Cabbage Budworm in Desert Cole Crops

John C. Palumbo

THE UNIVERSITY OF ARIZONA College of Agriculture & Life Sciences Entomology

Distribution

The cabbage budworm, *Hellula phidilealis,* is a Lepidopterous pest (Crambidae) of tropical origin that is commonly found on crucifer crops in the Caribbean, Central America, South America, and Mexico. It has previously been reported in the United States, including Arizona. It is considered a rare pest of desert Cole crops, but in the fall of 2022, cabbage budworm larvae were abundant and damaging cauliflower, broccoli, cabbage, collards, and kale. Organic crops appeared to be most affected by the pest. It has a relatively narrow host range and is known to attack all crucifer crops and beets. Among weeds, the pest is known to feed on Shepard's purse, mustards, and purslane.

Biology

On crucifer crops cabbage budworm will complete a generation in about 30 days under early fall weather conditions and develops throughout the year in tropical areas. The eggs are small (0.5 mm in diameter) and are laid singly or in small clusters on the stems and terminals leaves. On average, a female oviposits about 65 eggs over a period of 5 days. Eggs hatch in about 3 days. Upon emergence, larvae tunnel into the stem below the terminal. Brown frass is found at the entrance hole resulting from larval feeding. Larvae complete development in about 16 days. Larvae are creamy white with three reddish-brown longitudinal stripes dorsally. When fully mature, the larvae measure ½ inch long. The head capsule is pale with a mottled appearance *(see images below)* which differentiates it from the cabbage webworm. Larvae will pupate within the plant stem, or below the plant in the soil. The male moths are dark brown with an undulating wavy fringe on the fore-wings, and the females are light brown and lack the fringe. The moths are nocturnal and on average live about 10 days.

Damage and Management

Cabbage budworm larvae are known to bore into leaf petioles and plant stems but are most damaging when they tunnel into or below the terminal growing points of plants. Damage to terminals can lead to adventitious bud break, where plants produce multiple unmarketable heads, or blind plants, which do not produce a head at all. Extensive feeding in stems can result in reduced turgor and stunted plants. Younger plants have been observed wilting after larvae pupate. It is a serious pest in parts of the Caribbean, but elsewhere (including Arizona), it rarely causes economic damage. Insecticidal control of cabbage budworm is difficult because larvae quickly bore into plant tissue. To actively kill larvae, spray must make contact, or treated plant tissue must be ingested before entering the terminal. Thorough penetration of the terminal growth and foliage is essential to reach the pest. Preventing problems through sanitation is very important, particularly control of purslane and rapid destruction of crucifer crop residues. Anecdotal evidence suggests soil systemic insecticides such as Verimark transplant drench's and Coragen at-plant, soil applications can effectively prevent crop damage during stand establishment.

Sources.

1. Capinera, J.L. 2020. Cabbage budworm. *In* Handbook of Vegetable Pests, 2nd edition, p. 398, Academic Press, New York.
2. Allyson, S. 1981. Description of the Last Instar of the Cabbage Webworm, *Hellula rogatalis* (Lepidoptera: Pyralidae), with a key to larvae of North American species of *Hellua* Guenee. *The Canadian Entomologist:* 113 (5): 361-364.
3. Cadogan, B.L. 1983. Biology and Potential for Increase of *Hellula Phidilealis* (Lepidoptera: Pyralidae) in Barbados. Environ Entomol 12: 1805-1807

Source: J.C. Palumbo

Cabbage budworm larval feeding site in cauliflower terminal. *Note brown frass at the entry point.* Sep 30, 2022.

Source: J.C. Palumbo

Blind cauliflower plant resulting from cabbage budworm larval feeding. Sep 30, 2022.

Cabbage budworm larval feeding site in cauliflower terminal. *Note brown frass at the entry point.* Sep 30, 2022.

Source: Steve Jensen

Larva feeding within the stem below the terminal of direct-seeded broccoli, Sep 26, 2022.

Source: Steve Jensen

Budworm larva feeding within the terminal and stem of transplanted cauliflower, Sep 26, 2020

Source: Charlie Narramore

Budworm larval feeding damage within cauliflower plant terminals and stems. Sep 30, 2020

Source: J.C. Palumbo

Cabbage budworm larva in cauliflower transplant. Sep 30, 2020

Source: J.C. Palumbo

Mature cabbage budworm larva (top) and pupa in cauliflower transplant. Sep 30, 2020

Photo#1371156

Texas SE Gulf Coast - *Hellula phidilealis*

Lake Jackson, Brazoria County, Texas, USA
May 17, 2017
Size: ~9mm forewing length

https://bugguide.net/node/view/1371156

Cabbage budworm moth, Brazoria Co., Texas. 2017