Protecting Field Crops from Armyworm
Michigan State University
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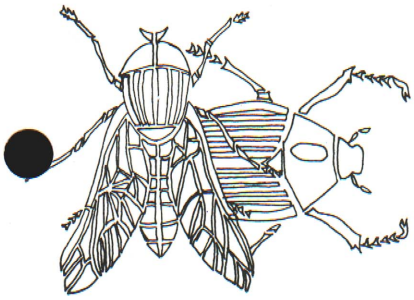

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ARMYWORMS IN FIELD CROPS

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THE ARMYWORM damages a few scattered fields of corn and small grains in Michigan each year, but devastates a large number of crops over a broad area during "outbreak" years.

This pest is held to low numbers during most years by its natural enemies (parasites, predators, and diseases). During outbreak years, conditions are favorable for the worms and unfavorable for their natural enemies, and the worms build up to spectacular numbers. It is impossible to predict when and where outbreaks will occur or predetermine which fields will be hit by scattered attacks of the worms. Early damage by the small worms is easily overlooked, and the worms are often not detected until they are large and considerable damage has already been done.

The only way to protect your crops from surprise attacks is to CHECK YOUR FIELDS for the pest. Ways of checking fields for armyworm and means of controlling it when it is found are presented in this bulletin. Notify your County Agricultural Extension Agent if you find large numbers of the armyworm so he can alert others to the threat.

BIOLOGY

The adult of the armyworm is an inconspicuous, tan-to-grayish moth. It has a wingspread of about 1½ inches and a small white spot in the center of its otherwise unmarked wings. The moth is active at night and rarely seen in the fields. It is attracted to lights around buildings, as are many other miller moths.

The adult armyworm lays its small, round, pale green eggs on the leaves of grasses in groups of up to 500. The female folds the leaf and cements the edges of the leaf over the cluster of eggs with a sticky secretion. The eggs are most frequently laid in dense grasses and in lodged areas of small grain fields.

The small armyworms that hatch from these eggs are white to pale green, have cylindrical bodies, a definite dark head, six small legs just behind the head, and ten fleshy legs near the rear of their bodies. The smaller worms feed at night and hide in the soil or near the crowns of the plants during the day. They may not be noticed even when they are abundant unless you specifically look for them. Their colors darken as they grow older.

The fully grown armyworm (Fig. 1) is 1½ to nearly 2 inches long, is greenish to nearly black, and usually has a prominent pale stripe on each side and a thin pale stripe down the center of its back. Their feeding increases tremendously as they grow larger. The apparent suddenness of the appearance of the armyworm in the field is caused by the rapid increase in feeding by the large worms.

Armyworms eat the above-ground portion of plants. They chew holes through the leaves or eat from the borders of the leaves. They may completely destroy the plant, but more commonly leave the tough midribs and stems uneaten. They will also feed on the heads of small grains and clip the stems so that the heads fall off. The large armyworms will feed during the day when their numbers are high. Their droppings (or frass) are rounded green pellets scattered over the ground under the plants.

Armyworms will move from field to field when numerous; this marching habit is the basis for its common name "armyworm." The fully grown worms enter the soil and change to the nearly immobile pupae. The pupae are about ¾ inch long, hard, brown, and thickly spindle shaped. Transformation to the adult moth is made during the pupal period.

The armyworms overwinter mainly as partially grown worms in the soil and at the crowns of grasses, and to a lesser extent as pupae in the soil. Some adults have been taken very early in the spring, and at least a few adults probably overwinter in Michigan. There are 2 and sometimes 3 full generations of the armyworm per year. Because of the variation of stages that overwinter, the generations overlap, and all stages of the pest can be found in the field throughout the winter. The adults that emerge from the overwintered larvae and pupae lay their eggs on the grasses or the small grains that are available early in the spring. The worms of the first complete gen-

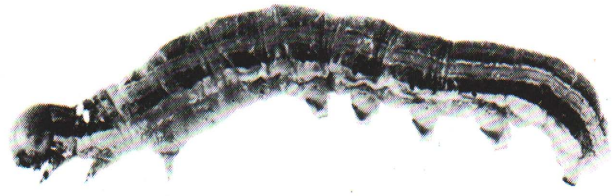

Figure 1. A fully grown armyworm (magnified 2X). The white spots near its head are eggs of a maggot parasite. Armyworm outbreaks occur when these maggots, and other natural enemies, fail to suppress the worms.

eration are the most damaging; this is during June to July in Michigan. The second generation of armyworms (during July and August) is usually small and not damaging to the crops. Third generation are the ones that seek sheltered places and remain inactive until the following spring.

DETECTION

There is no way to predict an outbreak of armyworms. Damage appears earlier in the south and later in northern areas. Newspaper and radio notices of armyworm outbreaks to the south of you should be used as alerts to start checking your fields. Fields should be checked for the worms, their frass and their damage every few days, starting in late May and continuing through June every year.

Armyworms are most likely to be abundant in heavy growth of grasses or small grain crops, especially where the small grains have lodged. Give special attention to such areas. Also check for build-up in pasture grasses and weedy fields. Look for leaves that have been fed on, examine the ground under the plants for fresh frass and sift through the dirt around the plant for the worms. Apply spray of insecticide when the armyworms can be easily found in the field. Apply spray in small grain fields even though the armyworms are not discovered until they are large and the field is already badly damaged. This spray will keep them from clipping the heads of small grain and from marching into adjacent fields. Fields adjacent to the infested field should be checked when the armyworm is abundant and sprayed if the armyworm is found in them.

CONTROL

Insecticides are the only means of controlling damaging numbers of the armyworm. Those recommended are given in the table. Sprays, granules, and baits of the insecticides can be used. A large amount of spray water per acre is not needed to get adequate coverage of the plant. A weed-killer type sprayer may be used for ground applied sprays if it is thoroughly cleaned of weed killer and properly calibrated. Seven to 15 gallons of spray water per acre in ground sprays is sufficient for good armyworm control. For aerial application, one gallon of spray per acre is adequate.

Insecticides for armyworm control are most effective when applied on warm evenings, just before the worms become active, and when the plants are dry. Treat the whole field if the worms are found scattered over the field. If only one section of the field is found to be infested, this section and a 20 to 40 foot border around it need only be treated. A border of 20 to 40 feet wide treated with insecticide will prevent the worms from marching from an adjacent infested field into a clean field.

4-POINT CONTROL PROGRAM

1. **Learn to recognize the armyworm.**
2. **Check your fields frequently for the pest.**
3. **Apply insecticides promptly when the worms are abundant.**
4. **Use insecticides with care.**

Insecticides Recommended for Armyworm Control

Insecticide	Pounds active insecticide per acre	Crop	Limits (Apply no closer to harvest than number of days given)
Carbaryl (Sevin)	1½	Field beans, soybeans, alfalfa, clover, hay and pasture grasses, and corn	0 days
		Sugarbeets	14 days
		Small grains	0 days; do not apply after boot stage.
Malathion	1¼	Soybeans, alfalfa, clover, and hay and pasture grasses	0 days
		Field beans	1 day
		Small grains	7 days
Trichlorfon (Dylox)	1½	Field beans	14 days
		Sugarbeets	14 days for beets; 28 days for tops.
		Small grains (except rye)	21 days grain; 3 days feed and forage.
Parathion (hazardous; use with full precautions)	½	Sugarbeets	14 days
	⅜	Corn	12 days
	⅜	Hay and pasture grasses, and small grains (except rye)	15 days

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