

Universities Receive Research Funds

DAVIS, Calif. — An industry group has announced funding of its first projects to take genetic insect resistance-management out of the laboratory and into a field setting.

According a news release made this week, the Bt Management Working Group (BtMWG), an international industry group comprised of scientists from 15 companies, has announced it is providing \$60,000 to fund three research projects.

Two of the field studies are to involve plants which have been genetically altered to produce proteins normally produced by *Bacillus Thuringiensis* (Bt).

Another study is to research resistance factors in the diamondback moth in field experiments in the United States and abroad.

Bacillus Thuringiensis is a bacterica which causes death in caterpillars after it is ingested, because of its lethal effect in the gut of the insect larva.

It has been used as a natural agent in the control of Gypsy Moth and other insects, such as the black fly.

This year is the first time that BtMWG, a non-headquartered group with interest in the use of Bt, has sponsored research involved in actual field experiments, according to Susan MacIntosh, chairperson of the BtMWG, and scientist at Novo Nordisk Entotech, in Davis, Calif.

Those receiving funding are North Carolina State University and University of Illinois for research on the European cornborer; Cornell University for Diamondback Moth research; and Mississippi State University for research into the tobacco budworm in cotton.

Entomologists, or insect researchers, at North Carolina and Illinois universities are to conduct field experiments involving corn plants that have been given genetic material to produce Bt for control of European cornborer.

The researchers are to use field work as well as computer modeling to determine if mixtures of corn with and without Bt production abilities can slow or avoid Bt resistance in the corn borer. A devastating corn pest, the European corn borer has not, as of yet, exhibited resistance to Bt.

David Onstad, with the office of Agricultural Entomology at Illinois, and Fred Gould, with the Department of Entomology at N.C. State University, are in charge of the research.

"The research will look at the survival of insects that migrate from one plant to another," said Brian Melin, vice chairman of the BtMWG. Melin is also a scientist at Abbott Laboratories. "Some questions to be answered are, 'Do the insects migrate away from the corn plant with Bt?' and, if they do, 'Are they going to survive on plants without the Bt gene?'"

In another project, Cornell University experts are to supervise field work on strategies to deter, identify, and measure resistance in the Diamondback Moth. Anthony Shelton and Richard Roush, with the Department of Entomology at Cornell, are responsible for the project.

Melin said that the study of the Diamondback is of special interest because it is the only known pest to have developed resistance to Bt. in the field, even though Bt have been used in agriculture for about 30 years.

He said this may be because of this particular moth's relatively low mobility and high reproductive capacity, combined with high doses of Bt.

For the Diamondback, actual field studies are to be conducted in Florida, New York, Texas, Canada, and Central America to determine what strategies may best deter resistance, and also to develop a technique for identifying and

measuring resistance in the moth at the earliest time possible.

Other research that involves the tobacco budworm is to be done in the laboratory with the use of computer simulation.

According to the news release, entomologist Michael Caprio, with the Mississippi State University, is to use computer models to evaluate strategies designed to manage Bt resistance in the budworm, as it concerns cotton plants that have been genetically altered to produce the Bt protein. He is to look at best ways to put plants out in the field to avoid or delay resistance, seed mixtures, etc., through computer modeling and simulation.

Although it is the first year that BtMWG has supported field research, it is the fifth consecutive year that the group has dedicated funding of research into Bt resistance-management strategies and the role that Bt-based products play in integrated pest management (IPM) systems, according to MacIntosh. Altogether the group has provided more than \$300,000 in grants during that time.

"Until now, the BtMWG-sponsored research has focused exclusively on laboratory studies, including computer modeling of

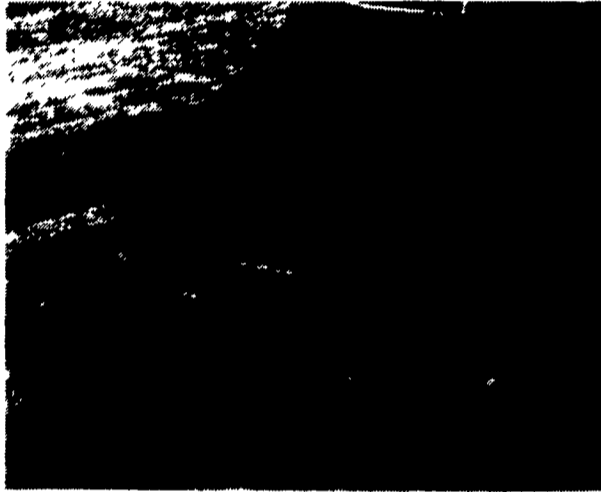
insect resistance strategies. We will continue to do some of that, as well as basic studies of how Bt work, but the increasing availability of both spray-on and plant Bt products now allows us to move on to a more real life setting of field research," MacIntosh said.

The objective of the group is to ensure the availability of a broad spectrum of mechanisms to protect crops against insects, she said. "Our research and education program is dedicated to ensuring this goal."

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