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## Evaluating host plant resistance in cotton (*Gossypium hirsutum* L.) with varying gland densities to tobacco budworm (*Heliothis virescens* F.) and bollworm (*Helicoverpa zea* Boddie) in the field and laboratory

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### ABSTRACT

Cotton (*Gossypium hirsutum* L.) produces a number of toxic terpenoid aldehyde (TA) compounds contained in epidermal glands that help protect the plant from pests and diseases. In the seed, one of these toxic compounds, gossypol, limits the use of the seed to ruminants such as dairy cows. There are breeding techniques and germplasm available to decrease gossypol in the seed, but the breeding process also needs to include methods to evaluate the plant's ability to resist insect pests. Three approaches were used to assess resistance of cotton to herbivory from bollworm (*Helicoverpa zea* Boddie) and tobacco budworm (*Heliothis virescens* F.) including field counts, controlled field antibiosis assays and laboratory feeding tests of young field grown leaves. Results indicated that both field and laboratory evaluation could provide an assessment of the cotton host's resistance. Measurements of terpenoid aldehydes (TAs) in the seed and the leaves, confirmed that the levels and types of TAs in the seed were not always good estimators of leaf TAs and that other TAs such as hemigossypolone and heliocides contribute to host plant resistance.

### KEYWORDS

Cotton; Gossypol; Helicoverpa; Heliothis; Terpenoid Aldehydes; Host Plant Resistance

### Cite this paper

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