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Potato Leafhopper Damaging NNY Alfalfa Crops

Northern New York Cornell Cooperative Extension Regional Field Crops Specialist Paul Peterson has posted the following information on Potato Leafhopper

Yellow, Stunted Alfalfa Suggests Potato-Leafhopper Damage

Many Northern New York farmers are losing yield and quality in their alfalfa fields this summer. During my travels the last couple weeks, I've seen many alfalfa fields with the classic V-shaped yellowing of the outer leaf margins, turning reddish when damage is severe. These plants are also clearly stunted, sometimes assumed to be just drought-stressed.

Tiny but toxic. The culprit is a 1/8-inch long, wedge-shaped green insect called the potato leafhopper (PLH). The PLH is a sucking insect, removing plant sap from the vascular system of the plant. In the process of removing sap, PLH leave in the plant a salivary secretion that causes "hopper burn" or tip burn, resulting in plant injury.

The characteristic yellowing or reddening of the alfalfa leaflets is the result of a salivary toxin injected during feeding. By adversely affecting the vascular system, PLH feeding reduces photosynthesis, decreases productivity, decreases water-soluble carbohydrates (energy), decreases protein, stunts the plant, and sometimes kills young seedlings. PLH does not occur in distinct generations or peaks. The adults are very long-lived and the generations continue to overlap and increase through mid-August.

The PLH is perhaps the most abundant insect pest in alfalfa fields statewide. It is potentially the most damaging of alfalfa pests because of the debilitating effect of its feeding on newly established alfalfa and stunting of re-growth.

Scout through mid-August.

In many respects, the PLH is quite different from other insect pests of alfalfa in New York. It does not overwinter in the Northeast. Instead, it migrates into New York each year from the South. The numbers and time of arrival vary each year, depending on spring climate, weather patterns, and spring crop production in the South. It can arrive from mid-May to late June.

The PLH has long hind legs that allow it to hop like a grasshopper and very powerful wings that allow it to fly quickly. Adults and nymphs walk backward and sideways as well as they walk forward. The PLH feeds on the underside of the alfalfa leaflet and stems, sucking sap from the veins. Adult females also implant eggs in the veins with the aid of a sharp ovipositor.

Females lay about three eggs a day over a six- to eight-week period. These eggs, not visible to the naked eye, take about nine days to hatch, depending on the prevailing temperature. Nymphs, which are very pale green and hard to see

on the plant, are miniature versions of the adult but have no wings. They go through five stages, or molts, in about two weeks before they become adults. The entire life cycle takes a little longer than three weeks.

Early detection is key.

We do not yet have a reliable method to forecast damage by PLH because damage relates to the density of PLH and the age and condition of the stand at the time of infestation. We do know that very early detection of PLH, before damage appears, is essential for good management. Very young plants and plants in early stages of re-growth are the most sensitive to PLH damage. Damage is intensified by drought.

In general, if alfalfa is more than 14 inches tall before PLH begins feeding on it, no reduction in yield will result. If PLH infest alfalfa re-growth when it is 2 to 4 inches tall, however, densities as low as one PLH per sweep can cause economic damage under the right circumstances. Since PLH damage is intensified by drought, under severe drought conditions, PLH action thresholds can be halved, especially for new seedings.

PLHs are detected by sweeping the field using a standard 15-inch-diameter insect sweep net. While walking forward, swing the net into the tops of alfalfa stems using a pendulum motion. Count the number of sweeps taken each time the net passes in front of you. Five sets of sweeps (10 sweeps per set) collected from different areas of the field are generally used for making management decisions. Count PLH found in each individual set of ten sweeps.

The management decision is made by comparing the number of PLH (adults and nymphs) per sweep with the height of the alfalfa using the following chart as a guide:

Average stem length	PLH per sweep
< 3 inches (new seedings)	0.2
3 – 7 inches	0.5
8 – 10 inches	1.0
11 to 14 inches	2.0
≥ 15 inches	If > 2.0 per sweep and if growth is inhibited, insecticide may be needed. If not, no action needed. If not, insecticide.

The two lowest treatment levels are specifically for use in new seedings, which warrant protection at lower PLH densities. For insecticide options, consult the 2012 Cornell Guide for Integrated Field Crop Management available on-line at <http://ipmguidelines.org>, your pesticide dealer, or custom applicator.

PLH-resistant alfalfa is recommended.

Recent advances in the development of PLH-resistant alfalfa have made the planting of resistant varieties an attractive alternative to insecticides for PLH management. Insecticides are powerful tools, but generally quite broad-

spectrum, and thus deadly to beneficial insects. Planting the newest generation of PLH-resistant alfalfa varieties is recommended in both clear alfalfa seedings and in stands mixed with grasses and/or a small-grain nurse crop. PLH-resistant alfalfa is virtually a must on organic farms. Refer to Cornell's most recent alfalfa variety trial results (on-line at <http://ipmguidelines.org> or at your local Cooperative Extension Office) and your seed dealers to evaluate available PLH-resistant varieties.

Source: *2012 Cornell Guide for Integrated Field Crop Management*, <http://ipmguidelines.org>; Bill Cox and Mary McKellar, Editors.