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CEREAL LEAF BEETLE CONTROL

COOPERATIVE EXTENSION SERVICE

MICHIGAN STATE UNIVERSITY

EAST LANSING

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THE CEREAL LEAF BEETLE invaded Michigan about four or five years ago and has been actively controlled since 1961. It is located primarily in southwest Michigan where it is a severe pest of oats. Wheat, barley, and rye are damaged less than oats, but in the tender growing stages of these plants, injury can be considerable. This new pest is spreading.

Description of damage.—Oats are the preferred host. The damage described here is for that crop although the injury on all of its grass host plants is about the same, but less intense than it is on oats. Whole fields may be destroyed by the cereal leaf beetle. Both the adults and larvae (often called grubs or slugs) chew long strips of plant tissue between the veins. The adult usually eats through all of the leaf tissue, while the larva leaves the lower epidermis or skin of the plant leaf intact. When enough feeding occurs, the leaves of the damaged plants turn white at the tips and upon drying turn rust-colored.

Note: This white-tipped condition is, for the most part, a blanching of the color in the leaves. As far as is known, only the cereal leaf beetle of the insect pests of cereals and grasses causes this white-tipped condition. The white-tipping of grass leaves and the black-slime covered larvae are abundant proof that the insect problem is the cereal leaf beetle.

Life history.—The insect has four phases to its life cycle: egg, larva, pupa, and adult. Only the adults pass through the winter, emerging in April to lay eggs. The eggs hatch in about five to ten days. Larvae feed from mid-May until the latter part of June. Pupation takes place the last half of June in cells in the upper two inches

of soil. The adults begin appearing in late June and feed on tender grasses and corn for about ten days. By mid-July, most of the adults discontinue feeding and seek overwintering sites. These normally move to places under the bark of trees, in cracks in fence posts and logs, in baled hay and straw, and other similar dry, secluded, and firm hiding places.

Description of the insect

Eggs.— They are elongate-oval shaped, about one-sixteenth inch long, yellowish when first laid, almost black at hatching. They are laid on their sides on the upper surface of the leaves of host plants.

Larvae.— Mature larvae are about three-sixteenths inch long, humped-backed with brown-black heads and legs, and yellow bodies. The body is usually covered with an "inky" liquid material.

Pupae.— The membranes covering the pupae are thin and transparent. Similar to the eggs, the pupae are bright yellow when first formed and dark-colored like the adults when mature. The soil cells in which the cereal leaf beetle pupates are lined with a secretion which hardens to form a tough-smooth cell.

Adults.— These are three-sixteenths inch long with the head and hard wing covers metallic-blue-black and the legs and front part of the thorax (just behind the head) orange-red.

Control

The cereal leaf beetle is controlled by: (1) date of planting cereal crop, and (2) treating with insecticides.



Date of Planting

1. Plant fall wheat immediately after the Hessian fly-free date for each county. The reasons for this early planting are twofold:
 - a. Early fall planted wheat (and barley) is more advanced in growth when cereal leaf beetle adults appear in the spring, making the wheat less attractive for egg laying. Normally, the insect prefers laying eggs on young, tender cereals, usually less than six inches high.
 - b. Early fall planted grains will be larger, and more mature, thereby more able to tolerate feeding by the adults and larvae.
2. Because the seeding of spring grown cereals is so highly dependent on weather, it is hard to pick a practical planting date that would prevent damage by the cereal leaf beetles. Therefore, chemical control of the cereal leaf beetle is the only good means of preventing damage to spring planted grains.

Chemical control

In 7 to 15 or more gallons of water, use only one of the following insecticides. CALIBRATE the sprayer to apply the AMOUNT given to ONE ACRE. Note: Before using any insecticide, read the label for instructions on how to apply it.

DIELDRIN.—1 quart of an emulsion containing 1-1/2 pounds of actual chemical per gallon.

Warnings

1. Do not graze until 30 days AFTER treating.
2. Do not feed or sell straw that was treated closer than 30 days of harvest.
3. Do not apply within 7 days of harvest of grain.

LINDANE.—1 quart of an emulsion containing 1.6 pounds of actual chemical per gallon.

Warnings

1. Do not apply after the heads begin to form.
2. Do not apply to land intended for potatoes and root crops.
3. Do not apply within 14 days of harvest or grazing.

MALATHION.—1-2/3 pints of an emulsion containing 5 pounds of actual chemical per gallon.

Warning

Do not apply within 7 days of harvest or grazing.

CARBARYL (Sevin).—This is an effective insecticide for control of the cereal leaf beetle. Presently it is not approved for this insect. However, by the time to treat, it may be. Check with your county agricultural extension agent as to its status at that time.

When to apply treatments

Uniform coverage of the plants is absolutely necessary for commercial control of cereal leaf beetle. Timing of the treatment is critical: if the adults are numerous in early May, a spray is needed at this time to protect the stand of spring grains, and may be needed to protect late planted fall grains.

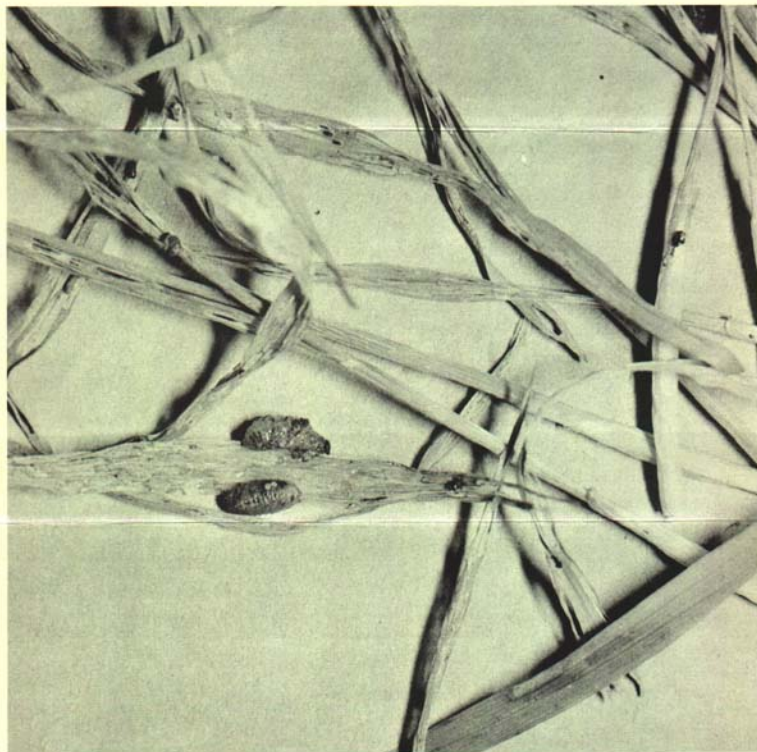
On all grains, whether planted in the fall or spring, a treatment will be needed when the larvae are abundant. The proper time for this spray is the latter part of May and the first few days of June. Details of the 1963 seasonal appearance of the various stages of the cereal leaf beetle are given in the following table:

| Host | Life Stages | First Found | Peak Numbers | Last Found |
|------------------------------------|---------------|---------------|-------------------|----------------|
| Winter Wheat | Spring adults | April 1 | April 18 to 27 | July 8 |
| | Eggs | April 11 | May 4 to 13 | June 15 |
| | Larvae | May 2 | May 25 to June 5 | June 18 |
| | Summer adults | June 17 | June 24 | July 18 |
| | Spring Oats | Spring adults | April 24 | May 9 to 25 |
| Eggs | | April 24 | May 10 to 30 | June 17 |
| Larvae | | May 9 | May 30 to June 11 | July 1 |
| Summer adults | | June 18 | June 24 | July 16 |
| Grasses: Red Canary and Orchard | | Spring adults | March 28 | April 15 to 21 |
| | Eggs | April 8 | April 20 to May 3 | June 10 |
| | Larvae | May 9 | May 20 to June 4 | June 21 |
| | Summer adults | June 18 | June 25 to July 1 | August 15 |

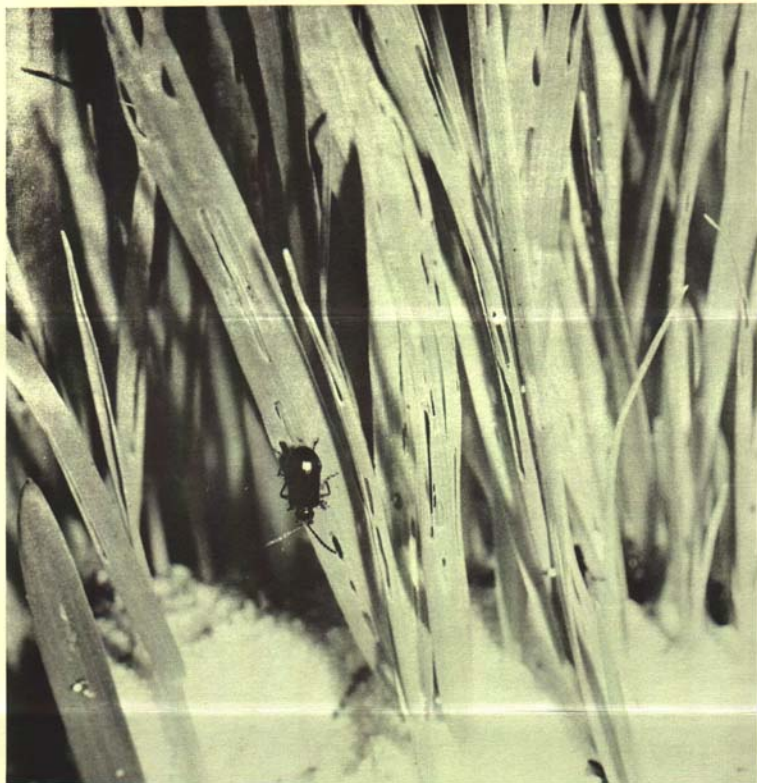
Note: When applying malathion, air temperatures should be 65 degrees F. or higher; dieldrin 60 degrees F. or higher; lindane 55 degrees F. or higher. For the most part, rising temperatures are preferred to falling temperatures when applying these chemicals.

Research and other phases of cereal leaf beetle control

are in progress. Before making a final decision on the insecticide to use for control of the beetle, consult your county agricultural extension agent. It is possible that other materials will be registered for this purpose. Also, more information about timing of sprays and planting date for spring grains will be available.



Mature larvae are about $\frac{3}{16}$ inch long, humped-backed with brown-black heads and legs, and yellow bodies. The body is usually covered with an "inky" liquid material. Larval feeding damage consists of long strips of tissue removed from between the veins of the upper surface of grass leaves. Note the small dark-colored larvae.



The adult is $\frac{3}{16}$ inch long. The head and hard wing covers are metallic-blue-black. The legs and front part of the thorax just behind the head are orange-red. Adult feeding damage consists of long strips of leaf tissue completely removed from between the veins.