



Squash Bug

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Order: Hemiptera

Family: Coreidae

Species: *Anasa tristis* (De Geer)

DESCRIPTION AND BIOLOGY: Squash bugs are one of the primary pests of cucurbits in the United States. Adults are typically 10 to 30 mm long, dark gray, brown or black in color with orange or brown markings on the sides of the abdomen (Fig. 1). Overwintering adults emerge from the soil, ground litter, wood piles or buildings in the spring. After feeding and mating, females deposit egg masses on the underside of leaves. Newly laid eggs are typically light pale in color, become coppery, then darker as they develop. Egg masses are commonly laid in diamond or V-shaped patterns along leaf veins (Fig 2).



Fig. 1. Adult female squash bug laying eggs on the underside of a pumpkin leaf.

Nymphs are 2.5 to 10 mm long, light green upon hatching and light to dark gray with each successive molt (Fig. 3). Nymphs have black legs and antennae. There are five nymphal instars with an average development time of 33 days. The last two instars have a more distinct thorax and wing pads.



Fig. 2. Squash bug egg mass in a common v-shaped pattern.

Nymphs aggregate and feed close to their parent egg mass, on the underside of leaves, until later stages of wilt set in on the leaf (Fig. 3). Squash bug nymphs and adults are cryptic, frequently hiding in the shaded parts of plants, under plastic mulches, in thick weed beds, or in wilted fruit and foliage. Squash bugs can complete their egg to adult life cycle in four to six weeks.

HOST PREFERENCE AND DAMAGE:

Summer squash (*Cucurbita pepo*) and pumpkin (*Cucurbita pepo*; *Cucurbita maxima*) are preferred hosts and their survival from egg to adult is significantly higher when compared to cucumbers or muskmelons (*Cucumis melo*). Squash bugs also prefer squash and pumpkins for oviposition.

Squash bugs use their piercing sucking mouthparts to suck fluids from the vascular bundles of leaves and stems. Leaves of heavily colonized squash plants turn yellow and desiccate rapidly, leaving a wilted leaf (Fig. 4). Seedlings colonized early (2-4 leaf stage) can quickly succumb to squash bug feeding.



Fig. 4. Wilted of squash leaf from squash bug feeding.

Yields are most affected at flowering and fruit set with yield reductions up to 50%. Feeding on fruits creates scarring, sunken spots and early rot that render fruit unmarketable. It also leads to greater incidence of fruit rot in storage. The saliva of squash bug is toxic and causes a wilt in leaves referred to as “Anasa wilt.” Also, squash bugs can transmit the phloem-colonizing bacterium, *Serratia marcescens* Bizio, which can result in yield losses due to cucurbit yellow vine disease (CYVD) (Fig. 5). Adult squash bugs harbor the bacterium while going into diapause and can infect new plants the following spring upon emergence. No official records of CYVD have been made in Virginia as of 2013.

CONTROL:

Scouting: The action threshold for squash bug is one egg mass per plant during the flowering stage. It is important to monitor plants and take appropriate

actions once squash bugs have been found and control them early in the season to prevent large populations from developing. If cucurbit yellow vine decline is present, there is nothing that can prevent the plant from dying.

Cultural control practices: Cultural control involves proper field sanitation to reduce debris acting as shelters for the squash bug, the use of resistant varieties (butternut, royal acorn, sweet cheese, green striped cushaw), early planting to limit early colonization of plants, and crop rotation. Eliminating weeds and straw or paper mulch is also necessary as they too provide an area for the squash bug to hide.



Fig. 3. Hatched egg mass with two stages of nymphs aggregating on the underside of a pumpkin leaf.



Fig. 5. Cross-section of squash stem showing the brown-colored phloem ring indicative of infection by *Serratia marcescens*, the causal agent of cucurbit yellow vine disease



Fig. 6. Parasitoid wasp (*Gryon pennsylvanicum*, Hymenoptera: Platygastridae) that emerged from a squash bug egg mass in southwest Virginia.

Physical and mechanical control:

Trap crops can be a successful way to control squash bugs, particularly if the trap crop is treated with an insecticide. Planting and treating a variety preferred by squash bug, as a barrier to a more profitable variety, is an efficient use of this tactic. Other physical practices involve the use of shelters (boards, large cabbage leaves, etc.) to concentrate squash bugs where they can be destroyed, preferably prior to egg laying.

Biological control: A native tachinid fly, *Trichopoda pennipes*, attacks

squash bug adults in the field. Parasitization of squash bug by this species does not prevent adult feeding but causes sterility in females. There are a few parasitoid wasps that attack the eggs of squash bug in Virginia. The Platygastrid wasp, *Gryon pennsylvanicum* Ashmead, and the Eupelmid wasp, *Anastatus reduvii* Howard, both lay their eggs in the eggs of squash bug (Fig. 6). Egg parasitoids can effectively limit initial colonization of squash bug as seen in the parasitization rates of 77% from a 2013 survey of squash bug egg masses in southwest Virginia.

Chemical control: Soil applications (via soil drench, chemigation, or seed treatment) of systemic insecticides containing imidacloprid, thiamethoxam or dinotefuran for control of cucumber beetles and aphids will help suppress squash bugs early in the season. Foliar applications of pyrethroids (such as lambda-cyhalothrin, esfenvalerate, bifenthrin, permethrin, zeta-cypermethrin), or other registered insecticides for bugs on cucurbits may however still be necessary. Proper timing of sprays is essential to maintain the population below a certain threshold. Adults are more difficult to control than nymphs. Therefore, a successful strategy often involves an application at egg hatch to target nymphs. For best squash bug control, under leaf spray coverage is essential. Read all labels carefully as special precautions may be needed at flowering when bees are foraging in fields.

In organic settings, azadirachtin may be applied when nymphs are very young. Kaolin clay (Surround™) can also be applied prior to squash bug colonization to prevent oviposition and feeding by squash bugs.

USEFUL REFERENCES:

Capinera, J. L. 2001. Handbook of vegetable pests. Academic Press, San Diego, Calif.

Pair, S. D. 1997. Evaluation of systemically treated squash trap Plants and attracticidal baits for early-season control of striped and spotted cucumber beetles (Coleoptera: Chrysomelidae) and squash bug (Hemiptera: Coreidae) in cucurbit crops. J. Econ. Entomol. 90: 1307-1314.