusion of many different pests and natural enemies in the monitoring program provides growers with information to assess their individual pest management programs and to know when insecticide applications may or may not be necessary.

Relation to Other Research

Monitoring results were shared with other research/extension personnel in Oregon and Idaho. Psyllid and other pest data have been included in the MAP-PSILDS-PNW project led by Bill Snyder, Washington State University. This project is assessing how field location and characteristics affect the risk of psyllid infestations and zebra chip outbreaks.

Acknowledgments

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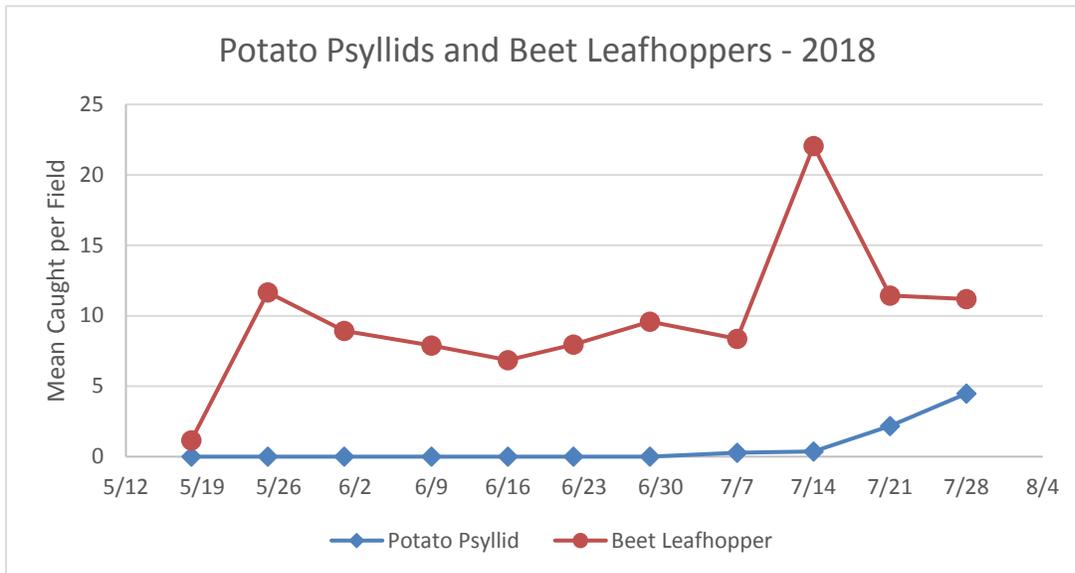


Figure 1. Seasonal dynamics of potato psyllids and beet leafhoppers in commercial potato fields in Malheur County, Oregon during 2018. Numbers are the mean per field per week for 28 fields.

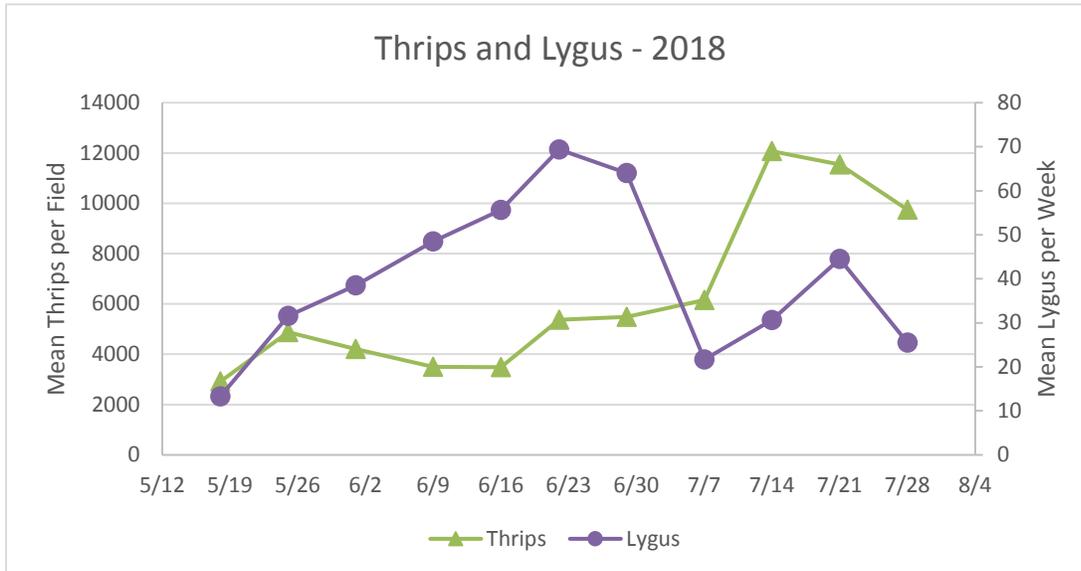


Figure 2. Seasonal dynamics of Lygus bugs and thrips in commercial potato fields in Malheur County, Oregon during 2018. Numbers are the mean per field per week for 28 commercial fields. Note the different axis scale for thrips and Lygus bugs.

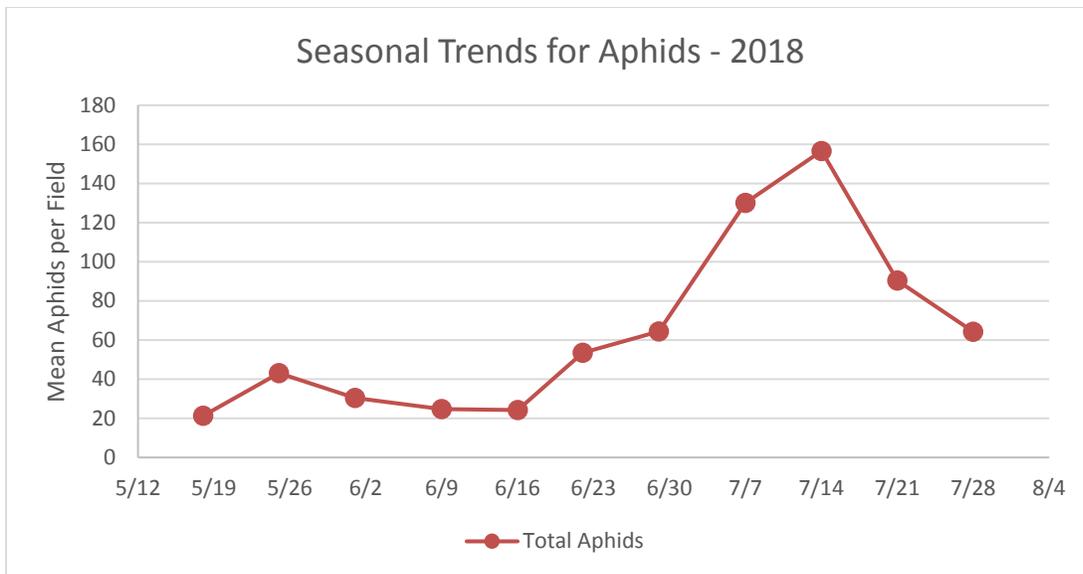


Figure 3. Seasonal dynamics of aphids found in commercial potato fields in Malheur County, Oregon during 2018. Numbers are the mean per field per week for 28 fields.

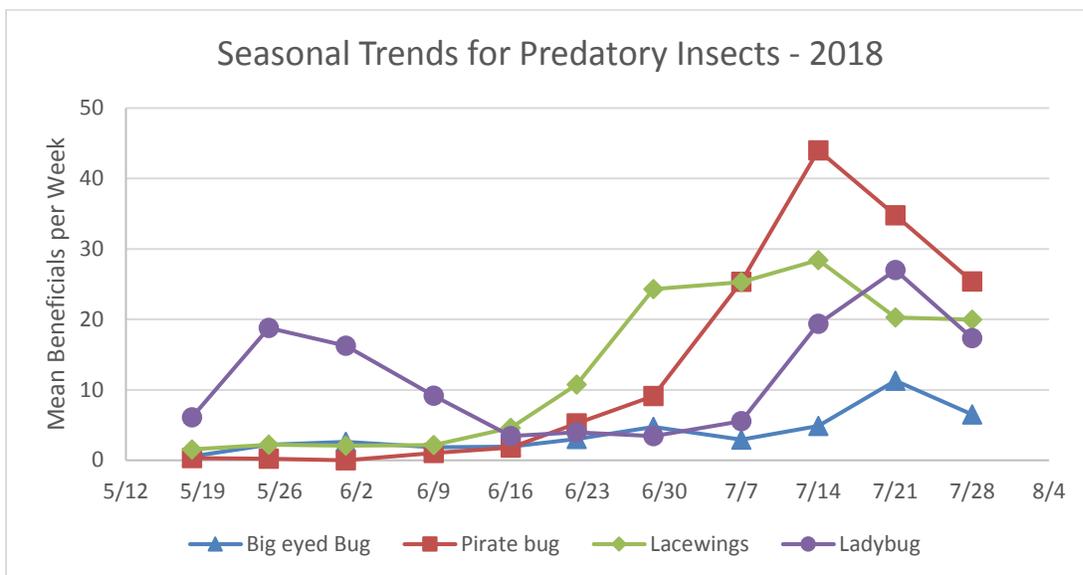


Figure 4. Seasonal dynamics of predatory insects found in commercial potato fields in Malheur County, Oregon during 2018. Numbers are the mean per field per week for 28 fields.