

Cotton Insects

Bollworm

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Classification and Description

The bollworm, *Helicoverpa zea* (Lepidoptera: Noctuidae), is a common occurrence in cotton. This insect has complete metamorphosis, but only the larval (cat-



Bollworm larva

terpillar) stage feeds on cotton plants. Egg and larval stages of this insect are very similar in appearance to tobacco budworm, and these species are often considered collectively (as a complex) in cotton. Moths have a wingspan of about 1½ inches and range in color from yellow-brown to olive. A dark spot occurs near the center of each forewing. Eggs are about 0.5 mm in diameter, spherical and white to pale yellow when first deposited. The eggs are usually laid singly and darken to brown or brownish-gray prior to hatch,



Bollworm moth

which occurs in 2-3 days. Larvae reach a maximum size of 1 5/8 inches in length and vary considerably in color. The head capsule is usually pale, although small larva may have a nearly black head.

Hosts, Life History and Distribution

Bollworm larvae feed on a wide variety of wild and cultivated plants, and this species is known by several names, such as the corn earworm, soybean podworm and tomato fruitworm. Bollworms are widely distributed in the United States but are most severe in the South. This species has several generations per year. It passes winter as a pupa in the soil. In the South, the early summer generation is often concentrated in corn. Movement into cotton is seen as corn fields begin to mature. It takes about 32-40 days for development from egg hatch to a reproductive adult. Females may lay as many as 2,000 eggs during their 14-day lifespan. Several overlapping generations (four or more) are common in Tennessee.

Pest Status and Injury

The bollworm continues to be among the top two or three most damaging pests in Tennessee despite the use of Bt cotton on a large percentage of acres. Larva feed on squares, blooms and bolls. Injury to flowering cotton



is more common and of greater economic concern. This is particularly true in Bt cotton, because economic infestations in pre-blooming Bt cotton are rare. Damaged fruiting structures typically shed, or in the case of larger bolls, rot. Outbreaks of bollworm and tobacco budworm are sometimes associated with previous insecticide applications that have reduced populations of natural enemies.

Management Considerations and Thresholds

Cotton bolls become progressively less susceptible to injury as they mature. Bolls greater than 18-20 days in age (about 350 DD60's) are generally safe from attack except from larger caterpillars. Consequently, insecticide applications for this pest can typically be terminated about 350-400 DD60's past cutout (NAWF5). Bollworms continue to remain susceptible to pyrethroid and other insecticide classes. Because tobacco budworm is highly resistant to pyrethroid insecticides, it is extremely important to determine if tobacco budworms are also present in the field when

making an insecticide selection. There are several ways to help distinguish between bollworm and tobacco budworm infestations. Unless resistance develops, larval infestation in Bt cotton can be assumed to be bollworm. Bollworm larvae in Bt cotton are often found in blooms or within pink and dried bloom tags.

Treatment thresholds in Bt and non-Bt cotton are similar: eight larvae per 100 plants prior to bloom, or four larvae per 100 plants after first bloom. However, in Bt cotton, caterpillars less than ¼-inch wide are not included in counts. This helps to avoid treating small tobacco budworm and bollworm larva that would not have survived. Treating for eggs alone is generally not recommended unless counts are unusually high. Nevertheless, it is extremely important that insecticides be timed to control small larva (< ¼ inch in length) and hatching eggs. Second-generation Bt cottons (e.g., Bollgard II) will provide improved control of bollworms. Insecticide choices and more specific threshold recommendations are available in the Tennessee Cotton Insect Control Guide (Extension PB 387).

For information about the management of the major field crops grown in Tennessee, visit www.utcrops.com

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

Disclaimer Statement

Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticides registrations are continuously reviewed. Should registration of a recommended pesticide be canceled, it would no longer be recommended by the University of Tennessee. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

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