

**BOLLWORM SURVIVAL ON REPRODUCTIVE
STRUCTURES OF NON-TRANSGENIC (CV.
DELTAPINE 5415) AND TRANSGENIC BT (CV.
NUCOTN 33B) COTTONS**

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Abstract

A fresh cotton tissue bioassay was used to evaluate bollworm, *Helicoverpa zea* (Boddie), larval survival on selected components of non-transgenic (cv. Deltapine 5415) and transgenic *Bacillus thuringiensis* Berliner var. *kurstaki* (Bt) (cv. NuCOTN 33B) cotton flower buds (squares) and flowers. Squares and flowers were removed from field plots of Deltapine 5415 and NuCOTN 33B during three plant development stages. Plant development was based on the number of main-stem nodes between the uppermost white flower at the first position on a fruiting branch and the last unfolded leaf in the plant terminal. Growth stages included nodes above white flower (NAWF) 8 to 9, NAWF 6 to 7, and NAWF 4 to 5. Individual components were dissected from squares and flowers and placed into 9.9 cm Petri dishes with moistened filter paper. Treatments included whole intact squares (bracts removed); immature anthers, stigmas, and styles (square anthers); flower bracts; flower petals; and mature anthers, stigmas, and styles (flower anthers). Five neonate larvae were transferred into each Petri dish and 5 dishes were infested for each treatment at each growth stage. Treatments were arranged in a randomized complete block design with 4 replications. Bollworm survival was measured at 24, 48, and 72 hours after infestation (HAI). Data within each cultivar were subjected to analysis of variance and means were separated according to Fisher's protected LSD. Bollworm survivability was compared between NuCOTN 33B and Deltapine 5415 using paired t-tests.

There were no significant NAWF stage by reproductive structure interactions at 24, 48, or 72 HAI on Deltapine 5415 or NuCOTN 33B. Treatments were pooled across all NAWF stages within each cultivar. On Deltapine 5415, bollworm survival was higher on square and flower anthers compared with flower bracts at 24 and 48 HAI. At 72 HAI, bollworm survival was higher on square and flower anthers compared with survival on other structures.

On NuCOTN 33B, bollworm survival was highest on square and flower anthers compared with flower bracts at 24 HAI. At 48 and 72 HAI, bollworm survival was higher on square and flower anthers compared with all other structures on NuCOTN 33B. Bollworm survival was higher on all

structures compared with flower bracts at 72 HAI. In addition, survival was higher on flower petals compared with squares.

Results of t-tests indicated that bollworm survival on NuCOTN 33B flower petals was lower than survival on Deltapine 5415 flower petals at 24 HAI. At 48 and 72 HAI, bollworm survival was lower on all structures of NuCOTN 33B with the exception of flower anthers at 48 HAI, which was not significantly different, compared to Deltapine 5415. Bollworm survival averaged >80% on flower and square anthers of NuCOTN 33B.