



Monthly Bulletin  
on Genetic Engineering  
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*For details:*

**South Against Genetic Engineering (SAGE)**

101, Kishan Residency, Street no: 5, Begumpet, Hyderabad- 500016, A.P.

email: [ddshyderabad@gmail.com](mailto:ddshyderabad@gmail.com)

net edition: [www.ddsindia.com](http://www.ddsindia.com)



## Contents

### ***National News***

1. **GEAC clears limited field trials of GM corn**
2. **Monsanto in the dock!**
3. **Former Dean of a Medical College warns about GM crops**
4. **GM Brinjal bids to sneak in!**
5. **New research finds, Bt affects soil microbes**

### ***Legal Issues***

6. **Apex Court urges caution!**
7. **India lax in GM trial regulation!**

### ***GE crops & Health issues***

8. **GE crops affect fertility in animals**
9. **Labelling GM food: Health Ministry passes buck to FSSA**
10. **Jeffrey Smith debunks modified foods**

### ***GE issues around the World***

11. **Tighter labelling of GMO products and GMO-free zones in the Nordic Region**
12. **Pampering purple GMO Tomato!**

## National News

### 1. GEAC clears limited field trials of GM corn

The Genetic Engineering Approval Committee (GEAC) has permitted Monsanto India Ltd to conduct limited field trials of corn hybrids that are genetically modified (GM) to confer resistance to the corn borer insect pest and application of its 'Roundup' herbicide, according to highly placed sources. The sources said the clearance for 'bio-safety research level-1 field trials under confined conditions' of the GM corn (maize) hybrids was granted at GEAC's meeting last week.

"It basically allows the company to carry out bio-safety trials in one-acre plots at select State Agricultural University-owned farms. These will be followed by level-2 trials on bigger 2.5-acre plots, which would then set the stage for large-scale trials on farmers' fields. It will probably take 3-4 years for the product to be finally released for commercial cultivation", they added.

During 2007-08, Monsanto India reported a profit after tax of Rs 54.30 crore (excluding profits from divestiture of product lines) on net sales of Rs 363.54 crore. The bulk of the company's sales come from two businesses – hybrid corn seed and 'Roundup' herbicides.

Through GM corn, the company would be looking to boost sales of its seeds as well as herbicide formulations. With farm labour becoming increasingly costly as well as unavailability, there is obviously potential for replacing manual weeding with herbicides, the marketing for which is growing annually by 15-20 per cent," the sources pointed out.

### 2. Monsanto in the dock!

<http://www.livemint.com/2008/10/30000949/Monsanto-battles-biopiracy-cla.html>

India is asking the local arm of multinational Monsanto Co. to pay a royalty for genetic information that forms the basis of a genetically modified seed sold by the firm here because it believes this information is that of bacteria found in Andhra Pradesh.

The Andhra Pradesh Biodiversity Board, a statutory body set up by the Union government

under the Biological Diversity Act, 2002, is seeking royalty payments from Monsanto India Ltd for genetic information it alleges was "stolen" from *Bacillus thuringiensis* (Bt) bacteria found in the soils of Mahanandi village in Kurnool district. This bacteria strain, claims the board, was then used in developing Monsanto's genetically modified, bollworm-resistant Bt cotton seeds sold in India.

A Monsanto executive in charge of sales of its Bt cotton seeds strongly denied the allegation. "There is absolutely no Bt research which Monsanto is doing in Andhra Pradesh. All Bt research was done in the US," said Raj Ketkar, deputy managing director of Mahyco Monsanto Biotech Ltd, a 50:50 joint venture between Monsanto Holdings Pvt. Ltd and Maharashtra Hybrid Seeds Corp. (Mahyco), which sells Bt cotton seeds in India. Ketkar added that "several" of the "more" than 23 Indian firms to which Mahyco Monsanto sub-licenses Bt cotton sales rights have breeding research facilities in Andhra Pradesh. "Through what is called as breeding research, these companies cross the parent US Bt cotton seed, which Monsanto developed and provided them, with local disease-resistant varieties of cotton to develop hybrid seeds, which are then sold in India," he said. All firms to which Mahyco Monsanto has sub-licensed sales rights for Bt cotton pay royalties to it.

"We are seeking 1-2% of sales revenue earned from the sale of Bt cotton (seeds) as royalty and we have had discussions with the company regarding the same," said R. Hampaiah, Chairman, Andhra Biodiversity Board. He further said that Bt bacteria found in the soil of Mahanandi in Kurnool district in Andhra Pradesh has been used in developing the indigenous version of Bt cotton capable of resisting Indian bollworm strains. Dubbing Monsanto's act "bio piracy", he claimed the company was also using the same technology for developing pest-resistant versions of maize and tomato.

“Monsanto denied stealing any genes but admitted that information regarding the genetic sequence of the Kurnool Bt was used,” he added. “All we are seeking is benefit sharing.” According to Hampaiah, while Monsanto was not willing to consider royalty payments, it offered to build roads and contribute to other physical and social infrastructure in the Mahanandi area as part of benefit sharing, which, he said, was not adequate in the board’s assessment.

If Monsanto doesn’t comply, Hampaiah added, the board will seek legal action. Lawyers representing the board are in the process of consulting legal experts in the US where Monsanto has a patent relating to Bt cotton, he said, claiming a legal case against Monsanto could be filed in the next couple of months. The genetically modified seeds have come under fire from environmental groups and consumer organizations that allege that they “contaminate” existing cotton strains and are overpriced.

### 3. Former Dean of a Medical College warns about GM crops

<http://www.expressbuzz.com/edition/story.aspx?Title=Opposition+to+Genetically+Modified+crop+grows&artid=5ZNndDRJZNg=&SectionID=lifojHIWDDUU=&MainSectionID=lifojHIWDDUU=&SEO=Dr+C+N+Deivanayagam:+Genetically+Modified+vegetabl&SectionName=rSY%7C6QYp3kQ=>

Medical practitioners, biotechnologists, farmers and traders are worried over the threat of unhealthy Genetically Modified vegetables making their way into the market.

Voices urging the Centre to prevent entry of these vegetables into the Indian market were raised at a Greenpeace press meet here.

Former Dean, Sri Ramachandra Medical College, and non-official member of Union Council for Research in Ayurveda and Siddha, Dr C N Deivanayagam said allowing GM crops could spell trouble for India.

Even the field trials for producing GM crops pose a risk to the environment and health, as they are open-air experiments and untested GM seeds could cross-pollinate, contaminating

neighbouring crops. Since a GM crop cannot be differentiated from a regular crop, there is a high risk of untested GM seeds or crops getting mixed up with other seeds and grains and entering the food chain, the experts addressing the press meet said.

Dr Sultan Ismail, Professor in Biotechnology, New College, Chennai, said toxic compounds would be retained in plants and transferred to humans when consumed.

“It is actually Genetic Manipulation at the cost of innocent men and women,” he said, adding that people needed safe food and had a right to choose what they wanted to eat.

Dr Ramalingam, President, Indian Medical Practitioner’s Cooperative Pharmacy and Stores Ltd, said the quality and action of a herb would be changed irreversibly and would cause chaos in new formulations and drug approvals. Dr Sivaraman, member of the National Siddha Pharmacopoeia panel said the eyes of those espousing GM varieties had now fallen on even herbs and that was a real threat. “It could annihilate our traditional medicine in no time.” Vellaiyan and Vettavalam Manikandan spoke on behalf of traders and farmers. The point raised was, “What was the need for GM crops in India?”

### 4. GM Brinjal bids to sneak in!

<http://www.expressbuzz.com/edition/story.aspx?Title=Gene-altered+brinjal+may+sneak+in:+Greenpeace&artid=3/ORkDa17Co=>

Genetically Modified vegetables, carrying with them health hazards, could soon make it to markets if the Union Government does not intervene, the Greenpeace warned on Thursday. GM Brinjal could be the first to sneak in. Practitioners of Indian and allopathic medicines, biotechnologists and representatives of farmers’ and traders’ bodies spoke on the threat of GM food crops at a press meet here.

Jai Krishna, campaigner for Sustainable Agriculture with Greenpeace, said GM brinjal was in the final leg of field trial. “If there is no government intervention now, the variety may hit the market quietly within three months,” he

said. Brinjal has passed large-scale field trial stage and though the biosafety of the crop has not been independently verified, the government hopes to go ahead with the commercialisation of Bt Brinjal.

Greenpeace warned that Rice, Mustard, Potato, Groundnut, Cabbage, Pigeon pea, Okra, Tomato and Cauliflower were in various stages of trials and all these could be out in the market if the government did not step in now. GM crops remain mired in controversy. An assessment by UN and the World Bank released this year acknowledges that genetically engineered crops are highly controversial and do not address key problems of climate change and biodiversity.

Globally, GM food has been banned or restricted in the EU, Japan, S Korea and many countries in Africa. In Tamil Nadu, the TN Agricultural University has been conducting field trials for Monsanto- Mahyco for the past one year.

## 5. New research finds, Bt affects soil microbes

[http://www.downtoearth.org.in/full6.asp?foldername=20081031&filename=sci&sec\\_id=12&sid=1](http://www.downtoearth.org.in/full6.asp?foldername=20081031&filename=sci&sec_id=12&sid=1)

It does kill the nasty bollworm. What about friendly microbes?

Transgenic crops come with a range of biosafety concerns, which are contested because the discussion of such crops is highly polarized. Researchers of the Indian Agriculture Research Institute (IARI), in a recent study, said Bt-cotton may affect soil microbes and nutrients available to the plants. "The Bt toxin has the potential to enter the soil through root secretion and from decaying roots where it comes in direct contact with soil microbes," said Keshav Raj Kranthi, senior scientist at the Central Institute for Cotton Research in Nagpur.

The researchers compared the behaviour of microbes in soil under Bt cotton varieties and non Bt cotton varieties, both developed by Mahyco Research Centre. They found lower activity of certain soil enzymes (called dehydrogenase) in the soil growing Bt cotton compared to that with non-Bt cotton. Dehydrogenase enzymes indicate microbial population in soil; a drop in their activity means partially inhibited microbial activity, the study said.

In terms of nutrient availability, the study found Bt cotton soil had lower mineral nitrogen than in non-Bt cotton soil. The researchers said Bt cotton has the tendency to take up more nitrogen compared to non-Bt cotton. Reduced microbial activity could have also affected nitrogen availability in soil as the microbes make nitrogen available to plants, the scientists said.

## Legal Issues

### 6. Apex Court urges caution!

<http://www.deccanherald.com/Content/Oct212008/national2008102096346.asp>

The Supreme Court on Monday directed the Centre to restrict the import of genetically-modified food stuffs containing living modified organisms without examining their contents.

A bench headed by Chief Justice K G Balakrishnan said the Genetic Engineering Approval Committee (GEAC), a regulatory body under the ministry of environment and forests, would scientifically examine the genetically-modified food stuffs and crops before allowing their sale in the country.

The Court said till the implementation of the Environmental (Protection) Act, 1986, the GEAC would be the apex scientific body to regulate gene technology and micro-organisms to protect health, environment and nature. In a petition against the introduction of GM crops in India, social activist Vandana Shiva had sought court direction to ban the import of GM food till the implementation of the law protecting the Indian gene pool.

Advocate Pinki Anand said the government order was against the objects and reasons of the Environmental (Protection) Act, 1986. "The net effect of the notification is that GM foods/substances which have been scientifically proven to pose serious health hazards to the

public will be permitted in the country without even seeking minimum mandatory approval by the GEAC," she argued. Shiva had moved the apex court in 2006 seeking a ban on GM crops in any form in the country till a regulatory framework was put in place.

## 7. India lax in GM trial regulation!

<http://www.scidev.net/en/news/indian-government-accused-of-gaps-in-gm-trial-regu.html#>

The Indian government has drawn criticism from civil society organisations over gaps in regulating trials and safety data on genetically modified (GM) crops in recent months.

The international nongovernmental organisation Greenpeace told reporters last week (15 October) that India's monitoring and enforcement of GM crop trials "are in shambles". They say state governments often have no knowledge of field trials being conducted and biosafety tests are being increasingly outsourced to private firms, with no evidence of government oversight.

India is currently testing 56 GM crops, including 41 food crops, developed by public and private institutes. Genetically modified Bt cotton, containing a gene that is lethal to bollworm pests, is the only GM crop grown commercially in India. GM aubergine, mustard, rice and tomato are undergoing trials.

But a senior official at India's Genetic Engineering Approval Committee (GEAC), which clears trials of GM crops, told SciDev.Net

that regulatory standards were being maintained. GEAC has authorised state agricultural universities to regulate GM crop trials in their respective states "and so far we have found them to be competent in their job", she says.

Trials of Bt rice in the central Indian state of Jharkhand also came under sharp criticism by the Delhi-based nongovernmental organisation Gene Campaign in September. Gene Campaign's convener, Suman Sahai says an independent survey of the trial sites by her organisation reveals serious gaps in the methods of the Maharashtra Hybrid Company (MAHYCO), an Indian partner of biotechnology company, Monsanto.

Especially worrying, says Sahai, is that Jharkhand is home to rich rice biodiversity that could be seriously affected by contamination with GM crops. Indian government officials and MAHYCO did not respond to Sahai's charges made public last month (September 16). The Indian government has proposed that a National Biotechnology Regulatory Authority (NBRA) be set up as a 'single-window clearance system' for all genetically modified crop and medicinal products. A draft bill on the NBRA is in circulation for comments.

But Pushpa Bhargava, former director of the Hyderabad-based Center for Cellular and Molecular Biology and appointed by an Indian court to the GEAC in August, told SciDev.Net that setting up a new body is meaningless, "without first identifying what is wrong with the existing regulatory system and the remedies".

## *GE crops & Health Issues*

### 8. GE crops affect fertility in animals

**A recent study released by the Austrian Scientists reveal** a link between GM maize and reduced fertility after conducting a series of trials on mice

<http://www.farmersguardian.com/story.asp?storycode=22553>

The study, commissioned by the Austrian Government, looked at reproductive behaviour in mice fed on pest-resistant GM maize and

found a significant reduction in the number of offspring produced.

The maize in question was produced by Monsanto and is currently approved for food and feed in a number of countries including the US, Argentina and South Africa. The link of the story is provided here below.

<http://www.farmersguardian.com/story.asp?storycode=22553>

The link of the original article which is in German language is provided here

<http://www.ages.at/ueber-uns/presse/pressemeldungen/klarstellung-zu-neuen-erkenntnissen-zur-fuetterung-mit-gvo-mais/>

### The Indian Scenario

Aruna Rodrigues (Petitioner No1 to the SC [Supreme Court] of India with co-petitioners Rajeev Baruah, PV Satheesh and Devinder Sharma,) has just returned from an investigation in four villages in the area of Hissar, of about 20 village house-holds. She was accompanied by two experienced vets from Anthra, Pune.

The findings are deeply worrying & serious. They include reproductive problems in buffalo and shepherd herds of sheep and goats (reduced fertility, aborted fetuses, premature deliveries and calf deaths), toxic effects leading to sudden unexplained deaths, as well as reduced milk yields and fat content.

The allergenicity incidents are more easily correlated to the Bt cotton harvesting season and cotton-picking. So also reduced milk yields are more easily identified with the introduction of Bt cotton and feeding with Bt cotton meal and boiled Bt cotton seed, given to milch cattle to increase milk yields and fat content. Instead of a rise in both, as winter approaches, there is a marked reduction of an average of around 25%.

These reports are in common with those reported earlier from Maharashtra, Andhra, MP & Punjab over the last few years. Yet, it is curious that the GEAC has consistently ignored farmers and their experience and knowledge of their fields, soil, animals, children and their labour.

The refusal to undertake anything less than the most exhaustive and rigorous investigation through long term rat feeding studies and other measures is a clear indication of their pro GM agenda at the expense of public health and the environment. This is directly attributable to the proven conflict of interest within the GEAC and the official Government policy to promote GM crops.

The Indian Government does not subject GMOs to sound bio-safety studies and

rigorous, long term risk assessment. The Nation is greatly imperilled by their unscientific approach. A moratorium has been called for in the Supreme Court.

### 9. Labelling GM food: Health Ministry passes buck to FSSA

<http://www.financialexpress.com/news/labelling-of-gm-food-health-ministry-passes-on-the-buck-tofssa/372849/2#>

Mandatory labeling of genetically modified (GM) food in India is likely to be delayed as the Union Health Ministry has planned to pass on the responsibility to the newly set up autonomous Food Safety and Standards Authority (FSSA).

In March, last year, the committee of experts and stakeholders constituted by the Union health ministry under the chairmanship of the additional director-general of the National Institute of Communicable Diseases, Shiv Lal, had unanimously recommended mandatory labelling of all GM foods irrespective of the threshold level.

More than a year has lapsed. The panel recommendations on a vital issue like mandatory labelling of GM food has not been implemented due to pressures from the biotech industry and the US, which had cited reasons for hampering global trade. Making several excuses for the delay, the Union health minister, Anbumani Ramadoss speaking to FE said, "We have decided to pass on the recommendations of the panel to FSSA to decide on the issue. I am of the view that all food items should be labelled disclosing its ingredients." The FSSA was set up in July this year, with PI Suvrathan as its chairman and G Balachandran as its chief executive officer. Under the Food Safety and Standards Act - 2006, the FSSA has powers to regulate GM food. The Genetic Engineering Approval Committee (GEAC), which has exclusive powers to regulate all GM products under the Environment Protection Act-1986 and EP Rules-1989, has also not been proactive on the issue of labelling of GM food, even though the annual amendments to the Foreign Trade Policy made in April 2006 had said that unlabelled GM products' import would attract penal action under Foreign Trade

(Development and Regulation) Act-1992. Already several NGOs have brought to notice cases of unlabelled GM products being imported.

Ramadoss said that he was not satisfied with the FSS Act- 2006 and that his ministry table a bill in Parliament for amending certain provisions. "The draft bill, which subsequently became an Act of the Parliament, was drafted and piloted by the promoter agency, the ministry for food processing industries (MFPI) and therefore has some lacunae. The MFPI insisted that it would anchor the FSSA and it was finally decided that it would be supported by the health ministry," he said.

Regarding multiplicity of food laws unified under FSS Act-2006, he said that his ministry was notifying, from time to time, such laws under the Act. Meanwhile the Union ministry for science and technology is gearing up to table a bill in the Parliament for setting up of the National Biotechnology Regulatory Authority (NBRA) replacing the GEAC. It has proposed that NBRA would be anchored by the promoter agency, department of biotechnology (DBT) and would regulate all aspects of transgenic technology, including the labelling of GM food.

## 10. Jeffrey Smith debunks modified foods

[http://www.leadertelegram.com/story-news\\_local.asp?id=B11ST29JG1P](http://www.leadertelegram.com/story-news_local.asp?id=B11ST29JG1P)

Genetic pollution could last longer than nuclear waste and global warming, said Jeffrey Smith, author of "Seeds of Deception," Monday night at The Forum at UW-Eau Claire's Zorn Arena.

It would be impossible to recall genetically modified mosquitoes or salmon once they're released into nature.

Much of the foods we eat - such as soy, corn and canola oil - have been genetically modified to withstand herbicides and pesticides, creating new organisms that never existed before. And they might be causing major health risks, Smith said.

"They put genes from bacteria and viruses into crops," Smith said.

Scientists have warned of allergens, toxins, new diseases and nutritional problems caused by genetically modified organisms (GMOs), but the U.S. Food and Drug Administration overruled the scientists' findings and deemed the foods safe, said Smith. In working with scientists, he said he's identified 65 different health risks related to GMOs.

Lab rats refused to eat genetically modified tomatoes, and squirrels in the wild will choose organic corn over genetically modified crops. Smith calls that phenomenon the "wisdom of animals." The process of genetically engineering potatoes made lab rats sick in one UK study, causing excessive cell growth, and animals have become sterile or even died after eating genetically modified crops, said Smith.

GMOs might be harmful to humans for many reasons. What scientists intended to change in an organism may not turn out how they expected, Smith said. The protein might be different than they intended, or it might rearrange once it's in the crop and generations later might mutate into something else.

Early science suggested soil-dwelling toxic bacteria would be destroyed during digestion, but Smith says that's not true. Tests have shown the bacteria survive digestion, and genes from GMOs might transfer to humans' gut bacteria and own DNA.

"Long after we stop eating GM foods, we may have visitors that have moved in," he said.

The effects on humans who consume these kinds of foods is not known. No human clinical trials have ever taken place, but Smith suggested that the increase in genetically modified foods might be connected to a decrease in general health among Americans.

Perhaps autism, diabetes, obesity and cancer have some links to GMOs, Smith said.

But it's not too late to change habits and eventually the market, Smith told the crowd at Zorn Arena. Europe has taken steps to limit GMOs, and Americans made conscious

decisions not to purchase milk with bovine growth hormones, turning around the milk market.

People can use non-GMO shopping guides, buy foods that are organic or carry a non-GMO label, and avoid at-risk ingredients such as packaged meals that include soy, corn and canola products, which also include ingredients such as high fructose corn syrup,

salad dressings and cooking oils. "It makes me not really want to eat food," said, Inga Witscher, an organic farmer in Osseo. Her mother, Cynthia Witscher, a registered nurse in Eau Claire, said perhaps she's personally seen the health effects of GMOs. Even as a vegetarian, but not someone who ate strictly organic foods, she had colon cancer. "My doctors said, 'How could this happen?'"

## *GE issues around the world*

### **11. Tighter labelling of GMO products and GMO-free zones in the Nordic Region**

<http://www.norden.org/webb/news/news.asp?id=8240&lang=6>

What effect do genetically modified organisms (GMO) have on animals and humans? We don't know enough about it. For that reason the Nordic Council now calls for GMO-free zones and tighter labelling of GMO products in the Nordic Region. There is considerable anxiety about what GMO manipulated food may lead to", said Elina Linna, one of the proposers from the Citizens' and Consumer Committee in the Nordic Council.

Setting up GMO-free zones in the Nordic countries could give the region a competitive advantage by producing organic GMO-free products. Moreover, it will give the Nordic consumers the opportunity to make conscious consumer choices, as long as the products they buy are properly labelled.

Therefore, the Nordic Council at its Session in Helsinki on Wednesday 29 October agreed that the Nordic governments should report on the opportunities for tightening current norms and regulations for the labelling of GMO products.

### **12. Pampering purple GMO Tomato!** <http://www.naturalnews.com/024658.html>

In what appears to be an attempt at softening the public's attitude toward genetically-modified organisms (GMOs), British scientists

have engineered a purple tomato, rich in antioxidants, by splicing certain genes from the snapdragon flower with those of a tomato in order to create a "super tomato" that they say may fight cancer. Cancer-prone mice that lacked the p53 gene, also called the "genome guardian", were fed the altered tomatoes in a scientific study and were shown to live an average of 40 days longer than other p53-deficient mice on a standard diet. But do these findings tell the whole story?

Of the hundreds of worldwide sources that reported these findings, some honestly side-noted that natural tomatoes already have cancer-fighting properties, also mentioning that natural, unmodified fruits such as blackberries, blueberries, currants, and a host of other dark red and dark purple fruits already contain high levels of cancer-fighting anthocyanins. Others were not so forthright, shrouding nature in inferiority as this "franken-fruit" was hoisted to miracle status. One writer begins her report on this study by declaring, "Now that we have tried and failed to win the cancer war, it's time to change our strategy. A new study suggests that eating a new genetically modified tomato may help prevent many types of cancer."

This same writer later contradicts herself by mentioning that natural fruits and vegetables with high levels of anthocyanins also provide protection against cancer (even though the cancer war has already been lost, according to the author), but states that it takes many more servings of these natural fruits and vegetables to achieve the same effective benefits of this genetically-modified tomato. But is this actually true? On what basis is she making this claim?

While it is true that the typical Western diet is deficient in nutritional foods, including antioxidant-rich fruits and vegetables, the conclusions drawn from this study by both the scientists who performed it and most of the journalists reporting on it are ultimately ill-informed and deceptive, favoring this engineered "fruit" that even the scientists themselves wouldn't eat over natural fruits and vegetables that are readily available and far superior to anything that man creates in a lab. Interestingly, no mentions were made in any of the articles about natural, organic purple heirloom tomatoes that already exist, have high levels of anthocyanins, and are perfectly safe and nutritious for both humans and mice.

Credit is due to the many reporters who did at least admit the cancer-fighting properties of fruits and vegetables in general, considering the FDA doesn't even believe that food and nutrients play a role in health promotion and disease prevention.

In conclusion, there was absolutely no reason to fund and conduct the research, creation, and experimentation of a genetically-modified "super tomato" when we already have the real thing. Genetically-modified foods of any kind are dangerous, untested, and shouldn't be touched with a ten foot pole. Thanks, but no thanks.

**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 educational materials.**