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## The new organic

The future of food may depend on an unlikely marriage: organic farmers and genetic engineering.

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By Pamela Ronald  
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BEGINNING IN 1997, an important change swept over cotton farms in northern China. By adopting new farming techniques, growers found they could spray far less insecticide over their fields. Within four years they had reduced their annual use of the poisonous chemicals by 156 million pounds - almost as much as is used in the entire state of California each year. Cotton yields in the region climbed, and production costs fell. Strikingly, the number of insecticide-related illnesses among farmers in the region dropped to a quarter of their previous level.



This story, which has been repeated around the world, is precisely the kind of triumph over chemicals that organic-farming advocates wish for.

But the hero in this story isn't organic farming. It is genetic engineering.

The most important change embraced by the Chinese farmers was to use a variety of cotton genetically engineered to protect itself against insects. The plants carry a protein called Bt, a favorite insecticide of organic farmers because it kills pests but is nontoxic to mammals, birds,

fish, and humans. By 2001, Bt cotton accounted for nearly half the cotton produced in China.

For anyone worried about the future of global agriculture, the story is instructive. The world faces an enormous challenge: Its growing population demands more food and other crops, but standard commercial agriculture uses industrial quantities of pesticides and harms the environment in other ways. The organic farming movement has shown that it is possible to dramatically reduce the use of insecticides, and that doing so benefits both farm workers and the environment. But organic farming also has serious limits - there are many pests and diseases that cannot be controlled using organic approaches, and organic crops are generally more expensive to produce and buy.

To meet the appetites of the world's population without drastically hurting the environment requires a visionary new approach: combining genetic engineering and organic farming.

This idea is anathema to many people, especially the advocates who have helped build organic farming into a major industry in richer countries. As reflected by statements on their websites, it is clear that most organic farming trade organizations are deeply, viscerally opposed to genetically engineered crops and

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seeds. Virtually all endorse the National Organic Standards Board's recommendation that genetic engineering be prohibited in organic production.

But ultimately, this resistance hurts farmers, consumers, and the planet. Without the use of genetically engineered seed, the beneficial effects of organic farming - a thoughtful, ecologically minded approach to growing food - will likely remain small.

Despite tremendous growth in the last 15 years, organic farms still produce just a tiny fraction of our food; they account for less than 3 percent of all US agriculture and even less worldwide. In contrast, in the same period, the use of genetically engineered crops has increased to the point where they represent 50 to 90 percent of the acreage where they are available. These include insect-resistant varieties of cotton and corn; herbicide-tolerant soybean, corn, and canola; and virus-resistant papaya. [Continued...](#)

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