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SEEDCORN MAGGOT INJURY

E. V. Vea, D. R. Webb, and C. J. Eckenrode

The seed maggot complex, composed of the seedcorn maggot *(Hylemya platura* [Meigen]) and the bean seed maggot (/-/. *florilega)* can damage beans, peas, corn, and cucurbits. Larvae feed on germinating seeds, sometimes destroying growing tips resulting in snakeheads (leafless seedlings). Occasionally, complete seed destruction occurs. *H. platura,* which predominates in western New York, overwinters as a puparium from which a fly emerges in early spring (Fig. 1). Although heavy fly populations occur at various times during the planting season, infestations are difficult to predict since weather and soil conditions also influence the degree of injury (1). Also, damage by this pest is not always readily distinguishable from other injuries.

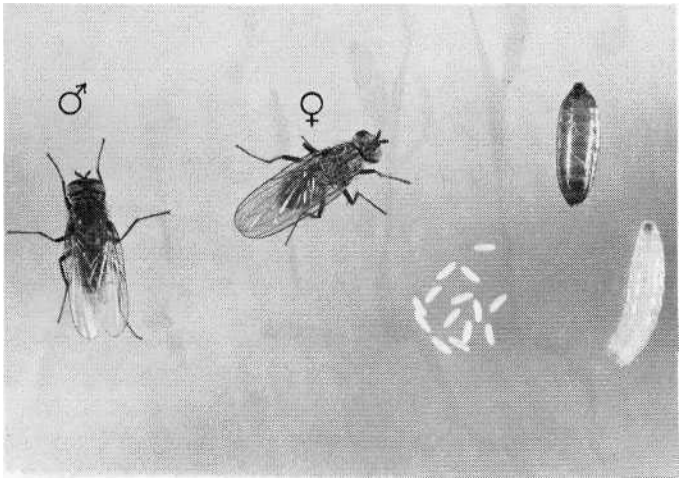

Figure 1 .—Life stages of the seedcorn maggot, Hylemya platura *(Meigen).*

This report describes and illustrates varying levels of seedcorn maggot damage on eight susceptible crops. We hope that this will aid in the diagnosis of maggot injury.

PROCEDURE

Seeds were placed on moistened sand in a plastic dish and infested with varying numbers of 1-day-old seedcorn maggot from a laboratory colony to produce different injury levels. All seeds were pretreated with a fungicide to protect against rots. Infested seeds were covered with $^{1}/2$-1-inch layer of sand and placed in the greenhouse until seedling emergence. Damaged seedlings were rated for maggot injury and photographed with a healthy plant. In general, increasing numbers of maggots decreased vigor and size of the seedlings.

RESULTS AND DISCUSSION

Beans

Kidney, lima, and snap beans exhibit the same type of maggot injury. Leaf damage ranges from a few holes in the first true leaves to complete destruction of the growing point (Figs. 2-4). In our laboratory experiments, 10,5, and 5 maggots/seed were required to significantly reduce stands of kidney, lima, and snap beans, respectively.

New York infestations are seldom severe enough to reduce bean stands noticeably except on limas which are particularly susceptible because of slower germination. Cold, wet springs may increase the potential for stand reduction from a combination of maggot feeding and seed rots. Light feeding on the embryonic leaves is of little con-

Figure 2.—Kidney bean. Injury ranges from a few holes in the first true leaves to total leaf loss. This type of damage also occurs in lima and snap beans.

Figure 3.—Lima bean.

Figure 4.—Snap bean.

Figure 5.—Soybean. Note the dark surface streaks on cotyledons.

sequence unless a surface loss of at least 10 per cent results; this has been severe enough to retard growth and development in our field trials. A 1 - or 2-day delay of snap bean maturation could significantly affect commercial yields in this state (2).

Feeding injury on soybeans usually appears as dark brown surface streaks on the outer parts of the cotyledons (Fig. 5). Occasional snakeheads may result. About 20 maggots/seed are needed to reduce soybean stands in our tests.

Corn

We feel that seed examination is the only reliable method for detecting maggot feeding on corn. Maggots tunnel through the seed coat and feed on the endosperm, but visible leaf damage seldom results (Fig. 6). Our experiments indicate that about 40 maggots/ seed are needed to reduce stands.

Figure 6.—Corn. Arrow indicates damaged portion of the seed.

Cucurbits

Emerged seedlings show light feeding damage on the leaf margins or tips (Figs. 7-8). Occasional leafless seedlings may result from severe maggot feeding; more often the plants never emerge. Heavy feeding produces ragged cotyledons or completely destroyed growing points, but tunneling is hard to detect in the damaged seeds. Seedling destruction from maggot feeding occurs more frequently in cucurbits than in any other susceptible crop since only two and four maggots/seed can reduce stands of winter squash and cucumber, respectively.

Figure 7.—Cucumber. Note light feeding damage on the leaf margins. This type of injury also occurs in squash.

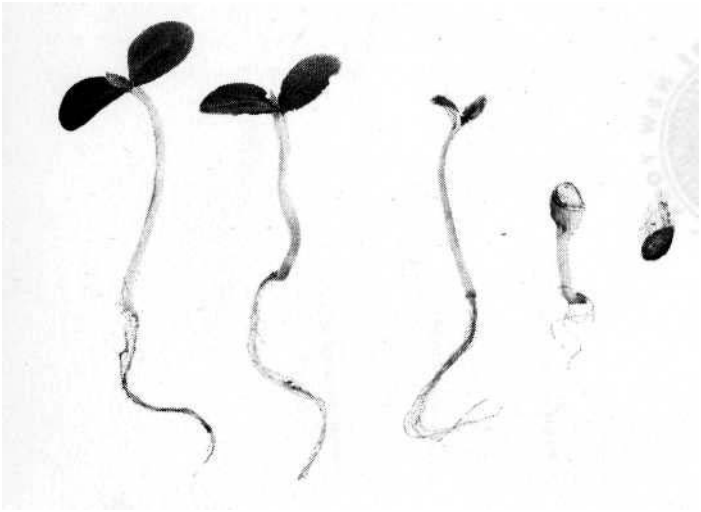

Figure 8.Squash.

Pea

Seedcorn maggot feeding on peas seldom results in detectable above-ground injury. As with corn, seeds must be examined to detect feeding damage which appears as cotyledon tunnels (Fig. 9). About 20 maggots/seed are required to reduce stands under our test conditions.

Figure 9. —Pea. Insert shows damaged part of the seed indicated by arrow.

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