

Enhancing Genetic Resistance in Cotton to Plant Bug

Background

The cotton fleahopper is one of the most damaging insect pests of cotton in the US. In 2003, this pest and the related plant bug, *Lygus* species, ranked fourth and second, respectively, among cotton pests in the US. Cotton fleahopper is especially damaging in Texas, and in 2003, was responsible for \$18 million loss in cotton production, and ranked second only to the \$19 million loss due to bollworm/budworm. Foliar applied insecticides are the only control option for plant bugs. Increasing plant resistance to insect pests through selective breeding has proven a very effective practice for the control of many important insect pests.

Objectives

- Identify genetic resistance through screening cotton germplasm from commercial and obsolete varieties of *Gossypium hirsutum* and *G. barbadense*, converted and non-converted race stocks from Mexico and Central America, and introgressions of *G. hirsutum* with *G. tomentosum* and *G. mustelinum*.
- Introduce these sources of resistance into the cotton breeding program of the Cotton Improvement Laboratory, Texas A&M.
- Characterize feeding damage by cotton fleahopper to cotton buds.
- Identify the mechanisms of resistance to plant bugs in cotton.

Benefits

- Increasing the genetic resistance in cotton to plant bugs would reduce crop losses and the costs of applying insecticides for these pests, helping Texas' cotton producers to remain competitive in a world market.
- A reduction in early season insecticide applications would preserve natural enemies needed for biological control of other cotton pests, further reducing the need for insecticides.
- Understanding the mechanisms of plant resistance to plant bugs could lead to more efficient screening methods and accelerate the development of plant bug resistant cotton through conventional and molecular breeding techniques.

Team Members

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