

**OVIPOSITIONAL-SITE PREFERENCES OF BOLLWORM/
BUDWORM ON BT AND NON-BT COTTON PLANTS**

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Abstract

The cotton bollworm (*Helicoverpa zea*) and tobacco budworm (*Heliothis virescens*) have historically been important pests of cotton in South Carolina. Prior to 1996, insecticides were the primary means of controlling both of these species. In 1996, however, farmers were provided with an alternative means of controlling bollworms and budworms when they planted one of the newly developed *Bt*-cotton varieties. The *Bt* cottons were genetically engineered to produce an endotoxin (Cry1Ac) a protein derived from *Bacillus thuringiensis*. Growers soon discovered that the endotoxin was highly effective against budworms, but was less effective on bollworms. Budworm control would be virtually 100%, while bollworm controls might range from 75 to 85%. When egg numbers were high this often allowed some bollworms to slip through and cause economic damage. Most of the problems appeared to be associated with larvae hatching from eggs laid on or near blooms or bloom tags. The tiny bollworms could eventually feed through the blooms or bloom tags into the tips of the developing bolls. Observers would be unaware of a problem unless they physically removed some bloom tags and looked for damage. We looked at DPL-33B (*Bt*-cotton) and DPL-5415 (a conventional variety) in 1997 and 1998 at six on-farm locations to learn more about the ovipositional-site preferences of F₂ bollworm/budworm moths. We also examined the relationship between parasitism by *Trichogramma* spp. and locations of eggs on the plants.

The majority of moths were most likely bollworms, as previous studies have shown them to comprise 80% or more of the heliothine complex in cotton in July and August. In this study, F₂ moths oviposited primarily on terminal growth and older expanded leaves. Terminal scouting alone detected from 20 to 35% of whole-plant numbers. Low percentages of eggs were deposited on or near fruiting structures, and this was relatively consistent on both DPL-33B and DPL-5415. As egg numbers declined in three fields on 30 July, 1998, the incidence of eggs on bloom tags was as great or greater than on any other plant location. On the same date we found that egg parasitism ranged from 50 to 60% in the three *Bt*-cotton fields. Evidence was inconclusive in regards to the relationships between egg locations and parasitism.