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W024-Cotton Insects: Boll Weevil

The University of Tennessee Agricultural Extension Service

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Cotton Insects

Boll Weevil

Scott D. Stewart, Associate Professor
Entomology and Plant Pathology

Classification and Description

The boll weevil, *Anthonomus grandis grandis* (Coleoptera: Curculionidae), belongs to a group of beetles characterized by an elongated snout (or proboscis). The adult boll weevil is about ¼ inch long. Recently emerged adults may have a slightly reddish hue, but adult color typically varies from gray or brown to nearly black. The boll weevil's snout is about one-half the length of its body. Chewing mouthparts are located at the end of the snout. Boll weevils can generally be separated from other weevils by the presence of two spurs on the femur of each front leg, with the inside spur being larger than the outside spur. Immature life stages, including eggs, larvae and pupae, are found inside squares or bolls. Eggs are small and embedded inside squares and bolls, and thus are not visible. The larval and pupal stages of the boll weevil are found inside squares or bolls. Larvae are white to cream-colored, legless and about ½ inch long when fully developed. Pupae are also white to cream-colored. Legs, eyes and mouthparts become visible on pupae as they develop.

Hosts and Distribution

It is generally believed that boll weevils were introduced into United States from Mexico or Central America in the 1890s and quickly made their way across most of the Cotton Belt. Although adults can temporarily feed and persist on the pollen of some other plants, this insect can only reproduce on cotton.

Boll weevil

Life History

The boll weevil overwinters as an adult. In the spring, adults disperse from overwintering sites, usually located in well-drained areas such as fence lines

and woods. Because of its Mid-American origin, boll weevils are susceptible to cold temperatures that may occur in winter months. In Tennessee, populations are often relatively low following cold winters. Boll weevils may have 3-4 generations per year in Tennessee. Each female lays from 100-300 eggs, and it takes about 20 days from egg hatch until adults emerge from infested squares or bolls. After 4-5 days, newly emerged females will begin laying eggs.

Pest Status and Injury

Historically, the boll weevil was the most important pest of cotton in Tennessee. In most Mid-Southern and Southeastern states, including Tennessee, boll weevil eradication efforts have currently reduced populations below the point where economic damage occurs. However, this insect is still of considerable economic importance because Tennessee growers pay significant assessment fees annually in support of eradication efforts.

Boll weevils cause damage by feeding on the fruiting structures of the cotton plant. Both males and females will bore a small feeding hole into the sides of squares and bolls. Despite the name, female boll weevils prefer to lay eggs inside squares when they are available. A single egg is deposited into a feeding site. The larvae then develop inside and are relatively protected from natural enemies. Squares less than one-third the size of a fully developed flower bud are not suitable oviposition sites. Feeding and oviposition injury usually result in abscission of squares and small bolls. Oviposition punctures can generally be distinguished from feeding punctures by the presence of a waxy nipple covering the oviposition site. Larger bolls may remain on the plant, but infested locks are often completely destroyed. Uncontrolled infestations often cause dramatic yield reductions.

Boll weevil larva

Management Considerations

Insecticide applications target adults because immature stages of this pest are protected within fruiting structures. Sequential insecticide applications on a 4-5 day interval are necessary against established populations. In areas where the boll weevil has already been eliminated or is actively being eradicated, including all of Tennessee, insecticide applications by producers are not necessary. Any infestations should be reported immediately to boll weevil eradication officials. Boll weevil eradication programs rely heavily on the use of pheromone traps to detect infestations and trigger insecticide applications. Unlike pheromone traps for many species of moths, these traps are attractive to both sexes. The insecticide used in eradication programs is malathion. However, the weevil is susceptible to a number of organophosphate and pyrethroid insecticides that are still available.

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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