

Genetically engineered rice: Illegal and unwanted in China

Illegal GE rice found in China

As of April 2005, no varieties of genetically engineered (GE) rice have been approved in China. However Greenpeace has discovered that GE rice seeds have been sold and grown commercially for a number of years. The GE rice is illegal, and has not been approved as safe for either human consumption or the environment. It has entered the Chinese food chain and environment, and may have contaminated Chinese rice exports.

Interviews with seed providers and farmers in the province of Hubei indicate that GE rice seeds have been sold over the past two years. Samples of rice seed, unmilled and milled rice have been collected from seed companies, agriculture extension stations, farmers, rice millers, wholesalers and retailers. Testing by the international laboratory GeneScan has confirmed the presence of transgenic DNA in 19 samples. Two of the samples tested positive as Bt rice – which has been genetically engineered to produce an inbuilt pesticide. For years, largescale field trials with Bt rice have been conducted by scientists of the Huazhong Agriculture University in Wuhan, the provincial capital of Hubei.¹

Greenpeace estimates that between 950 and 1,200 tons of GE rice entered the food chain or rice market after last years harvest. This year, it is estimated that up to 13,500 tons may enter the market unless urgent action is taken.

The Risks

GE insect resistant Bt rice has not been approved for cultivation anywhere in the world. There is no publically available environmental assessment nor human food safety assessment available for any GE Bt rice. However, studies from other GE Bt crops such as maize (corn) and cotton give strong indications that Bt rice will have serious environmental consequences and there are serious human food safety concerns.

Food safety risks:

- Rice is the most important staple food crop in the world. On average, rice provides 30% of calorie and 19% of protein intake in China;
- One of the toxins produced in Bt rice (and which was found in two of the samples) could cause allergic reactions in humans. It has recently been shown that this Cry1Ac protein² may have induced allergic-type responses in mice³;

Environmental risks:

- Non-target species such as butterflies and moths may be adversely affected;
- The emergence of more troublesome weeds;
- Insects resistant to the introduced toxin may evolve and require more intensive chemical control;
- Contamination of natural genetic resources;
- Bt rice could also affect long-term soil health.

Economic and Market risks:

¹ Tu, J., et. al 2000. Field performance of transgenic elite commercial hybrid rice expressing *Bacillus thuringiensis* δ -endotoxin. Nature Biotechnology 18: 1101-1104.

² The GE Bt rice illegally contaminating Chinese rice market contains a Cry1AC gene or part of a Cry1Ac gene

³ Moreno-Fierros, L., García, N., Gutiérrez, R., López-Revilla, R. & Vázquez-Padrón, R.I.2000. Intranasal, rectal and intraperitoneal immunization with protoxin Cry1Ac from *Bacillus thuringiensis* induces compartmentalized serum, intestinal, vaginal and pulmonary immune responses in Balb/c mice. Microbes and Infection 2: 885-890 and references therein.

As China is one of the world's largest exporters of rice, it is expected that the contamination scandal may have significant trade and market impacts, particularly in countries like Japan and Korea where consumer rejection of GE foods is very high.

In 2003/04, China exported rice to the following countries: Japan, Korea, Russia, Germany, UK, Slovakia, Poland, Czech Republic, Belgium, Italy, France, Netherlands, Sweden, Finland, Austria, Cote d'Ivoire, Liberia, Hong Kong and Indonesia.

A similar GE contamination case in the USA in 2001 resulted in a \$1 billion product recall amid concerns of potential allergenic reactions after illegal, GE corn (Starlink) entered the food chain. Although StarLink was grown on less than one percent of all US corn fields, it was co-mingled with much larger quantities of corn.⁴ It resulted in the recall of nearly 300 contaminated food products⁵ in the USA, and it was also found in US maize export markets such as Japan. US government officials estimated that it might take four years to get StarLink out of the US food and seed supply. Three years after the scandal, approximately 1% of samples sent to USDA testing labs are still found to contain StarLink.⁶

No country in the world has commercially released GE rice. The USA is the only country in the world that has approved GE rice, however despite its approval there, no commercial GE rice crops have been planted due to fears of consumer and market rejection.

In China, consumer concern over GE foods is rising. In an opinion poll released by Greenpeace in March, a majority (57%) of the respondents said they would choose non-GE food over GE food, a big leap from 40% in 2004. The poll showed that Chinese consumers were even more cautious when faced with GE rice. According to the survey, 73% of the respondents said they would choose non-GE rice.

Conclusions and Recommendations

The illegal GE rice scandal comes at a time when the Chinese government is considering the commercial release of a number of different varieties of GE rice. If any of these varieties are approved, it will be the first time that the world's most important staple food has been genetically engineered.

The illegal release of GE rice into the food chain prior to any approvals being granted shows the weakness of the regulatory system and highlights the urgent need to strengthen regulation of GE crops and field trials in China.

The Chinese government has not granted any of the required safety permits for GE rice. GE rice seed sold in the market is a violation of both the Seed Law and GE regulations, and those involved in manufacturing and selling the seed should be held accountable. The Seed Law requires withdrawal of unapproved seed varieties from the market. The GE regulation requires withdrawal and destruction of GE crops if they pose a threat to public health and the environment. Greenpeace calls on the Chinese government to uphold the law and act accordingly.

It is unacceptable for a small group of rogue scientists to take the world's most important staple food crop into their own hands. China should halt the approval process for GE rice and immediately implement a decontamination plan to withdraw the illegal GE rice from the food chain and environment.

For more information

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Video and photo images of the GE rice are available from: <http://photos.greenpeace.org.au>

⁴ USDA doesn't know how StarLink tainted 1998 corn. Reuters News Service November 23, 2000

⁵ FDA Enforcement Report 00-44 1 November 2000 at <http://www.fda.gov/bbs/topics/ENFORCE/ENF00666.html> as of December 5, 2000

⁶ Jacobs, P. 2003. *Traces of contaminated grain still showing up in corn supply*. 30 November. San Jose Mercury News.