

Snap Bean Insect Pests

Ed Grafius, Department of Entomology

Seed corn maggots injure seeds of a variety of crops, including corn, beans and cucurbits. They overwinter as small, brown pupae in the soil. Adult flies (fig. 1) emerge in late April to May. They are attracted for egg laying to soils that are high in decomposing organic matter, including plowed-down cover crops and animal manure. Eggs are laid on or beneath the soil surface. Larvae feed on decomposing plant material in the soil and especially on seeds of corn, beans, cucurbits, etc. (fig. 1). Seeds may be attacked before or shortly after germination. Injury may kill seeds. If sprouting seeds are attacked, cotyledons and new leaves may show injury above ground. Damage is especially common in cool weather because the seed corn maggot is well adapted to cool temperatures and seeds germinate slowly and are exposed longer to injury. There may be three or more generations per year. Monitoring for this insect is not practical, so seed treatment is generally recommended.

Potato leafhoppers (fig. 2) are serious pests of snap beans and dry beans in Michigan. Adults and nymphs cause "hopper burn" in the process of feeding (fig. 3). Foliage turns yellow, then brown, and plants may be stunted and the yield reduced. They migrate into Michigan from overwintering sites in the south, usually arriving in May. The potato leafhopper feeds by sucking plant sap of a wide range of plants, including alfalfa and potatoes. They may migrate into beans from these hosts, especially after cutting of nearby alfalfa hay. There may be 4 - 6 generations per year. Leafhoppers can be monitored visually or by using a sweep net.

Tarnished plant bugs (fig. 4) attack flowers and buds of snap beans. They feed by sucking sap from plant tissue, injuring nearby tissue. Damage to flowers of snap beans can cause flower drop and reduced pod set with little evidence of damage. Plant bugs overwinter as adults under leaf litter and debris in a variety of habitats. They emerge in late April or May and begin feeding on a wide range of weeds and crops, including alfalfa. There may be 3 - 5 generations per year. Adult plant bugs are active flyers and rapidly move from crop to crop. They may migrate into beans after cutting of nearby alfalfa. Frequently monitor plant bugs visually or by sweep net sampling, especially during flowering and pod formation.

European corn borers (fig. 5) may attack snap beans, boring into the pod and contaminating the product. They overwinter as larvae primarily in field corn crop residue. Mating occurs in grassy and weedy areas and the females move into snap beans, sweet corn and other crops to lay eggs (fig. 6). Eggs are usu-

ally laid on the undersides of the leaves. Larvae (fig. 7) may attack the stalk (fig. 8) or bore into the pod and feed on the bean (fig. 9). They most often attack field corn during the first generation. Second generation egg laying usually occurs in late July to August. A third generation of corn borers may occur in southern Michigan or during years with unusually warm spring and summer weather. Damage in snap beans is usually most severe during late August and early September when other hosts for the corn borer mature and become less attractive. Adult moth activity can be monitored using pheromone (sex attractant) lures and traps placed in grassy areas. European corn borer eggs and larvae can be monitored visually, but preventive treatment is usually required as soon as fruit begins to form.

Mexican bean beetle adults and larvae (fig. 10) feed on leaves of snap beans and dry beans. Larvae and adults cause a typical skeletonizing of the leaves. Adults overwinter in leaf litter and debris in a variety of habitats. They emerge in May and begin feeding on young bean plants and laying yellow eggs on the undersides of leaves. There may be up to three generation per year. **Bean leaf beetles** are yellow or red with black spots and smaller and more oval than the Mexican bean beetle. They can also seriously injure foliage of snap beans and are especially damaging to young seedlings. The bean leaf beetle primarily is restricted to the southern counties of Michigan.

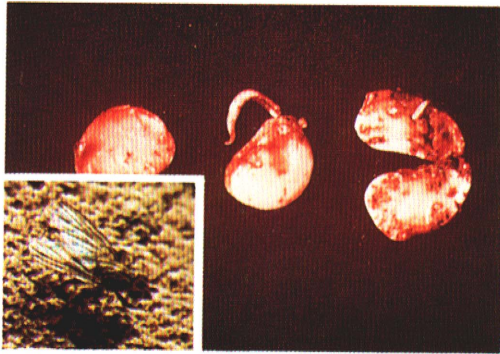
Bean aphids (fig. 11) may move from pigweed and dock and other wild hosts into bean fields. They may directly injure plants if densities are high enough, sucking plant sap and reducing yields. Bean aphids may also transmit bean mosaic virus. They can be monitored visually by regularly inspecting the undersides of leaves in several areas of the field.

Green cloverworms (fig. 12) feed on foliage and can also cause damage to the pods. They probably overwinter as pupae in Michigan and go through 2 - 3 generations per year. Fields should be inspected regularly for larvae or signs of foliar injury or injury to the bean pods.

For insecticide recommendations, commercial growers should consult MSU Extension bulletin E-312, *Control of Insects, Diseases and Nematodes on Commercial Vegetables*. Home gardeners, consult bulletin HYG-001, *Home Insect Pest Management Guide*.

Thanks to Art Wells and Don Cress for their contributions to earlier versions of this bulletin.

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1. Seed corn maggot (inset: adult) and maggot damage to bean



2. Potato leafhoppers—adult (left); immatures (right)



3. Hopperburn damage by leafhoppers



4. Tarnished plant bug on bean blossom



5. European corn borer adults



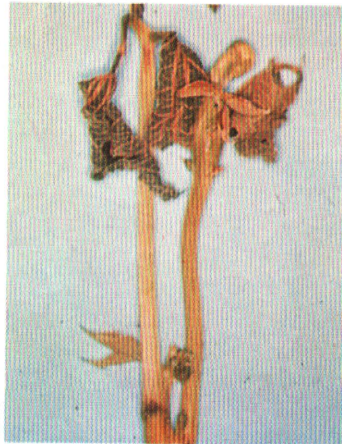
6. European corn borer egg mass and larvae



7. Full-grown European corn borer larvae



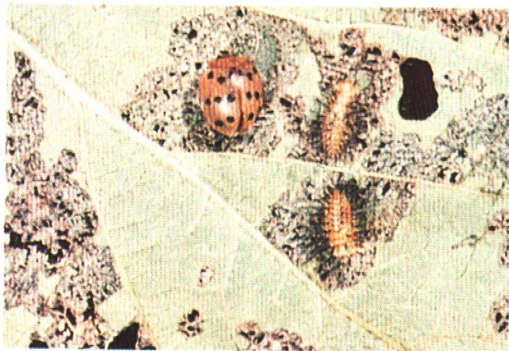
8. Left: European corn borer entry hole in bean stem (arrow)



right: flagged leaves indicate borer in stem



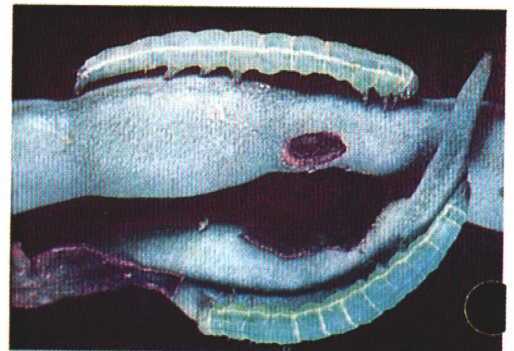
9. European corn borer in pod



10. Mexican bean beetle—adult (left); larvae (right)



11. Black bean aphid



12. Green cloverworms in bean pods