

## **China Releases Biotech Rice, Bars Biofuel to Protect Food Supply**

by Dennis T. Avery

China says short world grain supplies have persuaded it to release biotech rice nationwide, ensuring the broadest-ever use of genetic engineering in a food crop. Chinese plant breeders say biotech crops are certain to produce higher yields, forestalling the need to finance costly rice imports for China's billion-plus consumers.

To further protect its grain supplies, China has also been discouraging grain-based ethanol for the last two years. Chinese demand for grain ethanol—mainly from corn—had threatened to inflate prices for China's rice and livestock products as world oil prices hit record levels.

These strategies may quickly become the model for developing countries as the world strives to double food and feed production over the next three decades—with or without biofuels.

Western biofuel mandates have, unfortunately, more than doubled world grain prices since 2005. Corn costs have soared from less than \$2 per bushel to more than \$7, before settling recently at about \$5.50 per bushel. Pork, poultry, beef, and milk producers are still warning of further food price inflation ahead due to biofuels mandates.

The Chinese have already developed genetically engineered rice strains with bred-in pest and disease resistance. They're also experimenting with new nitrogen-efficient rice that needs only half as much fertilizer to get top yields. The new rice thus costs much less to grow, and emits far less greenhouse gas per ton of rice produced. They also say biotech rice "escapes" will not be a problem, since they've pre-programmed the rice to be hyper-sensitive to a particular herbicide.

China already permits the growing of genetically engineered peppers, tomatoes, and papaya, and much of its huge cotton crop is genetically modified to resist pests. Biotech has overcome the deadly ringspot virus, which severely hampers papaya production in much of the world, and provided virus resistance for tomatoes and peppers. Another genetic modification permits Chinese tomatoes to survive the longer shipping delays caused by the poor Chinese roads and lack of refrigeration.

The nitrogen-efficient biotech rice being tested by the Chinese emerged at Canada's University of Alberta, as breeders were seeking drought-tolerant crops. Someone forgot to fertilize the seeds in the greenhouse, but one set of plants grew vigorously anyhow. They had discovered a new and more efficient pathway for crop nitrogen uptake that allows top yields with half the nitrogen fertilizer.

Arcadia Biosciences is marketing the nitrogen-efficient crops, working with Chinese rice growers and Australian wheat growers and is working to develop the new nitrogen efficiency in

corn. Arcadia has already signed a licensing agreement with the Maharashtra Seed Company in India, the world's second-most-populous country.

Greenpeace claims that rice smuggled from biotech experimental fields has already been sold on consumer markets without government approval, and perhaps even exported. However, with world rice prices recently hitting record highs, no one has seemed to care.

The question today is how to produce adequate food, with cropland per person declining. In addition, fertilizer prices have been sharply inflated by the conversion of power plants to burn much of the natural gas which used to supply fertilizer factories.

World leaders are also welcoming the Bill and Melinda Gates Foundation's major effort to create a renewed Green Revolution to create the first high-yield farming in sub-Saharan Africa, supply the last surge of human population growth worldwide, and provide higher-quality diets for the tropical countries.

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