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Michigan State University

Cooperative Extension Service

IPM Facts

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January 1994

2 pages

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Managing Potato Leafhoppers In Dry Beans

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The potato leafhopper¹ is a serious dry bean pest in the Midwest. Protecting crops from potato leafhopper damage involves utilization of an IPM (Integrated Pest Management) approach, including timely monitoring of fields, biological control practices, and pesticide application when justified.

Identification:

Adults: About 1/8-inch long, adults are elongated with short, bristle-like antennae. They are lime green with translucent, greenish wings held at a roof-like angle over the body.

Eggs: The whitish, elongated eggs are about 1/24-inch long. Eggs are inserted in the plant stems and petioles.

Nymphs: The immature stages (nymphs) resemble the adults, but are wingless. When first hatched, the nymphs are approximately 1/32-inch long. They turn pale green and are about 1/8-inch long when fully grown. The potato leafhopper passes through five nymphal stages before becoming an adult.

Life Cycle:

Potato leafhoppers overwinter in the Gulf states and migrate north each spring on air currents. They usually arrive in Michigan during May or in early June. Migration most commonly occurs when a high pressure system to the east of Michigan and a low pressure system to the west combine to produce sustained flows of air to the north. After arriving in the

state, adults feed and lay eggs in available host crops, usually forages or dry beans.

Adult potato leafhoppers readily fly or run sideways when disturbed. Females deposit one to six eggs daily in plant stems, leaf petioles and leaf veins. The nymphs hatch in about 10 days. Like the adults, they

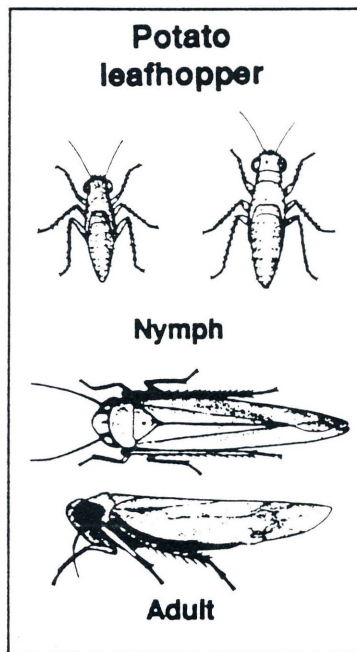
suck sap from leaf veins and run sideways when disturbed. Nymphs molt five times over a one- to two-week period before maturing into winged adults. There may be several overlapping leafhopper generations per year in Michigan. By late June, numbers may have increased sufficiently to damage dry bean crops. Leafhoppers will stay in crop fields until killed by fall frosts.

Damage:

The feeding of both immature and adult leafhoppers is damaging to dry bean crops. Potato leafhoppers inject saliva into plants as they feed, resulting in abnormal cell growth and interference with transport of fluids in the leaves. A visible result of this damage is the characteristic hopperburn. In dry beans, hopperburn begins as a yellowing of the tips and outer edges of the leaves. If feeding continues, the yellowed area spreads inward and cupping (curving downward and inward) and curling of the leaves begins. Seriously affected plants are stunted which results in yield losses.

Detection:

Check dry bean fields for leafhoppers as soon as plants have emerged and leafhoppers are present. Examine plants in five areas of the field, looking for leafhopper adults and nymphs. Placing your hand or



¹ Potato Leafhopper: *Empoasca fabae* (Harris)

a notebook under the leaves usually causes leafhoppers to run to the upper leaf surface where they can be easily counted. Be sure to check dry bean fields after nearby alfalfa fields are cut because cutting causes the adult leafhoppers to leave alfalfa fields. They frequently move to nearby dry bean fields.

Management:

Biological Control: A naturally occurring fungal pathogen helps reduce populations of the potato leafhopper under cool, moist conditions. Predators and parasites appear to play only a minor role in regulating this pest.

Cultural Control: Few cultural controls are avail-

able for managing leafhoppers in dry beans. Practices which promote a healthy, vigorously growing crop will aid in allowing the dry bean plant to tolerate some leafhopper feeding.

Chemical Control: Fields should be treated when there are one or more leafhoppers per trifoliate leaf, or when the first yellowing of the leaves appears. Full coverage is required except when using a systemic insecticide. Banded applications are an effective and economic means of controlling potato leafhoppers when plants are small. Fields must be checked following spraying as leafhoppers may continue to re-infest fields up to the first frost.

Recommended insecticides for controlling potato leafhoppers in dry beans¹

<u>Chemical</u>	<u>Formulation²</u>	<u>Rate³</u>	<u>RUP⁴</u>	<u>Restrictions⁵</u>
dimethoate (Cygon)	4 EC	1/2 - 1 pt	N	PHI 0 days, do not feed vines.
Orthene	75 S	2/3 - 1 1/3 lb	N	PHI 14 days, do not feed vines.
Asana XL	0.66 EC	5.8 - 9.6 oz	Y	PHI 21 days, do not graze or feed.
carbaryl (Sevin)	80 S	1 1/4 lbs	N	PHI 0 days.
Pennacp-M	2 EC	1 qt	Y	PHI 15 days.
malathion	5 EC	1 qt	N	PHI 1 day.
Lannate	1.8 L 90 SP	1 - 4 pt 1/4 - 1 lb	Y Y	PHI 3 days vines, 25 days beans.

¹ Be sure your equipment is properly calibrated. Refer to Extension Bulletin E-1582 **Chemical Control of Insects and Nematodes in Field and Forage Crops**, available at your county Extension Office.

² Other formulations available.

³ Rate per acre.

⁴ Restricted use pesticide.

⁵ PHI = Pre Harvest Interval

This bulletin was originally prepared with the support of the U.S. Department of Energy, Grant No. DE-FG0276CS60204. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of DOE.

To protect yourself and others and the environment, always read the label before applying any pesticide.

This publication contains pesticide recommendations based on research and pesticide regulations. However, changes in pesticide regulations occur constantly. Some pesticides mentioned may no longer be available, and some uses may no longer be legal. If you have questions about the legality and/or registration status for using pesticides, contact your county Extension office.

Illustrations courtesy of North Carolina State University Cooperative Extension Service, Extension Bulletin AG-271.



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