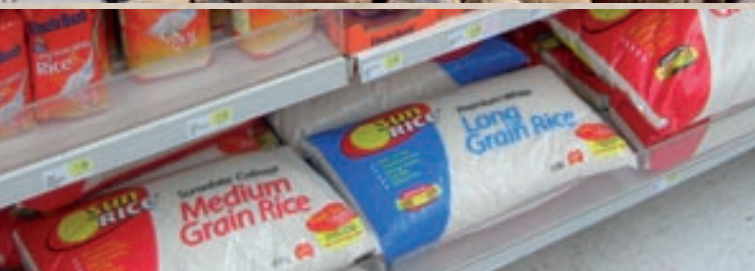




Rice industry in crisis



Major rice markets close doors to genetically engineered rice
after contamination of the global food supply chain



Cover Image and top: In the short term, the US rice industry is reeling under the impact of lost markets, cancelled orders, import bans and restrictions, plummeting prices and exports, testing and administrative costs. US rice exports are projected to decline 16% in 2006/2007. © Inga Spence

Centre: Unloading rice in China. © Yann Layma

Below: Where does the rice on your supermarket shelves come from?
© Greenpeace

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Executive Summary

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In 2006 a series of scandals erupted as world rice supplies were discovered to be contaminated with unapproved genetically engineered (GE) rice varieties. Field trials of GE rice in the US and the illegal sale of rice seed in China led to unapproved GE rice entering global food supply chains. Contaminated food stocks were found and pulled from shelves in European stores. Widespread bans on US-produced rice were enacted. As a result, farmers, millers, traders and retailers around the globe are facing massive financial costs, including testing and recall costs, cancelled orders, import bans, brand damage and consumer distrust – distrust that could last for years. The media described the events ‘as a biosafety time bomb’. The ongoing repercussions for the rice industry are substantial both in terms of financial impact and future trade agreements.

In the words of USA Rice Producers Group Chairman Paul T. Combs, “The economic viability of all segments of the rice industry is in jeopardy.”¹

The most important repercussions can be summed up in six points:

- Rice exports contaminated with unapproved GE varieties have caused serious financial impacts for the rice industry, economic volatility of rice markets has increased
- The rice industry is responding by rejecting GE rice products
- Field tests of GE rice cannot be contained and should be banned
- Regulatory bodies have failed to protect conventional or organic growers
- The continued release of GE crops poses environmental and health risks
- Public opinion of the perceived risk in consuming GE products is escalating

Fiscal impact - The discovery of three GE rice contaminations (a third contaminant originating from another Bayer GE rice in the US was discovered in France) in a short period of time indicate that contamination is not going to diminish or magically disappear without government and industry intervention. Global supply chain scares will persist, increasing market volatility and economic risk. The initial announcement of the unapproved GE contamination caused one of the largest single day drops of rice future prices in recent history.

Industry response - Reaction to the events signifies that global market forces are demanding the production of GE-free rice. Included in this report are statements made by 41 companies from around the world which make clear the position of the rice industry. Precedents are being set, for example as the rice industry of the world's largest rice exporting nations, Vietnam and Thailand, implement no-tolerance policies towards GE rice. We are seeing a refusal by rice production sectors to deal in GE rice. Major industry players, such as the world's largest rice processor, Ebro Puleva, have stopped buying US rice. They have released statements (included in this report) of intent not to buy, sell, or trade GE crops.



Containment of field trials - Efforts to contain field trials have clearly failed, resulting in losses of millions of dollars. The damage is borne by farmers and rice industry sectors, not by GE companies. A 2005 audit by the US Inspector General found that the policies and procedures of the United States Department of Agriculture (USDA) to oversee GE field trials do not go far enough to ensure the safe introduction of genetically engineered crops.

Environmental and health risks associated with GE crops – Inserting genes through genetic engineering can make strange things happen, such as making food toxic to eat. Risks to health include severe allergic reactions of consumers exposed to GE foods. GE organisms are living so can spread, reproduce and cause problems to the environment. The release of GE organisms to the environment is extremely difficult to reverse. GE crops can spread by seed, pollen, animals, insects and humans. Certain GE crops have led to more chemical use, lower yields and other problems like super-weeds, weeds that are ‘herbicide-proof’. The long-term effects GE organisms will have on soil and the animals, insects, plants and birds that live in the environment has yet to be determined and the continued release of GE crops poses potential environmental risks such as damage to ecological communities, and irreversible loss of species diversity and loss of genetic diversity within species.

Public perception - Contrary to predictions and assurances of GE companies and advocates, public perception of risks associated with consumption of GE products is increasing. By way of response, the rice industry needs to protect its interests by rejecting GE rice.

This report examines the circumstances that led to the contaminations and the reaction of the rice industry, presented in their own words. The economic implications and social and political repercussions. The current state of affairs of GE trials and public opinion will also be examined.

Background: Contamination of the global rice supply

In 2006, two rice contamination scandals erupted when global rice supplies were found to contain illegal varieties of US and Chinese genetically engineered (GE) rice. In the US, a GE rice variety (LL 601, owned by Bayer CropScience and not approved for human consumption) was identified in samples of commercial rice produced for the export market². During the weeks following the announcement, long-grain rice shipments from the US tested positive for traces of the strain in Germany, Italy, Switzerland, and the Netherlands^{3 4}. The contamination has now been independently confirmed in over seventeen countries in the EU and a total of 24 countries worldwide.

In China, a second unapproved GE rice variety (Bt 63) has been confirmed to have contaminated Chinese rice exports, tainting various levels of the food chain, from wholesale rice through to processed food products found with unapproved GE material on European supermarket shelves⁴.

These two events have changed the face and politics of the rice industry.

The European Union and Japan promptly declared import bans and restrictions on US rice long grain imports^{10 11}. Stores in the UK were advised to remove all potentially contaminated rice products from their shelves¹². Ebro Puleva, which controls 30% of the European rice market, stopped importing US rice¹³. US exports to South Korea were halted when the country demanded that rice be free of GE contamination¹⁴.

Immediately after the contamination announcement, effects were felt on the market, with rice future prices falling sharply by \$150 million¹⁵, the sharpest one-day decline in years^{16 17}. Rice prices were nearly 65% below the level forecast by the trend of prices prior to the LL 601 outbreak¹⁸.

In the short term, the US rice industry is reeling under the impact of lost markets, cancelled orders, import bans and restrictions, plummeting prices and exports, testing and administrative costs. US rice exports are projected to decline 16% in 2006/2007¹⁹.

Other rice producing countries are moving fast to capture open GE-free markets. The Commerce Ministry of Thailand is initiating plans to aggressively promote non-GE Thai rice and increase exports to the EU by 5-10%²⁰. In mid-November, the Rice Exporters Association of Thailand and the Vietnam Food Association signed an agreement confirming a non-GMO rice production policy²¹. Thailand and Vietnam are the world's largest rice-exporting countries and account for nearly half of all global rice exports²².

Countries in which rice and rice products contaminated with LL601, Bt63 or LL62 have been found

1. Austria
2. Belgium
3. China (Bt63 first identified by Greenpeace)
4. Cyprus
5. Finland
6. France (Bt63 first identified by Greenpeace)
7. Germany (Bt63 first identified by Greenpeace; LL601 first identified by Greenpeace)
8. Ghana (LL601 identified by Friends of the Earth)
9. Greece
10. Ireland
11. Italy
12. Kuwait (LL601 identified by Greenpeace)
13. Luxembourg
14. Netherlands
15. Norway
16. Philippines (LL601 identified by Greenpeace)
17. Poland
18. Sierra Leone (LL601 identified by Friends of the Earth)
19. Slovenia
20. Sweden
21. Switzerland
22. Denmark
23. United Arab Emirates (LL601 identified by Greenpeace)
24. UK (Bt63 identified by Friends of the Earth)
25. USA

Actual source of contamination remains a mystery

In the US, Bayer CropScience's field trials of LL601 were terminated in 2001, but news of the contamination did not surface until 2006²³. The seriousness of the event grew, when it was revealed that the 'foundational seed' (rice grown for seed) of the southern US had been contaminated^{24 25}. The USDA has not estimated the quantity of contaminated rice now on the market, but one important indicator is that long grain rice, the type that was contaminated, comprises 80% of US rice exports²⁶.

Contamination exported from illegal GE rice to Europe shelves

In China, contamination has also occurred. Illegal sale of GE rice seeds led to national, then international, contamination of rice and rice products^{5 6 7 8}. Contamination was revealed in rice cereal products produced by food giant HJ Heinz⁷ in China. The contamination was subsequently found in rice products in the UK, France and Germany, despite the efforts of the Chinese Government to stop it^{7 27}. Large companies claim to be able to track their ingredients to the source, but the Confederation of the Food and Drink Industries stated they were as of yet 'unsure' of which rice-based products may have originated in China⁶.

Bayer's Rice LL601 History of Contamination

Bayer is a multinational company with a primary focus on pharmaceuticals that has become increasingly involved in genetically engineered crops. This 2006 contamination scandal follows the 2005 canola contamination scandal in Australia in which a GE canola/rapeseed developed by Bayer is estimated to have contaminated over 400,000 hectares⁴⁷. Bayer has not received any penalties, fines or prosecutions for the contamination.

1998-2001 – Aventis field trials of LL601 are conducted in the United States. Exact location and number of trials not known.

2002 – Bayer buys Aventis and discontinues field trials. Field trials of other GE rice varieties continue worldwide. Plans for commercialisation of LL601 apparently abandoned.

2005 – USDA criticised heavily by Inspector General for poor oversight of field trials of GE crops.

2006, January – Riceland, the largest US producer and exporter of rice, tests rice intended for export. Presence of genetically engineered LL601 is revealed. Further testing conducted and confirmed in Arkansas, Missouri, Louisiana and Texas.

2006, May – Bayer claims first made aware of the contamination. No explanation for the delay in notifying Bayer.

2006, July – Bayer notifies the USDA of contamination and requests deregulation of the strain. No explanation for the delay in notifying the USDA.

2006, August – the USDA release the contamination information publicly. No explanation for delay in notifying rice importing countries and traders. Sharp trading decline in US rice market.

2006, August – EU issues Emergency Declaration (2006/578/EC) in order to prevent ongoing contamination of EU rice supplies. Japan suspends imports of long grain US rice. South Korea demands that its importers be guaranteed there is no genetically engineered contents in U.S. rice shipments. Other countries follow suit.

2006, September – Japan widens testing of US rice to look for GE contamination in short and medium-grain rice

2006 – Multi-million dollar class action lawsuits filed by farmers and rice traders against Bayer.

2006, October – France detects LL62 in long grain rice. LL62, approved in the US but not in the EU, represents an entirely new contamination problem. Testing in the US indicates that the problem is widespread in US rice supplies.

2006, November – USDA approves LL601 for consumption, despite 15,000 objections and the European Food Safety Authority finding that there was insufficient data to make a finding of safety. No penalties or prosecutions of Bayer to date.

Bt63 History of Contamination in China

Bt rice is genetically engineered to produce its own insecticide. There are many concerns about Bt crop. Bt63 rice seed was illegally sold in Hubei province leading to the current contamination crisis.

2005 – Greenpeace discovers GE rice seeds have been sold and cultivated illegally in China. The rice variety is not approved for human consumption or cultivation.

2005, August – Rice products contaminated with illegal Bt rice found in Carrefour food store in Wuhan and in wholesale markets in Wuhan and Guangzhou.

2005, August – Chinese Government punishes seed companies and destroys GE rice fields.

2006 – Chinese Government re-iterates that the sale of GE rice is banned and tightens control over field trials.

2006, March and April – Independent laboratories in Germany and Hong Kong confirm GE rice found in Heinz's Baby Rice Cereal sold in Beijing, Guangzhou and Hong Kong.

2006, September – Greenpeace releases test results showing Bt63 presence in rice products imported from China into France and Germany. Friends of the Earth releases similar information for the UK.

2006, September to October – France announces the discovery of illegal Chinese rice on the EU's Rapid Alert system. Subsequently the German and Austrian Governments announce that additional Chinese foods contaminated with Bt63 were found (EU Rapid Alerts on 21, 27, 28, 29th September and 6th October).

2006, September – Greenpeace releases statement from scientists indicating health concerns regarding the Cry1Ac protein in the Bt63 rice.

2006, October – European Commission receives official reply that the Minister of the General Administration of Quality Supervision, Inspection, and Quarantine of China is paying high attention to the contamination of food imported from China.

A third round of contamination **- Bayer's GE rice from US to France**

Yet another round of recalls and imports bans may occur after recent test results in France found a third and completely separate contamination problem. A rapid alert was issued when unauthorised rice LL62 – another variety of Bayer GE rice – was found in rice imports from the US to France²⁸.

The combined impact of these 2006 rice scandals highlights the enormous financial risks the rice industry faces if commercial GE rice is cultivated and field trials continue.

It is in this context of global contamination that this Market Report has been produced.

Part I of this Market Report presents statements made by the rice industry on their stance towards GE rice. Representing a significant portion of the rice industry that have rejected GE rice, the statements provide powerful testament to the massive damage that GE rice has caused to the rice industry. Many companies have not only committed to buying GE free rice but are now publicly stating they have ceased buying US rice because of the difficulties and costs of ensuring that supplies are GE free.

Part II of this Market Report is an analysis of the GE contamination scandals, including (i) economic damages; (ii) the risks and problems of GE containment in field trials; and (iii) consumer attitudes toward GE food technologies. While the final costs of the rice scandals of 2006 will not be known for some time, there are already indications that the damages may be larger in scope than even the StarLink GE maize contamination in 2000 in which a 6% drop in the price of maize translated into an approximate loss of \$500 million to the non-StarLink maize growers²⁹. As of November 2006, Bayer was facing 13-15 class action lawsuits by farmers who claim multi-million dollar damage from the contamination³⁰. Lawsuits will likely now be combined into one³¹. It is also likely that European rice traders and millers will undertake their own legal actions.



© Greenpeace

Rice is the world's most important staple food - grown in over 100 countries, consumed regularly by over two billion people and the primary source of protein for millions.

Part I: Industry rejects GE rice

© Greenpeace, John Novis

As public opposition mounts and the costs of the GE contamination burden rice growers and traders, it is not surprising to see a serious backlash by the industry against GE rice. The statements gathered below reflect the global nature of the resistance, the consistency of the public's opposition to GE foods, and the deep distrust of the technology, despite 30 years of high-powered marketing and strong political support by the GE industry. Perhaps most significantly they illustrate how sensitive industry players are to public opinion and trade policies.

The statements below represent 41 companies, covering Asia, Europe, Australia, and North and South America. In their own words, the rice industry rejects GE technology. This represents a strong statement against the GE rice industry and directly contradicts the GE industry's faith that consumer opposition to GE foods will simply disappear.

Statements from Rice Industry Letters:

GRUPO EBRO PULEVA (Spain)

World's largest exporter of rice:

"We at Grupo Ebro Puleva are proud of our decision to not use GMOs in any of our products in response to consumer demand."

"We regret that US rice is facing a problem with GM rice and we decided to stop any imports of US rice since August 2006. We are asking EU authorities to change the origin of our import certificates to substitute USA rice with other origins as long as the situation in USA is not fully under control."

9/27/2006 Antonito Hernandez Callejas (Chairman)

T&D Mideast Ltd. (Canada):

"We wish to advise you that we are against the use of GE rice. We do not purchase, trade, or promote any genetically modified rice."

9/01/2006 S V Tyan (General Manager)

Tilda Rice Ltd. (UK):

"GM material in products has the potential to damage both brands and consumer confidence."

"We have also seen at first hand how domestic and international authorities are poorly equipped to react to issues such as the current LL601 episode, not least in the area of definitive testing."

"We remain resolutely committed to non-GM sourcing and supply and can foresee no possibility of that changing in the near or indeed, distant future, we are simply a business supplying what our customers require."

10/11/2006 Jonathan Calland (Public Affairs and Communications Manager)



Rice Growers Association of Australia Inc. (Australia):

"All commercially produced Australian rice is proudly GE free. This stance has been driven by a long-standing market demand for GE free rice. As up to 80% of Australian rice is exported to 60 countries around the world, the requirements of these markets is of the utmost importance to the Australian rice industry."

9/14/2006 Laurie Arthur (President)

**Irfan Noman Bernas (Pvt) Ltd.
(Pakistan's largest exporter of rice):**

"As regards our comments about genetically engineered (GE) rice, we also agree with your observation and statement that GE technology can cause harm to the environment and human health and so on. Moreover, the contamination of food and crops with genetically engineered organisms is becoming an increasingly pressing issue."

8/26/2006 Irfan Ahmed Shaikh (Managing Director)

Grupo SOS (Spain):

"Grupo SOS has the firm commitment of not using GMOs, nor GMO derived products, in any of the products that it manufactures and commercialises inside and outside Europe."

9/01/2006 Eugenio A Gisbert (Press Officer)

Capital Rice Co., Ltd. (Thailand)

"Thailand's strength is non-GE rice. Since October, many buyers have switched to importing rice from Thailand after it was revealed that US rice was tainted with GE contamination. We are now sharing the USA's rice market. And if the US contamination scandal isn't solved, Thailand will permanently occupy this market share".

"The government must therefore clearly establish Thailand as a major source of non-GE food products."

16/10/2006 Wallop Pitchayapongsa (Managing Director)

All India Rice Exporters Association (India):

"With regard to rice contamination in China and the US: "It is quite evident that this subject is now no more a local affair, instead it has gained international proportions, thus gravely effecting the commercial trading of rice the world over."

"It is very encouraging to learn that presently GoI has not permitted any transgenic activity in Basmati Rice and proposes not to permit development of GM Basmati. Nevertheless we suggest that the Government seriously consider the following steps to protect the interests of the farmer and field trials should start ONLY after:

- The GM event to be declared safe for long-term human consumption/interaction.
- All field trials if conducted should be limited in scope and a test protocol to detect and quantitate the GM event which must be confirmed between all trading partners to provide the assurance that the trials have been limited and isolated.
- In any case no trials must be held in Basmati growing areas of India, ie, Punjab, Haryana, UP and Uttranchal.

18/10/2006 Brig. Anil Adlakha (Executive Director)

Yoki Alimentos (Brazil):

"We would like to inform you that, as an internal policy, the company has a strong commitment of not using genetically modified organisms and compounds in its products. For this reason, the "responsible purchase" criteria is part of our company's policy; we choose suppliers that are committed to the environment and only purchase GM-free rice."

18/10/2006 Mauro Kitano Matsunaga (Quality Director)

Camil Alimentos (Brazil)

"With regard to the correspondence dated September 8, 2006, we state that we guarantee that:

- Camil Alimentos S/A, a Brazilian company, will not agree to trade, either buying or selling, genetically modified rice.
- Camil does not promote or fund projects to develop transgenic seeds.
- Camil does not finance producers that could use transgenic seeds.
- Camil does not collaborate on events related to transgenic food products.

8/9/2006 José Rubens Arantes (Director)

Josapar (Brazil):

"Josapar's work policy is to market non-transgenic foods.

With respect to rice, the company wants to continue using non-genetically modified conventional rice because they understand that this is what their consumer wants within the reality of the national rice market.

Although the planting of genetically modified is not approved in Brazil, in anticipation of this, Josapar is concerned with explaining how it would guarantee the absence of transgenic rice in its products...

At the present time, the existing detection methods are still very expensive and time consuming. At harvest time, when dozens of trucks arrive daily to unload rice at the plants, it is necessary to have speed and the application of a quick detection test would not ensure that all the genetic modifications would be evaluated.

Yi rice farmers from Long Pu Village is weeding her paddy field manually, Yunnan Province, China. © Greenpeace, John Novis

The use of rice seeds certified as non-transgenic by the farmers could reduce, but not eliminate, the risk of contaminations coming from nearby cultivated lands, or even mixtures of grains in cooperative silos or in silos of the government itself...

There must be a governmental public policy with regard to this matter since rice makes up part of the basic diet of the population.

Because rice is a food available at a very accessible price, and since it is necessary to keep it that way, additional costs in its industrialisation are not acceptable.

Finalising and reinforcing the foregoing, Josapar states it will continue working only with conventional, not genetically modified rice, understanding that this is what the consumer public wants"

The Rice Marketing Board For The State of New South Wales (Australia):

"All commercially produced Australian rice is proudly GE free. This stance has been driven by a long standing market demand for GE free rice. As over eighty per cent of Australian rice is exported to more than 60 countries around the world, the requirements of these markets is of paramount importance to the Australian rice industry."

25/10/2006 Noel Graham (Chairman)

SunRice (Australia):

"Our domestic and export markets demand GM free rice food products and accordingly SunRice has policies and protocols in place to guarantee our paddy rice and our value added rice food products are GM Free and maintain the Australian rice industry's current GM Free status."

20/10/2006 Claudine Menegazzo (Manager – Corporate Affairs)

Kui Fat Yuen Limited (Hong Kong):

"We hereby certify, for Golden Phoenix Thai Fragrant Rice, only using conventional (non-GE) ingredients."

"We hereby certify, for Golden Phoenix Thai Fragrant Rice, only using conventional (non-GE) derivatives."

18/4/2005 Yam Ching Ping Eleanor (Manager)

Lui Hing Hop Company Ltd. (Hong Kong):

"We write to inform you that we requested our Australian rice supplier that all the rice sold to us should not be genetically modified, and we were so advised."

13/4/2005 Benjamin Lu (Assistant General Manager)



Tesco (UK):

"Non-GM ingredients are used in all our own brand food products".

"One example is soya-based animal feed. Our meat suppliers are the largest manufacturers in the UK of non-GM soya-based animal feed, which is sourced in Brazil. We have led the way in the development of stringent processes for the identification and certification of this soya. In fact, other UK retailers have adopted our systems... The development and maintenance of these systems has required considerable investment in terms of both money and resources, and we trust that this demonstrates our commitment to the management of GM in our supply chain."

25/3/05 email from Tesco UK (Customer Services)

Auchan (global):

"With the exception of our most recent international venture, Russia, we have a non-GMO policy in all of the countries in which we operate"

"In China we have communicated our policy in writing to our suppliers"

"In Russia the first priority for us has been to establish a supply base, which was not in place 2 years ago when we started operations. Our non-GMO policy will not come into effect until the second stage, when we have established partnerships with suppliers and set up a means of testing"

14/5/04 Translation of letter of Marie Helene Boidin Dubrule (Communications Manager)



Metro (Germany):

“All own brand products have been produced without the use of genetically modified organisms up to now. There neither was nor is a need for labelling of the food products distributed by our company”

“METRO Group’s own-brand products will, also after entry into force of these new regulations [European GE Labelling Regulations introduced in April 2004], not be marketed as labelled”

17/12/03 Translation of letter of V. Matern and A. Dorr

Coop (UK):

“Given our recent work with Greenpeace and our own membership and customers, our aim is to maintain our existing policy of not using GM ingredients”

24/2/04 David Croft (Head of Brand and Technical)

Coop (Switzerland):

“The great majority of our clients do not want genetically modified food. This has also been shown in our own surveys. This is why our range of goods does not include products made of genetically engineered materials.”

“If Thailand would plant genetically modified rice on a large scale in the future, we would have to rethink the procurement of rice from this region.”

13/8/04 Translation of letter of Dr. Sibyl Anwender Phan-huy (Economic policy/sustainability) and Brigit Hofer (Consumer policy)

Masterfoods (member of Federation of European Rice Millers - FERM):

“Masterfoods overriding concern is to manufacture and sell products which satisfy consumers and meet the highest standards of quality and safety. In all our products designed for human or pet consumption we do not use any genetically modified ingredients, additives or derivatives in our products.”

25/2/04 Consumer Care Advisor (UK)

“The statements you have received from the Masterfoods units are valid for all countries whether it is for an old EU country (15), a new EU country (25) or an accession country”

13/5/04 Ivan Renard (Director Masterfoods NV)

“In response to recent events with genetically engineered LL601 rice, we immediately decided to purchase only European produced long grain rice”

17/10/06 Uncle Ben’s advertisement, Switzerland

“As members of both the [UK] Rice Association and the Federation of European Rice Millers (FERM) Tilda supports the current position of both organisations. These highlight the current legal situation within the EU, and explain why we should all maintain the integrity of the conventional (non-GM) rice supply.”

1/4/05 Jonathan Calland (Public Affairs and Communications Manager)

Carrefour’s (France)

“You wanted to know Carrefour’s position on GE rice, referring to the recent news of the dissemination of the american GE variety LL601. For Carrefour’s own brands products (retailers brands, transverse brands and first prices), the requirements for our products are to exclude GMOs or GMO derivatives as the general rule. LL601 GE rice is strictly under this rule.”

Lionel Desence

Campbell’s (UK):

“We are committed to ensuring that our products always meet the preferences and demands of our consumers. As a result, we work to avoid the use of ingredients that are genetically modified or derived from genetically modified raw material.”

1/3/04 Anna Burr (Corporate Communications)

PARKnSHOP (Hong Kong):

“...in relation to GE rice specifically, PARKnSHOP will:

- Write a letter to all PARKnSHOP Brand (and Best Buy Brand) food product suppliers alerting them to this issue and stating that we do not permit the use of GE rice or its derivatives in these products.

- Will alert our GE testing laboratory (currently Genescan) and request that the testing methodology be altered if need be, to include GE rice detection.

7/4/05 Peter Johnston (QA Manager)

Migros (Switzerland):

“... for Migros it is clear, that no genetically engineered rice will be included in our range of goods.”

12/8/04 Translation of email of Stefan Fluckiger

Rickmers Reismühle (Germany):

“Our company has a very definite position opposed to genetically manipulated rice, and that this is made very clear to our suppliers and producers in the USA by our subsidiary, Rickmers Rice USA.”

12/10/05 Translation of letter

Müller's Mühle (Germany):

“For some time now we have ruled out by contract obtaining genetically modified rice.”

31/1/05 Translation of letter

Huber Mühle (Germany):

“For some time now we have ruled out by contract obtaining genetically modified rice.”

Translation of letter of 31/1/05

Transimpex (Germany):

“For some time now we have ruled out by contract obtaining genetically modified rice.”

Translation of letter of 28/1/06

“Referring to our letter from January 28th 2006, we would like to inform you, that we maintain the same position mentioned there.

Translation of letter of 14/3/06

Getreidenährmittelverband - Association of big millers and food producing companies (Germany):

As responsible manufacturers of high quality food our members only market products which meet broad consumer approval. For this reason they have for many years now contractually rejected

supplies of raw materials produced with genetic engineering being used.

Translation of letter of 10/6/05

Bayerische Reismühle (Germany):

As responsible manufacturers of high quality food our members only market products which meet broad consumer approval. For this reason they have for many years now contractually rejected supplies of raw materials produced with genetic engineering being used.

Translation of letter of 11/2/05

AEON (Japan):

“We have developed a stricter standard for our company's self-developed products:

- Avoid use GE derived ingredients as much as possible, considering customers' concern over GE food
- In order to let consumers make informed choice, we go far in disclosing information before the domestic law concerning GE food labelling, and indicate products that are derived from GE ingredients, including ingredients with no GE DNA and GE protein left in the final products as well as counter-ingredients.”

18/2/05 Kuniaki Miyachi (Quality Management Division Chief)

Public Policy Statements Issued by Industry

• Sumitomo Corporation:

Policy: Sumitomo would not deal with GE rice unless safety issues are solved by (importing and exporting) Governments and public acceptance of GE food in Japan increases.

• Tomen Corporation:

Policy: Currently, Tomen is opposing commercialisation of GE rice and communicating to suppliers not to deal with GE rice.

• Tokyo Boeki:

Policy: Tokyo Boeki is not planning to deal with GE rice at the moment until safety issue and merit and demerit become clearer.

• Marubeni Corporation:

Policy: Marubeni does not have any plan to deal with GE rice at the moment

• Seven-Eleven Japan:



Policy: No to GE rice and GE foods now and in the future.

• **Izumi-Seika:**

Policy: No plan to use GE rice

• **Murase:**

Policy: No to GE rice now and in the future.

• **Ministop:**

Policy: No to GE rice and GE ingredients now and in the future.

• **Iwatani International Corporation:**

Policy: Iwatani is importing a small quantity of rice from China. However since the Chinese government is not allowing GE rice to be cultivated commercially, the Chinese rice imported is not GE rice. There are two aspects concerning GE crops, which are

food safety issue and environmental impact issue. Iwatani is not planning to deal with GE crops until both issues are solved.

Part II – Analysis: Backlash to contamination felt globally

I. Rice industry collapses in wake of crisis

The statements above reflect the response and position of the rice industry to the contamination of the world's rice supply with illegal GE rice. Farmers, millers, traders, and retailers around the globe are facing a massive financial burden from cancelled orders, recalls, plummeting prices, testing and certification requirements, import bans, brand damage and consumer distrust that could last for years.

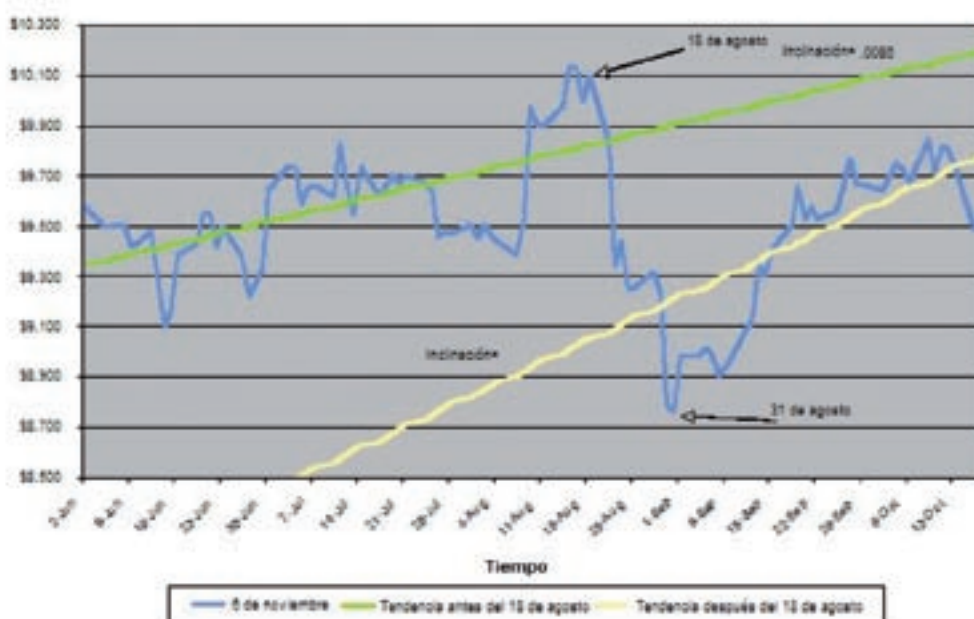
In particular, the US rice industry, with nearly a \$2 billion rice export market^{32 33} has suffered immensely as a result of contamination (graph: Rice future prices before and after August 18th). In 2005, the EU export market was worth \$86.5 million and the Japanese market worth \$160 million to the US³². The US stands to lose both these markets. Initially, Japan was testing only US long-grain rice for GE material, but lack of assurance from Washington and the USDA's failure to handle the spread of the contamination has forced Japan to increase the scope of testing to include short and medium-grain varieties³⁴. The zero GE tolerance policy in Japan will likely have a large effect on California growers; as much as 40% of California's short and medium grain rice is sold annually to Japan^{35 36}. South Korea has also demanded testing and certification of rice imports as free of GE contamination¹³, while Russia suspended imports of US rice in late September, 2006³⁷. An even larger threat is whether Mexico, the single largest export market for US rice³², will adhere to its regulations for genetically engineered foods. The loss of international markets is at the forefront of the rice industry's concerns.

Import Restrictions – November 2006

- Japan – restrictive ban on long grain rice imports from US, testing required of short and medium grain rice
- EU (25 member states) – long grain rice imports must be certified to EU standard. US certification not authorised
- South Korea – media reports indicate import restrictions on long grain rice
- Philippines – government announcement that US long grain rice will not be purchased without certification as GE free
- Russia – ban on long grain rice imports from US
- Bulgaria- ban on long grain rice imports from US
- Switzerland – import certification requirements similar to those imposed by the EU

Meanwhile, food importers are also facing costly legal and regulatory challenges. Testing costs and identity preservation costs are likely to increase as the EU tightens import restrictions, refusing to accept US testing and certification, and requiring testing at the point of import³⁸. Companies globally and throughout the US have suffered increased costs⁶. Importers have removed contaminated products from shelves¹² and now face liability and recall costs should the illegal rice products again be found in the EU.

Análisis de tendencias al 06 de noviembre: Precios futuros antes y después del 18 de agosto



Source: USRPA. 2006.
USRPA Updates
USDA, Agriculture
and Food Industry on
Rice Price Trends after
LL601.

The Rice Advocate
3:42, 20 October,
2006.

It is increasingly likely that regions such as the EU will broaden regulations in order to ensure that contamination of food from field trials of GE crops isn't occurring. This is likely to further increase costs for those rice-exporting countries that allow GE field trials³.

Farmers, traders, and processors are rejecting GE rice. Multi-million dollar class action lawsuits have been filed by farmers and traders who refuse to bear the financial burden of a reckless GE industry^{30,31}. They are claiming that Bayer is responsible for the contamination of rice supplies and must repay farmers and others the losses that they have suffered as a result of Bayer's negligence. In addition to the class action lawsuits, there are a number of individual lawsuits and anecdotal reports that European traders are undertaking legal action as well.

In the absence of a strict liability regime that would ensure that the GE industry is responsible for all costs associated with contamination (including cleanup), farmers and others must bear the burden and costs of proving that these giant multinationals are liable for the harm they have suffered.

In the words of USA Rice Producers Group Chairman Paul T. Combs, "The economic viability of all segments of the rice industry are in jeopardy¹".

Repeat offender, the history of financial fallout from genetic contamination

The economic fallout felt by the US rice industry is similar to losses felt by the US maize industry following a similar GE contamination scandal. In fall of 2000, reports surfaced that an unapproved GE maize variety developed by Aventis (now BayerCrop Science) had entered the food chain. Traces of the GE maize variety "StarLink" had been found in taco shells in the US and in foreign food products and bulk export cargoes²⁹. The unapproved "StarLink" maize contained an insecticidal protein from the Bt (*Bacillus thuringiensis*) bacterium which had not been approved for human consumption due to potential allergic reactions.

Widespread contamination of grocery store food products with unapproved StarLink maize led to food recalls of approximately 300 food products³⁹, with the Environmental Protection Agency (EPA) in the US receiving reports alleging adverse reactions to maize food products⁴⁰.

While less than 1% of the US maize crop was planted with StarLink maize, upwards of 10% of U.S. maize was found to be contaminated. At the time, the US had a maize market valued at more than \$17 billion²⁹. One-third of US maize is exported to



Conventional maize field. The release of GE organisms to the environment is extremely difficult to reverse. GE crops can spread by seed, pollen, animals, insects and humans. © Greenpeace/Nimtsch

Japan, which observes a zero tolerance policy for GE maize²⁹. As a result of the contamination, exports to Japan were down by 8% in 2001⁴¹. International markets for US maize exports fell in the EU, Asia and the Middle East, devastating the US maize industry.

Total food industry losses as a result of the StarLink GE contamination have now been calculated at \$1 billion⁴². A class-action lawsuit brought against Aventis by non-StarLink maize growers was settled out of court for \$110 million⁴³. Following the StarLink maize scandal, Aventis CropScience (now Bayer CropScience) abandoned GE StarLink maize, withdrawing it from the market.

BayerCrop Science is a repeat offender and yet no lessons have been learned. A 2005 canola contamination scandal in Australia in which a GE canola/rapeseed developed by Bayer is estimated to have contaminated over 400,000 hectares resulted in no penalties or fines⁷⁷.

II. Field trials on trial

The LL rice contamination of 2006 is significant, not only for its scale and damage but also for its origins. Bayer's LL601 rice was only ever grown in field trials. It has never been approved for commercial cultivation and at the time of the scandal was not approved for consumption in any country. It has nonetheless managed to contaminate global rice supplies and caused untold damage to the rice industry.

How have field trials alone contaminated global supplies of the world's most important staple food? What are the implications for the global rice industry?

Under USDA permits, farmers and researchers performed field trials of LL601 rice between 1998 and 2001. Development was halted (and apparently abandoned) in 2001. However, in July 2006 Bayer reported the presence of LL601 taken from samples of rice bins in Arkansas and Missouri⁴⁴. The LL601 strain had resurfaced.

By late September, Bayer announced that the company could not explain how LL601 came to contaminate commercial rice exports, noting only that the storage bins that contained the originally discovered LL601 contained rice from a 2005 crop originating from several states³⁸.

Bayer CropScience now contends that rice farmers and an "act of God" are to blame for the inadvertent release of the unapproved crop³⁰.

The event underscores the lack of accountability and traceability of industry-run GE field trials.

The day the contamination was announced in August, Bayer asked the government to approve the variety³⁰. The USDA

responded by helping Bayer to fast track deregulation for the rice so it could be consumed by humans. Rather than penalise the company for contaminating the food supply, deregulation of the rice was granted by the USDA in late November, 2006⁴⁵.

Under the current system, the US Government relies on self-reporting from food companies to identify GE contamination, rather than a federal testing system⁴⁶. The resurfacing of LL601 has confirmed serious doubts over the ability of the GE industry to be trusted in the control or reporting of unintentional spread of GE material.

Bayer seeks to control commercial rice trade with LL rice

While Bayer was rewarded for its contamination of the US rice industry through the rapid deregulation of LL601 by the USDA, it is seeking even larger rewards for its negligence: Bayer has applied for authorisation for cultivation and/or food and feed consumption of their GE rice in eight countries.

Countries in which Bayer CropScience has applied for authorization for cultivation or food/feed consumption. All approvals are for LL62 unless otherwise noted.

1. Australia – food and feed. Applied 2006
2. Brazil – cultivation, food and feed, seed import, additional field trials. Applied 2006
3. Canada – approval granted for food and feed 2006
4. European Union (25 states) – food and feed. Applied 2004
5. New Zealand – food and feed. Applied 2006
6. Philippines – food and feed. Applied 2006
7. South Africa – food and feed. Applied 2006
8. United States – approvals granted for cultivation, food and feed. Approvals – LL601, 62, 06 (2006, 2002)

There may be a number of other countries in which trials, authorisations or applications for approval have taken place, but for which there is no public reporting requirement.

The commercialisation of GE rice has the potential to devastate the global rice industry that chooses to remain GE free. Commercialisation hugely increases the risks of contamination.

It is now clear that the GE industry cannot prevent contamination events, even when the sole source of contamination⁴⁷ is small-scale field trials of GE rice varieties.

Commercialisation of GE rice not only guarantees contamination and makes the production of organic or conventional rice much more difficult, it gives companies such as Bayer unprecedented control over the world's most important staple food.

Rice is the world's most important staple food - grown in over 100 countries, consumed regularly by over two billion people and the primary source of protein for millions. © Greenpeace, Ngo



Global confinement of field trials: mission impossible as illegal GE plantings spread

As the global scope of contamination suggests, containment of GE material cannot be guaranteed. In field trials, GE rice seeds can be physically displaced by wind, flooding, birds, mammals, and human error and human greed, not just transfer of pollen⁴⁸. In some countries, farmers determined not to be held responsible for the blunders of the GE industry, have begun to resist GE rice field trials, for instance farmers protesting against Bt rice field trials in India^{49 50}.

The GE industry has previously argued that the risk of rice supplies being contaminated with GE rice is small because of the low level of cross-pollination. However, as these contamination cases illustrate, the risk of contamination is not limited to natural sources but human error and human greed as well. The unintentional release of GE seeds remains a major financial and health liability for agricultural industries⁵¹. If GE companies cannot prevent contamination of seeds and rice supplies from supposedly contained and controlled field trials, it is absurd to expect segregation or other mythical coexistence measures to work in the event of GE rice commercialisation.

In 2005, unapproved GE rice seeds were found by Greenpeace to have been sold and grown commercially in the Chinese Hubei province^{7 8}. Seed companies in China that were found to have sold GE rice seed to farmers operate directly under the university researching GE rice and it has been reported that the key scientist even sat on the board of one of the seed companies⁵². After the exposure of the contamination, the Chinese Government took several steps trying to stop the contamination, which included punishing seed companies and destroying GE rice grown in the field²⁷.

In early 2006, the government also issued commands and notifications banning the sale of unapproved GE seeds and tightening the control over GE field trials. But these measures were not enough to remove the illegal GE rice from the food chain. The contamination has now been confirmed by independent laboratories to have entered the European food supply chain^{5 6 7 8}.

Field trials of GE rice have taken place in many countries around the world.

Including:

- Argentina*
- Australia*
- Brazil*
- China*
- Egypt (1)
- France (1, 1999) ²
- India
- Indonesia
- Iran
- Italy (8, most recent approval 2002)*
- Japan
- Mexico
- Philippines
- Spain (26 approvals, most recent 2003)*, ²
- Thailand
- Uruguay*
- USA (approximately 250 trials in 13 states, plus Puerto Rico)*
- Vietnam

1 Denotes field trials of glufosinate resistant rice.

2 Notification number submitted - field trials did not necessarily take place

This list of GE rice field trials may not be comprehensive as it is based on publicly available information.

For sources see:

<http://www.isb.vt.edu/CFDOCS/fieldtests1.cfm> http://www.aphis.usda.gov/brs/ph_permits.html
http://www.fao.org/biotech/inventory_admin/dep/stat_result.asp
<http://www.fas.usda.gov/gainfiles/200607/146208487.pdf>
<http://www.s.affrc.go.jp/docs/sentan/eguide/edevelp.htm#RICE>
<http://biotech.jrc.it/deliberate/ES.asp>
<http://biotech.jrc.it/deliberate/IT.asp>
http://gmoinfo.jrc.it/gmp_report.aspx?CurNot=B/ES/03/27-CON
http://www.rfb.it/comuni/iberi.ogm/sperimentazioni_ogm.htm http://www.agricoltura.regione.lombardia.it/admin/rfa_Documenti/1-973/csba02-006-bloccosperimentazioni.pdf
<http://biotech.jrc.it/deliberate/FR.asp>

Lack of transparency in worldwide GE field trials, commercial interests protected at the expense of human health

Worldwide there have been approximately 350 GE rice field trials in over a dozen countries (see below). Included in these field trials are GE rice varieties that produce pharmaceuticals and industrial chemicals⁵⁵. Lessons have not been learned. The weakness of the pharmaceutical crop regulatory system was highlighted in 2002 when GE maize producing a pharmaceutical protein was discovered growing in US fields – Biotech company ‘ProdiGene’ had failed to completely harvest the field trial of the modified crop and GE plants were found growing the next year⁵⁶.

Little information on GE field trials is made publicly available. The majority of the information is declared ‘confidential business information’ (CBI). Most of the varieties being trialed do not have a valid detection test because the gene construct is generally considered a commercial secret⁵⁷. This lack of transparency has evoked criticism from high scientific bodies, such as the US National Research Council⁵⁸. The quality of permitting, oversight, and enforcement standards is likely to vary, but it is known that standards in the United States, where the vast majority of GE rice trials have been held, are exceptionally poor^{59 60}.

A 2005 audit of the USDA/APHIS regulation of experimental GE crops by the Inspector General found: i) the USDA failed to properly oversee field trials of GE crops; ii) the department lacked basic information such as the location of the field tests and the destination of the crops after the harvest; iii) the USDA failed to inspect fields of pharmaceutical crops with the frequency that was mandated. The report concluded: “Current (USDA) regulations, policies and procedures do not go far enough to ensure the safe introduction of agricultural biotechnology⁶¹”.

Fear of contamination, especially contamination by GE rice producing pharmaceuticals, has mobilised farmers and industry bodies to speak out against open-field acreage expansion proposed by GE firms⁶². Applications have been denied due to serious potential economic risks to the rice industry, as well as possible health hazards. In one case, rather than comply, a GE firm relocated to a state where opposition was less organised^{63 64}.

In many countries, field trials are occurring (and expanding) without any public or industry notification at all⁶⁰. In some cases, a single approval may represent trials at multiple sites. This structural lack of transparency protects the commercial interests of the GE industry at the expense of the safety of the food supply. The inability to manage field trials jeopardises the integrity of food supplies, and justifies a total ban until adequate control mechanisms are found.

III. Surveys show consumers around the world distrust GE foods

As documented in this market report, industry leaders across the globe have spoken unequivocally, rejecting GE products in general and GE rice in particular. In large part, this rejection is a response to consumer demands and consumer’s risk perceptions⁶⁵.

European and Japanese consumers are among the strongest opponents of GE foods. The level of support for GE technology in Europe has been in decline since 2002⁶⁶. This indicates that consumers believe that the risks of GE foods outweigh any perceived benefit of the technology. Even in Spain, where GE crops cover tens of thousands of hectares, support is only 7% above the 27% European average. Anxieties have not eased despite new regulations and labelling laws in Europe⁶⁶.

Germany is an example of increasingly acute consumer opposition. According to a recent Forsa poll, 79% of German citizens do not want GE ingredients in their food⁶⁷. Similarly, in Greece, the level of consumer support for GE foods has decreased from 49% in 1996 to a low of 17% consumer support for GE foods in 2005⁶⁶.

Recent media reports highlight the findings of an Italian survey presented at International Forum on Agriculture and Food in 2006. It was found that 74% of Italians believed GE organisms could damage human health⁶⁸. Similarly, in Russia, polls conducted in 2005 by the All-Russia Public Opinion Research

Center found that two-thirds of Russians say they are not ready to eat foodstuffs comprised of GE ingredients. Of those polled, 76% called for a ban against growing GE crops until cleared of health and environmental hazards⁶⁹.

While European and Japanese consumers are some of the most outspoken citizens against GE, recent surveys indicate that consumers worldwide are opposed to GE foods. An IMPACT survey from Washington State University found that 35% of Chileans surveyed associated a high level of risk with biotechnology; fewer risks were perceived in Mexico and India⁷⁰. A 2005 survey by the Agricultural Economics Office of Thailand found that 91% of consumers and 71% of the farmers surveyed said they have no access to information about benefits and constraints of genetically modified farming, and were not confident about its effect on health⁷¹.

Surveys commissioned by Greenpeace and conducted by IPSOS in Beijing, Shanghai, Guangzhou and Wuhan, China indicate a wariness towards GE foods, and a rejection of GE rice in particular. 79% of respondents prefer non-GE rice to GE rice and 78% of the respondents regard unapproved GE rice as unsafe⁷².

Australians are also not convinced by GE foods. According to a survey by the Australian Centre for Emerging Technologies and Society, only 30% of respondents felt comfortable with consuming GE plants as food⁷³.

In the United States, traditionally considered a stronghold for GE foods, recurring contamination events have increased consumer suspicions of GE technologies. In 2004, the Pew Initiative on Food and Biotechnology concluded its third consecutive survey of US consumer sentiment towards GE foods. The report highlighted the finding that over the last three years, there has been an increase in the number of consumers saying there was 'too little regulation' of GE foods⁷⁴. An overwhelming majority (81%) believed that that FDA should approve the safety of GE foods before they come to market, even if this would mean "substantial delays". The 2006 Pew survey confirms the trends identified in 2004. It indicates that Americans are poorly informed about the presence of GE in foods, but are also strongly opposed to allowing it into the food chain - 63% of those with an opinion did not want GE in their food⁷⁵. Similarly, according to findings of a 2005 study from Cornell University's Survey Research institute, US consumers have shown a shift over time towards less support and increasing risk perception of GE food⁷⁶.

Market losses can be driven by consumer perceptions of food safety. Predictions by the GE industry that consumer opposition would disappear have not proven correct. The lack of consumer or environmental benefits, persistent contamination scandals, deep distrust of the technology and increasing awareness of the importance of food to health and well-being are all likely reasons for the continued high levels of opposition to GE foods. The recent contamination scandals are key determinants in mapping future commercial marketability of GE crops, and the market for GE crops looks bleak.

Securing a Healthy Industry - Conclusion and Demands

This report has documented the introduction of unapproved GE rice varieties into the global food chain and the resulting havoc, with US rice growers experiencing the brunt of negative fiscal impact. A summary of these events allows us to conclude that as long as new GE field trials are approved, the global rice industry faces enormous risks. In this risk climate the industry faces increased testing and administrative costs, and the ongoing prospect of new contaminations being detected and repeated economic losses.

In light of this evidence, Greenpeace urges:

- An immediate ban of GE rice field trials as containment cannot be guaranteed
- Accountability from GE corporations engaged in GE field trials, including legal and financial liability
- Bayer CropScience be held liable for all damages to farmers and industry as a result of contamination caused by LL rice
- That Bayer withdraw all applications for approvals of LL rice and surrender all existing approvals
- Governments of rice-producing countries to follow the lead of the rice industry in places such as Thailand and Vietnam and prohibit the growth and production of GE rice crops
- China not approve the commercialisation of any GE rice variety

It is clear that the financial risks to business, farmers, traders, millers, and processors are very real. While litigation may allow farmers and others in the industry to recover partial damages, it will not allow recovery for lost markets, brand damage or a reduction in the amount of rice eaten by wary consumers. The troubles of the rice industry are not over, even if the illegal Chinese and US rice is successfully eliminated from the supply chain. Field trials of GE rice cannot be confined and can no longer be seen as safe scientific undertakings. Banning open field trials is the only way to ensure that contamination of food from GE trials will not occur.

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“As Frank Zappa might have said, it was a rice-unapproved-illegal-contamination-weak-Chinese-regulation-staple-crop-dependency-Greenpeace-center-of-diversity-local-farmers-multinational-forced-accident-environment-rogue-scientist-unacceptable-monopolistic-monocrop-immediate-inquiry kind-of-a-thang.”

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