INSECT MONITORING REPORTS
Report for Aug 8-14, 2012

APHIDS: We are continuing to find aphids scattered in fields across the Basin. Aphids were found in 41% of the fields we sampled. Almost all of these were wingless, colonizing aphids. The fields with aphids averaged 0.4 aphids per plant, which is the highest population density this season. One field had a lot of aphids, 4.5 per plant. Continue to scout fields for aphids.

Aphids are important pests because they transmit several important potato viruses, especially potato leafroll virus (PLRV) and potato virus Y (PVY). Green peach aphids are the most important vector of PLRV, which has caused substantial yield and tuber quality losses in the Columbia Basin. PLRV causes net necrosis in some cultivars, an unacceptable tuber defect in processing potatoes. PVY can also result in significant yield losses, and some strains cause tuber defects. Potato growers should monitor fields for aphids at least once a week, because early recognition and control of aphids is the best tactic in limiting spread of potato viruses. Current recommendations are to treat long-season storage potatoes as soon as wingless aphids are detected. Low tolerances have been established because even a low incidence of seed borne PVY and PLRV can spread rapidly if aphids go unchecked. You can find more information about aphids and the viruses they spread in the *2012 IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes*.

BEET LEAFHOPPERS: Beet leafhopper (BLH) numbers have been low at most of our trapping sites throughout the season. An exception is one sticky card located on the east end of the Royal Slope that has been trapping a lot of BLH since July, and had 48 BLH this week. More moderate numbers were found at locations on the west end of the Royal Slope and southwest of Ephrata this week, with 13 and 15 BLH per card respectively. All other sticky cards with BLH had 10 per card or less this week. A graph showing weekly BLH trapping data in the Columbia Basin for the years between 2007 and 2012 has been added below. It illustrates how small the BLH populations have been in 2012 compared to previous seasons.

Beet leafhoppers are important pests because they transmit BLTVA, a phytoplasma that causes purple top disease in potatoes. In the Columbia Basin, the first spring generation of BLH usually migrates towards potato fields in late May and early June, with a peak flight in late June. Yellow sticky traps placed near potato fields are one way to monitor BLH. Information about setting up traps and identifying BLH can be found in the article, "*Beet Leafhopper Monitoring with Yellow Sticky Cards*". Treatment thresholds based on BLH numbers on traps have not been established, but we know that the risk of infection increases as BLH populations become large. If the numbers on traps build up to 40 or more BLH per week, then it is probably time to be concerned. A typical weekly catch during peak BLH activity is 100. Eliminating weed hosts (wild mustards, Russian thistle, kochia) in areas surrounding potato fields is an important cultural management approach for BLH. These weeds are preferred hosts of BLH. Potato growers may also select cultivars that are less susceptible to purple top (Ranger, Umatilla, and Norkotah are considered highly susceptible; Russet Burbank is susceptible; and Alturas and Shepody are moderately susceptible). A number of insecticides are labeled for use on potatoes to control

leafhoppers. There has been some research to suggest that systemic at-planting insecticides, especially those with longer residual activity applied at the maximum allowed rate, provide adequate early season control of BLH. Results may vary depending on the product used, application rate, soil and environmental conditions, and insect pressure. Foliar insecticides may also be used to control BLH. These are usually applied in May, June, and sometimes July. Insecticides with long residual activity (10-14 days) are preferred. If you apply a non-systemic insecticide, it may be necessary to shorten the application interval during periods of rapid plant growth to ensure adequate plant coverage. Remember to always read and follow instructions on the pesticide label. For more information about managing BLH, visit *2012 IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes* and the *2012 PNW Insect Management Handbook*.

POTATO TUBERWORM: **We have received some reports of tuberworm damage in potatoes being harvested in the south Columbia Basin, between Eltopia and Pasco. If you are growing potatoes south of Othello, we recommend you put out your own pheromone traps, since populations can be spotty. Potato tuberworm moths were found in four of our traps in the Columbia Basin this week; one trap near the OR border with 23 moths, two traps between Pasco and Eltopia with 1- 2 moths, and one trap north of Basin City with 4 moths. For information about this pest, visit *Biology and Management of the Potato Tuberworm*.**

Potato tuberworm (PTW) was first recognized as an important pest of potatoes in the southern Columbia Basin in 2003. PTW larvae feed on tubers causing damage that renders them unmarketable. Potato growers with fields south of Connell, WA are recommended to pay close attention to regional trapping data, and should deploy pheromone traps. Infestations of PTW are highly localized, and it is risky to conclude too much from traps that may be several miles away. Information about setting up traps and identifying PTW moths can be found in the article, "*Tuberworm Monitoring with Pheromone Traps*". Trap counts from mid-season to harvest are particularly important to watch. The more moths you find in the traps, the more tuberworm larvae you are likely to find in the field feeding on plants and tubers. Pre-harvest control measures may be warranted in fields where PTW moths in pheromone traps are found to be increasing every week, especially in August-October. Cultural methods reported to reduce PTW damage include 1) eliminate cull piles and volunteers to reduce overwintering stages of PTW; 2) maintain soil moisture after vine kill to prevent soil cracking; 3) minimize the time between vine desiccation and harvest; and 4) ensure that tubers have more than 2" of soil covering them in the hill. For more information about managing PTW, visit *2012 IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes* and the *2012 PNW Insect Management Handbook*.

POTATO PSYLLIDS: As previously reported, zebra chip disease was confirmed from two potato plants in a commercial field located east of Hermiston, OR on July 24, 2012. The plants showed typical symptoms of ZC, including reddish coloration to foliage, thickened nodes, dying vines, and tubers with mild to moderate internal necrosis. Potato psyllids infected with the Liberibacter bacterium that causes zebra chip were also found in the same area (in the vicinity of Cold Springs Reservoir and the HAREC). Potato psyllids collected in other parts of the Columbia Basin, including other areas in OR and southern WA, have not tested positive for the bacterium. There have not been any new reports of potato plants with zebra chip in WA, but everyone should be actively scouting for both the

insect and plant symptoms. If you find potato psyllids or plants with symptoms, please let us know and we will help submit them for testing.

Zebra chip is a destructive disease that can cause very significant yield and economic losses. Most potato growers in the region have already initiated a foliar insecticide program to control potato psyllids that may be migrating into their fields. The commercial potato field with the two ZC positive plants had received applications of Movento, two applications of Vydate a week apart, and another Movento. Keep in mind that an insecticide program may not prevent the disease from entering your field via psyllids, but it should minimize colonization of psyllids in the field after they arrive, i.e. adult psyllids laying eggs and multiplying. The presence of eggs and nymphs indicates psyllids are colonizing the field. Growers who are waiting for first detection of potato psyllids in their fields before beginning a foliar insecticide program should be scouting their fields very carefully, and should understand that potato psyllids are tiny and very easy to overlook. A significant amount of damage may occur before the psyllids are detected. Once a psyllid picks up the bacterium, it is always a carrier, and it can transmit the bacterium to potato plants in as little as 6 hours of feeding. There are a number of insecticides registered for use on potatoes that have activity against psyllids in the adult and immature stages. No effective non- chemical control options for potato psyllids have been verified at this time, but some research is underway.

Potato psyllids are important pests mostly because they can transmit a bacterium (*Candidatus* Liberibacter *solanacearum*) to potatoes that causes zebra chip disease (ZC). This disease reduces both yield and tuber quality and has lead to serious economic losses in some regions. ZC was first detected in potato fields in the Columbia Basin in 2011, and it has occurred again in 2012. Early detection is critical for controlling psyllids and minimizing transmission of zebra chip disease. Adult psyllids are monitored using yellow sticky cards placed inside the field, just above the plants, and near the field edge. It is best to have five or more yellow sticky cards around the field. Another method for sampling adult psyllids is to use a leaf blower/vacuum with a mesh net secured to the end of the cylinder (see photo on the sidebar). This method may be better for detecting low population densities. Operate the machine (in vacuum mode) above the potato plants for at least 5 minutes, 5-10 feet from the edge of the field, and then carefully remove the net from the end of the cylinder. It helps to transfer the insects from the net to a plastic bag that you can seal, and then look for the tiny winged adults. If you place the bag in the freezer for a while, you can slow the buzzing insects down which will make it easier to scan the bag. Other life stages of the psyllid may be found by collecting several leaves (mid-plant) from the outer rows of the field, and then scanning the underside (with a hand-lens) for the tiny nymphs and eggs. It is also recommended to scout for psyllids in cull piles and volunteer potatoes. For more information about psyllids, including insect identification, monitoring, and control recommendations, read *Biology and Management of Potato Psyllid in Pacific Northwest Potatoes* and *Potato Psyllid Vector of Zebra Chip Disease in the Pacific Northwest*.

SPIDER MITES: This is the time of the season when potato growers should be actively looking for two-spotted spider mites. We found mites in about 15% of the fields we monitored this week. Sampling for mites requires close visual inspection because they are tiny and difficult to see. It helps to shake plants over white paper and then look for the tiny moving dots. Mite populations increase rapidly and the damage they cause can go unnoticed, so it is important to

scout often. If you plant to apply a miticide, apply it early because none of the registered miticide products provide full control once populations reach outbreak levels. Mite outbreaks have been associated with 1) use of non-selective insecticides, like pyrethroids; 2) close proximity to mite harboring crops like corn, alfalfa, hops, and mint; 3) close proximity to dusty roads; and 4) hot, dry weather. More information is available at *2012 IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes* and the *2012 PNW Insect Management Handbook*.

BENEFICIAL INSECTS: Beneficial insects were found in many of the potato fields we monitored this week, but not as many as last week. Big-eyed bugs were found in 22% of the fields, damsel bugs were found in 41% of the fields, and minute pirate bugs were found in 22% of the fields. These insects feed on a variety of pest species, including aphids, mites, and more. We also found lady beetles, green lacewings, parasitic wasps, and lots of spiders (not insects). Beneficial insects tend to be much more abundant in fields when selective insecticides are used to control insect pests, rather than broad-spectrum insecticides.