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MONSANTO SCIENTISTS DEVELOP NOVEL INSECTICIDAL PROTEINS TO CONTROL PLANT PESTS

ATLANTA, February 19, 1995 -- Monsanto Company announced today that its scientists have made groundbreaking discoveries in the development of genetically modified insect-protected plants. Speaking at the annual meeting of the American Association for the Advancement of Science (AAAS) in Atlanta, Robert T. Fraley, Ph.D., President of Monsanto's New Agricultural Products business unit, described the discovery and development of novel classes of insecticidal proteins and genes that can control some of the most significant insect pests in agriculture.

Dr. Fraley's presentation provided details on cholesterol oxidase, one of a series of new, highly effective proteins for insect control recently discovered by Monsanto. According to Dr. Fraley, when the gene for cholesterol oxidase is introduced into plants, the plants are protected from weevils and worms. These insects pests are among the most damaging to crops such as cotton and corn.

The research at Monsanto is characterized by Dr. Fraley as "breakthrough science that creates the opportunity to develop completely new categories of insect-protected plants using biotechnology methods." These newly discovered proteins "allow us to tackle head-on some of the most important insect pests facing world agriculture," Dr. Fraley said. It has been estimated that insects reduce world crop yields by nearly 25 percent.

Monsanto scientists first demonstrated insect protection in cotton, potato and corn in the late 1980's. This was made possible by utilizing their expertise in plant genetic engineering and genes from a bacterium, *Bacillus thuringiensis* (B.t.).

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Crops with the *B.t.* gene have been tested extensively in the field since 1990 and have demonstrated excellent control of some of the most damaging insect pests of cotton (such as tobacco budworm and cotton bollworm), potato (Colorado potato beetle) and corn (European corn borer). These products have been thoroughly tested and the data have been submitted to government regulatory agencies. Commercial approval is expected soon.

According to Fred J. Perlak, Ph.D., a Monsanto scientist heading the team involved in research on *B.t.* and the newly identified proteins, "The discoveries of a number of new proteins with potent insecticidal activities, such as cholesterol oxidase, are exciting advances in insect control. These discoveries, with our recent breakthroughs in plant gene expression, have provided us with the opportunity to go beyond *B.t.* genes and address multiple insect problems. Novel proteins such as these will enable us to create new products of significant value to growers."

Development of insect-protected plants using the *B.t.* approach has been undertaken by several companies, including Mycogen, Calgene and Ciba-Geigy. According to Dr. Fraley, "Because these new proteins are not from *B.t.*, they provide Monsanto with opportunities to create unique and more effective proprietary products. Coupled with the company's already strong research base in plant genetic engineering and *B.t.* technology, these newly announced discoveries strengthen Monsanto's position as the leader in the development of pest-resistant plants."

Monsanto Company makes and markets high-value agricultural products; chemical products, including plastics and manufactured fibers; pharmaceuticals; food products; and other performance materials.

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