



•Fortnightly Bulletin on Genetic Engineering South Against Genetic Engineering (SAGE)

We deeply regret that we were not able to bring out the last few issues of the SAGE Bulletin since the staff dealing with it left the organisation. Before we could recruit replacements and restart the process it took us some time. We hope we to be able to avoid recurrence of this

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1. Livestock death & skin allergy- Reports From Warangal

The widespread propaganda of the MNCs is leading the farmers and farm labour to the chaos. The MNCs are not only incorporating poisons in the soil but also now penetrating into their body in the form of skin allergies. This is an incident reported from villages of Warangal district. Medarametta and Issipet there the labours who were harvesting the BT cotton fields had got rashes and skin allergies on the exposed parts of their body. They underwent a treatment with the nearest doctor at Mogullapalle investing their hard earned labour wages. Even the farmers' livelihood is being parted away from them in the form of cattle deaths. These cattle mortality was reported in Gangadevipalle and Srimannarayanapuram of Warangal district during the months of December & January. Totally there were 12 cases of cattle death. In these, there was bloating (stomach problem) respiratory problems, no regurgitation, they did not milch and died after 2 days of medication. Of them 8 were milch cattle. This year the wilt was also seen in the BT fields.

Source: From our community researcher (CROPS) & DDS team

2. Genetically Modified Crops should be tested for Toxicity

By G. Narsimha Rao

(<http://www.hinduonnet.com/2008/01/03/stories/2008010354640600.htm>)

Recent findings of French scientists alarming, says expert *Kidney, liver problems have surfaced in rats fed with GM corn* Biotech firms must concentrate on fundamental research, he says: The much ado about the genetically modified (GM) crop varieties quickly turned into a frustration for the Indian farmers. The many promises like higher yield, no need to use pesticides and a buy-back facility did not materialise. The Indian farmer has also found that the crops have failed and more frustrating is the fact that the seeds have no reproductive character. Added to this is the recent findings made by French scientists in their analysis that kidney and liver problems have surfaced in the rats that have been fed with GM corn. This is a new evidence that has come to light when the French scientists analyzed the data of Monsanto company, a biotechnologist from the US, Krishna Dronamraju said while talking to The Hindu. Dr. Krishna Dronamraju, who has done a lot of research in biotechnology and was also once nominated for the Nobel Prize, is here to participate in the 95th Indian Science Congress commencing on Thursday. In India the GM crops are being raised in small extent of land unlike in the US where they are being used extensively, he noted and felt it is better on the part of Indian Government to test the GM crops on a small scale to determine their toxicity. Noticing the surge biotechnology is experiencing in India, he observed that the biotech companies in India must concentrate on fundamental research instead of only finding ways to earn profit; They should get themselves involved in fundamental research to create new products and therapies; They can also start philanthropic foundations similar to those existing in the US to support research and other activities, Dr.Dronamraju felt. Talking about other outstanding issues regarding biotechnology, he said efforts are being made to produce vaccines for AIDS, malaria and cancer. New techniques have been invented in the gene therapy, like using the non-biological nano molecules in the place of virus to carry the DNA. The biodegradable chemical polymers are safer, he observed. Seventy-year-old Dr. Krishna Dronamraju was in the news some years ago when he accompanied the then US President Clinton to India.; this is my proudest moment. I am invited by him to be part of his official delegation to India in 2000; he said. He is advisor to both Mr. Bill Clinton and his wife Hillary on health care in America. Dr. Krishna Dronamraju is from Pithapuram in East Godavari district. He studied B.Sc. (biology) at the M.R. College, Vizianagaram and took M.Sc. degree in plant genetics from Agra University in 1957; that was one of the few places offering that subject then; he said. Dr. Krishna Dronamraju received Ph.D. from the Indian Statistical Institute, Kolkata where he worked with noted scientist J.B.S. Haldane.

He left for the US in 1963 and is now heading the Foundation for Genetic Research located in Houston.

3. Skin allergy and Pulmonary diseases after cotton plucking

Here is the English translation of the news item appeared in the Daily Punjabi newspaper 'Desh Sewak' on dated 16th October 2007 with a title- 'Narme De Kashtkaran te mazdooran nu kharish ate shah di bimari'(Skin allergy and pulmonary problems to the cotton cultivators and farm labourers).

The English translation
DESH SEWAK,
Chandigarh, Tuesday, 16th October 2007
Lehra Mohabbat / 15 October/ Manjeet Dhaliwal

Now the farmers and the farm laborers are forced to struggling with a new problem. Many farmers and laborers are suffering with the problem of skin allergy and pulmonary diseases after the cotton plucking. It is to be noted that the green signal to BT cotton's cultivation in Punjab was given by the captain Government [the Government of Captain Amrinder Singh] after which it was sown at a large scale in the cotton belt. Spurious seeds and Singh who got cultivation of BT cotton started [in Punjab] is shaken by these diseases. Other reasons has failed the BT cotton on one hand, on the other hand the farmers and the farm labors entangled in the skin allergy and the bronchial/pulmonary disorders. In this context many women of the villages around the Ballianwali near Lehramohabbat have complained about the bronchial/pulmonary disorders and the skin allergy after the cotton plucking. Naseeb Kaur and Kuldeep Kaur of village Mandikalan went to the cotton plucking but afterward they were suffering from the above diseases now visiting hospital. Similarly Tez Kaur of village - Khokhar was put to trouble after she went to the cotton plucking during the day in the farmer's fields and developed allergies. This lady with an earning of Rs 60/- per day is forced to consume costly medicines. The ancestral village of Captain Amrinder Harvinder Kaur of village Mehraj is also suffering from the dermal allergy due to this. In the same way Veerpal Kaur and Mahionder Kaur of village Sandhu Kalan are also came under the clutches of this disease. Some reports about the suffering farmers, to our representative have been received from some villages about the skin allergy. If the investigation in the whole cotton belt is made then cases on a large scale shall come forth. People suffering from these diseases are availing medical services from different hospitals.

Dr Gurpiar Singh who is running a private clinic says that so many cases came to his notice during these days. People from villages are under his treatment. It has been seen that this type of allergy includes heavy burning sensation and itching complaints. Dr Gurpiar Singh told our representative that poisonous types of genes have been used in the BT cotton that's why the farmers and the laborers are affected most.

4. SC to look into deregulation of GM food imports

<http://www.indiatogether.org/2007/nov/agr-gmstay.htm>

Following Gene Campaign's challenge to the government's decision to withdraw all existing regulatory oversight over the import of GE foods, the Supreme Court has issued notices to the Centre, writes Suman Sahai

26 November 2007 - The Government of India had issued a notification on 23 August, 2007, which came into effect on 11 September, 2007, withdrawing all existing regulatory oversight over the import of GE foods. This development allows the import of GE foods without the importing agencies having to take any permission from regulatory agencies, as has been the case so far. The new notification exempts importing agencies from even informing the government.

Gene Campaign has filed a writ petition in the Supreme Court challenging the notification issued by the government. Gene Campaign had appealed to the Court to strike down the notification since it is "unconstitutional, being violative of Articles 14 and 21 of the Constitution". Gene Campaign had further requested the Court to strike down the new provisions since these give uncanalised power to the government; which power is likely to be abused and is therefore violative of Article 14 of the Constitution.

The Supreme Court of India has heard the matter on 19 November and issued a notice to the Government of India on the petition. The Court issued a further notice on Gene Campaign's application that a stay be granted on the notification till the issue is finally decided. This means that the government has been put on alert that the Supreme Court is now watching the deregulation of GM foods.

Until now, in view of the known health risks that are associated with GE foods, the government guidelines have required that import of GE foods can only take place with the express permission of the apex regulatory body in India, the GEAC (Genetic Engineering Approval Committee), Further, any handling of GM foods was to be done only after these were labeled as such.

The regulatory oversight that existed prior to the government's new notification was necessary and appropriate since it had allowed India to monitor the entry of food products produced by a new technology that is known to produce toxic and allergic compounds. The Indian regulations which made it necessary for permission to be taken from national agencies, allowed government to monitor the entry of GM products into the country. These regulations had also allowed India to maintain vigil that food products rejected by other countries in Europe, Africa and Middle East are not in fact being dumped on us.

The arbitrary withdrawal of the regulatory oversight without any scientific reason and without any consultation with a range of stakeholders that are engaged with GE technology and policies associated with it, is a dangerous development. It will benefit the producers and exporters of GM foods, like the US and pose health dangers to the Indian population. Such a move is inexplicable, especially at a time when scientific evidence is mounting from laboratory tests in various parts of the world, that genetically engineered foods can in fact cause serious damage to health. Confronted with this scientific data, we need to upgrade our food testing systems and make them more stringent and comprehensive, not dismantle them, as the government is doing. It is incomprehensible that instead of strengthening our systems to ensure that no foods reach the market that have the potential to damage health, the government has decided to withdraw all opportunities to test and regulate such novel and controversial foods. Not only is it dangerous to make the system lax from the health point of view, it is a matter of considerable concern that unfettered access to unknown foodstuffs is being allowed in the absence of a legal regime for liability and redress. India has still not introduced a law on liability for this sector, even though it is required to do so by the Cartagena Protocol on Biosafety. This means there is no law in the country that can fix responsibility and claim compensation if something should go wrong with the environment or with animal and human health, from the cultivation and consumption of genetically engineered crops and foods.

The new notification of the Ministry of Environment and Forests will in effect provide unrestricted entry to untested foods of dubious origins, especially since the imported GM food does not have to be labeled. This denies consumers the right to exercise free choice in the matter of the food they wish to eat. This unfortunate move is therefore in violation of the Consumer Protection Act of India that grants consumers the right of informed choice.

The government's notification also goes against India's long standing commitment to mandatory labeling of GE foods, a position the Indian delegation has consistently maintained in international negotiations, particularly at the WHO-FAO led Codex Committee on Food Labeling. □

5. Doors opened for processed GM foods to enter market

<http://www.indianexpress.com/story/221269.html>

Sonu Jain

Posted online: Wednesday, September 26, 2007 at 0000 hrs IST

NEW DELHI, SEPTEMBER 25

In a move that's likely to have a significant bearing on the food processing industry, the Government has allowed processed food containing genetically modified organisms (GMOs) and exempted it from regulatory approval.

The Ministry of Environment and Forests issued a notification on September 11 that grants exemption to foodstuff whose end-products are not Living Modified Organisms (LMOs) — living organisms can be used to propagate or reproduce, like in seeds.

The notification has tremendous implication for the food processing industry which uses ingredients and additives made of genetically modified corn, maize and soya.

Until now, producers and importers had to go through the Genetic Engineering Approval Committee (GEAC), the apex body for clearing all GMOs.

According to a GEAC member, the mandate of the committee is "environmental safety". Since GMOs in this form do not propagate or grow, it "does not fall in their purview". Rule 11 of the Environment Protection Act has been amended to make this exemption possible.

Regulators say it should be a "health-concern" and should be regulated as per the Prevention of Food Adulteration Act and Rules 1954 or under the new Food Safety and Standard Act 2005. But the system under this new Act is yet to become operational.

Both the Swaminathan Committee on Agricultural Biotechnology and Mashelkar Committee on r-Pharma have taken the view that the GEAC should be involved only in regulation of organisms or products where the end-product is a LMO.

This notification marks a major shift in the way GMOs are regulated in the country after being first introduced in the form of Bt cotton in 2002.

But activists are not too happy. Reacting to the new notification, Suman Sahai of Gene Campaign said: "This is introducing a new set of laxity in the system and violates our own laws."

According to the new Food Safety and Standards Act, all genetically modified food need to have labels. "This will mean that there will be no traceability and in case there is a problem, there is no way liability can be fixed. This is not desirable at all," said Sahai. Though the US has been selling genetically modified food for nearly two decades now without labels, there have been stray cases of health hazards associated with processed GMOs.

The most well-known is the 1989 incident where a genetically engineered brand of L-tryptophan, a common dietary supplement, killed 37 Americans and permanently disabled or afflicted more than 5,000 others with a painful and potentially fatal blood disorder, eosinophilia myalgia syndrome (EMS), before it was recalled by the US Food and Drug Administration.

The manufacturer, Showa Denko, Japan's third largest chemical company, has already paid out over \$2 billion in damages to EMS victims.

The import of soya oil for humanitarian aid has led to some controversy in the past. It was finally approved after certification from the country of export that it has been derived from Roundup Ready Soybeans. In case of crude soybean oil, the importer was asked to submit a series of analytical reports from government-approved laboratories.

For now, the lengthy regulatory route will no longer be required to import soya oil to India.

Infant formula to salad dressing

In the US, 7 out of 10 processed products on the shelf have some ingredient or the other that is a genetically modified corn or soya derivative. Labelling is not mandatory and unless specified as "organic", it is likely to contain GMOs.

- Corn derivatives: Malt, corn syrup, baking powder, confectioner's sugar, food starch and fructose sugar
- Soya derivatives: Bread, soya sauce, tofu, margarine, soya lecithin, protein isolates
- Common products: Infant formula, cereal, mayonnaise, crackers, candy, peanut butter, tomato sauce, ice cream, chips, chocolate, salad dressing, frozen yogurt

6. Samples of GM Maize found at deserted farm

By Kultida Samabuddhi

December 21, 2007

http://www.checkbiotech.org/green_News_Genetics.aspx?infoId=16508

Genetically-modified maize has been found at a local farm near agribusiness giant Monsanto's maize farm in Phitsanulok province, bringing the leakage of transgenic crops in the country to three.

The GM maize contamination was exposed yesterday by Biothai, a non- government organisation working on organic farming

"Clean up and containment operations are urgently needed to prevent the GM crop spreading further," said Mr Witoon.

"This case is much more serious than the previous two GM crop leakages because corn is one of the country's top export produce while its pollen can spread very far and easily breed with conventional corn varieties."

He recalled the spread of GM cotton in Loei province in 1999 and the leakage of GM papaya from the Agriculture Department's experimental field in Khon Kaen in 2004.

Once the GM maize spreads to sweet corn and baby corn farms, the country's corn exports, which generate about five billion baht in revenue per year, would be badly affected as Thai corn might be banned by the European Union (EU) and Japan, where consumers are strongly against GMOs, Mr Witoon said.

"[The spread of GM maize] reflects flaws in the government's control of transgenic crop plantations, therefore the ban should be maintained," said Mr Witoon.

7. Scientist who claimed GM crops could solve third world hunger admits he got it wrong

By Sean Poulter

The Daily Mail, 18th December 2007

http://www.dailymail.co.uk/pages/live/articles/technology/technology.html?in_article_id=503339&in_page_id=1965

A claim that GM technology is helping deliver higher crop yields in Africa was wrong; the Government's chief scientist has been forced to admit.

Professor Sir David King recently caused uproar with his assertion that GM crops could help feed the hungry of the Third World.

He called on the Government to campaign for the adoption of GM technology and said the Daily Mail's campaigning stance against it was holding up progress. Yesterday however he was accused of "letting off blasts of hot and sometimes rancid air" after it emerged his latest GM crop claims were wildly inaccurate. Dr Richard Horton, the editor of medical journal The Lancet said Sir David took his faith in science into "the realms of totalitarian paranoia". Writing in his online blog he said: "If he lost the debate on GM, it was because his arguments failed to convince people. "King seems biased and even antidemocratic. It seems he would prefer the media not to exist at all. That is a troubling position for the Government's chief scientist to adopt." Since the announcement, he has taken a more outspoken line on controversial issues such as GM, global warming and the need to inoculate children with the MMR vaccine.

Dr Horton said Sir David was "letting off blasts of hot and sometimes rancid air to relieve the dyspeptic frustrations of seven years in the most uncomfortable job in science". The chief scientist had used the example of crop trials around Lake Victoria in Kenya to boast how useful GM farming could be in feeding the Third World. He claimed scientists had discovered the identity of a chemical in food plants that attract pests such as root borers. Sir David suggested it had been possible to "snip" the gene responsible for this chemical out of the food crop and then insert it into grass that is grown alongside it. He said the pests then eat the grass rather than the food. The only problem is Sir David failed to accurately describe the research in Africa, which did not involve the use of any GM technology at all. The research actually involved finding plants that can be cultivated alongside food crops and provide a natural solution to boosting yields. Researchers identified one set of plants that naturally deters parasitic weeds, while another set, a species of grass, attracts the pests. The net result of this "push and pull" regime is that the food crop can grow more easily and produce a much higher yield. Green pressure groups are demanding a public apology from Sir David, whose credibility has been shaken by the error? Director of the GM Freeze campaign, Pete Riley, said: "We find it quite staggering that Professor King made such misleading comments. "The 'push pull' project in fact illustrates how the problem pest and weeds which plague farmers in the Global South can be tackled by well researched crop management techniques. "These have the advantage of being cheap to apply and being free of the potential environmental and health impacts of GM crops or pesticide usage. "If Africa is to become more self reliant in food supply without locking farmers into very expensive GM seeds and their associated herbicides then the Government need to be funding more projects like 'push pull'." A spokesman for the Department for Innovation, Universities and Skills admitted Sir David simply got it wrong. He said: "Sir David has said this was an honest mistake." Sir David has described the Daily Mail's campaigning stance on GM food as "brilliant journalism".

8. Monsanto Under Fire From Shareholders!!

http://pameladrew.newsvine.com/_news/2007/12/18/1173210-monsanto-under-fire-from-shareholders-

News Type: Event — Seeded on Tue Dec 18, 2007 10:03 PM EST

Article Source: *CSR - Corporate Social Responsibility News*

[business](#), [monsanto](#), [gmo-crops](#), [woot](#), [corporate-accountability](#), [criminal-liability](#), [harrington-investments](#), [shareholder-resolution](#)

Seeded by Pamela Drew

Hip, hip, hooray!! The day so many of us have been fighting for. One by one, tooth and nail for years.

Say Holla or woot or just plain old thanks to all the people in the EU and Down Under, the whole rest of the world, from the tip of Chavez's Venezuela to Putin's Soviet States people and their leaders have been fighting Monsanto and now, Wall Street fires the first shot over the bow.

Kudos and many thanks to Harrington Investments, Inc. for this!! Well done ladies and gentlemen, for putting your money where your mouth is!!

Shareholder Proposal Revisits Fiduciary Duty at Agribusiness Goliath, Monsanto

Harrington Investments, Inc., (HII) a socially responsible investment advisory firm, has announced the introduction of a binding amendment to Monsanto Corporation's corporate bylaws that could bar corporate indemnification of directors who fail to adequately oversee corporate activities that cause "harm to the natural environment, public health, or human rights."

"The idea behind this resolution is that by increasing the personal accountability of corporate directors, our proposed bylaw amendment would encourage these fiduciaries to better represent the shareholders of the corporation - and to serve as better guardians of the public interest," said John Harrington, President and CEO of Harrington Investments. The new vehicle for improving corporate governance will be on the proxy for the January 16, 2008 shareholder meeting at Monsanto (MON).

"We chose Monsanto as our target for this new approach, because we view this company as facing significant legal and reputational liabilities that might have been prevented with better board oversight. These include allegations of selling potentially dangerous products abroad, bribing foreign government officials, and releasing genetically engineered products that have not been proven safe for human consumption or the natural environment. Such activities are bad for our company's reputation, and could lead to substantial liabilities," said Harrington.

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- Groups: [GMO Vine](#), [Permaculture](#), [Activism](#), [Global Health](#), [Breaking News](#)

Dr Higgens had this to say

From the abc on-line: GM pea trial abandoned after mice fall ill - The CSIRO has abandoned a trial of GM peas after they were found to cause lung damage in mice. The GM trial has been under way for the last decade, to try to breed a strain resistant to pea weevils, which cause significant damage to crops.

Project leader DR TJ Higgins from CSIRO says it was only when they tested the pea on animals that they noticed an allergic reaction. "They had mild inflammation of the lungs," he said. "It wasn't a life-threatening condition in the mice but it was enough to alert us. "If there was even the slightest chance they were transferable to humans, the right thing to do and the responsible thing to do was to stop the research there.

"What we're doing now is finding ways of destroying the remaining peas. "The field sites have all been assessed by the regulator, there are no peas growing in the field and have not grown for several years thereafter."

The gene technology regulator, Dr Sue Meek, says the study will be wrapped up under contained conditions and that nothing has entered the human food chain. Lucky for us hey?

9. France suspends commercial GMO seed use, studies safety

<http://ispy.newsvine.com/news/2007/12/09/1151593-france-suspends-commercial-gmo-seed-use-studies-safety>

News Type: Event — Seeded on Sun Dec 9, 2007 6:21 AM EST

Article Source: Reuters

[world-news](#), [france](#), [gmo](#), [monsanto](#), [suspended](#), [seeds](#)

Seeded by ISPY

France formally suspended on Thursday the commercial use of genetically modified (GMO) seeds in the country until early February and ordered a biotech safety study.

The future of GMOs has long been the subject of heated debate in France -- Europe's top grain producer -- and the country's reluctance to use GMO crops compares starkly with the United States, which is far more tolerant of the technology.

The French agriculture ministry said it had charged a newly set-up committee with assessing the environmental and health implications of using GMO seeds reliant on the MON 810 technology developed by U.S. biotech giant Monsanto.

"As a result, there is a need to suspend the end-use of MON 810 maize seeds and related sales while awaiting the results of this mission," it said in a circular.

Thursday's formal suspension until February 9 at the latest, when parliament is slated to vote on a new biotech law, only concerns MON 810 maize, as it is the sole GMO technology permitted for cultivation in France and the European Union.

Stressing that the suspension was temporary, Monsanto slammed France's action.

10. Genetically Modified Foods: Are They a Risk to Human/Animal Health?

<http://www.actionbioscience.org/biotech/pusztai.html>

By Arpad Pusztai

An ActionBioscience.org original article

article highlights:

Genetically modified (GM) crops and food are being grown and consumed by the public, even though:

- *there is little scientific study about their health risks*
 - *safety test technology is inadequate to assess potential harm*
 - *they can carry unpredictable toxins*
 - *they may increase the risk of allergenic reactions*
-

Scarcity of safety tests

How can the public make informed decisions about genetically modified (GM) foods when there is so little information about its safety? The lack of data is due to a number of reasons, including:

Information is scarce about health hazards, such as toxicity in genetically modified (GM) crops.

- It's more difficult to evaluate the safety of crop-derived foods than individual chemical, drug, or food additives. Crop foods are more complex and their composition varies according to differences in growth and agronomic conditions.
- Publications on GM food toxicity are scarce. An article in *Science* magazine said it all: "Health Risks of Genetically Modified Foods: Many Opinions but Few Data".¹ In fact, no peer-reviewed publications of clinical studies on the human health effects of GM food exist. Even animal studies are few and far between.
- The preferred approach of the industry has been to use compositional comparisons between GM and non-GM crops. When they are not significantly different the two are regarded as "substantially equivalent", and therefore the GM food crop is regarded as safe as its conventional counterpart. This ensures that GM crops can be patented without animal testing. However, substantial equivalence is an unscientific concept that has never been properly defined and there are no legally binding rules on how to establish it.²

When food-crops are genetically modified, ("genetically modified" food is a misnomer!) one or more genes are incorporated into the crop's genome using a vector containing several other genes, including as a minimum, viral promoters, transcription terminators, antibiotic resistance marker genes and reporter genes. Data on the safety of these are scarce even though they can affect the safety of the GM crop. For example:

GM foods may cause bacteria to become resistant to antibiotics.

- DNA does not always fully break down in the alimentary tract.^{3,4} Gut bacteria can take up genes and GM plasmids⁵ and this opens up the possibility of the spread of antibiotic resistance.

They can also produce allergies.

- Insertion of genes into the genome can also result in unintended effects, which need to be reduced/eliminated by selection, since some of the ways the inserted genes express themselves in the host or the way they affect the functioning of the crop's own genes are unpredictable. This may lead to the development of unknown toxic/allergenic components, which we cannot analyze for and seriously limiting the selection criteria.

Current testing methods need radical improvements.

Currently, toxicity in food is tested by chemical analysis of macro/micro nutrients and known toxins. To rely solely on this method is at best inadequate and, at worst, dangerous. Better diagnostic methods are needed, such as mRNA fingerprinting, proteomics and secondary metabolite profiling.⁶ However, consuming even minor constituents with high biological activity may have major effects on the gut and body's metabolism, which can only be revealed from animal studies. Thus novel toxicological/nutritional methods are urgently needed to screen for harmful consequences on human/animal health and to pinpoint these before allowing a GM crop into the food chain.⁷

Safety tests on commercial GM crops

GM tomatoes: The first and only safety evaluation of a GM crop, the FLAVR SAVR™ tomato, was commissioned by Calgene, as required by the FDA. This GM tomato was produced by inserting kan^r genes into a tomato by an 'antisense' GM method. The test has not been peer-reviewed or published but is on the internet.⁸ The results claim there were no significant alterations in total protein, vitamins and mineral contents and in toxic glycoalkaloids.⁹ Therefore, the GM and parent tomatoes were deemed to be "substantially equivalent."

In acute toxicity studies with male/female rats, which were tube-fed homogenized GM tomatoes, toxic effects were claimed to be absent. In addition, it was concluded that mean body and organ weights, weight gains, food consumption and clinical chemistry or blood parameters were not significantly different between GM-fed and control groups. However:

Some rats died within a few weeks after eating GM tomatoes.

- The unacceptably wide range of rat starting weights ($\pm 18\%$ to $\pm 23\%$) invalidated these findings.
- No histology on the intestines was done even though stomach sections showed mild/moderate erosive/necrotic lesions in up to seven out of twenty female rats but none in the controls. However, these were considered to be of no importance, although in humans they could lead to life-endangering hemorrhage, particularly in the elderly who use aspirin to prevent thrombosis.
- Seven out of forty rats on GM tomatoes died within two weeks for unstated reasons.
- These studies were poorly designed and therefore the conclusion that FLAVR SAVR™ tomatoes were safe does not rest on good science, questioning the validity of the FDA's decision that no toxicological testing of other GM foods will in future be required.

GM maize: Two lines of Chardon LL herbicide-resistant GM maize expressing the gene of Phosphinothricin Acetyltransferase Enzyme (PAT-PROTEIN) before and after

Rats' ability to digest was decreased after eating GM corn. ensiling showed significant differences in fat and carbohydrate contents compared with non-GM maize and were therefore substantially different. Toxicity tests were only performed with the PAT-PROTEIN even though with this the unpredictable effects of the gene transfer or the vector or gene insertion could not be demonstrated or excluded. The design of these experiments was also flawed because:

- The starting weight of the rats varied by more than $\pm 20\%$ and individual feed intakes were not monitored.
- Feed conversion efficiency on PAT-PROTEIN was significantly reduced.
- Urine output increased and several clinical parameters were also different.
- The weight and histology of the digestive tract (and pancreas) was not measured.

Thus, GM maize expressing PAT-PROTEIN may present unacceptable health risks.

The toxin level of GM cotton is unpredictable. GM cotton: Several lines of GM cotton plants have been developed using a gene from *Bacillus thuringiensis* subsp. *kurstaki* providing increased protection against major lepidopteran pests. The lines were claimed to be "substantially equivalent" to parent lines¹⁵ in levels of macronutrients and gossypol, cyclopropenoid fatty acids and aflatoxin levels were less than those in conventional seeds. However, because of the use of inappropriate statistics it is questionable whether the GM and non-GM lines were truly equivalent, particularly as environmental stresses could have unpredictable effects on antinutrient/toxin levels.¹⁶

Toxins were found in mice after eating GM potatoes. Feeding mice with potatoes transformed with a *Bacillus thuringiensis* var. *kurstaki* Cry1 toxin gene or the toxin itself was shown²⁴ to have caused villus epithelial cell hypertrophy and multinucleation, disrupted microvilli, mitochondrial degeneration, increased numbers of lysosomes and autophagic vacuoles and activation of crypt Paneth cells. The results showed that despite claims to the contrary, Cry1 toxin was stable in the mouse gut and therefore GM crops expressing it need to be subjected to "thorough tests...to avoid the risks before marketing."²⁴

Allergenicity studies

One of the major health concerns with GM food is its potential to increase allergies and anaphylaxis in humans eating unlabeled GM foodstuffs.

Allergies are a major concern with GM food, especially if ingredients are not labeled in packaged food.

- When the gene is from a crop of known allergenicity, it is easy to establish whether the GM food is allergenic using *in vitro* tests, such as RAST or immunoblotting, with sera from individuals sensitised to the original crop. This was demonstrated in GM soybeans expressing the brasil nut 2 S protein²⁸ or in GM potatoes expressing cod protein genes.²⁹
- It is also relatively easy to assess whether genetic engineering affected the potency of endogenous allergens.³⁰ Some farm workers exposed to *B. thuringiensis* pesticide were shown to have developed skin sensitization and IgE antibodies to the Bt spore extract. With their sera it may now therefore be possible to test for the allergenic potential of GM crops expressing Bt toxin.³¹ It is all the more important because Bt toxin Cry1Ac has recently been shown to be a

11. GM Crops vandalized in Portugal

By Eloise Walton

http://www.checkbiotech.org/green_News_Genetics.aspx?Name=genetics&infoId=15459

Around 100 anti-GM protesters destroyed more than a hectare of genetically modified corn at the Herdade da Lameira farm in Silves while the owner tried desperately to stop them before the GNR arrived. The President of Portugal and the Minister of Agriculture have condemned the acts of vandalism.

João Menezes, the 56-year-old farmer, was surprised on August 17 by a group of around 100 protesters who destroyed part of his 51 hectare farm of genetically modified (GM) corn. By the time the GNR arrived on the scene to escort the protesters off the premises, they had already destroyed one hectare of the crop. During the protest, the activists had their faces covered to protect themselves against the pollen. After being identified and escorted off the land by the authorities, the protesters continued their rally against genetically modified products as they marched with banners into the village of Poço Barreto. This action was promoted and supported by two environmental groups, the newly created Verde Eufémia and the Algarve based Almagem as well as some of the local population and organic farmers who disagree with GM crops. Mr Menezes said that his farm is completely legalised and has been inspected by the Ministry of Agriculture. "This is what my family live on; it is our only means of income," said Mr Menezes, adding: "If they destroy this corn, I will die of hunger. Someone has to pay for the damages."

Luis Grifo, the technical engineer responsible for the corn crop at the Herdade da Lameira, said: "It is only known that GM corn is planted here because all of the regulations have been adhered to and all of the neighbours have been informed. Portugal only produces corn for three months of the year; during the rest of the year, corn is imported, of which 90 per cent is genetically modified."

Since the incident, the environmental group Almagem has asked the Portuguese government to destroy the GM crop at the Herdade da Lameira. A spokesman said: "We are asking for the immediate application of the emergency measures outlined in article 25° of the law decree n° 72/2003 of April 10."

This law regulates the deliberate release of genetically modified organisms into the environment, as well as the placement of these products on the market, conforming to the principle of precaution, taking into account the protection of human health and the environment. "The presence of GM crops in the Algarve could have a catastrophic impact on the region's main industry, tourism, with unpredictable social consequences," said the spokesman. Castelão Rodrigues, regional director of Agricultura do Algarve, said: "The farm is legal and I cannot see why Almagem is invoking that particular law".

Mr Menezes has decided to press charges against the protesters responsible for the damages caused, and who were identified by the GNR, which could lead to a prison sentence of up to three years. During visits to the Algarve on Monday, President Cavaco Silva and Jaime Silva, Minister of Agriculture, condemned the acts of vandalism at the Herdade da Lameira. Cavaco Silva appealed to the authorities during a speech in Albufeira for an investigation to be carried out on the vandalism of genetically modified crops in Silves. "There can be no doubt that the law in Portugal is to be obeyed and those who have the power to make it be obeyed must not let this happen," said the President. Jaime Silva visited farmer José Menezes to offer him legal support, saying: "Those responsible for the damages caused will pay, have no doubts."

"If it (GM crop) does not cause problems to public health, if it generates more income and is an environmentally friendly corn, as it does not need pesticides, why should we not plant it?," said Jaime Silva.

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Source: [The Resident - Algarve & Lisbon Edition](#)

12. Effects of Bt pollen in aquatic ecosystems

<http://www.bioscienceresource.org/news/news09.php>

02 Nov 2007 Below is the relevant NSF press release:

Toxins in transgenic crop byproducts may affect headwater stream ecosystems E. J. Rosi-Marshall, J. L. Tank, T. V. Royer, M. R. Whiles, M. Evans-White, C. Chambers, N. A. Griffiths, J. Pokelsek, and M. L. Stephen PNAS 2007 104: 16204-16208

Ecological impacts of genetically engineered corn are particularly important because of increased corn demand created by biofuels production. A new study indicates that a popular type of genetically engineered corn--called Bt corn--may damage the ecology of streams draining Bt corn fields in ways that have not been previously considered by regulators. The study, which was funded by the National Science Foundation, appears in the Oct. 8 edition of The Proceedings of the National Academy of Sciences. This study provides the first evidence that toxins from Bt corn may travel long distances in streams and may harm stream insects that serve as food for fish. These results compound concerns about the ecological impacts of Bt corn raised by previous studies showing that corn-grown toxins harm beneficial insects living in the soil. Licensed for use in 1996, Bt corn is engineered to produce a toxin that protects against pests, particularly the European corn borer. Bt corn now accounts for approximately 35 percent of corn acreage in the U.S., and its use is increasing.

"As part of the licensing process for genetically modified crops, the U.S. Environmental Protection Agency (EPA) was responsible for testing and identifying potential environmental consequences from the planting of Bt corn," says Jennifer Tank, who is from the University of Notre Dame and is a member of the team studying Bt corn. "To fulfill this requirement, EPA completed studies that assumed that plant parts would remain in fields without being carried away by streams draining agricultural lands" says Tank. In addition, EPA only tested the impacts of Bt corn on small lake organisms that are typically used to test the impacts of chemicals on aquatic ecosystems. ----- "Overall, our study points to the potential for unintended and unexpected consequences from the widespread planting of genetically engineered crops," Tank said. "The exact extent to which aquatic ecosystems are, or will be, impacted is still unknown and likel.

13. Transcomplementation and synergism in plants: implications for viral transgenes?

<http://www.bioscienceresource.org/docs/index.php>

MOLECULAR PLANT PATHOLOGY (2007) 8 (6) , 000–000

Jonathan R. Latham & Allison K. Wilson

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In plants, viral synergisms occur when one virus enhances infection by a distinct or unrelated virus. Such synergisms may be unidirectional or mutualistic but, in either case, synergism implies that protein(s) from one virus can enhance infection by another. A mechanistically related phenomenon is trans complementation, in which a viral protein, usually expressed from a transgene, enhances or supports the infection of a virus from a distinct species. To gain an insight into the characteristics and limitations of these helper functions of individual viral genes, and to assess their effects on the plant–pathogen relationship, reports of successful synergism and trans complementation were compiled from the peer-reviewed literature and combined with data from successful viral gene exchange experiments. Results from these experiments were tabulated to highlight the phylogenetic relationship between the helper and dependent viruses and, where possible, to identify the protein responsible for the altered infection process. The analysis of more than 150 publications, each containing one or more reports of successful exchanges, trans complementation or synergism, revealed the following: (i) diverse viral traits can be enhanced by synergism and trans complementation; these include the expansion of host range, acquisition of mechanical transmission, enhanced specific infectivity, enhanced cell-to-cell and long-distance movement, elevated or novel vector transmission, elevated viral titre and enhanced seed transmission; (ii) trans complementation and synergism are mediated by many viral proteins, including inhibitors of gene silencing, replicases, coat proteins and movement proteins; (iii) although more frequent between closely related viruses, trans complementation and synergism can occur between viruses that are phylogenetically highly divergent. As indicators of the interoperability of viral genes, these results are of general interest, but they can also be applied to the risk assessment of transgenic crops expressing viral proteins. In particular, they can contribute to the identification of potential hazards, and can be used to identify data gaps and limitations in predicting the likelihood of transgene-mediated trans complementation.

Full article can be downloaded from <http://www.bioscienceresource.org/docs/index.php>

14. Another view on Bt Proteins – How Specific are They and What Else Might They do?

Source: Institute of Integrative Biology

Publication date: May 03, 2006

<http://www.biosafety-info.net/article.php?aid=452>

Hilbeck & J.E.U. Schmidt

Institute of Integrative Biology, ETH Zurich, Switzerland
Biopestic. Int. 2 (1): 1-50 (2006)

A recent study finds that the Bt proteins are harmful to the non-target insects such as green lacewing, *Chrysoperla carnea*. The researchers who did the study feel that it should be further studied in the context of the widespread approval and cultivation of the Bt crops worldwide.

ABSTRACT

The entomopathogenic bacterium *Bacillus thuringiensis* (Bt) and its toxins are extensively used for pest control purposes in agriculture, forestry and public health programmes since the 1930s. In addition to spray formulations, transgenic plants containing Bt genes for the expression of the toxins (Bt plants) are commercially available since the mid 1990s and are grown on an increasing percentage of the global agricultural area. A main reason for the importance of Bt as a pesticide is the assumed environmental safety concluded from the high specificity of its endotoxins (Cry proteins) towards a limited number of target organisms, mostly distinct groups of pest insects. While the mode of action of the Cry toxins in these susceptible target insects is well studied, Bt experts claim that several details are still not understood well enough. Although there is considerable experience with the application and the environmental safety of Bt sprays, a number of research papers were published in the past that did report adverse effects on non-target organisms. These and the widespread use of transgenic Bt plants stimulated us to review the published laboratory feeding studies on effects of Bt toxins and transgenic Bt plants on non-target invertebrates. We describe those reports that documented adverse effects in non-target organisms in more detail and focus on one prominent example, the green lacewing, *Chrysoperla carnea*. Discussing our findings in the context of current molecular studies, we argue firstly that the evidence for adverse effects in non-target organisms is compelling enough that it would merit more research. We further conclude from our in-depth analysis that the published reports studying the effects of Bt toxins from Bt pesticides and transgenic Bt plants on green lacewing larvae provide complementary and not contradictory data. And, finally, we find that the key experiments explaining the mode of action not only in this particular affected non-target species but also in most other affected non-target species are still missing. Considering the steadily increasing global production area of Bt crops, it seems prudent to thoroughly understand how Bt toxins might affect non-target organisms.

15. Latin America: The Downside of the GM Revolution

Source: Center for International Policy

Publication date: December 14, 2007

<http://www.biosafety-info.net/article.php?aid=489>

Carmelo Ruiz-Marrero

December 3, 2007

<http://americas.irc-online.org/am/4786>

<http://americas.irc-online.org/pdf/reports/0712downside.pdf>

As genetically modified soybeans take over vast tracts in South America and reports flow in of genetic contamination of local corn in Mesoamerica, grassroots resistance to biotech crops has also grown. The protests form part of people's movements across the hemisphere that tie together a rejection of neoliberalism and agribusiness, and call for land reform, food sovereignty, and sustainable agriculture.

16. Traits in Agriculture – Horizontal gene Transfer & it's hazards

<http://www.biosafety-info.net/section.php?sid=4>

Horizontal gene transfer is increasingly recognized as a phenomenon of great concern. Gene-transfer vectors can facilitate horizontal gene transfer and recombination, leading to the spread of antibiotic resistance (through the use of antibiotic resistant marker genes) and new pathogens. An emerging concern is the potential creation of new viruses as a result of probable recombination of the promoter from cauliflower mosaic virus (CaMV) with other viruses. The CaMV promoter is routinely used to drive gene expression in

crop plants engineered for herbicide or disease resistance. These hazards can impact negatively on biodiversity and the environment. Human and animal health impacts of concern include toxic and allergenic effects, as well as probable new diseases.

TRANSGENIC CONTAMINATION LEADING TO ENVIRONMENTAL RISKS

<http://www.mainstreamweekly.net/article522.html>

Recent advances in genetic engineering have emerged as one of the most important influences on the future of agricultural and food systems. This is a crucial time to carefully examine the many sided impacts of genetic engineering on agriculture. The rapid spread of transgenic crops poses a threat to traditional crop varieties and wild plants that are the major sources of crop genetic diversity. Some traits of organisms may take decades or even longer to manifest themselves. An organism declared 'safe' in the short term could eventually prove to be dangerous. It may be impossible to recall and difficult to control harmful GEOs, especially those that may contaminate ground-water. Third World countries face even greater environmental risks than countries of the North because, in contrast, they have many wild relatives of many crops and thus there are more opportunities for various kinds of rogue species to be created. Moreover, most Third World countries currently have less scientific expertise and legal or regulatory capacity to monitor, assess and control activities involving genetically engineered organisms, and are thus even more vulnerable to adverse impacts. Developing countries can learn from the experience of Argentina, a country which took up growing GM Soy in a big way in the late 90s. This was supposed to lead to a reduction in the use of herbicides and pesticides. But GM Soy growers registered a 10-fold increase in the use of herbicides (compared to conventional farmers) in five years— Charles Benbrook, former Executive Director of the Board on Agriculture of the US National Academy of Science commented: Argentina faces big agronomic problems that it neither has the resources nor the expertise to solve. Clearly the threat from G.M crops to natural farming systems & environment is so serious that any commercial release cannot be allowed. Even any experimental trials should be asked to wait till definite ways to avoid hazards can be found.

17. MEXICO: Transgenic Maize Knocking at Mexican Doors

By Diego Cevallos

<http://www.ipsnews.net/news.asp?idnews=40573>

MEXICO CITY, Dec 21 (IPS) - Mexico's first experimental trials of genetically modified maize will take place next year, a government official has announced. The news has put environmental and campesino (small farmer) organisations, still hoping that this will not happen, on the alert.

The country will be dealt a severe cultural, environmental and economic blow if synthetic species of maize are allowed in, opponents of genetically modified (GM) crops warn.

The Agriculture Ministry's coordinator of International Affairs, Víctor Villalobos, informed local journalists that the permits are ready to be granted. IPS also learned that the corporations that promote the use of GM crops are certain that their applications for experimental trials, rejected three times in the last two years, will at last be accepted.

18. Third World Network Information Service on Sustainable Agriculture

Organic agriculture helps adaptation to climate change

Adaptation to climate change is a key issue for many developing countries, particularly as climate change will disproportionately affect the most vulnerable. Farmers will need to adapt their practices to deal with changing temperatures and more frequent extreme weather events.

An FAO paper published in August 2006 explores the potential of organic agriculture in increasing resilience within the agroecosystem, thereby increasing its ability to continue functioning when faced with unexpected events such as climate change. The paper concludes that, as a whole, organic agriculture builds adaptive capacity on farms. This is because it promotes agroecological resilience, biodiversity, healthy landscape management, and strong community knowledge processes. Improved soil quality and efficient water use also strengthen agroecosystems, while practices that enhance biodiversity allow farms to mimic natural ecological processes, which enables them to better respond to change.

The scope of the paper is reproduced below. The full paper can be downloaded at <ftp://ftp.fao.org/docrep/fao/009/ah617e/ah617e.pdf>

19. Cabinet refuses to lift ban on Open-Field Crop Trials

Bangkok Post, December 26 2007

http://www.bangkokpost.com/261207_News/26Dec2007_news16.php

The Agriculture and Cooperatives Ministry's push for the lifting of the ban on open-field trials of genetically-modified (GM) crops was turned down yesterday by the cabinet which decided to leave the decision to the next administration. The cabinet instructed the ministry to conduct more studies on the impact of growing GM plants in open fields and to organise a public hearing on the matter as required by the constitution before seeking approval for field trials of transgenic crops from the next cabinet. Article 67 of the charter stipulates relevant agencies must hold a public hearing before implementing a project that has social and environmental impact. "The ministry must also draft a regulation to prevent and control the spread of GM crops from experimental fields to nearby areas," said government spokesman Chaiya Yimwilai. Revoking the 2001 cabinet resolution banning open-field trials has recently become controversial after Agriculture Minister Thira Sutabutra said lifting the ban would promote research on GM crops. His stand prompted anti-GM crop groups to stage weekly protests at Government House to demand the coup-appointed cabinet maintain the ban.

20. OHIO Considers Banning rBGH-free Milk Labels

Regulators in the state of Ohio are considering banning 'rBGH-free' labeling on dairy products produced without the GM hormone rBGH. US subscribers are encouraged to TAKE ACTION on this even if they live outside Ohio

<http://www.gmwatch.org/archive2.asp?arcid=8609>

21. Consumer Advocate Linked to GM Hormone Industry

A woman representing consumers on an Ohio state committee developing new rules for labels that appear on dairy products formerly worked for Monsanto, the corporation which markets the GM hormones at the centre of the labeling debate

<http://www.gmwatch.org/archive2.asp?arcid=8610>

22. Western Australia Won't Relax GM Ban

<http://www.gmwatch.org/archive2.asp?arcid=8572>

Western Australian premier Alan Carpenter says his government's policy on genetically-modified canola won't be influenced by decisions in the east. Last week, Victorian and New South Wales Governments announced an end to their moratoriums on GM-canola. But Mr Carpenter says he'll ignore calls for an early review of WA's G-M status. 'We've carved out a reputation in Western Australia for being GM-free, for being environmentally friendly, for being very good at managing major resource and agriculture projects and I intend that to stay exactly as it is,' he says. 'Put it this way - we gave a commitment at the last election that there'd be no change to our GM free food status. And there won't be.'

23. Most Australians Still Don't want to Eat GM Foods

<http://www.gmwatch.org/archive2.asp?arcid=8578>

This follows on from Swinburne University's annual survey which showed, 'there wasn't any change in reaction to genetically modified plants and overall most people remain uncomfortable with GM agriculture.'

<http://www.gmwatch.org/archive2.asp?arcid=8421>

Another survey found only 27.6% of Australian farmers want to see GM grain crops introduced, with a clear majority of farmers opposed to their introduction.

<http://www.gmwatch.org/archive2.asp?arcid=8343>

24. Non-GM Farmers Call for Strict Liability on GM Crops

The Network of Concerned Farmers is calling for strict liability legislation to be introduced to protect non-GM farmers from the inevitable economic losses that will occur if GM canola is introduced in New South Wales.

<http://www.gmwatch.org/archive2.asp?arcid=8561>

25. Mexicans Campaign Against NAFTA

Prensa Latina, Dec 26 2007

[http://www.plenglish.com/article.asp?ID=%7BEC1C5D0A-98B3-4105-A5D2-D38099CFFFDE%7D\)&language=EN](http://www.plenglish.com/article.asp?ID=%7BEC1C5D0A-98B3-4105-A5D2-D38099CFFFDE%7D)&language=EN)

Mexico - Mexican farmer and social organizations have kicked off a campaign to collect one million signatures to demand that corn and beans be removed from the list of products whose imports will be tariff free as of January 1, 2008.

The National Campaign in Defense of Food Sovereignty and the Reactivation of Mexican Countryside called on the people to sign the document, which also states the need to establish a Congress-controlled permanent mechanism to administer imports and exports of corn and beans, as well as their byproducts. The campaigners also demand banning transgenic corn, protecting and improving the genetic heritage of that food, which is fundamental in Mexicans' diet, and boosting production.

Other demands are that the House of Deputies approves the Constitutional Right to Food and the Act on Agricultural and Nutritional Sovereignty and Security. The signatories will back the struggle against monopolies in the agricultural sector and fight hoarding, speculation and deceitful advertisement of junk food.

The declaration also proposes that corn and the cultural expressions linked to it be included in the UNESCO's List of Humankind's Oral and Intangible Heritage.

The campaign is part of a series of mobilizations against the controversial North American Free Trade Agreement, signed by Mexico, the United States and Canada.

26. French Left Backs Strike against GMO

Paris, Preens Latina, Jan 4 2008

<http://www.plenglish.com/article.asp?ID=%7B31E956C2-FE8E-4E9F-826D-550B549253AB%7D>)

French left-wing parties back hunger strike led by French farmer politician and unionist Jose Bove, who became a worldwide celebrity for his fight against junk food and other 15 people opposed to genetically modified foods. Former socialist presidential candidate Segolene Royal visited Bove and she gave her full support to the strike like other deputies of the same party. "I respect and welcome that position of principle", indicated the president of the region of Poitou-Charentes. She added that the government must fulfill its promise of moratorium of cultivation of OGM's (genetically modified foods) in the field. Also the representatives of the French Communist Party in the capital showed their solidarity and expressed that there is a demand to prorogate the authorization to cultivate transgenic foods.

Green campaigners expressed their support to strikers and declared that the Le summit named in French Le Grenelle de l'Environnement, in which participated several organisms, concluded with a minimum promise on the subject. Bove began a hunger strike on Tuesday night, threatening to extend it if the government does not fulfill its promise to request for the activation of the clause that allows a State of the European Union to prohibit the OGM authorized by Brussels.

This monthly bulletin is brought out by South Against Genetic Engineering (SAGE), a coalition of civil society activists, farmers, scientists, academicians, and consumer groups of four Southern States of India, viz., Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra. SAGE has been waging a concerted battle against genetic engineering through a series of activities that involve public protests, media actions, seminars, consultations and publication of a series of education.

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