INSECT MONITORING REPORTS
Report for August 9, 2013

BEET LEAFHOPPERS (BLH): **We are seeing a lot of purple top in the Columbia Basin. It looks just like zebra chip in the foliage, but when you cut into the tubers there are no symptoms. It is not surprising that we are seeing more purple top this year versus the last few seasons, because BLH numbers on sticky cards have been much larger compared to the previous few years. Potato plants that are infected with BLTVA while they are still small are particularly susceptible to developing symptoms. This week, we found BLH at 79% of our trapping sites across the Columbia Basin, but the counts have been decreasing since they peaked at the beginning of June.**

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. 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. Systemic at-planting insecticides, especially those with longer residual activity applied at the maximum allowed rate, have been shown to provide some 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 *IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes* and the *2013 PNW Insect Management Handbook*.

POTATO PSYLLIDS **This week a plant with zebra chip disease was found in the same field where we collected a psyllid that tested positive for Lso last week. In fact, the plant was only a few feet away from the yellow sticky card that collected the infected psyllid. This field is located to the NW of Basin City. This was the only plant we observed that had symptoms, but we will continue to monitor the field. It takes about 3 weeks for symptoms to appear after infection. A few plants with zebra chip have also been reported in the lower Columbia Basin. So far, no major zebra chip outbreaks have been reported, i.e. it has only been random plants to date. Only a few potato psyllids in the Columbia Basin this**

season have been reported to carry Lso, but it is enough to cause concern. Widespread damage is possible even when infection levels in psyllid populations are low. This week, we collected 31 adult potato psyllids in sampling network fields (1-4 per card), and another 62 psyllids (1-16 per card) were brought to us by crop advisers. These potato psyllids are being found all across the Basin, so most potato growing areas are at risk. Most potato growers in the region are applying insecticides to manage potato psyllids and limit the spread of zebra chip. If you find potato psyllids, please let us know by sending an email to cwohleb@wsu.edu. We can help you submit psyllids for Lso testing.

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 occurred again in 2012. Yellow sticky cards are recommended for detecting psyllid migration into an area. The cards should be placed inside the field, near the field edge, and just above the canopy level. It is best to have five or more yellow sticky cards around the field. For more information, read *Psyllid Monitoring with Yellow Sticky Cards.* Another method for sampling adult psyllids is to use an inverted leaf blower with a mesh net secured to the end of the cylinder (see photo on the sidebar). This method is better for detecting low population densities than the sticky cards. 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. Most potato growers in the Columbia Basin are applying insecticides to manage potato psyllids and limit the spread of zebra chip. 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*.

APHIDS: **Aphids were detected in 61% of the potato fields we sampled this week. Wingless green peach aphids were found in 42% of the fields and they averaged 0.2 aphids per plant. Keep monitoring your fields for aphids, because their numbers can really increase as the season progresses. It is not unusual to see big aphid outbreaks as we move to the latter part of the growing season. Go to the pest data mapping section below to see all of the aphid counts for this week.**

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.

POTATO TUBERWORM (PTW): **Moths were found at 10 locations in the Columbia Basin of Washington this week; at locations from north of Warden to fields near the WA/OR border. The moth counts ranged from 1 to 62 PTW moths per trap. Go to the pest data mapping section below to see all of the PTW moth trap counts for this week.**

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*". It only takes a few weeks for PTW to complete a generation (egg, larva, adult), so there are several generations completed in a season. In the Columbia Basin, the time that tuberworm are most important is in the 3 to 4 weeks before harvest. This is because almost all tuber damage occurs after vine death. Insecticide applications beginning 4-8 weeks before harvest have been shown to reduce PTW in tubers. Cultural practices that reduce PTW damage include 1) eliminate cull piles and volunteer potatoes; 2) maintain soil moisture after vine kill to prevent soil cracking; 3) minimize the time between vine kill and harvest; and 4) maintain more than 2" of soil over tubers.

SPIDER MITES: **We are seeing some spider mites in potato fields. Sampling for mites requires close visual inspection because they are tiny. It helps to shake plants over a white paper and then look for the tiny moving dots. If you plan to apply a miticide, then apply it early because none of the registered miticide products provide full control once populations reach outbreak levels. A well-times application is made when mite populations reach 2 mites per leaf, which is close to the detection limit for the pest. Include a surfactant to improve coverage (refer to the miticide product label for specific information). In most cases, a single, well-timed application will control mites. More information can be found in *IPM Guidelines for Insects and Mites in ID, OR, and WA Potatoes.***

BENEFICIAL INSECTS: **This week, we found big-eyed bugs in 48% of the fields we sampled, and damsel bugs in 19% of the fields. We also observed quite a few minute pirate bugs. All of these are "good guys" that prey on insect pests.**