

# Control Of Insects

## Researchers Study Ways To Curb Plant Bugs In Cotton And Rice

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### STONEVILLE, MISS.

Insect management in cotton was a topic discussed by Dr. Jeff Gore, Assistant Professor, at a field day at the Delta Research and Extension Center in Stoneville, Miss.

"The one on cotton is dealing primarily with the tarnished plant bug, our number one pest in Mississippi," he said. "We're averaging around 7 to 10 applications per year for tarnished plant bugs. The primary reason is that our populations have been a lot higher the last few years than they were historically. That has a lot to do with the new diversity in the crop mix that we have now. A large percentage of our acres are planted with early maturing Group 4 soybeans and corn."

Two things are happening with this change. The other crops serve as a source of plant bugs that move into cotton; and the cotton acreage has declined from 1.3 million acres to around 300,000 acres.

"So, we are concentrating those plant bugs in a much smaller area," he said.

However, probably the most important factor now is the widespread resistance to the standard insecticides, pyrethroids and organophosphates.

"We're essentially limited on the number of insecticides we have available to control plant bugs and we're not getting the same level of control with our old standards," Gore added. "We're averaging around 60 percent control with three-fourths of a pound to a pound of acephate; and control with pyrethroids is much lower than that, only around 30 percent control. Those were our two main insecticides 10 years ago."

Today farmers have switched over to the neonicotinoids as well as the insect growth regulator Diamond and a slightly newer class of chemistry which is Carbine. These three options are more expensive than the old standards.

"Also, we have to make multiple applications with very few options so the lifetime of those insecticides may be limited as well," he said.

"Some of the things we're looking at in terms of managing plant bugs are other strategies, including host plant manipulations in early spring. Plant bugs build up on wild hosts such as henbit in February and March so we have a program where we spray a selective herbicide during the spring to control those hosts on the ditch banks and roadsides, and that's helped us reduce the plant bug pressure somewhat."

Other options are also under study. There's a nectariless cotton available from Delta Pine.

"It's a good variety and the nectariless trait helps with plant bugs," Gore said. "These non-insecticide, nonchemical type control measures are doing some good but they're not going to solve our problems. Insecticides are still the main components of a plant bug management program."

So, researchers are looking at different insecticide use strategies. They have learned that shortening spray intervals from seven days down to five days and then rotating the few insecticides that are available is helping to maximize the level of control.

"We do have widespread resistance to organophosphates and pyrethroids, but we found that by mixing those two we get some synergism and that increases our control up to about 80 percent to 90 percent," he added. "Another thing we're looking at is thresholds. We've refined our thresholds and sampling methods for plant bugs. We're recommending a black

drop cloth for sampling. By doing that, we can pick up small nymphs before they get bigger and more difficult to control.

"Currently, we have two regional projects in the mid-South funded by Cotton Incorporated to investigate control options for tarnished plant bugs. We are in the second year of a project looking at side-dressing 10 lbs. of Temik during



**Jeff Gore, Assistant Professor, at the Delta Research and Extension Center in Stoneville, Miss., makes recommendations for insect management in cotton.**

Photo by John LaRose, Jr.

the squaring period in cotton adjacent to corn."

That's a fairly expensive application that would not be economical on an entire field, so Gore side-dressed Temik on 32 rows of cotton immediately adjacent to corn and that showed some dramatic economic benefits. The other project is a standardized efficacy trial where researchers are comparing the effectiveness of insecticides across the mid-South.

"The other key insect we're dealing with in cotton is spider mites. We have several regional projects for spider mites. This year, we initiated a regional project in Mississippi, Arkansas, Louisiana, Tennessee and Missouri that is funded by Cotton Incorporated looking at yield losses caused by spider mites."

He explained that researchers are infesting mites into plots at different times to see when the greatest yield losses from spider mites are occurring. Then they're pursuing control options.

"Unlike plant bugs, we have numerous miticides available for spider mites but they're extremely expensive. We want to find the best ways to maximize those applications while minimizing cost," Gore summed.

His take-home message is to shorten spray intervals when there are high populations of plant bugs, and rotate the few insecticides available as much as possible.

"We're encouraging our growers to maximize their use rates for both plant bugs and spider mites," he said. "We want to maximize the level of control we get with a single application. It generally takes more than one application to get these pests under control, so we want to use the highest rate that's still affordable to maximize our level of control."

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