

BREAKING NEWS: Alarm on Gene GM Crops: A Previously Unrecognised Effect on GM Plant Development

By [Global Research](#)

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New Delhi, June 2: Indian scientists have discovered that the genetic modification of plants with a gene already used in crops worldwide may severely damage the plants, a surprising finding that may stir a debate on current crop biotechnology science.

The scientists at the University of Delhi have shown that inserting a bacterial gene that makes a protein named Cry1Ac into genomes of plants appears to cause developmental defects, growth retardation and sterility in the plants.

Several experimental and commercial genetically-modified plants, including GM cotton cultivated in India and other countries, make the Cry1Ac protein which is toxic to some insects. The insects die when they try to eat parts of these GM crops.

The Delhi scientists have now shown through laboratory experiments that modifying cotton or tobacco with Cry1Ac has a detrimental effect on these plants. Their results have appeared in the *Journal of Bioscience* published this month by the Indian Academy of Sciences.

“This is a completely unexpected finding,” said Durgadas Kasbekar, a senior biologist with the Centre for Cellular and Molecular Biology in Hyderabad who was not associated with the study, but is the editor of the *Journal of Bioscience*.

“Until this point, if you asked someone in the plant biotechnology community what the Cry1Ac toxin does in plants, they would say it kills insects. No one has yet demonstrated harm to plants as this study has done,” Kasbekar told **The Telegraph**.

The Delhi researchers say such observations may have been overlooked in the past as most previous studies were aimed at finding plant varieties that can be genetically altered just enough so that they are suitable for cultivation.

Independent studies have earlier shown that levels of Cry1Ac in some commercial GM cotton decline progressively over the life-cycle of the plant and are produced at such low levels in vulnerable parts of the crop that insects can continue to consume them.

“We find a very strong correlation between the levels of Cry1Ac and abnormalities —higher the levels of Cry1Ac in the plants, the greater the damage,” said Pradeep Burma, a plant geneticist at the University of Delhi South Campus, who led the study.

Burma said these findings do not in any way suggest that GM crops are either unsafe for consumption or can cause damage to other crops or the environment. "But they reveal a previously unrecognised effect on GM plant development," Burma said.

"It's a hurdle we need to overcome to improve insect-resistance in crops," he said.

The researchers have themselves shown that if the plants are modified in such a way that the Cry1Ac is confined in their chloroplasts - the site of photosynthesis in plant cells - they do not show any developmental defects.

"This could be a future strategy to protect plants from damage," Burma said.

But scientists caution that the study describes observations and the mechanism of how the toxin harms host plants remains unclear. "We need to understand why the plants are being affected - and use that knowledge to make better plants," Kasbekar said.

The Indian government had approved commercial cultivation of GM cotton containing Cry1Ac in 2002, and research groups have been trying to equip other plants with this protein. But a proposal to introduce GM brinjal with Cry1Ac has been stalled by the environment ministry amid concerns among sections of scientists and environmental activists about safety and environmental impact of edible GM crops.

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