

European Corn Borer

...controlling it on:

- CORN
- PEPPERS
- POTATOES
- SNAP BEANS

By Donald Cress and Arthur Wells
Entomology Department

The European corn borer (Figs. 1 and 2) is a serious pest of several crops, including sweet corn (the preferred host), peppers, potatoes, and snap beans. The demand of buyers for only the highest quality vegetables — free from insect damage and contamination — adds to the seriousness of this pest. Some of the factors which make it difficult to control include: the short interval from hatching until the damage is done, difficulty in obtaining thorough spray coverage, short intervals between sprays, and an apparent increase in the over-all corn borer populations.

Damage can result in reduced yields and/or quality and insect contamination, depending on the crop. Reduced yields are caused by larvae boring into the stems, which reduces their efficiency, enhances the possibility of disease entry, and sometimes kills the



Figure 1 — Adult European corn borer and an egg mass.



Figure 2 — Egg mass in "black head stage". Note emerged larva (top, left).

plants. Stem boring has been found in corn, potatoes and beans (Figs. 3 to 6). On beans, any blossoms or pods above (and below) the point of entry may be lost (Fig. 7). Young larvae can also do considerable leaf feeding on sweet corn which may reduce the effective leaf area and result in yield loss (Fig. 3). Leaf feeding has not been observed on crops other than corn. Reduction in quality and contamination results when larvae enter the ears, peppers or snap bean pods, making them worthless for both processing and fresh market (Figs. 8 to 11).

Intensity of the control program (number of sprays and days between each spray) depends on the crop and the type of damage (yield, quality, or both). For example, the fruit of peppers, snap beans and sweet corn are under direct attack and must be continuously protected to prevent loss of the entire crop from damage and insect contamination. In contrast, potato tubers are not directly attacked and the loss is in terms of yield, but not necessarily quality. The entire potato crop is not subject to loss from insect contamination.

Life Cycle

Knowledge of the life cycle of the corn borer is an aid to proper timing and placement of insecticides, regardless of the crop. Ground equipment with drop nozzles is suggested for all crops.

1. Winter is passed as mature larvae in corn stalks or other suitable hosts. In very early spring, pupae are formed.
2. Adults (pale yellowish brown moths with about one inch wing spans) begin to emerge during the last week of May or first week in June. Emergence may vary a week or so from year to year depending mainly on temperature.



Figure 3 — Arrows show leaf feeding (left); whorl damage (top, right) by corn borer larva (center) on corn.



Figure 4 — Frass (light colored area) in potato stem crotch usually deposited by larva over entry hole.

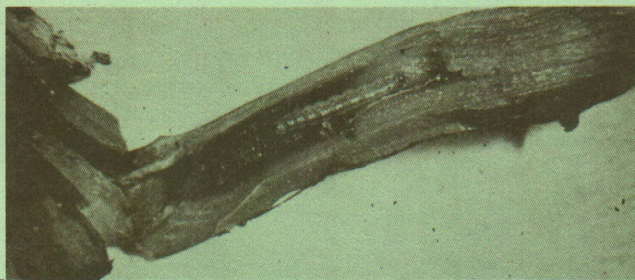


Figure 5 — Larva in potato stem.



Figures 6, 7 — Entry hole of larva (arrow) into bean stem near bud (left); "flagged" bean leaf (and buds) can result from a larva in the stem (right).



Figure 8 — European corn borer larva in ear of corn.

What Does All This Mean?

3. The number of first generation moths increases rapidly; peaking around the end of the second week in June. Their numbers then drop rather sharply to a very low level the first two weeks of July (Fig. 12).
 4. Moths of the second generation begin emerging around mid-July and reach a peak around the second week of August. Their numbers then drop but not nearly as sharply as in the first generation. In fact, second generation moths are active until frost.
 5. Eggs, whether in the first or second generation, are deposited in small, white masses on the underside of leaves. They reach the "black head stage" and begin to hatch within five to eight days.
 6. Larval leaf feeding has not been observed, except on corn, before they bore into the stems, stalks, ears or peppers.
 7. Once the larvae enter the stems, stalks, ears, bean pods or peppers, damage is done and control is no longer possible.
- Potatoes, corn, and snap beans may be vulnerable to both generations. Only peppers escape the first generation.
 - Peak moth activity is about the second week in June (first generation) and the second week in August (second generation). Shortly before, during, and after the peak of both generations, timing of the normal spray program should be intensified (days between applications reduced) to compensate for the increased number of moths and egg masses.
 - The insecticide must be placed on the undersurface of the leaves, where egg masses are deposited. Phosphate insecticides applied to egg masses may kill the embryos when they reach the "black head stage" of development. Thorough insecticide coverage must also be maintained on the fruits and/or stems to kill the larvae before they enter.
 - Peppers, beans, or potatoes planted near, or adjacent to, corn may be under additional pressure, especially on the side of the field nearest the corn.
 - Adjacent corn fields or volunteer corn, when present in the bean, pepper or potato fields, should be checked regularly for egg masses.
 - Weeds must be controlled so they will not hinder spray application.

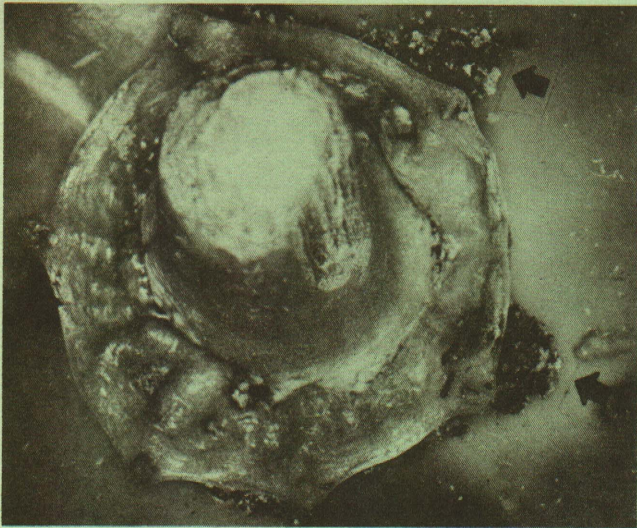


Figure 9 — Frass (arrows) around pepper cap is a sign of corn borer entry.



Figure 10 — Damage by larva to flesh of a pepper.

Although information on moth emergence and build-up will be made available from Michigan State University, it is ultimately the grower's responsibility to check each field and adjust his spray schedules accordingly. Growers of these and other vegetable crops are referred to Extension Bulletin EB-312, Control of Insects and Diseases on Commercial Vegetables, for chemical control suggestions.

The accompanying pictures should aid in recognizing the moths, egg masses, larvae, and damage to the various crops. The graph in figure 12 is an indication of moth activity in 1970. Similar to graphs of moth activity from previous years, it is only a 'rough' guide for moth emergence.

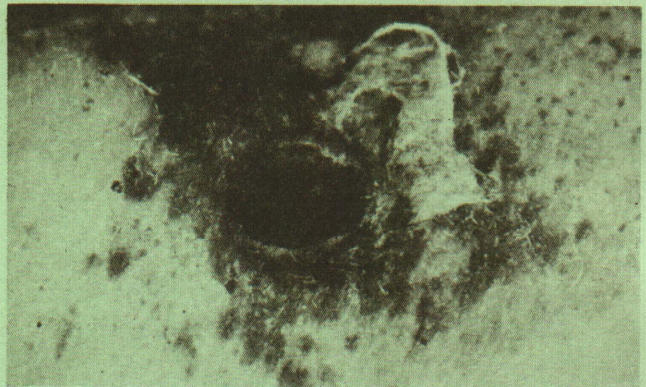


Figure 11 — Damage to snap bean pod.

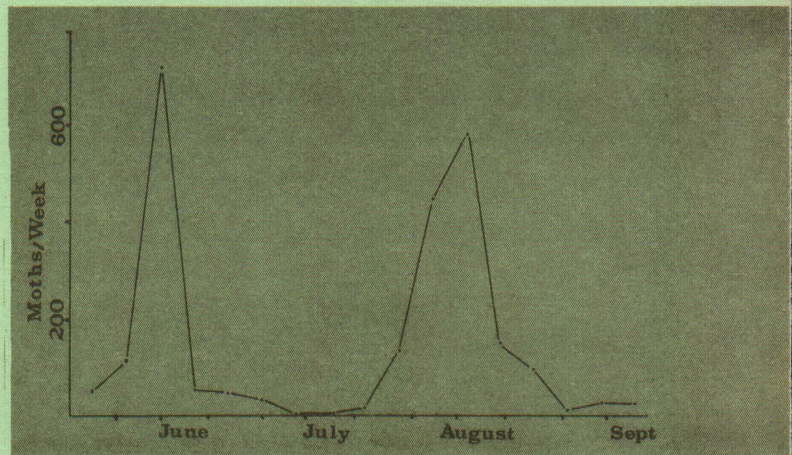


Figure 12 — Corn borer moth flight as determined with a blacklight trap, Lenawee Co., 1970.