



Monthly Bulletin  
on *Genetic Engineering*  
August 2011

*For details:*

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# Contents

## SAGE CHRONICLE

### NATIONAL

GM Crop wing to tighten conflict of interest norms  
Gujarat registers highest growth rate: ASSOCHAM  
GEAC Minutes

### GLOBAL

In Midwest, Flutters May Be Far Fewer  
The cost of spurning GM crops is too high  
Why the World Should Roundup Glyphosate

### GE FOOD

Firms urge EU to allow unapproved GMOs in food Imports  
Produce genetically modified crops after proper assessment'

### GE & AGRICULTURE

Bt, Brinjal and Biryani  
Prominent agriculture figure says GMOs do not belong in Africa, Organic biodiversity is the way

### ADDITIONAL LINKS:

Hungary to penalize planting, distribution of GMO seeds

MTI – Econews, Tuesday 16:50, July 26, 2011

[http://www.bbj.hu/economy/govt-to-penalize-planting-distribution-of-gmo-seeds\\_59095](http://www.bbj.hu/economy/govt-to-penalize-planting-distribution-of-gmo-seeds_59095)

Despite fears, more genetically modified crops are on the way

By [Tom Webb Pioneer Press](#) Updated: 07/24/2011 01:11:27 PM CDT

[http://www.twincities.com/business/ci\\_18533083?nclick\\_check=1](http://www.twincities.com/business/ci_18533083?nclick_check=1)

Monsanto Sues Pennsylvania Farmer for Saving Seeds

***One of the many benefits to GMOs, you can't save seeds.***

By [Sara Novak](#) Sun Jul 24, 2011 08:00

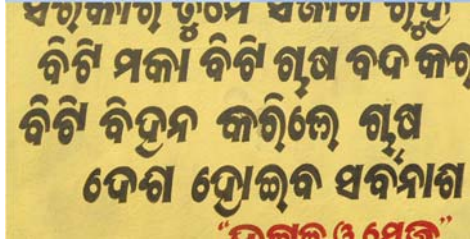
<http://planetgreen.discovery.com/food-health/monsanto-sues-pennsylvania-farmer-for-saving-seeds.html>

What is your policy on GM food, parliamentary panel asks AP Govt by **K.V. Kurmanath**

<http://www.thehindubusinessline.com/industry-and-economy/agri-biz/article2201574.ece>

**SAGE CHRONICLE****SAGE – ODISHA****Health Worker Sensitization Programme(HWSP)**

A total 5 Health Worker Sensitization Programmes were organised at 5 villages of the 3 Blocks (Centralise programme) : Bisoil Block - 2 villages; Suliapada Block - 1 village; and Joshipur block - 2 villages.

**Wall Writing**

The Wall Writing work was finished in the two blocks (Bangriposi block and Saraskona block). A total number of 25 villages were covered under this programme: Bangriposi block -13. and Saraskona block 12

**SAGE – SAMVADA MYSORE**

FAQ on GE in Kannada was released in the 1st week of July. The feedback for this booklet is quite encouraging.

Letters were published in major Kannada daily news papers inviting readers to offer suggestions to declare Mysore a GMO free city.

Ramachandra of SAGE-Samvada was interviewed by PRAJAVANI, a State level newspaper. In this interview, issues like declaring Mysore GM free, the dangers of GM food and crops, and the government's inaction were discussed.

A meeting of the notable citizens of Mysore was organized by VISMAYA CHINTANA MILANA, led by a publishing group and some thinkers, academicians, organic farmers and other professionals. As part of the event, SAGE SAMVADA was invited to speak on GMOs. Ramachandra presented a paper and interacted with the audience. Also, copies of some of SAGE's publications were distributed.

**SAGE TAMILNADU**

On 23<sup>rd</sup> July, SAGE TN and LEISA Network, Erode District, jointly hosted a workshop on the "Threats of GM to Indian Agriculture and Food Sovereignty" at Madurai. This was part of a 3- day State Level "Conference against Warming the Globe" organized by JASL (Joint Action for Sustainable Livelihood). More than 200 participants, mostly farmers from different parts of Tamil Nadu, besides consumers, NGOs, academicians and general public participated in the workshop. Dr. G. Nammalvar delivered a keynote address in the workshop.

Different case studies of farmers' experience in organic cotton cultivation, the problems in accessing non-Bt cotton seeds, issues in marketing of organic cotton, and the revival of climate tolerant traditional rice varieties were presented in the workshop. Mr. Oswald Quintal, SAGE TN Convener, explained the objectives of the workshop to the participants. Resolutions insisting on the complete ban of GM research in agriculture universities, state support to organic farming through establishing a separate board, state production plan to focus on nutritious foods like millets and pulses were recommended to the State Government through Madurai Declaration.

A village level campaign was organized by “Create” in Thiruvavur district on 27<sup>th</sup> July 2011 in which 2 villages were covered. The campaign focused in creating awareness on the impacts of GMO to human, animal and bio diversity, the need for farmers movement to pressurize the State to uphold farmer’s right, saving and exchanging seeds, and the immediate banning of deadly pesticides like Endosulfan. Information and educational materials like pamphlets and notices were distributed during the campaign. The campaign has reached more than 300 farmers in 2 villages.

**OTHERS:**

Letter to **Ms Jayanthi Natarajan**, Union Minister for Environment & Forests, Government of India, New Delhi and Press release:



## National News

### GM Crop Wing to tighten conflict of interest norms

TNN | Jul 11, 2011, 12.43am IST

**DELHI:** The environment ministry's [GM crop](#) assessment arm decided to strengthen the rules on conflict of interest in its last meeting on July 6, ensuring that members on board the genetic engineering appraisal committee do not sit on meetings where their family members are involved in projects.

The move came after TOI reported on a case in West Bengal where a GEAC member, Swapan K Datta, influenced the decision in favour of his wife Karabi Datta and got clearance for trials of GM rice to be conducted by her as faculty with the botany department of Calcutta University.

The GEAC also held a separate meeting to review the decision, this time with Datta, who is also the deputy director general at Indian Council for Agricultural Research, recusing himself.

But it decided not to withdraw the clearance given to Karabi's project and stuck to its decision taken under Swapan Datta's advice.

The meeting also concluded that no trials would be allowed without approval from state governments where the tests are to be carried out. The decision came after Bihar and Madhya Pradesh objected to trials being held in their states without their permission or knowledge. Environment minister Jairam Ramesh had agreed with the state chief ministers on this. Recently, West Bengal chief minister Mamata Banerjee too had ordered a moratorium on all testing of GM crops till a committee set up by the state took a view on the matter.

The committee also took up the issue of alleged violations of safety norms by Monsanto during trials of GM corn in Karnataka, highlighted by [Greenpeace](#) and other civil society groups. The committee has asked the state government to carry out an inspection and send a report.

[http://articles.timesofindia.indiatimes.com/2011-07-11/developmental-issues/29760856\\_1\\_gm-crop-trials-of-gm-rice-genetic-engineering-appraisal-committee](http://articles.timesofindia.indiatimes.com/2011-07-11/developmental-issues/29760856_1_gm-crop-trials-of-gm-rice-genetic-engineering-appraisal-committee)

### Gujarat registers highest growth rate: ASSOCHAM

**Mumbai, Jul 12 :** Gujarat has registered the highest 10.97 per cent decadal Agricultural growth rate between 2000-01 and 2009-10 in real terms (at compound annual growth rate) among 15 non-special category states, according to independent research and analysis of the apex industry body, Associated Chambers of Commerce and Industry of India (ASSOCHAM).

Maharashtra closely followed Gujarat, registering almost 10.50 per cent of agri growth during the last decade.

D S Rawat, secretary general of ASSOCHAM, said the revolutionary steps like investment in agricultural infrastructure to improve irrigation system, employment of latest technologies and establishment of a dedicated power grid to ensure regular power supply for agri sector together with a committed leadership are certain significant reasons behind high agricultural growth rate that Gujarat has achieved.

Reasonable monsoon season throughout the decade along with rising minimum support prices from the Centre and extension of profitable cash crop BT cotton are factors that led to superlative performance by Gujarat.

Chhattisgarh has ranked 3rd with six per cent of agricultural growth, compounded annually, followed by Orissa which registered 5.28 per cent and Andhra Pradesh ranked 5th among top five states with 5.2 per cent CAGR, says the chamber's analysis.

Innovative and efficient management of state's groundwater resources is a major turning point in Gujarat's agricultural miracle, which has converted barren lands into fertile farms thereby raising yields and resulting in fall of cultivation costs. Revolution in agriculture has converted around 15 lakh hectare additional lands in largely semi-arid Gujarat fit for farming thereby, establishing the state on top in systematic and scientific development of farm sector.

Farmers in the state are adopting more technology and value addition of agricultural produce to supplement their income.

ASSOCHAM recommends other states to focus on small, minor irrigation projects and watershed facilities, which are cheap and affordable considering, irrigation is a major bottleneck in agri sector across majority of states in India.

Innovative initiatives carried out by Gujarat government must be followed by other states to disseminate technical knowledge and expertise to farmers for better productivity and increased income, Mr Rawat added. —UNI

<http://www.newkerala.com/news/2011/worldnews-26417.html>

## GEAC Minutes

### PRESS RELEASE

**Important Decisions Taken in the 110<sup>th</sup> Meeting of the Genetic Engineering Appraisal Committee (GEAC) held on 06.07.2011**

#### 1. Approval from State Governments to conduct GM crop field trials:

In order to take the views of the State Government on board and to promote their involvement in activities pertaining to GM crop field trials specially its effective monitoring, it was decided that in respect of all GM crop field trials, the GEAC/RCGM would issue the approval letter only on receipt of NOC from the respective State Government.

#### 2. Conflict of Interest:

The GEAC in its 105<sup>th</sup> GEAC meeting held on 8.12.2010, had adopted the following criteria to address issues related to conflict of interest based on the recommendations of the sub-committee constituted by the GEAC:

- I. A member of the GEAC is either a team leader or member of a team that has developed a transgenic plant which has come up for consideration before the GEAC shall not participate in the discussion regarding such an application.
- II. A member of the GEAC is a consultant for an industry/research foundation that has developed a transgenic plant which has come up for consideration before the GEAC shall not participate in the discussion regarding the said application.
- III. A Member of the GEAC is involved in the development of transgenic plant constituting the same crop/trait of interest that is being considered by the GEAC or is involved in the development of a recombinant vaccine/drug against the same disease. The GEAC member shall not participate in the discussion regarding such an application.
- IV. Further, in all the three situations mentioned above, the GEAC member should not be involved in the conduct or monitoring of field trials/clinical trials with regard to an application being considered by the GEAC.

The criteria for 'Declaration and Statement of Independence' to be submitted to the GEAC were specific to the involvement of the Member with respect to an application under consideration of the GEAC.

The matter was reconsidered in the GEAC meeting in light of a recent report. The GEAC has now decided that the 'Conflict of Interest' clause would be triggered if the member or his/her spouse or children are involved in terms of the criteria mandated above.

The GEAC has also decided to constitute a Sub-Committee to ensure that there is no Conflict of Interest and suggest further measures for avoiding such situations.

#### 3. Appeal from M/s Mahyco against GEAC decision dated 9.3.2011 regarding the use of non-Bt RRF Cotton Hybrids containing cp4epsps gene (event Mon 88913) as Refugia during BRL-II trials:

The GEAC in its 108<sup>th</sup> meeting held on 9.3.2011 had taken a decision that the data generated during BRL-II trials using non-Bt RRF flex as refuge shall not be considered for regulatory purpose. The appeal from M/s Mahyco to reconsider the above decision was discussed in the GEAC meeting on 6.7.2011. The Committee rejected the appeal. The applicant will be required to conduct fresh trials with protocols approved by the GEAC.

#### 4. Violations of biosafety norms at GM corn experimental seed production site by Monsanto:

The GEAC in its 104<sup>th</sup> meeting held on 15.11.2010 had approved the request for BRL-II trials and experimental seed production.

The representation from some of the interested stakeholders pertaining to non compliance with the biosafety guidelines by M/s Monsanto during experimental seed production of GM corn at Bijapur District, Karnataka was considered by the GEAC.

The GEAC decided to ask the State Government to have the site inspected and send a report urgently. Further action will be taken on getting the report of the State Government.

#### 5. Event selection trials on seven transgenic rice (oryza sativa L) by the Department of Botany, Kolkata University at Rice Research Station, Chinsurah

In the meeting, the issue of approval given to GM rice trials developed by Calcutta University was also discussed. The above matter was discussed in the absence of Dr Swapan Datta. The Committee reconsidered the case and reiterated its earlier decision to allow Calcutta University to conduct event selection trial maintaining an isolation distance of 10 m. In light of the fact that the isolation distance under Indian Minimum Seed Certification Standards (notified under Seed Act 1986) is 3 m for inbred rice lines, the Committee was of the view that the 10 m isolation distance stipulated by the GEAC is adequate.

<http://moef.nic.in/divisions/csurv/geac/information.html>

## GLOBAL

### In Midwest, Flutters May Be Far Fewer



**HABITAT** The use of a herbicide has taken away a home for monarchs.

By [ANDREW POLLACK](#), Published: July 11, 2011

As recently as a decade ago, farms in the Midwest were commonly marred — at least as a farmer would view it — by unruly patches of milkweed amid the neat rows of emerging corn or soybeans.

Not anymore. Fields are now planted with genetically modified corn and soybeans resistant to the herbicide Roundup, allowing farmers to spray the chemical to eradicate weeds, including milkweed. And while that sounds like good news for the farmers, a growing number of scientists fear it is imperiling the monarch butterfly, whose spectacular migrations make it one of the most beloved of insects — “the Bambi of the insect world,” as an entomologist once put it.

Monarchs lay their eggs on milkweed, and their larvae eat it. While the evidence is still preliminary and disputed, experts like Chip Taylor say the growing use of [genetically modified crops](#) is threatening the orange-and-black butterfly by depriving it of habitat.

“This milkweed has disappeared from at least 100 million acres of these row crops,” said Dr. Taylor, an insect ecologist at the University of Kansas and director of the research and conservation program [Monarch Watch](#). “Your milkweed is virtually gone.” The primary evidence that monarch populations are in decline comes from a new study showing a drop over the last 17 years of the area occupied by monarchs in central Mexico, where many of them spend the winter. The amount of land occupied by

the monarchs is thought to be a proxy for their population size.

“This is the first time we have the data that we can analyze statistically that shows there’s a downward trend,” said Ernest H. Williams, a professor of biology at Hamilton College and an author of the study along with Dr. Taylor and others.

The paper, [published online](#) by the journal *Insect Conservation and Diversity*, attributes the decrease partly to the loss of milkweed from use of “Roundup Ready” crops. Other causes, it says, are the loss of milkweed to land development, illegal logging at the wintering sites in Mexico, and severe weather. The study does not suggest the monarch will become extinct. But it questions whether the annual migration, the impetus for butterfly festivals around the United States and waves of tourism to Mexico, is sustainable.

Still, the paper does not present any data backing its contention that genetically engineered crops are reducing monarch populations. Some experts dispute that the monarch populations are declining at all, and say it is unclear whether the biotech crops are having an effect.

Andrew K. Davis, an assistant research scientist at the University of Georgia, said censuses of adult monarchs taken each fall at Cape May, N.J., and Peninsula Point, Mich., did not show any decline. It could be that “even though the overwintering population is getting smaller and smaller, once they come northward in the spring they are able to recoup the numbers,” Dr. Davis said. His paper disputing that there has been a decline in the monarch population was [published online](#) by the same journal.

Leslie Ries, a research professor at the University of Maryland, said other butterfly counts she had examined also did not show a decline, but rather year-to-year fluctuations. Since milkweed populations are not likely to fluctuate as much, the milkweed is probably not the major determinant of butterfly populations, she said.

But two other researchers, Karen Oberhauser of the University of Minnesota and John M. Pleasants of Iowa State, cite other evidence for a decline: the number of monarch eggs in the fields of the Midwest.

But the sheer amount of farmland in the Corn Belt has meant that farms, in aggregate, have accounted

for a vast majority of monarch births, according to another [study](#) published by Dr. Oberhauser and colleagues in 2001. That study estimated that in Iowa, farms produced 78 times the number of monarchs as nonagricultural sites, and in Wisconsin and Minnesota, 73 times as much.

And while monarchs come from other parts of the country as well, the Midwest is widely believed to be where most of them are hatched.

Still, even Dr. Hartzler said in his paper that it was difficult to assess what impact the decline of Iowa milkweed was having on monarch populations.

A spokesman for Monsanto, the inventor of the Roundup Ready crops and the manufacturer of Roundup, agreed, saying “knowledge is still evolving about whether and how agriculture in Iowa affects monarch population biology.” And what is true of Iowa, he said, might not apply to other regions.

This is not the first time genetically modified crops have been thought to threaten the monarch.

In 1999, researchers at Cornell reported that monarch caterpillars could be killed if they ate milkweed onto which the researchers had dusted pollen from another type of engineered crop known as BT corn. That corn has a bacterial gene allowing it to produce a toxin that kills certain pests.

But subsequent research, financed in part by the biotechnology industry, found that caterpillars were not likely to be exposed to lethal amounts of BT corn pollen under actual field conditions. That concern has died down.

Scientists say it is not surprising that suppressing weeds would have an effect on insects, and probably not just the monarch.

The National Academy of Sciences discussed this in a 2007 report on bees and other animals that pollinate crops. The report cited a British study that found fewer butterflies in fields growing genetically engineered beets and canola than in fields growing nonengineered crops.

That raises the somewhat radical notion that perhaps weeds on farms should be protected. “There’s a change in agricultural thinking, because the weed-free field was the gold standard,” said May Berenbaum, head of entomology at the University of Illinois.

Still, she and other insect experts say it is unrealistic to expect farmers to give up the herbicide-

tolerant crops — so efforts should be made to preserve or grow milkweed elsewhere, perhaps on farmland set aside for conservation. Monarch Watch is encouraging gardeners to grow milkweed.

Dr. Taylor of Monarch Watch offered a modest, possibly ironic proposal for biotechnology companies. “I would implore them to develop a Roundup-resistant milkweed,” he said.

<http://www.nytimes.com/2011/07/12/science/12butterfly.html?pagewanted=1& r=2>

### The Cost of spurning GM crops is too high

The benefits of the technology far outweigh any risks and we must embrace the opportunities created by it

Jonathan DG Jones [guardian.co.uk](http://guardian.co.uk), Thursday 21 July 2011 13.57 BST

The term “genetic modification” provokes widespread fears about the corporate control of agriculture, and of the unknown. However, results from 25 years of EU-funded research [show that](#) there is “no scientific evidence associating [GM](#) plants with higher risks for the environment or for [food](#) and feed safety than conventional plants and organisms”. This of course does not prove GM methods are 100% safe, but makes clear there is no evidence to the contrary.

This Saturday, anti-GM campaigners plan to offload potatoes outside the John Innes Centre (JIC) in Norfolk – one of the country’s leading crop research institutes – for a “photo shoot”. They claim that our research trial of blight-resistant GM potatoes on a plot at JIC, one of only two ongoing GM research trials in the UK, is a “[dangerous experiment](#)”.

The trial involves research on genes from wild potatoes. We have been able to isolate genes from wild species that make them resistant to UK races of the late blight pathogen, *Phytophthora infestans*, which causes £3.5bn in annual losses worldwide.

Phytophthora has evolved to circumvent all the 100s of resistance genes in most cultivated potato varieties. Resistance genes exist to recognise pathogens, enabling the plant to activate its natural defence mechanisms. The aim of the trial is to test whether resistance genes from wild potatoes will give commercial varieties the ability to detect when they are under attack by UK pathogen races, and then activate defence.

Because of the difficulties of potato genetics, it is essentially impossible to breed a useful trait such as disease resistance from a wild inedible potato into a well-defined variety such as maris piper or desiree while retaining all the characteristics that the market loves in these potatoes. GM is a particularly useful tool because it enables us to introduce a desirable trait without at the same time breeding in unwanted ones.

The blight resistant desiree variety being trialed, that reduces the amount of pesticide the crop needs – and is rejected by the protesters – could not have been produced without GM.

We had hoped to create an opportunity to discuss this with the campaigners, as well as other issues they raise in their publicity material. With support from JIC, we invited them to take part in a proper debate.

Disappointingly, they declined. We recognise their right to peaceful protest but have been frustrated that we cannot talk to the organisers, except via exchange of emails.

Meanwhile, the benefits of GM technology are becoming clearer to all. Insect resistant GM cotton and maize has reduced insecticide applications and lowered mycotoxin levels in the maize we eat. Genetic engineering in microbial research has produced new antibiotics and other natural products. JIC's purple tomatoes contain elevated levels of health-promoting anthocyanins.

Food insecurity and climate change highlight the challenges of sustainably feeding a growing world population. Further research using GM methods opens new possibilities for raising and stabilising yields, improving resistance to pests and diseases and withstanding abiotic stresses such as drought and cold.

But in Europe, while taxpayers' money is still paying to develop useful GM crop traits, taxpayers are not benefitting from their deployment. In contrast, Canada, China, the US and South America are blazing ahead with GM and India is not far behind. The latest figures from the [International Service for the Acquisition of Agri-Biotech Applications](#) report [15 million farmers planting GM crops on around 150m hectares in 2010](#). Many promising GM traits exist, often discovered by academics, but the commercial risks are too great, the costs too high and the rewards too low for the European private sector to invest in taking them forward.

To get around this problem, I suggest that it is now time to establish a private/public partnership to put GM traits into favoured crops. The top priority should be wheat, but barley, potato, rapeseed and tomato should also be supported. We could test which available GM traits actually do something useful in UK varieties, in UK conditions, and then evaluate them for deregulation in the public sector. If the UK were the first European country to wholeheartedly re-embrace the technology, we could attract substantial inward investment.

The argument has to be made that the benefits of the technology far outweigh any hypothetical hazards. We need to think about the cost of *not* adopting GM as well as the risks, and we must not spurn the great opportunities created by embracing it.

- Prof Jonathan Jones is a group leader at the charitably funded Sainsbury Laboratory at the John Innes Centre in Norwich. He co-founded [Mendel Biotechnology](#) in 1997 where he is still a science adviser, and more recently Norfolk Plant Sciences Ltd. He is on the board of directors of ISAAA and is a science adviser to the 2Blades foundation and the Danforth Centre.

<http://www.guardian.co.uk/environment/2011/jul/21/gm-debate>

## Why the World Should Roundup Glyphosate

**Date :** 12 July 2011

A new report by GM Freeze and Greenpeace analysing almost 200 independent and peer-reviewed scientific studies shows that the widely used herbicide glyphosate is far from safe.

Glyphosate is the active ingredient in Roundup, produced by Monsanto. Studies link exposure to glyphosate with cancer, birth defects and neurological illnesses (including Parkinson's). Lab testing suggests that glyphosate can cause damage to cells, including human embryo cells. Studies also indicate that glyphosate can interfere with our hormonal balance.

Evidence also shows that glyphosate can negatively affect rivers and aquatic life, as well as could disrupt nutrients in soil, exposing plants to disease, and could end up contaminating drinking water.

Glyphosate is widely used in the cultivation of Roundup Ready GM crops which are tolerant to the herbicide, allowing for massive spraying of Roundup to eliminate weeds. It has resulted in weeds that are becoming increasingly resistant to glyphosate-based herbicides like Roundup, prompting farmers to use more and more toxic chemicals to fight a new breed of “superweeds”. This escalation in the pesticides “arms race” has put an enormous toxic burden on people’s health and the environment.

The full report is available at:

<http://www.greenpeace.org/international/Global/international/publications/agriculture/2011/363%20-%20GlyphoReportDEF-LR.pdf>

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[www.twinside.org.sg](http://www.twinside.org.sg) To subscribe to other TWN  
information lists: [www.twnnews.net](http://www.twnnews.net)

#### Item 1

### Herbicide Tolerance and GM Crops: Why the world should be ready to roundup glyphosate Greenpeace and GM Freeze

#### Executive Summary

Glyphosate is the active ingredient in many herbicides sold throughout the world, including the well-known formulation, Roundup. Glyphosate based herbicides are used widely for weed control because they are non-selective; glyphosate kills all vegetation.

Glyphosate has been promoted as ‘safe’. However, mounting scientific evidence questions the safety of glyphosate and its most well known formulation, Roundup. The evidence detailed in this report demonstrates that glyphosate-based products can have adverse impacts on human and animal health, and that a review of their safety for human and animal health is urgently needed.

The widespread and increasingly intensive use of glyphosate in association with the use of GM (genetically modified, also called genetically engineered or GE) crops poses further risks to the environment and human health. GM crops specifically engineered to be tolerant to glyphosate are known as ‘Roundup Ready’ (RR). These RR varieties allow farmers to spray the herbicide over

the top of the growing crop, killing virtually all weeds without affecting the crop.

The use of glyphosate on GM RR crops such as soy, maize and cotton has increased dramatically in North and South America, where they are predominantly grown. GM RR crops are marketed by the US agrochemical giant Monsanto, and are associated with its own formulation of glyphosate herbicide, Roundup. Monsanto’s sales pitch to farmers promised, and still does, reduced labour and financial savings by simplifying and reducing the costs of weed control. The reality is turning out to be different, with increasing health, biodiversity and environmental concerns and the development of weed resistance.

Given the problems that are now evident, no new GM glyphosate-tolerant crops should be authorised. In broader terms, GM herbicide-tolerant crops have been developed for an industrial farming model. They are therefore intrinsically linked to unsustainable farming practices that damage the basic natural resources food production is based upon, and their cultivation should be banned.

#### Exposure to glyphosate

People, plants and animals can be exposed to glyphosate and Roundup in many ways. Farmers, bystanders and other operators can be exposed during its application, and neighbouring natural habitats by drift from the area where it is being applied. Aerial application is used on some crops, such as on the vast monoculture plantations of GM RR soya in the Americas, which greatly increases the chances of accidental exposure of neighbouring populations or habitats.

Exposure to glyphosate and Roundup also occurs via their residues, frequently found in food and the environment. The Maximum Residue Levels (MRLs) in food for glyphosate and its breakdown product were agreed by the UN-based Codex Alimentarius Commission in 2006, but appear to be related more to the type of agricultural practices characteristic of each food crop rather than to safety thresholds for human health.

In light of the new scientific evidence on the health and environmental impacts of glyphosate it is essential to re-evaluate MRLs in order to align them with updated safety assessments.

In the environment, glyphosate can be held in the soil by binding to particles but, depending on soil chemistry, can also leach into groundwater. Glyphosate can also wash directly into drains and

surface waters and it has been detected in both. Glyphosate and its degradation product have been detected in studies of drainage surface waters in Canada, the US and Denmark. These findings have implications for surface water quality and drinking water quality.

Given the evidence that glyphosate can cause harm to health and the environment, the leaching of glyphosate has also serious implications for aquatic life. Glyphosate is present in soils, waters and our food as a result of its use as an herbicide. Therefore, rigorous assessment of the safety of glyphosate to plant, humans and animals is of great importance.

### Human health problems related to glyphosate

Independent scientific studies are underscoring the call for an urgent reassessment of glyphosate and its related products. These studies associate exposure to glyphosate with a number of negative effects on human and animal health, including long term or chronic effects:

- Birth defects in the Argentinean state of Chaco, where GM soya and rice crops are heavily sprayed with glyphosate, increased nearly fourfold over the years 2000 to 2009. Similar defects were also found in a woman from Paraguay exposed to glyphosate-based herbicides during pregnancy. These defects were compatible with those induced in laboratory experiments at much lower concentrations than normal commercial glyphosate concentrations.
- Glyphosate is a suspected endocrine disruptor. This means it could disrupt production of vital reproductive hormones, such as progesterone and oestrogen. Published studies demonstrate various endocrine effects in animals and human cells associated with glyphosate.
- Studies of illness patterns in human populations (epidemiological studies) have linked glyphosate exposure to non-Hodgkin's lymphoma (a type of blood cancer) whilst laboratory studies have confirmed that glyphosate and/or its associated products exhibit characteristics typical of cancer causing agents (i.e. genotoxicity or mutagenicity) in animals and both human and animal. Together, these studies suggest that glyphosate may contribute to cancer. Evidence that glyphosate may also affect the nervous system and may even be implicated in Parkinson's disease.

Scientific evidence highlighting these health effects must be taken very seriously. An urgent

reassessment of the health impacts of glyphosate and its related products must take place.

### Glyphosate affects biodiversity

Glyphosate can impact on biodiversity in a number of different ways and can have short and long term, as well as direct and indirect negative effects. Evidence is accumulating that glyphosate can have a damaging impact on aquatic organisms as a result of its normal use in agriculture or forestry. Several studies have suggested that, under close-to-field conditions, glyphosate-based products, including Roundup, have a direct toxic effect on the adults and tadpoles of a range of amphibian species.

Despite these findings, Monsanto still claims that Roundup has 'no adverse effect on aquatic animals' (Monsanto 2010a).

Many aquatic animals - from microscopic algae to fish and mussels - have been found to be affected by exposure to glyphosate and/or Roundup. The observed effects included: shorter life spans and reduced reproductive rates in rotifers (a type of freshwater invertebrate); changes in population structure in phyto- (or plant-) plankton; increased mortality in aquatic worms; and changes in liver cells in carp. A recent study found genotoxic effects in the red blood cells of European eels when exposed to Roundup for a short period.

There is also a suggestion that glyphosate may affect the nervous system of aquatic animals in a manner similar to an organophosphate. Glyphosate can also have a direct impact on non-target plants in the environments where it is used through spray drift or deliberate over spraying. This could lead to the loss of rare or endangered species or an overall reduction in diversity and numbers. Research carried out in the UK on the use of glyphosate on GM RR beet showed significant indirect effects of this form of weed control. These included reduced weed numbers in arable fields and reduced weed seed production both of which are potentially deleterious to species further up the food chain, including threatened bird species, if repeated over a number of years.

'...If GM herbicide-tolerant beet were to be grown and managed as in the FSEs [UK Farm Scale Evaluations 2000- 2003] this would result in adverse effects on arable weed populations, as defined and assessed by criteria specified in Directive 2001/18/EC, compared with conventionally managed beet. The effects on arable weeds would be likely to result in adverse effects on organisms at higher trophic levels (e.g. farmland birds), compared with conventionally managed beet' (ACRE 2004)

It is apparent that glyphosate and its formulated commercial products (e.g. Roundup) can be harmful to species at many stages along the food chain, including the aquatic food chain.

Regulators must ensure that usage of herbicides is safe for wildlife when it is used for purposes it has been approved for. Therefore, the safety of glyphosate to biodiversity urgently needs to be re-assessed.

### **Glyphosate impacts on the soil-plant system**

The impact of glyphosate on soil biodiversity and the soil-plant system is of concern because of the effects observed with GM RR crops. Glyphosate enters the soil by being directly sprayed on it, via the roots of plants that have been sprayed, or from dead vegetation. Importantly, glyphosate affects the rhizosphere – the region of the soil surrounding the roots that is essential to the health and nutrient uptake of the plant.

Surprisingly, the approvals processes for glyphosate and its formulated products around the world, including the EU, currently do not require exhaustive testing of its soil impacts.

Studies of earthworms exposed to glyphosate showed reduced growth rate, reduced cocoon hatching and behaviour to avoid treated areas. Earthworms are vital to soil health so any adverse effect on them is likely to affect soil health.

Independent researchers are now publishing studies showing that glyphosate has an impact on key functions of the rhizosphere. These include:

- Reduction in the uptake of essential micronutrients by crops
- Reduction in nitrogen fixation, resulting in reduced yields
- Increased vulnerability to plant diseases

Such changes can have a direct impact on the health and performance of crops. Plant diseases - such as take-all in cereals, damping off, root rot and sudden death syndrome in soya – are encouraged by the changes in soil biology and chemistry that glyphosate induces. These impacts are of concern to farmers and environmentalists and need to be addressed urgently.

### **Glyphosate and the plague of resistant weeds**

When glyphosate first appeared in the mid 1990s, weed resistance to herbicides as a result of GM RR crops was rarely discussed, although the phenomenon of weed resistance to herbicides was well known. Now, 15 years later, weed resistance to glyphosate is one of the most well documented effects and is a major environmental concern of the cultivation of GM RR crops.

Since the introduction of RR crops, there has been a dramatic increase in the number of weed species exhibiting glyphosate resistance. Glyphosate resistance has now been confirmed in over 20 species, with over 100 resistant strains identified, primarily in the Americas. Many scientists attribute this increase to the over reliance on glyphosate to control weeds in fields of GM RR soya, maize and cotton.

'No-tillage corn and soybean production has been widely accepted in the mid-Atlantic region, favouring establishment of horseweed. Within 3 years of using only glyphosate for weed control in continuous glyphosate resistant soybeans, glyphosate failed to control horseweed in some fields.

Seedlings originating from seed of one population collected in Delaware were grown in the greenhouse and exhibited 8- to 13-fold glyphosate resistance compared with a susceptible population' (Van Gessel 2001)

Controlling glyphosate-resistant weeds in GM RR crops is now a major problem for farmers. Monsanto acknowledges this, and has published guidance on how to deal with the growing weed resistance problems in GM RR crops. Monsanto's recommended strategies include:

- the use of either stronger formulations of glyphosate or of mixtures of glyphosate and other herbicides, e.g. the notorious 2,4-D – one active ingredient of Agent Orange, the defoliant used by the US Army during the Vietnam; and
- producing GM seeds with several herbicide tolerant genes (gene stacking), which would allow other herbicides, in addition to glyphosate, to be sprayed over crops.

These strategies add to the amount of herbicides being used therefore increasing the overall toxic burden from GM RR crops and continue the industrial agriculture treadmill of herbicide usage and resistance. The development of more weeds with resistance to multiple herbicides seems probable. The widespread nature of weed resistance, and the additional herbicides required to control these weeds means that Monsanto's promise of cheaper and easier weed control with GM RR crops has not been delivered.

The toxicological profiles for mixtures of herbicides are not clear. However, it is clear that GM RR crops have brought about an escalation in the pesticides 'arms race' with an increasing toxic burden on the environment and people.

### Conclusion

Recent studies demonstrate that glyphosate-based herbicides, such as Roundup, can have harmful effects to human health and the environment. Exposure of humans to glyphosate has been linked to various health effects including reproductive effects, cancer and neurological effects. Glyphosate interacts with soil chemistry and biology, resulting in a variety of impacts including reduced plant nutrition and increased vulnerability to plant disease. Glyphosate may also leach into surface and groundwaters, where they may damage wildlife and possibly end up in drinking water. Glyphosate and Roundup are far from benign herbicides and a review of their safety for human and animal health and for the environment is urgently needed.

GM RR crops have greatly increased glyphosate usage, especially in the Americas where they are primarily grown. Given the new evidence of glyphosate toxicity, this is of great concern. The rise in glyphosate resistant weeds is associated with GM RR crops, and the escalation in the 'arms-race' against these resistant weeds fuels concerns that even more glyphosate will be used in the future with GM RR crops, in stronger formulations and possibly with additional herbicides. This facet of GM herbicide-tolerant crops should be enough to lead to a ban on their cultivation.

GM herbicide-tolerant crops, as epitomised by GM RR crops, are not part of sustainable agriculture practices. They are part of an industrial agriculture system that involves large-scale monocultures that depend on costly, polluting inputs such as herbicides.

There is no doubt that there is an urgent need to find sustainable solutions to agriculture. As the recent UN/World Bank global assessment of agriculture (IAASTD) recently stated, 'business as usual is no longer an option' (IAASTD 2009b). Sustainable solutions will not come from GM crops, and definitely not from GM herbicide-tolerant crops.

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### Item 2

## The Human Cost of the War on Superweeds

New report from GM Freeze and Greenpeace International links herbicides to cancer, birth defects and water pollution

From flower boxes in city gardens to intensive farming on a massive scale, weed killers are used under the assumption that they are safe. Roundup, one of the most common herbicides, is marketed by US agrochemical company Monsanto as "safe" for the environment and for humans – deadly for weeds. But are all herbicides really as safe as Monsanto and others are telling us?

Whether we live in cities or in the countryside, we are all exposed to herbicides: sometimes from aerial spraying, sometimes through chemical residues in our food and sometimes because of chemical run off from agricultural land into nearby fields, seas or rivers. Recent polls indicate that people want to know more about what this means for our health and the environment.

An extensive survey on attitudes to the environment published by the European Commission last week shows that, across the board, Europeans feel they need more information on chemicals and farming. [1]

One of the things people often do not know is that when the European Union (EU) and other regulators declare a product like Roundup as safe, they rely heavily on research provided by the companies who produce herbicides and whose business it is to sell them. However, a new report by GM Freeze and Greenpeace and GM Freeze analysing almost 200 independent and peer-reviewed scientific studies, mostly carried out in the last decade, demonstrates that herbicides like Roundup are far from benign. [2]

One of the main ingredients of Roundup and several other herbicides is a chemical known as glyphosate. Studies associate exposure to glyphosate with cancer, birth defects and neurological illnesses

(including Parkinson's). Alarming, lab testing suggests that glyphosate can cause damage to cells, including human embryo cells. Studies also indicate that glyphosate may be a gender-bender chemical that interferes with our hormonal balance.

The environmental impacts of glyphosate are not much better. Evidence shows that the chemical has a damaging impact on our rivers and on the animals that live in them. It disrupts nutrients in soil, exposing plants (that are not weeds) to disease and could end up contaminating drinking water.

Of particular concern is the association of glyphosate with the cultivation of genetically modified (GM) herbicide-tolerant crops, known as Roundup-Ready. These crops, which so far are mostly grown in the Americas, are genetically engineered to tolerate glyphosate so that they can survive massive spraying of Roundup to eliminate weeds. The problem is that weeds are becoming increasingly resistant to glyphosate-based herbicides like Roundup.

Resistance to glyphosate has now been confirmed in over 20 weed species, with over 100 resistant strains identified, covering nearly 6 million hectares, primarily in Argentina, Brazil and the U.S. Controlling

these glyphosate-resistant weeds growing amongst GM crops has become a major problem for farmers.

This has prompted manufacturers of glyphosate and GM crops like Monsanto to recommend further increases in the deployment and concentration of herbicides - including the use of chemicals that are even more toxic than glyphosate. This escalation in the pesticides 'arms race' has put an enormous toxic burden on people's health and the environment, creating a vicious circle that is producing a new breed of superweeds.

The EU can no longer ignore growing scientific evidence on the dangerous effects of glyphosate and must start an immediate and extensive review of its use. Given the problems identified so far, no glyphosate-tolerant GM crops should be authorised in Europe or elsewhere. With a major reform of European farming policy just underway, governments need to recognise that the industrial agriculture system where GM crops and chemicals thrive is profoundly unsustainable. Failure to act will threaten food production, jeopardise human lives and put the environment severely at risk. It is time to round up glyphosate for good and embrace ecological farming.

## GE FOOD

### Firms urge EU to allow unapproved GMOs in food imports

**BRUSSELS | Fri Jul 15, 2011 3:05pm EDT**

(Reuters) - Europe's food and drink industry has urged the EU to allow traces of unapproved genetically modified (GM) material in food imports, after similar rules for animal feed imports were approved last month.

The global nature of grain supply chains makes it increasingly difficult and costly for exporters to guarantee that small amounts of GM crops that are not yet approved in Europe don't find their way into cargoes.

The European Union voted in June to allow up to 0.1 percent of unapproved GM in feed imports, following supply disruptions in 2009 when U.S. soy shipments were blocked after tiny amounts of unauthorized GM were found in some cargoes.

"While this [regulation](#) represents a first step in an obvious direction, a necessary second step is that

the scope of the legislation needs to be extended to include food as a matter of urgency," EU industry association FoodDrinkEurope said in a statement. "Like feed producers, food producers are dependent on raw material imports and are therefore confronted with very comparable challenges to feed producers," said the association, which represents Europe's 1 trillion euro (\$1.4 billion) a year food and drink sector. The European Commission said on Friday it would assess the effectiveness of the new regulations for feed imports before making any similar proposal for food.

"Food will be addressed in the future, but we can't give any specific date at this stage," EU health and consumer affairs spokesman Frederic Vincent said. When the rules for feed imports were proposed, a majority of EU governments said they would welcome similar proposals for food.

Some member states — as well as major grain exporters to Europe such as the United States, Brazil and [Argentina](#) — say different EU rules for food and feed are unworkable because global grain supply chains cannot be separated into one or the other.

The problem of unapproved GM material in imports to Europe has arisen because of delays in the EU's authorization process for GMOs, which currently takes up to two years longer than in exporting countries.

This is the first time that Europe's food industry as a whole has called for a tolerance threshold for unapproved GM material in imports destined for human consumption.

In a 2010 Commission survey, 57 percent of EU respondents said they were opposed to GM food. (Reporting by Charlie Dunmore, editing by Anthony Barker)

<http://www.reuters.com/article/2011/07/15/us-eu-gmo-food-idUSTRE76E4GM20110715>

### Produce genetically modified crops after proper assessment

**Kolkata, July 20 : India should produce genetically modified crops and grains after proper impact assessment studies, said an advisor to the National Resource Management Division of the Planning Commission of India.**

"India is cultivating Genetically Modified Organisms (GMOs) like BT Brinjal and BT Cotton. But there is a huge debate on this as risk is involved," Dipayan Dey told IANS.

"Genetic fragmentation, genetic shift can occur if you cultivate these organisms. So, there is a huge hue and cry on whether to cultivate them or not. And there is divided opinion on this," he said.

"We (advisory committee on national resource management) have recommended to the Planning

Commission to introduce GMOs with proper impact assessment studies," he said.

First, its potential should be judged, after that there is a certification programme, and only after certification cultivation will be allowed after field trials, Dey added.

He said these things should be taken care of by the ministry and the implementing agencies.

Dey said even if India did not produce GMOs, other countries would be producing those and the products would invariably enter India as the country did not have ecologically-sensitive goods tracking law.

"If we do not use GMOs, we cannot say that we are very safe. Bangladesh will be producing it, Pakistan will be producing it, China will be producing it, the whole world will be producing it. Those crops and grains will invariably come to India," he stated.

To a question whether India can ban the import of GMOs, Dey said: "You cannot stop importing. You will have to develop resilience and a preventive system. We have to understand whether it is good or bad."

"Ecologically sensitive goods tracking law is not present in India. It is the system that is faulty," he added.

Dey was present at a programme Tuesday of St Michael's Institute of Leadership Education (SMILE) here which, under the aegis of St Michael's Academy, joined hands with Southern Institute of Medical Sciences (SIMS) Group of Institutions to introduce undergraduate courses in biotechnology in West Bengal.

<http://www.newkerala.com/news/2011/worldnews-31465.html>

## GE & AGRICULTURE

### BT Brinjal and Biryani

Raghuvir Srinivasan

Micro-organisms continuously evolve. It is a continuous fight against Nature.

If pests could talk they would probably convey their hatred for him and those of his ilk in language stronger than what the most vociferous anti-biotech activists can summon.

Yet, Ram Kaundinya, CEO and Managing Director, Advanta, hardly comes across as the biotech warrior that he is. Not for him the airs of a multinational's CEO, or the aggression of a businessman in a business that many love to hate.

Ram is genial, soft-spoken and, of course, well informed of all the arguments, for and against the use of biotechnology in agriculture. We are having lunch at the Deccan Pavilion, ITC Kakatiya in Hyderabad on a leisurely Saturday afternoon. We

opt for the buffet which has a lavish spread of local Andhra, Chinese, tandoori and continental cuisine.

### Happy with Jairam's exit?

So, is the biotech industry happy to see the back of Mr Jairam Ramesh from the Environment Ministry, I prod Ram, hoping to catch him off guard as he dips into his bowl of corn and potato soup. He seems to have expected the question because the response is quick and diplomatic: "I'm very unhappy that we couldn't convince him. We never got the opportunity. He's a senior minister in the Cabinet and can still influence policy." The anguish is evident.

Ram calls for pepper and salt to add to the soup which has a strong hint of ginger.

### Europe's rejection of GM

He then starts off with how scientific data is the casualty in biotech arguments which are pegged on emotional appeal and points out how the US has adapted to biotech after assessing it scientifically. But what about Europe, I ask him. Aren't they opposed to biotech in agriculture? That sets him off on an elaborate reply at the risk of his soup running cold. European countries have no compulsion to increase food production given their small populations and smaller growth rates, while it is not the same with India, he says, rattling off figures.

India has just 0.12 hectares of arable land per head while Europe and the US have 0.33 and 0.44 hectares each per head, he points out. This means that we have to maximise yield to feed our growing population. "India can only compare itself with China. Average incomes are so low that we cannot afford high cost food," he adds.

"Why doesn't Europe oppose pharma biotech," he asks, arguing that most of Europe's opposition to food biotech is political rather than scientific. Agri biotech was developed in the US and Monsanto is a global leader at the cost of European companies. Europe anyway uses genetically modified yeast that goes into numerous food preparations, he points out.

Ram is now sufficiently warmed up and intense but remains soft-spoken. "Do you know that in India more than 25 medicines have genetically modified stuff in them," he asks, "why don't activists insist on labelling of medicines?"

We break to get our food. He recommends Hyderabadi *biryani* with *mirchi salan* reassuring me that its vegetarian. I discover he's vegetarian too as both of us pick up paneer kebabs, beans and carrot *poriyal* and *gummadikai iguru*. "Its an Andhra speciality", he tells me as I help myself to the pumpkin dish.

### NGOs and their funds

Food security now assured, I try to provoke him on the subject of NGOs and their vocal opposition to anything biotech. Where do their finances come from, I ask him. "It needs to be investigated. I have thought of filing an RTI to find out the source of funds of the major NGOs and Greenpeace in India but it is something that should be done with the backing of the association," he replies. Ram is chairman of ABLE or the Association of Biotech Led Enterprises-Agriculture Group.

But isn't there something to be said for organic food which is now popular in cities? "I'm not opposed to organic food. There should be choice but it is not right to mandate it," he says pointing out that prices of organically cultivated food will be higher because the yields are low. The *biryani* tastes delicious with the *salan* and I'm tempted to return to the buffet table for a refill but the intense conversation and the waiter just then, emerging with *rotis*, together prevent me.

Ram narrates an anecdote from his public debate last year over Bt brinjal with Mr Pushpa Bhargava, former head of the Centre for Cellular and Molecular Biology and an eminent biotechnologist himself. "I asked Mr Bhargava how being a biotechnologist himself, he was opposing Bt brinjal, the reply to which was that he was opposed to those who were providing the technology," Ram says. That these are multinationals is more cause for opposition than the technology itself.

### Educating people on biotech

I ask him if the industry has missed a trick by failing to effectively educate people on the advantages of biotech and that it is not all about genetic modification (GM) alone. Molecular marker technology and plant breeding have been practised in India for a long time and are accepted tools of biotechnology.

Ram graciously concedes that the industry may have failed to get its point across well enough and narrates an incident about how he once ran into Mr Sitaram Yechury and discovered that the latter thought biotech and GM were the same. "If a senior member of Parliament is not clear about this, then there is something surely wrong with our efforts to educate people", he says.

We return to the buffet for dessert now. Ram looks warily at the spread but encourages me to dive into it and I oblige by picking up a piece of chocolate cake, brioche chocolate pudding and a small cup of rabri falooda. "At my age I have to watch what I eat but not you," he says as I wonder if there was a touch of regret there.

We return to the contentious subject of GM and he speaks of how drought tolerance and salt tolerance genes in seeds can help India, given their dependence on the monsoon and the large 20 million hectare of saline land. But is it not possible to do this with molecular marker technology, I ask. "GM is a more precise science and is faster compared to traditional plant breeding," replies Ram, an agricultural sciences graduate and MBA from IIM, Ahmedabad.

Hailing from Kakinada, Ram spent more than two decades in the pesticide industry and about six years in a seeds company that was eventually taken over by Monsanto. He joined Advanta in 2006 when it was acquired by the United Phosphorus group.

Isn't there an inherent contradiction in a pesticide company acquiring and nurturing a biotech business whose main objective is to control pesticide use? "There are some conflicts that come, but then there are always other pests to kill!"

Is it possible that genetically modified plants lose their protection from pests due to evolution? Ram says it is quite possible: "Micro-organisms continuously evolve. It is a continuous fight against Nature".

#### Keywords:

[Ram](#), [aundinya](#), [Advanta](#), [biotech](#), [agriculture](#), [Food security](#), [Bt brinjal](#), [Pushpa Bhargava](#), [genetically modified plants](#), [table talk](#)

<http://www.thehindubusinessline.com/opinion/article2282065.ece>

### Prominent agriculture figure says GMOs do not belong in Africa, organic biodiversity is the way

Tuesday, July 26, 2011 by: Ethan A. Huff, staff writer

(NaturalNews) Genetically-modified organisms (GMOs) do not belong anywhere on the continent of Africa, and the only groups pushing for their implementation are multinational biotechnology companies like Monsanto whose insatiable lust for new "frankencrop" markets is never satisfied. These are essentially the words of Anne Maina, advocacy

coordinator for the international charity organization African Biodiversity Network, in response to recent proposals by stakeholders of the Zambian government to introduce [GMOs](#) in that country.

"Everything that genetic engineering has claimed to offer can readily be achieved through safer methods such as non-GM breeding, intercropping and creative innovation," wrote Maina in an email statement to *The Post Online*. "We do not believe that top-down technological solutions will solve the many challenges that Kenyan [farmers](#) face. This one-size-fits-all solution cannot attend to our varied needs."

Monsanto's marketing materials, of course, tell a different story entirely. The company's lofty and deceptive claims about its products make it seem as though farmers everywhere are literally chomping at the bit to get their hands on the latest variety of GM soy or [corn](#). But according to Maina, this could not be further from the truth.

"Eighty percent of Africa's small-scale farmers depend on seed saving, so patented [crops](#) present a threat to their [food](#) security and way of [life](#)," said Maina. "We have clearly seen how farmers who grow a diversity of crops using [organic](#) farming techniques become much more food secure than on conventional or GM varieties, where expensive seeds and chemicals must be purchased each season."

Not only are [biotechnology](#) companies at the helm of the [GMO](#) agenda, but so is the US [government](#), according to leaked documents released back in December. These documents explain how the Pentagon's AFRICOM military command post has been tasked with seizing control of Africa's [natural](#) resources, and also paving the way for the proliferation of GMOs there — this clearly illustrating the intimate relationship between the US government and the biotechnology industry ([http://www.naturalnews.com/030683\\_G..](http://www.naturalnews.com/030683_G..)).

"The push for GM crops in Kenya has not come from the farmers," added Maina, concerning the recent introduction of GM corn there. "It has come from the GM [companies](#) desperate for new markets in [Africa](#) after their wholesale rejection in Europe. Africa is not the place for GM crops."

[http://www.naturalnews.com/033128\\_GMOs\\_Africa.html](http://www.naturalnews.com/033128_GMOs_Africa.html)

This monthly bulletin is brought out by Southern Action on 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 Orissa. 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 educational materials.