

Field Refuges Prevent Moth's Resistance To Genetic Insecticides

ITHACA, N.Y. - Cornell University scientists have demonstrated that creating a refuge in a crop field reduces the chance of insects developing resistance to transgenic insecticidal plants. Researchers report on their finding in the March issue of the journal, *Nature Biotechnology*.

"The whole concept of a refuge really works," said Anthony M. Shelton, Cornell professor of entomology and the lead author on the *Nature Biotechnology* article. "Before it has been theory, and this is the first demonstration of it in a field situation. This is all about managing resistance, and we found that, yes, it is important to have a refuge and to manage those insects within the refuge carefully."

In this case, a refuge is a section of plants within the field that have not been genetically engineered to contain the insect

moth developing resistance to Bt ticide.

The insecticide contained in the plants is *Bacillus thuringiensis* (Bt), a naturally occurring bacterium that is not harmful to humans and is considered by the Environmental Protection Agency (EPA) as the safest insecticide from an environmental standpoint. The genes to produce Bt proteins have been engineered into plants, and last year farmers in the United States planted nearly 19 million acres of transgenic Bt crops approved by the EPA.

"Bt transgenic plants can greatly reduce the use of broader spectrum insecticides, but there is concern that this technology may be short-lived due to insect resistance," wrote Shelton in the *Nature Biotechnology* article. Shelton and his colleagues conducted field tests to examine ways of reducing the likelihood of the diamondback

broccoli plants.

At Cornell's New York Agricultural Experiment Station in Geneva, N.Y., the scientists had previously conducted laboratory and greenhouse trials for several years using Bt broccoli plants engineered by Elizabeth Earle, Cornell professor of plant breeding and chair of the university's plant breeding department. "Once we felt comfortable with our system, it was important to take it to the field to see how a resistance management program would work under field conditions," said Shelton.

To manage resistance to Bt-engineered plants, Shelton and his colleagues examined several planting options, including how the refuge was placed in the field. Their findings are clear - a refuge is needed, but it is also

important how that refuge is placed. Using a "20 percent mixed refuge," in which the Bt and non-Bt plants were mixed randomly, compared with a "20 percent separate refuge," in which a block of non-Bt plants was grown next to the Bt plants, they followed changes in the insects' level of resistance over the course of the season. Their results backed up theoretical models that indicated a separate refuge would be more effective in keeping the diamondback moth from becoming Bt-resistant.

Additional studies examined how to manage the insects in the refuge. The studies' results demonstrated the importance of making sure sufficient insects are generated on the non-Bt plants to mate with any resistant insects that may have sur-

vived on the Bt plants.

Fred Gould, professor of entomology at North Carolina State University, a noted expert in the use of Bt transgenic plants, noted in an accompanying commentary in the journal, "Field studies like this one are essential for developing public confidence in resistance management techniques."

Joining Shelton and Earle in authoring the article, "Field Tests on Managing Resistance to Bt-Engineered Plants," are Juliet Tang, a former Cornell entomologist now at Mississippi State University; Richard Roush, a former Cornell entomologist at the Waite Institute in Australia; and Timothy D. Metz, a former Cornell plant breeder now at Campbell University in North Carolina. USDA funded the research.

Video Conference To Focus On Private Forestland Stewardship

TOWANDA (Bradford Co.) - National experts will present perspectives to private forest landowners on strategies to take control over the revenue potential of private lands and for landowners to reduce their tax burden. Private forest landowners throughout Pennsylvania may have several opportunities to obtain more income from their property, but need to learn which strategies best fit their circumstances.

On April 15, from 9 a.m. to noon, Cornell University will broadcast this financially focused satellite videoconference.

In addition to presentations by forest landowners, speakers will include Jonathan Kays discussing which personal attributes you need to consider before undertaking a new enterprise. Next Bill Hoover will give an introduction to strategies to reduce your federal income tax burden and an overview of a forest landowner income tax web

page. The second half of the broadcast will begin with Bob Beyfuss who will look at ginseng and several other examples of private forestland enterprises. Finally, Thom McEvoy will describe what you need to consider when planning for the ultimate transfer of your estate.

Landowners wishing to participate should contact the Sullivan County Extension Office at (570) 928-8941 for reservations. Cosponsors include Cornell Cooperative Extension, the New York Forest Owners Association (NYFOA), Penn State University, University of Maryland, Rutgers University, the University of New Hampshire and the University of Connecticut.

The session will be downlinked at the Sullivan County Extension Office in Dushore. There is no fee, but because of limited seating, advanced registration is required. For additional information, call Dr. Bob Hansen at (570) 265-2896.

AFBF Names Harris To Top Staff Post

PARK RIDGE, Ill. - Richard D. Harris of Des Moines, Iowa was elected by the American Farm Bureau Federation's board of directors to the newly created position of chief administrative officer and secretary/treasurer, consolidating several former officer positions. He also is secretary/treasurer of AFBF's affiliated companies.

For more than three years prior to joining AFBF, Harris was executive director and sec-

retary/treasurer of the Iowa Farm Bureau Federation and senior vice president/secretary-treasurer of that organization's affiliated insurance company.

Harris began his career with Iowa Farm Bureau in 1968 as a county fieldman. He also served as director of field services, director of public affairs, and administrative director.

A native of Greenfield, Iowa, Harris has been active in many civic and professional organizations

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