

Potato Leafhopper

Empoasca fabae

QUICK FACTS ABOUT POTATO LEAFHOPPER

- Potato leafhopper adults are about 1/8 inch long, nymphs are half that size.
- Potato leafhoppers feed with piercing-sucking mouthparts on host plant vascular tissue.
- Feeding restricts phloem and xylem flow to the rest of the leaf, resulting in leaf edge yellowing and curling in addition to stunted internode growth.
- Potato leafhopper does not survive winter in the north but arrives on winds originating in the gulf states.
- Hop cultivar susceptibility to potato leafhopper is variable.

Like many plants, hops are sensitive to the saliva of potato leafhopper (PLH), which is injected by the insect while feeding. Damage to leaf tissue can cause reduced photosynthesis which can impact production, quality, and cause death in first year plants.

Most injury occurs on rapidly expanding leaf tissue with PLH feeding near the edges of the leaves using piercing-sucking mouthparts. Symptoms of feeding appear as whitish dots arranged in triangular shapes near the edges. Heavily damaged leaves are cupped with necrotic and chlorotic edges and eventually abscise from the tree. Severely infested shoots produce small, bunched leaves with reduced photosynthetic capacity. Symptoms of feeding damage are commonly referred to as “hopper burn”.

Adult leafhoppers are pale to bright green and about 1/8 inch long. Adults are easily noticeable, jumping, flying or

running when agitated. The nymphs (immature leafhoppers), are smaller, pale green and have no wings but are very similar in form to the adults. The potato leafhopper can't survive Michigan's winter and survives in the Gulf States until adults migrate north in the spring on weather systems. Economic thresholds have yet to be developed for potato leafhopper in hop.

Scouting should be performed weekly as soon as leaf tissue is present to ensure detection early and prevent injury. More frequent spot checks should be done following rain storms which carry the first populations north. Pest management specialists recommend scouting the underside of three leaves per hop plant, per cultivar, weekly. The easiest way to observe PLH is by flipping the shoots or leaves over and looking for adults and nymphs on the underside of leaves. Pay special attention to succulent new leaves on the terminals of branches.



Figure A. Potato leafhopper nymphs along a mid-vein. Photo credit, Mario Mandujano, Michigan State University.

The most common classes of insecticides recommended for control of PLH include the pyrethroids, neonicotinoids and organophosphates. Organophosphates are broad spectrum and can disrupt natural enemies so only use when necessary to rotate insecticidal mode of action or to target another pest at the same time. Pyrethroids are also effective at controlling PLH and remain relatively inexpensive. However, pyrethroids have been shown to cause increases in mite populations in other crops and should be used judiciously, particularly early in the season when mite populations have time to build over the season. Neonicotinoids are longer lasting and narrow spectrum making them a solid choice for management. For more information on chemical management, refer to the most current version of the publication, *Pesticides registered for use on hops in Michigan* which can be found at www.hops.msu.edu.



Figure B. Symptoms of potato leafhopper feeding damage on hop. Figure C. Upper surface of the hop leaf with a necrotic and chlorotic leaf margin caused by potato leafhopper. Figure D. Adult potato leafhopper on hop. Figure E. Underside of hop leaf with 'hopper burn' and potato leafhopper nymphs present. Photo credit Erin Lizotte, Michigan State University.

References: Walsh, Douglas. 2015. *Field Guide for IPM in Hops*. USDA and Washington State University. Web accessed April 2016 at http://usahops.org/userfiles/image/1457308044_HopFieldGuide3rdEdition-Full.pdf