
Potato Leafhopper in Alfalfa

Posted on June 27, 2024 by Christine O'Reilly, OMAFRA Forage & Grazing Specialist

This article was originally written by Joel Bagg in 2012. It was edited June 27, 2023 by Christine O'Reilly to reflect current insecticide options to control potato leafhopper and the cessation of third-party alfalfa variety trials in Ontario.

Potato leafhopper (PLH) is the most damaging alfalfa insect pest in Ontario in most years. While the damage created is not as dramatic as an alfalfa weevil or armyworm outbreak, leafhopper damage is more chronic and widespread. Many farmers are unaware of the significance of PLH damage, which is often blamed on the hot, dry weather that frequently accompanies it. PLH damage is common across southern Ontario. The Niagara area and counties north of Lake Erie are particularly affected and extensive damage often results.

Tiny, Green & Wedge Shaped

PLH do not overwinter in Ontario, but migrate annually from the Gulf States carried on weather-front air currents. They usually begin arriving in late May. Adult leafhoppers are 3 mm (1/8th inch) long, lime green and wedge-shaped. The adults lay a few eggs per day in the alfalfa stems and petioles, which hatch about 9 days later. Juvenile leafhoppers, also called nymphs, are about 1 mm (1/32nd inch) when they hatch. They resemble adults, except they are wingless and are often found on the underside of the leaves.



Figure 1 – Potato

leafhoppers are pale
green, wedge-shaped,
winged insects.

Immature nymphs are
smaller and wingless.

Explosive Growth

The generation interval is short, with about 25 days from egg laying to the adult stage. This gives the leafhopper the ability to have an explosive population growth. Farmers walking in their second and third cut alfalfa fields can often see leafhoppers flying or “hopping” sideways, as they are disturbed. PLH are killed by frost in the fall. Leafhoppers feed on a wide variety of host plants, including edible beans. Biological controls have not been very effective.

Hopperburn

Leafhoppers feed by inserting a stylet into a leaf midrib and sucking sap juices from the plant. They inject saliva

containing a toxin into the plants as they feed. This causes abnormal cell growth and interferes with transportation of fluids and nutrients in the leaves. The result is the characteristic “hopperburn”, which starts as a wedge-shaped “V” yellowish pattern on the leaf tips. (Figure 2)



Figure 2 – Hopperburn
symptoms

Damage

PLH feeding causes reduced stem elongation, reduced root development, leaf cupping and stunting. Yields can be lowered by as much as 50% with a severe infestation, accompanied by reduced protein levels. Decreased stand vigour results in slow regrowth following cutting and increased winterkill. **New seedlings are very susceptible.** Most of the damage occurs from June to mid-August. Symptoms are sometimes confused with nutrient deficiency or herbicide injury, and are often dismissed as “drought damage”.



Figure 3 – Potato
leafhopper injury is
most severe in new
seedlings and young
regrowth

Scouting



Figure 4 – Use a
sweep net to
determine if potato
leafhopper populations
are at threshold

Economic losses occur before plant symptoms develop, so it is important to identify the presence of large leafhopper populations before the damage occurs. It is particularly important to monitor new seedlings. Scouting with a sweep net will help you determine whether early harvest or spraying is needed. Scout at intervals of 5 to 7 days, beginning after first cut. To determine the number of leafhoppers, including adults and nymphs, take 10 sweeps and divide by 10. Do this in 5 representative areas of the field and note the height of the alfalfa. Recommended action thresholds are listed in Table 1.

Stem Height	Average Number of Potato Leafhoppers per Sweep
9 cm (3.5 inches)	0.2 adults
15 cm (6 inches)	0.5 adults

25 cm (10 inches)	1.0 adults or nymphs
36 cm (14 inches)	2.0 adults or nymphs

Table 1. Thresholds for Potato Leafhoppers in Alfalfa

Insecticide Recommendations

Refer to the [Ontario Crop Protection Hub](#) for a current list of registered products. Always read and follow the product label; labels are legal documents. Keep in mind that there are pre-harvest intervals (“days to harvest” restrictions) with these products. Local beekeepers should be contacted so they have an opportunity to move colonies out of the danger area. It should be noted that spraying insecticides on alfalfa will also kill beneficial insects, many of which keep pests under control.

There are currently no organic insecticide options to control potato leafhopper. Products with organic options are indicated with a leaf symbol in the Crop Protection Hub.

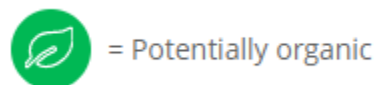


Figure 5 – Products in the Ontario Crop Protection Hub that have an organic option available are indicated with a leaf symbol

PLH Resistant Varieties

A more recent development has been the introduction of PLH resistant alfalfa varieties. These varieties have tiny glandular hairs on leaves and stems that provide tolerance to PLH. Treatment thresholds for HR varieties after the establishment year can be increased by 4 times those in Table 1. The glandular hairs are not fully expressed the first year, so while resistant varieties can dramatically reduce the PLH damage, yield reductions can still occur. Treatment thresholds for HR varieties after the establishment year can be increased by 4 times those in Table 1. **New seedlings of PLH resistant varieties should be monitored and may still need to be sprayed when PLH pressure is severe.**

PLH Highly Resistant [varieties currently registered](#) include:

- DLF Pickseed's Safeguard PLH
- Growmark's WL358LH
- Pioneer's 55H96
- Quality Seeds' FSG 421LH
- Speare Seeds' FSG 421LH

PLH resistant varieties are bred using conventional methods (i.e., they are not GMOs), and are therefore permitted for use in organic production. Organic producers may choose to use PLH resistant varieties as an easy and practical method to manage PLH risk.

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About Christine O'Reilly, OMAFRA Forage & Grazing Specialist

Areas of Focus: - Production and storage strategies to improve the productivity and profitability of forages - Benefits of forages and grazing within cropping systems - Forage production and grazing systems in northern Ontario

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