

Connecticut Agricultural Experiment Station

New Haven

Insects that Injure Cucumber, Melon, Pumpkin and Squash Plants in Connecticut

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Cucumbers, melons, pumpkins and squashes, known as cucurbitaceous plants, are grown rather extensively in Connecticut, and the plants are often infested and sometimes severely injured by several insect pests.

The first paper giving information about the insect pests of this group of plants was published in the Report of this Station for 1907-1908, pages 805-815. Bulletin 216, December, 1919, was devoted to this subject. Both publications have long been out of print, but brief scattered information on these insects may be found in the Plant Pest Handbook for Connecticut, Bulletin 344, which was printed in a limited edition. The object of the present circular is to bring together brief descriptions with the best control measures.

Possibly the following key may aid in a hasty identification of each insect:

Key to Insect Injuries of Cucumber, Melon, Pumpkin and Squash

	PAGE
BORERS IN ROOTS AND STEM:	
Small, slender larvae tunneling in the main root or stem in the ground	52
Large, stout larvae that tunnel in squash stems above ground	54
CHEWING INSECTS THAT DEVOUR THE STEMS AND LEAVES:	
Small, purplish jumping springtails, length about one-sixteenth of an inch	53
Black jumping beetles that feed upon the young leaves, length, one-twelfth of an inch	53
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.....	53

	PAGE
Yellowish beetles marked with three longitudinal black stripes, length, nearly one-fourth of an inch.	52
Striped cucumber beetle	
Greenish yellow, marked with twelve black spots.	53
Spotted cucumber beetle	
Hemispherical orange beetle marked with black spots, length, one-third of an inch: yellow larva with black spines.	54
Squash lady beetle	
SUCKING INSECTS ON UNDER SIDE OF LEAVES:	
Small dark green or brownish aphids, often very abundant, curling the leaves.	56
Melon aphid	
Grayish brown bugs with spicy odor, length, three-fifths of an inch when full grown.	55
Squash bug	
Small greenish white scale-like insects on under side of leaves of plants growing in or near greenhouses. White moth-like adults resting on leaves and flying about.	57
Greenhouse whitefly	



FIGURE 17.
Striped cucumber beetle.

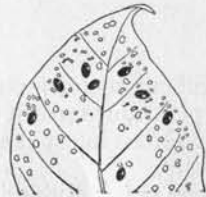


FIGURE 18.
Cucumber or potato flea beetle.

Chewing Insects

Striped Cucumber Beetle, *Diabrotica vittata* Fabr. This is probably the most destructive insect pest of cucumber plants in Connecticut and injures the young seedlings. It also injures melon, pumpkin and squash plants if they are started early in the season. The beetles hibernate under trash or in the ground, and appear as soon as the seeds germinate. They usually feed upon the under side of the leaves, but frequently injure the upper surface and also eat into the stems. Through this injury the plants become infested with bacterial wilt. The beetles are one-fourth of an inch or less in length, yellow with three black longitudinal stripes on the wing-covers, and with black head, as shown in Figure 17. The eggs are laid late in June on the surface of the ground, and oviposition continues for about a month. In about a week the eggs hatch and the young larvae work their way downward along the main stem or root and burrow into it, often perforating it. A mature larva is one-third of an inch long, slender and white with brown head. There is only one generation each year.

In the field, plants should be kept dusted with a mixture of calcium arsenate 1 part, and gypsum 15 parts, or with a spray of calcium arsenate and Bordeaux mixture. In the small home garden the plants may be covered with screen protectors.

Spotted Cucumber Beetle, *Diabrotica duodecimpunctata* Oliv. This beetle is greenish yellow with 12 black spots on the wing-covers, arranged in three transverse rows. It is a minor pest that sometimes injures the young plants. Although slightly larger than the striped cucumber beetle, its injury, life history and control are similar.

Cucumber or Potato Flea Beetle, *Epitrix cucumeris* Harris. This is a small, black, jumping beetle, about one-sixteenth of an inch in length, that eats holes in the leaves of young plants, usually from

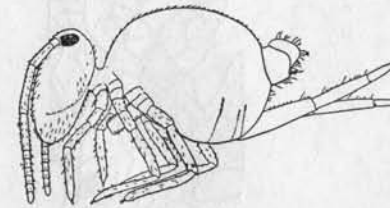


FIGURE 19.
Garden springtail.

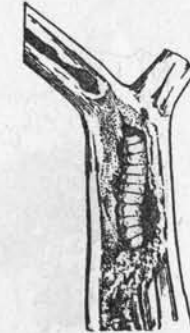


FIGURE 20.
Squash borer.

the under side, as shown in Figure 18. The adult beetles live through the winter under trash and rubbish. The eggs are laid in the soil in June, and the larvae are white thread-like worms that feed in the roots. There is one generation each year and possibly two. The life history is being restudied in Connecticut.

The usual treatment is to spray or dust the under surface of the leaves with calcium arsenate and hydrated lime. In the home garden this insect can be controlled with nicotine solution and soap.

Garden Springtail, *Sminthurus hortensis* Fitch. Small seedling plants of various kinds are injured and often killed by minute, purplish jumping insects that eat small holes in the leaves. These insects have no wings but are equipped with forked tail-like appendages, by means of which they are able to throw themselves into the air. They are usually found only on small plants near the ground. See Figure 19. Spraying or dusting with nicotine or pyrethrum will control this insect.

Squash Borer, *Melittia satyriniformis* Hubn. This is perhaps the most important pest of squash in Connecticut. The moths emerge late in June and during July and lay eggs on the main stalk, leaf stems and underneath the leaves on the basal portion of the vine. In from 6 to 15 days the eggs hatch, and the larvae bore in the stems, and reach larval maturity in four to six weeks (see Figure 20). They are about an inch in length, and are white with brown head. They descend about two inches into the soil, spin cocoons and transform the following spring. There is one generation each season in Connecticut. Infested vines wilt in late July, August and September, and soon die.

Probably the best control consists in spraying the basal four feet of each vine thoroughly, covering all stems and under sides of the leaves with nicotine solution, 1 part in 100 parts of water with soap. This spray will kill the eggs, and four applications should be



FIGURE 21.
Squash ladybeetle.



FIGURE 22.
Adult squash bug, and egg-cluster

given at weekly intervals in July. Good results have also been obtained by sprays of lead arsenate applied in a similar manner. Infested vines should be examined and wherever sawdust indicates its presence, a longitudinal incision should be made with a knife and the borer killed. By covering the main stem with soil as soon as it begins to run along on the ground new roots will be formed at the nodes.

Squash Ladybeetle, *Epilachna borealis* Fabr. This is one of the two injurious species of ladybeetles occurring in Connecticut, the other species being the Mexican bean beetle, *Epilachna corrupta* Muls. The squash ladybeetle passes the winter in the adult stage under the bark of dead trees, stumps and other sheltered places, and emerges in June and lays yellow eggs in clusters on the under side of the leaves. The eggs hatch in about 12 days and the yellow larvae bear six rows of long, black, branched spines, and feed upon the under side of the leaves, skeletonizing them. In about three

weeks the larvae reach maturity, and transform to bright yellow pupae, each fastened by its posterior end to the under side of a leaf. Later the adult emerges and is dull yellow marked with 12 black spots. The adults feed upon the upper surface of the squash leaf, first with their mandibles marking out definite areas, within which they feed, often skeletonizing these areas (see Figure 21). There is only one generation each season and perhaps the best control measure is a spray or dust containing lead arsenate.

Other Chewing Insects. In states toward the south, the melon worm, *Diaphania hyalinata* Linn., and the pickle worm, *D. nitidalis* Stoll, cause severe injury to melon, cucumber and summer squash. The larvae tunnel in the fruits, and decay soon follows. In 1931 for the first time on record, the pickle worm injured cucumber and

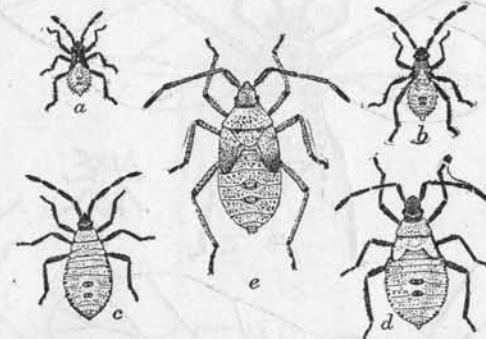


FIGURE 23. Nymphs of the squash bug; different stages, about twice natural size. (After Chittenden, Bulletin 19, Bureau of Entomology, U. S. Department of Agriculture.)

summer squash in southwestern Connecticut. Sprays thus far are unsuccessful, but all vines and trash should be burned. Summer squash plants may be employed as traps to be destroyed after becoming infested.

Wireworms, cutworms and the stalk borer, *Papaipema nitela* Guen., occasionally injure this class of plants, but they are general feeders and need not be described here in detail.

Sucking Insects

Squash Bug, *Anasa tristis* DeG. The squash bug or "stink bug" is an important pest of squash and pumpkin, but as a rule does not injure cucumber and melon in Connecticut. It injures the plants by puncturing the veins on the under side of the leaves and sucking the sap, causing the leaves to wilt and die. The adult bug passes the winter under old vines and rubbish, loose bark and boards, or

wherever it can find shelter. It emerges rather late in spring and often injures the young plants as soon as they appear above ground. Later, after the plants have grown some large leaves, the females lay on the under side of them, clusters of brown shiny eggs, each cluster containing between 20 and 40 eggs, arranged in more or less regular rows. These eggs hatch in from 6 to 15 days and the young nymphs remain in clusters on the under side of the leaf near the old egg-cluster. At first they are green with pink head, but after the first molt they are ash gray in color. They molt five times and

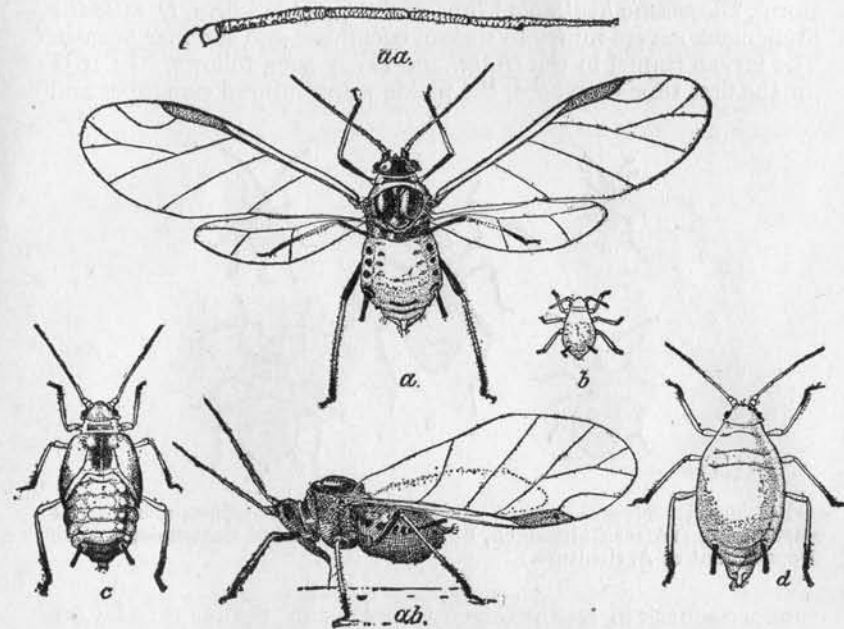


FIGURE 24. The melon aphid: *a*, winged female; *aa*, enlarged antenna of same; *ab*, dark form, side view; *b*, young nymph; *c*, last stage of nymph; *d*, wingless female. All greatly enlarged. (After Chittenden, Circular 80, Bureau of Entomology, U. S. Department of Agriculture.)

become full grown in four or five weeks. Adult and eggs are shown in Figure 22 and nymphs in Figure 23. There is one generation each year.

All old vines and trash should be burned after the crop is harvested. The young nymphs may be killed by spraying with nicotine, 1 part in 400 parts of water with soap, thrown against the under sides of the leaves by means of an angle rod with upturned nozzle.

Melon Aphid, *Aphis gossypii* Glover. This aphid infests many different kinds of plants, but is particularly troublesome on melon and cucumber. Scattered colonies appear in the field the latter

half of July, but are seldom noticed until the leaves begin to curl. Heavy infestation causes the vines to become too stunted to produce a crop, and they may wilt and die. There are several generations each season, and the species passes the winter in the egg stage on stonecrop or live-forever. The melon aphid is shown in Figure 24. Treatment for the control of this aphid is difficult, but it may be killed by dusting heavily with nicotine dust applied on a warm day. If the heavily infested hills or areas are covered with a cloth and the dust blown underneath, the nicotine fumes may be held long enough to kill the aphids, and the treatment is more effective than it would be on open plants.

Other Aphids. The squash aphid, *Macrosiphum cucurbitae* Middleton, and the potato aphid, *Macrosiphum gei* Koch, occasionally infest cucurbitaceous plants, but they are much less trouble-



FIGURE 25.
Greenhouse whitefly.

some than the melon aphid. They do not curl the leaves so extensively and may be controlled by the dust treatment mentioned above or by under-spraying with nicotine solution and soap.

Greenhouse Whitefly, *Trialeurodes vaporariorum* Westw. The adult is a tiny, white moth-like insect covered with particles of wax, and flies about and rests on the under side of the leaves. The eggs are laid in circular clusters on the under side of the leaves. The nymphs are greenish white scale-like objects with short radiating wax rods forming a fringe around the margin. The skin splits open along the back when the adults emerge, and the empty skins are silvery white and remain upon the leaves. Nymphs and adults are shown in Figure 25. This insect is a serious pest of cucumber and melon under glass and often injures all cucurbitaceous plants in a nearby garden.

As a control, greenhouses should be fumigated with hydrocyanic acid gas, using 1 ounce of cyanide for each 1,000 cubic feet of space. In the garden and field, the plants may be under-sprayed with nicotine solution and soap, or with pyrethrum soap.