China's farmers embracing gene-modified crops

By Keith Mulvihill

NEW YORK, Jan 24 (Reuters Health) - Poor farmers in China are growing more genetically modified plants than small farmers in any other developing nation, according to a report released Thursday.

"Our survey of China's laboratories identified over 50 plant species and more than 120 functional genes that scientists are using in plant genetic engineering, making China a global leader in the field," Dr. Scott Rozelle of the University of California-Davis and colleagues report in the January 25th issue of the journal Science.

The country is developing the largest capacity to use biotechnology to modify crop plants outside of North America and is targeting crops--including cotton, rice, wheat, potatoes and peanuts--that get little attention in other parts of the world. The amount of research and the number of scientists working on gene-modified plants is "impressive," according to the report.

"Regulators (in China) approved 45 genetically modified plant applications for field trials, 65 for environmental release, and 31 for commercialization," the authors write.

Genetic modification involves transferring genes of one species to another to acquire certain characteristics, such as hardiness or pest resistance. For example, scientists have spliced spider venom genes into corn and other food crops as a "natural pesticide" to deter insects and birds from feeding on the plants, and inserted fish "antifreeze" genes into tomatoes to extend their growing season into winter.

There has been bitter debate about the safety of genetically altered food, and some scientists warn of a "Trojan gene" effect that could damage or destroy species of plants or animals.

Worldwide sales of genetically modified foods grew an estimated $75 million in 1995, when the first commercial plantings occurred, to approximately $2.3 billion in 1999. More than 40 modified food plants have been marketed in the US for general use, most of them corn and soy products.

With a staff of biotechnology researchers that is approaching 2,000, and a 1999 budget of $112 million, "the developing world's other large biotechnology programs, in Brazil and India, fall short of China's," the report indicates.

Presently, China's efforts have largely been focused on Bt cotton--cotton that has been genetically modified to produce the bacteria-derived toxin Bacillus thuringiensis, which protects growing plants from insect pests.

Some of the benefits of the effort cited in the report include reduction in pesticide use and an increase in production efficiency, the authors point out.

"Using its own human and physical capital, (China) is creating not only a large viable biotechnology research program, it is working on creating new crops that are important to a developing country and poor people, and it is developing new methods...that one day may be able to compete with the life science companies in the industrialized countries," Rozelle told Reuters Health.

"Obviously, this has implications for extension of (genetically modified technology) to developing countries and may create more competition in international technology markets," he added.

"We really welcome having some solid data on what is actually being done (in China), said Dr. Margaret Mellon, director of the Food and Environment Program, at the Union of Concerned Scientists, a nonprofit group.

"For years there have been reports swirling around that China has been doing much more," she said.

Although the report notes that farmers using genetically modified crop plants have reduced their use of pesticides, this may be a short-lived effect, she explained. Whether a pesticide is manufactured biologically by the plant or applied by humans, insects will eventually develop resistance to the pesticide, Mellon noted.

The risks and benefits of the genetically modified crops should be weighed by Chinese regulatory agencies, Mellon said.

"The balance of risk versus benefits needs to be left to the Chinese," she said. "It is not the place of (others) to dictate to them what technology they use and how they balance risks versus benefits."

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