



Fig. 1. Adult (with wings) and nymphs of potato leafhopper.

# Protecting Field and Forage Crops from Potato Leafhopper

Leafhoppers suck the sap of many plants. The potato leafhopper does by far the most damage to field and forage crops in Michigan. This pest damages alfalfa and other legume hays, such as clovers and trefoils, nearly every year, dry beans and soybeans during some seasons, and sugarbeets on rare occasions. The potato leafhopper injects saliva into the plants as it feeds. This saliva affects the plant like a growth regulator and causes stunting of the stems, cupping (curving downward and inward) and curling of the leaves, retarded development, and a yellowing or reddening of the leaves. These can be signs of any number of problems—including drought, soil problems and weed killer injury—but the presence of leafhoppers on the plants indicates the source of the problem.

The potato leafhopper is killed by frost and overwinters only on the southern Gulf coast. It increases early in the year in the South and adults are carried northward by air movements, usually arriving in Michigan during the last days of May or the first days of June. The hay crops have lush growth then and most of the adults settle in the forage crops. The adults are elongate with short, bristlelike antennae (feelers) and are about 1/8 inch long (Fig. 1). They are pale green, usually have a series of white spots along the margin of the body behind the head, and have translucent, greenish wings. They fly readily or run sideways around the leaf when disturbed. They suck the sap from the veins on the undersides of the leaves. The females insert their eggs into the stems of the plants.

The nymphs (young) of the leafhopper hatch from the eggs in about 10 days. They resemble the adults but lack wings (Fig. 1). The nymphs are whitish when first hatched and are pale green and about 1/8 inch long when fully grown. Like the adults, they run sideways and suck sap from the leaf veins. The nymphs change

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to the winged adults about three weeks after eggs are laid. Their numbers can increase sufficiently to damage hay crops starting in late June. Some of the adults of the first generation move out of the hay crop and begin infesting dry beans, soybeans and (rarely) sugarbeets about mid-July. Several generations per year occur. Leafhoppers will stay in the field until killed by frost in the fall.

## Control

Check fields of alfalfa, clovers and trefoil for leafhoppers starting the latter part of June. Fields of dry beans, soybeans and sugarbeets should be checked starting in mid-July. The leafhoppers remain a threat throughout the season, so checks should continue until the crops begin to mature or the final hay cutting is made. Check fields simply by looking for cupped or discolored leaves and occasionally turning leaves over to see if leafhoppers are present. An insect sweep net can be used to check for the leafhoppers, especially in the hay crops. (Insect sweep nets can be purchased from biological supply houses. Direction for their construction and use are given in Extension bulletin E-986, "An Insect Sweep Net—Construction and Use.")

An application of insecticides is recommended when:

- There are one or more leafhopper adults or nymphs per tip or per sweep of the net in alfalfa, clovers or trefoil. If the infested crop is almost ready to cut, we recommend cutting it first, checking the regrowth and spraying the regrowth, if needed.
- There are one or more leafhoppers per trifoliolate leaf and when the first cupped leaves appear in dry beans or soybeans. These crops are especially susceptible to leafhopper damage from first flower to pod fill, and fields should be checked very carefully during this time.
- We have too little experience with leafhoppers in sugarbeets to set firm guidelines for their control. Beets should be sprayed if the leafhoppers appear to be abundant and definitely if leaves are curling.

The insecticides dimethoate (Cygon, Defend), Orthene, methomyl (Lannate, Nudrin), Furadan and Metasystox R are systemics, and 10 gallons of spray per acre with ground equipment are sufficient for effective control. When the other recommended insecticides are used, a minimum of 10 gallons of spray per acre in small plants (less than about 6 inches tall) and 20 gallons per acre in taller plants should be applied with ground equipment.



## Insecticides Recommended for Control of Potato Leafhopper

Insecticide	Amount per acre	Limits <sup>a</sup>			
<b>DRY BEANS</b>					
dimethoate (Cygon, DeFend)	1 pt 4 lb/gal EC	PHI 0 days. Do not feed vines.	Imidan	2 lb 50% WP	PHI 7 days. Maximum 1 application per cutting.
carbaryl (Savit, Sevin)	1 qt 4 lb/gal F 1¼ lb 80% WP 2 lb 50% WP	PHI 0 days.	Guthion	1 lb 50% WP 1 qt 2 lb/gal EC <sup>b</sup>	PHI 16 days. Maximum 1 application per cutting.
Orthene	1 lb 75% WP	PHI 14 days. Do not feed vines.	Supracide	1 qt 2 lb/gal EC <sup>b</sup>	PHI 10 days. Maximum 1 stubble and 1 foliar application per cutting.
methomyl (Lannate, Nudrin)	½ lb 90% WP 1 qt 1.8 lb/gal EC <sup>b</sup>	PHI 3 days vines, 7 days hay, 25 days beans.	Phosdrin	1 pt 4 lb/gal EC <sup>b</sup> 6 fl oz 10.3 lb/gal EC <sup>b</sup>	PHI 1 day.
Trithion	½ pt 8 lb/gal EC	PHI 21 days. Maximum 2 applications per season.	diazinon	¾ pt 4 lb/gal EC ¾ lb 50% WP	PHI 7 days hay, 0 days grazing.
diazinon	1 pt 4 lb/gal EC	PHI 4 days vines, 7 days beans.	malathion	1 qt 5 lb/gal EC	PHI 0 days. Malathion applied in the evening is especially recommended where bees may be exposed.
Dibrom	1 pt 8 lb/gal EC	PHI 1 day. Do not feed vines.	<b>SOYBEANS</b>		
Guthion	1 lb 50% WP 1 qt 2 lb/gal EC <sup>b</sup>	PHI 30 days. Do not feed vines. Maximum 4 applications per season.	carbaryl (Savit, Sevin)	1 qt 4 lb/gal F 1¼ lb 80% WP 2 lb 50% WP	PHI 0 days. Do not mix with 24-DB.
Pydrin	5⅓ fl oz 2.4 lb/gal EC <sup>b</sup>	PHI 21 days. Do not feed vines. Maximum 42⅓ fl oz per acre per season.	Trithion	½ pt 8 lb/gal EC	PHI 7 days. Do not feed vines.
ethion	1 pt 4 lb/gal EC ½ pt 8 lb/gal EC	PHI 2 days. Do not feed vines.	Guthion	1 lb 50% WP 1 qt 2 lb/gal EC <sup>b</sup>	PHI 45 days. Do not feed vines.
malathion	1 qt 5 lb/gal EC	PHI 1 day.	Pydrin	5⅓ fl oz 2.4 lb/gal EC <sup>b</sup>	PHI 21 days. Do not feed vines. Maximum 42⅓ fl oz per acre per season.
<b>LEGUME HAYS</b>			Ambush	3⅓ fl oz 2 lb/gal EC <sup>b</sup>	PHI 60 days. Do not feed vines. Maximum 2 ap- plications per season.
dimethoate (Cygon, DeFend)	1 pt 4 lb/gal EC 1½ pt 2.67 lb/gal EC	PHI 10 days. Maximum 1 application per cutting.	<b>SUGARBEETS</b>		
Furadan	1 pt 4 lb/gal F <sup>b</sup>	PHI 14 days. Maximum 1 application per cutting and 2 applications per season.	carbaryl (Savit, Sevin)	3 pt 4 lb/gal F 1⅞ lb 80% WP 3 lb 50% WP	PHI 14 days.
carbaryl (Savit, Sevin)	1 qt 4 lb/gal F 1¼ lb 80% WP 2 lb 50% WP	PHI 0 days. Do not apply to small plants if they are wet or if rain is expected within 48 hours.	Trithion	1 pt 8 lb/gal EC	PHI 14 days.
Lorsban	1 pt 4 lb/gal EC	PHI 14 days. Maximum 1 application per cutting and 4 applications per season.	parathion	1 pt 4 lb/gal EC <sup>b</sup> ½ pt 8 lb/gal EC <sup>b</sup>	PHI 15 days.
trichlorfon (Dylox, Proxol)	1¼ lb 80% WP 1 qt 4 lb/gal EC	PHI 0 days. Maximum 3 applications per season. Trichlorfon applied in the evening is especially recommended where bees may be exposed to the spray.	Dibrom	1 pt 8 lb/gal EC	PHI 2 days. Do not feed tops.
Trithion	½ pt 8 lb/gal EC	PHI 28 days. Maximum 1 application per cutting.	diazinon	1 pt 4 lb/gal EC 1 lb 50% WP	PHI 0 days.
			Metasystox R	1 qt 2 lb/gal EC	PHI 30 days. Maximum 6 applications per season.

<sup>a</sup>PHI (pre-harvest interval) is the minimum time allowable between applications and harvest or other use of the crop.

<sup>b</sup>This formulation is a restricted-use pesticide that may be purchased and used only by a certified pesticide applicator.



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