

1. Executive Summary

Genetic Engineering out of control

2006 was the tenth year of the commercial growing of genetically engineered crops. Over these ten years, academic scientists, government officials, farmers, environmentalists and consumers have raised numerous concerns about the threats these crops pose to farming systems, agricultural biological diversity, the environment, and human health. One of the concerns most often raised has been the impossibility of containing these organisms to the fields in which they are planted. Genetically modified organisms (GMOs) are living organisms that reproduce, spread pollen, and produce seed. At any and all points along the production cycle from seed to crop to seed there is a high possibility of contamination. After ten years of commercial growing it is clear that these concerns are well-founded, as contamination events occur on a regular basis.

Global contamination from genetically engineered crops growing

In 2005, GeneWatch UK and Greenpeace started a global register showing incidents where genetically engineered organisms had been found to have contaminated non-GM crops and food supply. Large scale commercial planting of GM crops began in 1996 but there is still no global monitoring scheme of their impacts on food production or the environment. Because of this failure of international agencies the register was created: www.gmcontaminationregister.org

The register contains records of:

- contamination incidents – when food, feed or a related wild species have been found to contain unintended GM material from a GM crop or other organism. These are included when there is evidence from laboratory testing that GM contamination has occurred;
- illegal plantings or releases of GM organisms – when an unauthorised planting or other release into the environment or food chain has taken place. These cases are included when there has been official acknowledgement that rules on the release of GM organisms have not been followed;
- negative agricultural side-effects – when there has been a report in the scientific literature of agricultural problems arising from the GM organism and how it is managed.

In 2006, records of twenty-four incidents were added to the register. In addition, three cases for 2005, one for 2004 and one for 2000, were also included in the register in 2006, bringing the total number of incidents recorded in the database since GM crops were first grown commercially in 1996 to 142. **The number of incidents recorded for 2006 is the highest for any year.**

MAIZE

Over one-third of the contamination incidents recorded over the last ten years involved maize – not surprising, given the wind-pollinated nature of the crop and the ability of maize pollen to travel for miles. The cases in this report highlight the growing threat to maize diversity and ultimately maize producers and consumers from the inability to keep maize transgenes under control.

Last year's report focused on a global contamination scandal, maize contaminated with an unapproved GE variety, Syngenta's Bt10. Syngenta revealed that several hundred tonnes of unauthorized GM Bt10 maize were produced in the US and distributed world-wide between 2001 and 2004. At the time nowhere in the world was genetically engineered Bt 10 maize approved for human consumption, nevertheless it entered the global food chain without being noticed by the US authorities for four years.

The US continues to be the most important source of contamination world-wide. Less known, but equally troubling, is the growing problem of contamination in Spain's maize growing regions. Added to the register in 2006 is documentation of extensive contamination discovered in the Spanish regions Aragón and Cataluña, where maize contamination is threatening the way of life of organic and conventional farmers in the principal maize growing regions.

One of the most concerning aspects of the growing number of global contamination incidents is the continuing recurrence of contamination in maize seed stocks. Over the last ten years contaminated maize seed has been found in eleven countries: Austria, Chile, Croatia, France, Germany, Greece, Italy, New Zealand, Slovenia, Switzerland and the United States of America. All five contamination events in New Zealand over the last seven years have been incidents of maize seed contamination. In 2006, maize seed contamination was documented in four countries: France, Germany, New Zealand and Slovenia. The last contamination event recorded in 2006 was contaminated maize seed found in New Zealand.



*Varieties of Mexican maize. Oaxaca, Mexico
© Greenpeace/Roberto Lopez*

Rice, growing in the Hung He Valley, Yunnan Province, China. Rice
© Greenpeace/John Novis

The extent of contamination of organic and conventional maize crops in Spain and the growing problem of maize seed contamination bode ill for the areas of the world where maize was originally domesticated. Contamination of traditional varieties of maize in Mexico has already been documented, even in the absence of field trials or commercial growing. The move of both the Mexican and Brazilian governments towards field testing (Mexico) and commercial growing (Brazil) is worrying from both genetic diversity and food security perspectives.

RICE

This year's report highlights the major contamination event of 2006, another global contamination scandal, this time of rice. Global rice supplies have been found contaminated with two unapproved varieties, Bayer's LLRICE601 and LLRICE62. As with Bt10, Bayer's LLRICE601 was not intended for commercialisation. The variety had last been grown in field trials **in 2001**, yet it was found throughout the rice growing areas of the USA in 2006 in one of the most commonly used varieties, Cheniere.

LLRICE601 has not been approved for human consumption anywhere in the world. Nevertheless, the product was exported widely from the United States. How this contamination arose is not known over a year after it was first detected, and it has led to product withdrawals in a number of countries, further damaging the confidence of food companies in the ability of the biotech industry to control its products.

Rice contaminated with LLRICE601 has now been found across the world, including in nineteen European countries: Austria, Belgium, Cyprus, Finland, France, Germany Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Slovenia, Sweden, Switzerland, and the UK. LLRICE601 contamination has also been found in rice purchased in the United Arab Emirates, Dubai, Kuwait and the Philippines, food aid in Ghana and Sierra Leone, and rice being imported into Russia. Another contamination event also rocked the rice industry in 2006. An unapproved Chinese variety, Bt63, was found contaminating food products not only in China but as well in Austria, France, Germany, and the United Kingdom.

As with Syngenta's Bt10 contamination scandal in 2005, the cases of LLRICE601 and Bt63 show that field trials and GM crops not intended for commercialisation are not being properly controlled. The potential for contamination with a plant modified to produce a drug, industrial chemical or other biologically active protein can not be discounted and the implications of such an accident are enormous. All indications are that the biotech industry simply is not up to the task of managing its products safely and responsibly and that lessons of the past have not been learnt.



The high cost of contamination

GM contamination causes serious environmental risks, poses potential health risks and has a negative economic impact on sectors of the economy that choose to remain GM-free. As most countries do not have a system of liability for GMOs, the costs of (avoiding) GM contamination – such as testing and clean up costs – are born by the contaminated and not by the contaminator.

In 2006, new evidence from Spain was published by Greenpeace. This evidence documented numerous cases of genetic contamination in organic and conventional maize, caused by the uncontrolled spread of GM pollen and seeds from GM maize fields. In several cases the affected farmers suffered significant economic losses, as they were not able anymore to sell the contaminated maize at a premium market value.

Additions to the register in 2006

In the rest of the report, we review all the cases reported in the public and scientific literature of contamination, illegal plantings and releases of GM organisms, and negative agricultural side-effects that were added to the on-line GM Contamination Register in 2006. These cases undoubtedly represent only a sample of the actual cases of GM contamination that have taken place, because many incidents are not able to be detected or are not revealed because they are part of food producers' quality control systems.

The twenty-four incidents added to the register in 2006 involved fifteen incidents of contamination and nine illegal releases. The contamination incidents were in the following twelve countries: Germany (three); China (two); France (one); Japan (one); New Zealand (one); Romania (one); Bulgaria (one); Hungary (one); Slovenia (one); South Africa (one); South Korea (one); and the USA (one). These contamination incidents involved food (nine); seed (four); feed (one); and wild relatives (one). The cause of the contamination in food and feed was often neither determined nor investigated, but in most cases this must have been the result of poor quality control measures following either cross-pollination or post-harvest mixing.

The illegal releases were recorded in Brazil (two); the USA (two); Europe (one); France (one); Japan (one); Mexico (one); and the Philippines (one).

The 2006 incidents of contamination and illegal release involved soybeans (eight); maize (seven); rice (four); cotton (two); grass (one); papaya (one); and killifish (medaka) (one).

Since GM crops were first grown commercially, contamination incidents have taken place in a total of forty-three countries and twice affected Europe as a whole. Bulgaria, Hungary, Slovenia and South Africa recorded their first GM contamination incidents in 2006.

The new incidents recorded in 2006 have confirmed the main conclusions from the first review of the GM Contamination Register. These are that:

- Controls on GM organisms from the laboratory to the field are ineffective and prone to failure.
- Countries and companies are often unable to prevent illegal sales of GM crops.
- No control system, physical or biological, is totally foolproof - human error will always result in accidents.
- There are no independent systems in place to detect and investigate contamination, illegal releases and negative side-effects of GM organisms. National, international and corporate structures are inadequate and thus probably the majority of GM contamination incidents are undetected and certainly only a fraction of detected cases is published.
- Countries are not fulfilling their obligations under the Cartagena Protocol on Biosafety to inform the Clearing House of illegal transboundary movements of GMOs.
- Potentially dangerous genes could be introduced into the food chain and the environment as a result of the poor controls and lack of information because of claims to commercial confidentiality.
- The economic costs of contamination and other incidents have been, and are likely to continue to be, large in the future. Health, environmental and social costs are potentially immense.

GeneWatch UK and Greenpeace again consider that these findings require that governments:

- **require** event specific detection methods for GMOs as a pre-requisite for field trials in addition to commercialisation. The detection methods and associated reference materials should be made publicly available to facilitate identification in case of GMO escape.
- **urgently enforce** international standards for the identification and documentation of transboundary shipments of GMOs.
- **ensure** that the public interest outweigh commercial confidentiality issues.
- **target** imports of food, feed and seed from high-risk, GM growing countries for routine tests for GM contamination and subsequent investigation.
- **deny** to companies their right to commercialise GM products if the companies are involved in intentional illegal releases of GMOs or fail to cooperate in their prevention and management.
- **act firmly** against violators when an illegal act takes place. Without substantial and predictable sanctions, sloppy practice and complacency are likely to be encouraged.
- **oblige** companies to keep records of the global dissemination of their products and GMO events, and make these publicly available, as a matter of product stewardship.
- **stop** all approvals and releases of GM organisms under present conditions.

that the Parties to the Biosafety Protocol and Convention on Biological Diversity:

- **introduce** national and international rules to provide strict liability for environmental, health or economic damage that arises from GM contamination and illegal growing. The biotechnology company producing the GM organism should be considered liable unless it can demonstrate negligence by another party.
- **establish** an independent, international commission to investigate GM contamination and implement measures to reverse GM contamination.
- **establish and maintain** a global and publicly available register of cases of contamination, illegal releases and negative agricultural side-effects within the framework of the Cartagena Protocol on Biosafety (CPB).
- **ensure** that the CPB Clearing House is fully informed about illegal transboundary movements of GMOs as soon as they are detected.

that companies, insurers and investment companies:

- **review** the potential liabilities of GM organism development and sales and disclose these liabilities fully in their financial reporting.