INSECT MONITORING REPORTS
Report for July 18-24, 2012

APHIDS: Aphids were found in only 19% of the fields we looked at this week. Only one field had wingless, colonizing aphids. The aphid numbers have been on the decline since early July. Continue to scout fields. We have noted several fields on our sampling routes with plants that show mosaic symptoms due to potato virus Y (PVY) infection. Aphids can spread this virus very rapidly.

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) counts have been very low, with the exception of one sticky card located on the east end of the Royal Slope that had 29 BLH. This trap has collected BLH for several weeks now, and the numbers have been increasing a little each week. All other sticky cards with BLH had only 1- 3. 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 low 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 is new 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: **Potato tuberworm moths were found in six of our traps in the Columbia Basin this week; four traps near the OR border with 1- 7 moths, two near Pasco with 2 moths each, and one near Othello/Warden with 2 moths. Moths were also found in several traps in Oregon, with numbers up to 43 moths per trap.**

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: Two plants with zebra chip disease were confirmed by PCR at the HAREC Plant Pathology lab earlier this week. These plants were found in a commercial field near Hermiston, OR. The plants showed typical symptoms of ZC, including reddish foliage, thickened nodes, dying vines, and tubers with mild to moderate internal necrosis. Based on the symptoms, the likely time of infection by a potato psyllid carrying the Liberibacter bacterium was about 2 weeks ago. Potato psyllid numbers in commercial fields were low up to a couple of weeks ago. The numbers are increasing, as evidenced by an increase in the number of psyllids submitted to HAREC for testing. Most of the potato psyllids are being found in the lower Columbia Basin, but they have also been found in fields as far north as the Royal Slope. Potato growers across the Basin should be concerned. Zebra chip is a destructive disease that can cause very significant yield and economic losses. Application of insecticides to control psyllids is warranted in all parts of the Columbia Basin. Most potato growers in the Basin have already initiated a foliar insecticide program to control potato psyllids that may be migrating into their fields. 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 be aware 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 (suction end). 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 have not seen any on our sampling routes yet, but are looking for them. 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*.