



POTATO LEAFHOPPER IN ALFALFA

(Revision of Factsheet "Potato Leafhopper in Alfalfa", May 1980)
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The potato leafhopper feeds on potatoes, beans, alfalfa and over 200 different species of plants. It is now recognized as a very important insect pest of alfalfa in the northeastern states and in Ontario. The damage to alfalfa in Ontario is sometimes severe, particularly to seedling alfalfa in dry years.

LIFE HISTORY AND HABITS

The potato leafhopper does not overwinter in Canada. The pest breeds throughout the year in the Gulf states and each year the adults disperse northward on the wind into Canada. They arrive in Ontario in early June and alfalfa is a preferred host.

The adults are light green, wedge-shaped insects about 3 mm long ($\frac{1}{8}$ in.) (Figure 1). They have sucking mouth parts and can fly, walk and hop (hence the name). They are active insects, especially when it is warm. The best time to find them is from 10:00 a.m. to 4:00 p.m. when it is warm and dry and they have moved up to the top of the foliage.

The eggs are laid in the fleshy tissues of the upper leaves and stems and hatch in about 10 days. These nymphs or immatures (Figure 2) are yellowish-green and wingless but otherwise resemble the adults. They are found on the undersides of the leaves, particularly near the top of the plants. The nymphs have the curious ability to walk sideways or backwards to hide on the underside of the leaves. The nymphs pass through five stages, each larger than the previous and become adults in about 25 days. Three or four generations are produced each year before they are destroyed by frost.



Figure 1. Adult Potato Leafhopper. Photo Courtesy: Ohio Agricultural Research and Development Centre, Wooster, Ohio.



Figure 2. Developing nymph. Photo Courtesy: Ohio Agricultural Research and Development Centre, Wooster, Ohio.

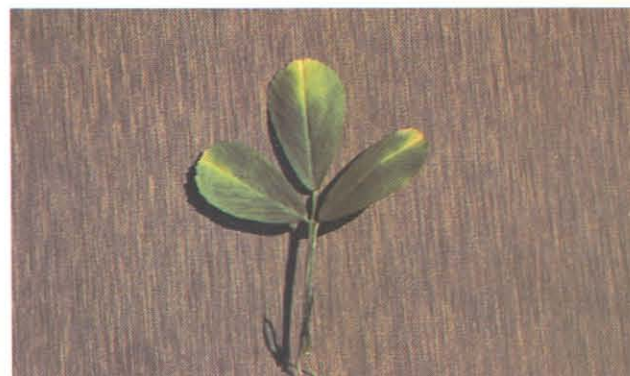


Figure 3. Initial Feeding Symptom

DAMAGE

This pest feeds by sucking plant juices and this reduces the vigor of the alfalfa. However as it feeds, it also produces a proteinaceous sheath that causes plugging of the vascular system. This plugging prevents normal translocation in the plant and can cause discoloration and even dried out areas at the leaf margins. A typical symptom is yellowing followed by bronzing, especially in a triangular area at the tip of the leaflets (Figure 3). On some plants these areas may dry out and turn brown. This symptom is called 'hopper burn' and is a characteristic of leafhopper feeding on some plants such as potatoes but is less common on alfalfa. As the leafhoppers become numerous and the vascular system becomes plugged, the whole plant develops symptoms. Discoloration spreads

throughout the leaves (Figure 4) and the crop becomes stunted (Figure 5) and yellowed (Figure 6). Unfortunately these symptoms are not unlike those of boron deficiency or lack of moisture. In fact because of the plugging, damage by leafhoppers is more severe in dry years when the plant is under moisture stress.

Experiments in southwestern Ontario have shown that leafhoppers can cause a 2 to 3% reduction in percent protein, in addition to reducing both the average height and yield.

Damage to direct seedlings is usually more severe than that to established alfalfa. Direct seedlings are usually only 10 to 20 cm high when the leafhoppers arrive in Ontario and are particularly vulnerable to damage. The first cut of established fields always escapes significant injury but damage may be severe on regrowth from late June to mid-August. In planning controls, new seedlings should take priority because of their greater susceptibility.

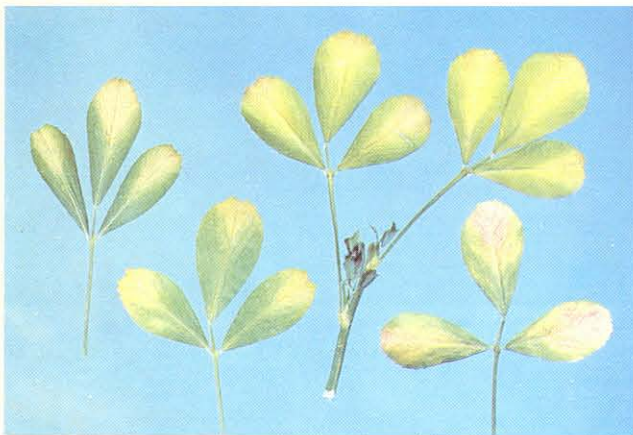


Figure 4. Progressive leaf discoloration

CONTROL

Effective control on both direct seedlings and regrowth of established fields depends on recognition of the nymphs and adults **before plant symptoms** become noticeable. Experience has shown that plants do not respond well to treatment after symptoms develop because of the plugging in the plant. In this case it is better to harvest the crop early and spray the regrowth early.

A small number of adults on new seedlings in mid-June or on the early regrowth can cause a serious loss of yield.

The best way to detect these populations early and in time for control is with an insect sweep net. New seedlings should be checked twice weekly starting in mid-June and the regrowth of established stands checked regularly after harvest. **When an average of one leafhopper adult or nymph is found per sweep, treatment is recommended with one of the following:**

Leafhopper Control			
Insecticide	Formulation*	Product per ha	Days to harvest
methoxychlor	2.4 EC	5.5 L	7
	50% WP	2.2 kg	7
Cygon	480 E or 4.8 E	425 mL	2

*EC (Emulsifiable Concentrate); WP (Wettable Powder)



Figure 5. Healthy vs stunted plant

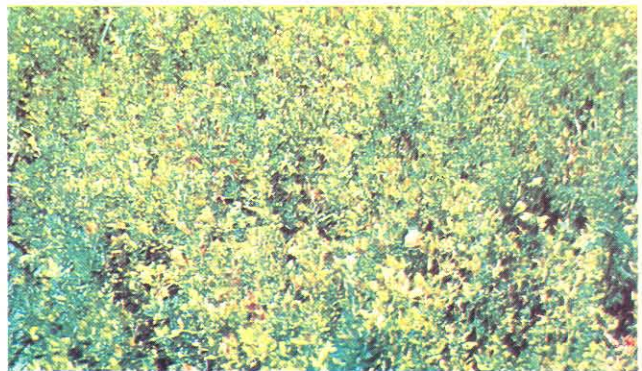


Figure 6. Field injury