



BUG BIZ

Pest Management and Insect Identification Series



Plutella xylostella, Diamondback moth (Lepidoptera: Plutellidae)

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Description

Worldwide, the most severe insect pest of cabbage and other cruciferous (*Brassicaceae*) crops is the diamondback moth. It is also known as the cabbage moth. Diamondback moth adults are small, grayish brown and have prominent antennae. The wings are marked with a broad, cream or light brown band along the trailing margins. This band sometimes forms one or more light-colored diamonds on the back, the basis for the common name. Larvae can reach an average length of $\frac{7}{16}$ of an inch (11 mm) and become increasingly more green as they mature. The last instar larval stage builds a silk cocoon that protects the pupa. Pupae change from yellow to brown as they develop and are $\frac{1}{4}$ to $\frac{1}{3}$ of an inch (7 to 9mm) in length. Diamondback moth eggs are oval, flattened and yellow or pale green. Eggs are deposited singly or in clusters of two to eight. First larval instars have an average length of $\frac{1}{16}$ of an inch (1.7 mm), and larvae are colorless to pale white with a dark head capsule.



Diamondback adult moth (David Cappaert, Bugwood.org).



Left: Larva feeding on cabbage (Alton N. Sparks Jr., University of Georgia, Bugwood.org). Right: Larva pupating (Whitney Cranshaw, Colorado State University, Bugwood.org).

Life Cycle

Diamondback moths feed on crucifers, such as broccoli, brussels sprouts, cabbage, cauliflower, flowering white cabbage, head cabbage, mustard and radish. All damage is caused by the larval stages. The species is found wherever crucifers are grown. It completes its life cycle in 17 to 51 days, depending on weather conditions. In northern states of the U.S., three to four generations per year may be completed. In warmer areas, such as Louisiana, it can complete as many as 15 generations per year.

Insect damage occurs when newly hatched larvae mine leaf tissue, while older instars consume leaf tissue on the undersides of leaves. Damage is usually done in irregular patches, leaving the plant with a windowlike appearance. When disturbed, young larvae can suspend using silk threads that also allow dispersal to other parts of the plant. Adult moths are primarily active during dusk until complete darkness. Adults have an average life span of two weeks.



Injury in cabbage (Alton N. Sparks Jr., University of Georgia, Bugwood.org).

Ecological Significance and Pest Management

For farmers in the United States, total costs associated with diamondback moth management range from \$150 to 200 million per year. The diamondback moth was one of the first crop pests in the world to develop resistance to synthetic insecticides and bacterial insecticides derived from *Bacillus thuringiensis*. However, successful control of the diamondback moth can be achieved through integrated pest management.

Because the species has a narrow host range (*Brassicaceae*), crop rotation to other plant families can be beneficial. The use of trap crops, such as collards, along field margins can help manage pest populations. Crops within the *Brassicaceae* possess different levels of resistance to damage from diamondback moths. Mustards and turnips are among the most resistant of the crucifers.

Parasitoid wasps (Hymenoptera) help in control of diamondback moths. In addition, several fungi, viruses and nematodes are useful in controlling the pest in small-scale farming. Please talk with your LSU AgCenter extension agents can inform the availability of biological control options.

For chemical control, see the Louisiana Insect Pest Management Guide (Publication No. 1838) for currently approved insecticides for control of diamondback moths. As with all pesticides, follow the label instructions carefully regarding rates and precautions. Insecticides are registered for specific insects on specific crops, and they should not be applied if they are not labeled accordingly.

References

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Contact Us: For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage: <https://bit.ly/36c4awm>.



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