Potato leafhopper in Michigan Soybean and Dry Bean

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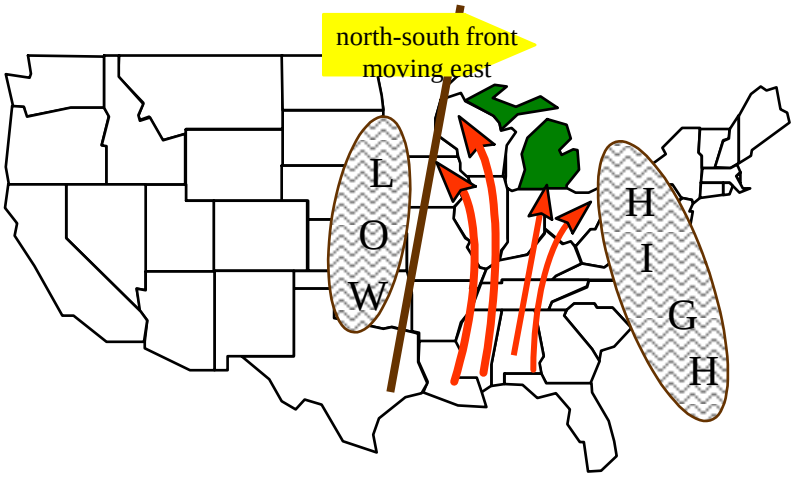
Potato Leafhopper in Michigan

Potato leafhopper is the most important insect pest of alfalfa and dry beans in Michigan. In addition to many crops, it also attacks many ornamentals and trees around the farmstead. Like other leafhoppers, potato leafhoppers feed by sucking sap out of plants, injecting saliva as they feed. But unlike most other leafhoppers, potato leafhopper's saliva is toxic and results in abnormal cell growth and blockage of fluid transport in the leaf. The visual symptom in many plants is a characteristic yellowing called "hopperburn." Both nymphs (immatures) and adults cause this damage.

PLH cannot overwinter in the northern U.S. Instead, insects move north on storm fronts each year from the Gulf Coast states, as warm temperatures move north. The classic weather pattern that carries PLH north is shown in the figure to the right. PLH generally arrives in Michigan in mid to late May.



Sampling and spraying

In **alfalfa**, sample using a sweep net and treat based on a combination of potato leafhopper number per sweep and average plant height. Regrowth (under three inches) is particularly vulnerable to potato leafhopper damage. As the crop grows, it can handle a greater number of leafhoppers. The threshold values based on plant height are:

- Regrowth 0.2 adults per sweep = 20 per 100 sweeps
- 3-8 inch 0.5 adults per sweep = 50 per 100 sweeps
- 8-12 inch 1 adult +nymphs per sweep = 100 per 100 sweeps
- 12-14 inch 2 adults+nymphs per sweep = 200 per 100 sweeps

In **dry beans**, sample plants or whole leaves to determine the level of infestation. The threshold for unifoliate stage beans is 0.5 potato leafhoppers per plant and for later-stage beans, one leafhopper per trifoliate leaf.

For both alfalfa and dry beans, waiting until you see hopperburn means damage and some yield loss has already occurred. Treatment reduces further damage and protects new growth.

Hopperburn is a common symptom on many PLH host crops, including alfalfa (above), dry beans, and potato. In rare cases, even soybean shows symptoms of hopperburn, as in this PLH-susceptible line evaluated by MSU's Soybean Breeding Program (left).

As an insecticide treatment breaks down, potato leafhoppers reinfest a field. Leafhopper eggs are laid inside the plant stem, so insecticide treatment doesn't kill them. Eggs hatch in seven to ten days, so new nymphs may emerge and survive in the field after the insecticide treatment has dissipated. Adults will also re-infest fields from outside sources as the insecticide breaks down. Potato leafhoppers can feed on dozens of different plants, including weeds, other crops such potato and soybean, and many ornamentals, so there is always a source of leafhoppers nearby.

Insecticide Choice

Potato leafhopper is not resistant to insecticides, so many insecticides do a good job of killing them. Factors like cost and availability are generally more important in deciding among products. But the most important thing is to scout fields on a timely basis and treat at threshold rather than waiting for yellowing to appear.

Insecticides sprayed on the foliage begin to break down immediately, but some insecticides last longer than others. Note that residual activity changes under certain conditions (depending on things like weather). Systemic insecticides (for ex, Furadan) are absorbed by the plant and tend to last longer. Some of the pyrethroids (Baythroid, Mustang, Warrior, etc) now last 10 to 14 days or longer, and perform well in cooler conditions. However, all insecticides break down faster under hot, sunny conditions (over 90 F). Consult MSU Extension Bulletin E-1582 for a complete list of products registered for dry beans and alfalfa. Always read the pesticide label for additional important information before spraying.

PLH control without insecticides

Predators and parasitic wasps seem to play only a minor role in reducing potato leafhopper populations. A pathogenic fungus infects and kills many potato leafhoppers in certain years under favorable weather conditions – especially warm, humid weather in August. In alfalfa, timely cutting kills eggs and most nymphs, although adults are mobile and can move out of the field. These adults may then re-infest regrowth or move to neighboring crops. Potato leafhopper -resistant alfalfa has been available for several years. The first varieties were expensive and not particularly effective, but recent releases are much improved. In all crops, good plant vigor and adequate water reduces the impact of potato leafhopper feeding.