



Dr. Hugh Smith
The Connecticut Agricultural Experiment Station
153 Cook Hill Road
Windsor, CT, 06095

Phone: (860) 687-4763
Fax: (860) 683-4987

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Email: Hugh.Smith@ct.gov
Website: www.ct.gov/caes

Leafhopper Pests of Connecticut Nurseries and Landscapes

Several types of leafhopper attack plants in nurseries, greenhouses and landscapes in Connecticut.

Leafhoppers are narrow, elongate, wedge-shaped insects with either sharply or bluntly rounded heads. They belong to the family Cicadellidae in the order Hemiptera. Among the more important leafhoppers in the northeast are the potato leafhopper (*Empoasca fabae*), the aster leafhopper (*Macrostelus quadrilineatus*), the redbanded leafhopper (*Graphocephala coccinea*) and the white-banded elm leafhopper (*Scaphoideus luteolus*).

Leafhoppers have piercing-sucking mouth parts. They cause damage to plants by destroying chlorophyll, removing plant fluids, and by introducing toxins into the plant with their saliva. Feeding damage by leafhoppers can produce stippling, silverying, and in the case of some leafhoppers, such as the potato leafhopper, a yellowing on leaf margins called “hopper burn.” In addition, female leafhoppers can damage plants when they insert eggs into leaf tissue, making it susceptible to fungal and bacterial infection.

The aster leafhopper vectors the aster yellows phytoplasma, an infection that affects over 200 types of ornamental and food plants. The symptoms of aster yellows can vary according to host plant and the severity of the infection, and can include yellowing of leaves, shortening of internodes, malformed flowers, and “brooming” or excessive shoot proliferation. The white-banded elm leafhopper vectors the phytoplasma elm phloem necrosis, also known as elm yellows, which is responsible for the death of many elm trees in the northeast.

The potato leafhopper cannot overwinter in the north. It survives year-round in the Gulf States, and

migrates north with warm air currents each spring. It is usually present in Connecticut by June. The aster leafhopper may overwinter in low numbers in the northeast, particularly if snow cover protects the eggs, which are the overwintering stage. However, overwintering populations are relatively unimportant compared to populations that migrate north each spring from the southern Great Plains. The white-banded elm leafhopper and the rose leafhopper (*Edwardsiana rosae*) overwinter as eggs in plant tissue.

Leafhoppers have simple metamorphosis. They typically pass through five nymphal stages before reaching the adult stage. Nymphs resemble adults but have wing pads instead of fully developed wings. Adult potato and aster leafhoppers feed on a broader selection of hosts than nymphs, and because they have fully developed wings, are more mobile.

Yellow sticky cards are useful tools for monitoring leafhoppers, particularly adult leafhoppers. Leafhoppers are most commonly observed on the undersides of leaves. Striking foliage with your hand onto flat, light surface such as a scouting sheet can dislodge and reveal the presence of leafhoppers. As with aphids, the presence of cast nymphal skins is also evidence of leafhoppers.

Several types of parasitic wasp attack leafhopper eggs and nymphs, and predators attack all stages of leafhopper. However natural enemies overall have not been very helpful in suppressing leafhopper populations in commercial crop production. Host plant resistance to leafhoppers has been developed for some food crops, but nursery and greenhouse growers continue to rely primarily on insecticides to suppress leafhoppers. Broad spectrum insecticides

such as acephate, bifenthrin, and chlorpyrifos are registered in Connecticut for use against leafhoppers but have a disruptive effect on natural enemies that suppress other pests such as spider mites. Softer options for suppressing leafhoppers include the fungal pathogen *Beauveria bassiana*, azadirachtin-based products, insecticidal soaps and oils, and insect growth regulators such as buprofezin. Neonicotinoids, including acetamiprid, imidacloprid and thiamethoxam are also registered for use against leafhoppers. See Table 2 for a partial list of insecticides available for leafhopper management in Connecticut.

References

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Table 1. Leafhopper pests in Connecticut and their host range		
Common name	Scientific name	Primary hosts
aster leafhopper	<i>Macrostelus quadrilineatus</i>	Big leaf periwinkle (<i>Vinca major</i>), black-eyed Susan (<i>Thunbergia</i>); over 200 annuals; vector of aster yellows
Japanese leafhopper	<i>Orientalis ishidae</i>	mountain ash (<i>Sorbus</i> sp.)
Ligurian or mint leafhopper	<i>Eupteryx decemnotata</i>	Mint family (Labiatae): rosemary, sage, oregano, catnip
maple leafhopper	<i>Alebra albostrigella</i>	basswood (<i>Tilia</i>), beech (<i>Fagus</i>), cherry (<i>Prunus</i>), elm (<i>Ulmus</i>), hawthorne (<i>Crataegus</i>)oak (<i>Quercus</i>)
potato leafhopper	<i>Empoasca fabae</i>	Norway and sugar maples (<i>Acer</i>), birch (<i>Betula</i>), apple (<i>Malus</i>), chestnut (<i>Castanea</i>), Persian walnut (<i>Juglans regia</i>); many horticultural and ornamental crops
redbanded/sharpshooter leafhopper	<i>Graphocephala coccinea</i>	Rhododendron, mountain laurel (<i>Kalmia latifolia</i>), azaleas, rose
rhododendron leafhopper	<i>Graphocephala fennahi</i>	Rhododendron, azaleas
rose leafhopper	<i>Edwardsiana rosae</i>	Rose family; nymphs also feed on <i>Cornus</i> , <i>Crataegus</i> , <i>Prunus</i> , <i>Quercus</i>
white-banded elm leafhopper	<i>Scaphoideus luteolus</i>	Elm (<i>Ulmus</i>), vector of elm yellows disease (elm phloem necrosis)

Table 2. A partial list of insecticides registered for use against leafhoppers in Connecticut. N = Nursery, G = Greenhouse, L = Landscape; R = Restricted; OMRI = Approved for use in organic production

Active ingredient	Insecticide class/Mode of Action	Example	Sites (see label for full list)
acephate	Organophosphate	Acephate Pro 75	N, L
		Orthene TTO	N, G, L
acetamiprid	Neonicotinoid	Tristar 30 SG	N, G
azadirachtin	Antifeedant, moulting disruptor, repellent	Azatin XL	N, G, L
		Azatrol	N, G, L, OMRI
		Ornazin 3 EC	N, G
<i>Beauveria bassiana</i>	Microbial	Mycotrol O	N, G, L, OMRI
		Naturalis L	N, G
bifenthrin	Pyrethroid	Attain Greenhouse	G, L, R
		Menace GC 7.9% Flowable	N, G, L, R
		Talstar Lawn and Tree flowable	L, R
		Talstar One	G, L, R
		Talstar select	N, G, L, R
buprofezin	Growth Regulator	Talus	G, L, R
chlorpyrifos	Organophosphate	Chlorpyrifos Pro 4	N, G, T, R
		Dursban 50 W (WSP)	N
		DuraGuard ME	N, G
clothianidin	Neonicotinoid	Arena 50 WDG	L, T
cyfluthrin+imidacloprid	Pyrethroid + Neonicotinoid	Discus	N
cyfluthrin	Pyrethroid	Decathlon 20 WP	N, G
dinotefuran	Neonicotinoid	Safari 20 SG	N, G, L
		Safari 2G	N, G, L
fenpropathrin	Pyrethroid	Tame 2.4 EC	N, L, R
fluvalinate	Pyrethroid	Mavrik Aquaflo	N, G, L, R
horticultural oil	suffocant	Damoil	N, G, L
		Sunspray Ultrafine oil	N, G, L
		Synergy Super Fine Spray oil	N, G, L
imidacloprid	Neonicotinoid	Benefit 60 WP	N, G
		Imida E-Pro 2F	N, G
		Imida E-Pro 60 WSP	N, G
		Marathon 1G, 60 WP	N, G
		Marathon II	N, G
		Merit 0.3 G	L, T
		Merit 75 WP	L, T
insecticidal soap	Dessicant, suffocant	Insecticidal soap 49.52 CF	N, G, L
		M-Pede	N, G, L, OMRI
lambda cyhalothrin	Pyrethroid	Scimitar CS	L
		Scimitar GC	N, G
neem oil	suffocant	Triact 70	N, G, L, OMRI
permethrin	Pyrethroid	Ambush, Astro	N, G - see label, R
		Arctic 3.2 EC	N, G - see label, R

		Permethrin 3.2 AG, 3.2 EC	N, G - see label, R
		Perm Up	N, G - see label, R
phosmet	Organophosphate	Imidan 70W	L, Christmas trees
pyrethrins and PBO	Pyrethrin and piperonyl butoxide	Pyrenone	G, T
		Pyrethrum TR	N, G
thiamethoxam	Neonicotinoid	Flagship 25WG	N, G

Mention of a chemical or product is for informational purposes only and does not constitute an endorsement by The Connecticut Agricultural Experiment Station

This fact sheet is not a substitute for the pesticide label. The applicator assumes all responsibility for the proper use of any pesticide and must always thoroughly read, understand, and follow all label directions.



Redbanded sharpshooter (*Graphocephala coccinea*). Photo: Susan Ellis, Bugwood.org



Yellow sticky crads are important tools for monitoring leafhopper pests. Photo: Hugh Smith



Potato leafhopper nymphs (*Empoasca fabae*). Photo: Merle Shepard, Clemson University, Bugwood.org



Typical "leafhopper burn" damage on malvaceous plant. Photo: Hugh Smith



***Macrosteles* sp. Photo: Hugh Smith**