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Efficacy of Seed Mixes of Transgenic *Bt* and Nontransgenic Cotton Against Bollworm, *Helicoverpa zea* Boddie

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Pages: 74-80
Arthropod Management

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Field trials conducted in northeastern North Carolina in 1994 and 1995 examined the effects of plantings of pure and blended genotypes of Bollgard cotton on (i) the larval population development of caterpillar pests, (ii) fruit damage, and (iii) yield. Treatments in 1994 included (i) 100% *Bt* seed:0% non-*Bt* seed; (ii) 0% *Bt*:100% non-*Bt*; (iii) 90% *Bt*:10% non-*Bt*; (iv) 85% *Bt*:15% non-*Bt*; (v) 80% *Bt*:20% non-*Bt*; and (vi) 75% *Bt*:25% non-*Bt*. The same treatments were tested again in 1995, with the omission of the 90% *Bt*:10% non-*Bt* and 80% *Bt*:20% non-*Bt* seed blends. Bollworms made up 95 to 98% of larval pest populations in 1994 and 1995. The 0% *Bt*:100% non-*Bt* plots had significantly higher larval numbers and damaged fruit and significantly lower yields than all other seed treatments both years. The treatment containing 100% *Bt* seed had lower percent larval infestation and percent damaged fruit and higher yields than all other seed blends in both years. In general, mean percent larval infestation and mean percent damaged fruit increased in both years as the percentage of *Bt* seed in the blends decreased. Conversely, seed cotton yields decreased as the percentage of *Bt* seed in the blends decreased. In these experiments, the treatments incorporating blends of *Bt* and non-*Bt* seed sustained too much fruit damage and yield loss for the blended seed concept to be practical.