



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

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### **Keep Basmati rice areas free from GM crop trials: Indian commerce ministry**

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NEW DELHI - The Union commerce ministry has decided to intervene and ask the Genetic Engineering Approval Committee (GEAC) not to approve field trials of genetically modified (GM) crops in Basmati rice growing states of Punjab, Haryana, Uttarakhand and western Uttar Pradesh.

The consensus emerged at a recent meeting of stakeholders convened by the commerce ministry. The meeting among others were attended by the chairman of Agricultural and Processed Food Export Development Authority (Apeda), Sashi Sareen of Export Inspection Council of India, advisor to the department of biotechnology, KK Tripathi and representatives of the All India Rice Exporters Association (Airea).

The meeting also decided to ask GEAC not to approve field trials of GM crops in all the 60 agri export zones (AEZs). Apeda has been asked to submit a detail list of 60 AEZs.

Speaking to FE, the Airea executive director, Anil Adlakha said, "We are neither against nor in favour of GM crops. Our concern is maintaining the country's export prospects. Recently when the US and Chinese rice were contaminated with GM trace, major importing countries refused rice consignments from these two countries. The US rice industry is reeling under heavy losses. We do not want such a situation to occur in India."

Saying that the exporters' concern was to keep all AEZs safe from any possible contamination by GM crop field trial, Adlakha said, "We suggested a transparent and scientific procedure for such field trials and that the GM crop field trials should be conducted under a validated event-specific protocol and in a transparent manner. The trials should be conducted by a lead scientist whose details should be disclosed," he said.

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## **Genetically modified crops add new layer to Indian farming**

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By Neil Schoenherr

*The arrival of genetically modified crops has added another level of complexity to farming in the developing world. Glenn D. Stone, Ph.D., professor of anthropology and of environmental studies, both in Arts & Sciences, has completed the first detailed anthropological fieldwork on these crops and the way they impact – and are impacted by – local culture.*

The study, published in the February issue of *Current Anthropology*, focuses on cotton production in the Warangal District of Andhra Pradesh, India, one of the nation's key cotton-growing areas. There, Stone found several factors affecting farmers' ability to adjust to new developments by practical methods. Among them are the speed of change, the overwhelming number of choices in the seed market and the desire for novelty — all of which lead to lack of proper seed testing by farmers.

There is a rapidity of change that the farmers just can't keep up with," Stone said. "They aren't able to digest new technologies as they come along. In Warangal, the pattern of change is dizzying. From 2003 to 2005, more than 125 different brands of cottonseed had been sold. But the seeds come and go. In 2005, there were 78 kinds being sold, but only 24 of those were around in 2003."

Bt cottonseed, genetically modified to produce its own insecticide, was introduced in India in 2002. Between 2003 and 2005, the market share of Bt seed — created through collaboration between Monsanto Co. and several Indian companies — rose to 62 percent from 12 percent.

Stone's research reveals that the increase resulted not from traditional farming methods of testing seed for efficacy, but from a pattern of "social learning" — farmers relying on word of mouth to choose seeds.

"Very few farmers were doing experimental testing, they were just using it because their neighbors were," Stone said. "There has been a breakdown in the process of farmers evaluating new seed technologies."

While Bt seed exacerbates the problem by creating yet another option, the farming troubles predate its introduction. In the late 1990s, there was an epidemic of farmer suicide in the Warangal District. Many farmers are deeply in debt and have been for generations.

Stone's study shows that a problem of recognition contributes to those woes. The farmers' desire for novelty leads to rapid turnover in the seed market. Seed firms frequently take seeds that have become less popular, rename them and sell them with new marketing campaigns, Stone said.

"Many different brands are actually the same seed," he said. "Farmers can't recognize what they are getting. As a result, the farmers can't properly evaluate seeds. Instead, they ask their

neighbors. Copying your neighbor isn't necessarily a bad thing; but in this case, everyone is copying everyone else, which results in fads, not testing."

Stone argues that the previously undocumented pattern of fads, in which each village moves from seed to seed, reflects a breakdown in "environmental learning," leaving farmers to rely on "social learning." Stone refers to this situation as "de-skilling."

"The bottom line is that the spread of Bt cotton doesn't so much reflect that it works for the farmers or that the farmers have tested it and found it to be a good technology," Stone said. "The spread more reflects the complete breakdown in the cotton cultivation system."

[www.record.wustl.edu](http://www.record.wustl.edu)

**Preliminary Assessment study on sheep mortality grazing on Bt-cotton fields in Warangal district, Andhra Pradesh- February 2<sup>nd</sup> 2007**  
**Anthra<sup>1</sup> and A.P. Sheep and Goat Federation**

- **Background**

There were reports in the newspaper in the lat week of January 07<sup>2</sup> of Sheep mortality in sheep flocks in a few villages in Warangal, after grazing on Bt-cotton fields.

A team comprising Veterinary doctors from Anthra, and representatives from the AP Sheep and Goat Federation, visited the village to investigate this report further on s<sup>nd</sup> February '07

- **Objective:** *To investigate and study the reports of Sheep Mortality due to grazing on Bt cotton fields in Warangal district.*
- **Study Team :**

Anthra:

Dr.S.Ramesh, Veterinary Scientist. MVSc.  
 Mr.Appa Rao, Animal Health Worker

A.P. Sheep and Goat federation- Mr.Jamaliah, President

- **Date of visit - 2<sup>nd</sup> Feb. 2007**
- **Villages visited:**

S. No	Village Name	Mandal Name	Total shepherd in village	Total shepherds with whom we	Flock visits	Animals examined	Grazing history	Symptoms observed
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<sup>1</sup> B-135 Sainikpuri, Secunderabad-500094. Andhra Pradesh , India

<sup>2</sup> Andhra Jyothi, January 31<sup>st</sup> 2007

				interacted				
1	Gummadavelli	Lingala Ghanpur	30	10	5	25 1-2 years age  Animals showing symptoms- 7  Temperature taken	Day of examining 2/3 <sup>rd</sup> days of grazing on BT fields	Inactive, dull, diarrhea-brownish, mucous, no smell (only 2 showed this) nasal mucopurulent discharge swelling of eyes cough  No fever
2	Uppigal	Zabharhad	80	11	4	4 1-2 years of age  All four showing symptoms	as above	inactive very dull anorexia nasal discharge light swelling of eyes cough diarrhea-brownish, mucous, no smell (only 3 showed)  No fever
3	Khatiyala	Parvatagiri		2	2	no symptoms in flocks		
4	Vadlakonda	Parvatagiri		2	2	no symptoms		
5	Daulatnagar	Parvatagiri	30	10	-			
					13	29		

- **Observations of Shepherds:**

According to shepherds of villages Gummadivelli and Uppigal there was mortality of sheep in their flocks, after grazing continuously for 3-4 days on the Bt- cotton fields. The animals grazed on leaves and pods of the standing BT cotton in the fields. The fields have not been sprayed with pesticides. The symptoms in the affected sheep as reported by the shepherds included:

1. Anorexia
2. Cough – from Day 2 onwards, occasional difficulty in breathing,
3. Nasal discharge - mucopurulent, blood tinged
4. Red coloured urine,
5. Bloat – from Day 3 after grazing on the fields
6. Eye swelling / face swelling,
7. Difficulty in standing
8. Diarrhea in a few sheep

Death occurred after 4-5 days of grazing. The shepherds began to sell their sheep soon after the sheep began to exhibit these symptoms and began to die.

In **Gummadivelli** village, a shepherd named Mr Dandi Ailaiah informed us that in his flock of 100 Red Nellore sheep and 50 goats, 25 sheep and 5 goats fell sick and began to exhibit symptoms after continuously grazing on BT cotton fields (his own cotton fields) for 3-4 days. He immediately reported this to the local government veterinarian. The vet treated the affected sheep by drenching egg white and also administered normal saline (it is usual practice to use egg white as first aid to treat cases of poisoning, for absorbing toxins.). This indicated that the local veterinarians too suspected it was a case of poisoning. The vet advised them to stop grazing their sheep on BT cotton fields.

*In post mortem conducted by the shepherds, the shepherds observed the following:*

- Lungs – fibrosed
- Small Intestine and large intestine - resembling as if it was cooked, easily peeling off and blackish
- Liver – white spots on the liver

Another shepherd told us that he had noticed the undigested cotton pods in the stomach.

In **Khatiyala** village, a shepherd informed us that in his flock, sheep died due to foul smelling diarrhea and high fever, typical symptoms of what could be PPR. ***However he also informed us that till now his flock had not grazed on Bt-cotton fields.*** He came to know that there were deaths of sheep in Gummadiveli after grazing on Bt-cotton fields. He also stated that he was aware that sheep will die if they are continuously grazed on BT cotton fields.

In **Vadlakonda** village, a shepherd Mr Singarmeni Ghatiah, informed us that 20 sheep died in his flock after they suffered from symptoms such as mild fever, diarrhea and mucopurulent nasal discharge. His animals too had grazed on BT cotton continuously for 3-4 days. When he conducted a post mortem of the dead sheep, he found that there was adhesion of heart and lungs to lateral ribs, as also fluid around it. The postmortem lesions observed by this shepherd were different from what other shepherds had observed in their sheep which had grazed on BT cotton fields.

In **Daulat nagar** village, shepherds started grazing their sheep on Bt-cotton fields after Shankranti (after Jan 15<sup>th</sup> 2007). During our interaction with shepherds, a shepherd named Mr Biona Venkatesh who owns 40 sheep, had given the sheep to be grazed by a shepherd in Parvatagiri village, which is 3 kms away from his village. He was informed by that shepherd, that 5 of his sheep died after grazing on the Bt-cotton fields.

According to another shepherd Mr Sammaiah, his sheep grazed on the BT cotton continuously for 3-4 days. They began to exhibit cough, sheep became dull, diarrhea in few, and bloat appeared on 3<sup>rd</sup> or 4<sup>th</sup> day. 5 sheep died around the 20<sup>th</sup> of January. They contacted the local doctor (Dr RamMohan, Veterinary Doctor, Parvatagiri Mandal), who said that the symptoms did not resemble PPR, and advised them not to graze on Bt cotton fields.

In the same village amongst goats, there was foul smelling diarrhea with mild fever which are symptoms which resemble PPR.

- *Flock examination*

The history reported by the shepherds, was that as soon as they start noticing severe symptoms after grazing in Bt-cotton fields, they immediately begin to sell their sheep before they die. They were very few sheep exhibiting symptoms in the flocks.

25 animals were examined in Gummadavelli of which 7 exhibited the following symptoms. In Uppigal village, 4 animals were examined of which all showed the following symptoms.

1. Inactive
2. Anorexia
3. Dull
4. Nasal discharge – mucopurulent
5. Cough
6. Slight swelling around eye
7. diarrhea (in 2 animals in Gummadavelli; 3 animals in Uppigal)

As reported by shepherds, sheep show bloat on Day 4. The day animals were examined was Day 3 after grazing on Bt cotton fields.

- *Preliminary assessment*

The history of sheep that died showing symptoms that resemble toxicity symptoms, occurred after the sheep continuously grazed on Bt-cotton fields for 3- 4 days. The same symptoms as reported by shepherds, were observed when the Anthra veterinary scientists physically examined sheep that were suffering since grazing on Bt cotton fields. Since most of the fields were covered by Bt-cotton, shepherds had no choice other than to graze their sheep on these cotton crop residues.

Some of the BT cotton fields were sprayed with pesticides in October 06, and hence the chances that this is toxicity due to pesticides are practically impossible.

Shepherds from village Khatiayala and Daulatnagar, reported symptoms (fever with foul smelling diarrhea, mucopurulent nasal discharge) in their sheep and goat flock respectively which resemble PPR.

**There is a strong indication that grazing on Bt cotton fields continuously is resulting in morbidity and mortality amongst sheep flocks in Warangal district. Shepherds have only recently begun to graze their sheep in these fields in January 07. The situation is confounded by the fact that some sheep and goat are also exhibiting symptoms which resemble PPR. Of the latter, some have grazed on Bt cotton fields and others have not. None of the flocks were protected against PPR or HS as reported by the shepherds. The flocks were protected against Sheep pox, as per history reported by shepherds.**

- *Recommendation*

The history of sheep falling sick with typical symptoms, only after continuously being grazed on the BT cotton fields for 4-5 days strongly suggests that there is some toxin in the standing plant (whether it is Bt toxin / Gossypol / any other bacteria /fungi) fields that is making the animal ill, needs to be thoroughly investigated.

The situation is confounded by the fact that PPR – like symptoms are also incident in the area.

**Anthra and AP Sheep and Goat Federation demand that a high level team of scientists comprising members from IVRI, Sri Venkateshwara Veterinary University and State Animal Husbandry department be constituted to investigate into the morbidity and mortality in sheep currently occurring in warangal district, and its linkages to grazing on BT cotton.**

Animals are currently suffering from symptoms and are being grazed on Bt cotton fields so immediate appropriate samples from animals can be collected. Dead animal post-mortem samples can also be collected and analysed. Fresh BT cotton leaves with pods of crop standing in the fields, can be collected and analysed.

We urge the scientists to respond immediately, to prevent any further death in animals and loss to the shepherds.

ANTHRA is an organization of women veterinary scientists working primarily on issues of livestock development, in the wider context of sustainable natural resource use.

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## **Leading the organic revolution**

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In Bhubaneswar, 3,000 tribal women stage a demonstration demanding the declaration of Orissa as an "organic" State. In Medak, Andhra Pradesh, 1,000 women march through the streets demanding a ban on hybrid and genetically modified (GM) seeds.

Women are the major stakeholders in organic agriculture, precisely because they are the worst victims of inorganic agriculture, or chemical farming. Over decades, the socio-economic and health status of women in farming communities has been adversely affected by green revolution or "industrial" farming technologies and policies.

For millions of rural Indian women, organic agriculture offers escape from the three demons of debt, disease and destitution. In an arid corner of Rajasthan, Anand Kanwar of Laporiya village recalls how, when she was an adolescent, the entire village would be decimated by drought. Crops would fail, cattle would die and people would have to migrate to cities in search of work.

### ***Community-driven project***

Today, thanks to a community-driven watershed management-cum-organic farming project implemented over 15 years, the village manages two crops a year and at least one crop even in a really bad drought year and maintains large herds of milch cattle. No one ever goes hungry or thirsty, she says.

Crop rotation, use of bio-inputs, water-harvesting, animal husbandry, development and maintenance of pastures and wildlife preserves are all part of an integrated organic management system which has made this possible. Says Anand Kanwar: "We conserve water, we maintain forest cover and pastures. We do not poison the water or soil with chemicals. We do not hurt birds

or any other animals. We do not cut down trees. We respect the earth and in return, the earth sustains us."

The project was first mooted by Anand's husband, Laxman Singh, himself a farmer. It was she who brought the women around to the idea. Once they were convinced, they took the lead in developing and maintaining traditional water-harvesting structures, wildlife sanctuaries, pastures and woods, and even learning about composting techniques. Groups of women perform these community duties in rotation with spectacular results.

Apart from milch cattle, food processing is another income-generating activity. Having realised there is an urban market for organic food products, women like Anand have formed self-help groups to process and package organic foods for Mumbai and Delhi. "We supply traditional items such as *daliya*, *papad*, etc," Anand says proudly.

### ***Resource-intensive***

Organic agriculture is knowledge- rather than resource-intensive. Much of the required knowledge and techniques are already available with traditional farmers. Indigenous traditional knowledge systems (or ITKS) are at the very core of organic farming. The Indian Council of Agricultural Research (ICAR) has conducted trials and validated many of these systems. Traditional knowledge has thus entered the realm of "agricultural science".

In organic farming, no inputs need to be purchased. Access to cattle and cattle products is essential for organic cultivators; hence the special status accorded to cows in rural households. Women have a critical role to play in taking care of cattle and processing of cattle products. Fertilisers and pesticides are manufactured from cattle manure and locally available trees and shrubs. Biological and mechanical systems of pest control are employed.

Organic farming promotes indigenous varieties of seeds rather than hybrids; so the farmer is not dependent on seed marketing companies, which is a major saving. Women play a crucial role in selection and preservation of seeds.

### ***Better yield***

Trials conducted worldwide, including India, have proved wrong the myth that organic farming leads to lower yields. The Tamil Nadu Agricultural University's study on organic cultivation of green chillies is a case in point — where it produced better yields and quality. Likewise, the University of Agricultural Sciences, Dharwar, Karnataka, found more viability in organic cultivation of groundnut. Ditto, French beans. Punjab Agricultural University studies found use of organic inputs produced better rice yields.

As ICAR Director-General (DG) Mangala Rai pointed out, in rainfed agricultural systems, organic farming produces consistently better yields. Even the World Bank admits: "Farmers in developing countries who switch to organic agriculture achieve higher earnings and a better standard of living, according to a series of studies conducted in China, India and six Latin American countries by the International Fund for Agricultural Development."

Asha Mawasi, a small farmer of Tagi village in Madhya Pradesh, is one of the half-dozen women cultivators who have joined an organic farmers' collective under the aegis of the Krishi Vigyan Kendra (KVK) in Chitrakoot, Madhya Pradesh. She says: "We do not use chemical fertilisers nor chemical pesticides as they destroy the crops. We follow what the KVK tells us and also our traditional agricultural practices like *nakshatra* farming (going according to the movement of the planets). Our harvest is better and there are no pests or diseases."

Across the country, groups of small and marginal farmers have come together to form organic-farming collectives. They get their farms certified as organic through NGOs or government agencies, thus opening up markets in India and abroad.

### ***Government support essential***

What's lagging behind is government policy. On the one hand, the success of organic agriculture demonstrated by Vandana Shiva's Navdanya, the Kheti Virasat mission in Punjab, the Uttaranchal Organic Commodities Boards, the Maharashtra Organic Farmers' Association, the Spices Board and other agencies have forced the Ministry of Agriculture to set up a National Centre for Organic Farming.

However, in terms of policy it continues to kowtow to pesticide, fertiliser, agri-machinery, biotechnology and seed lobbies. Chemical agriculture is subsidised, organic agriculture is not. It has been left to the Ministry of Commerce to lay down standards for organic certification and for state governments to promote organic agriculture.

Although 68 per cent of the total agricultural land available in India is believed to be under *de facto* non-chemical farming, no effort has been made to improve yields through organic methods or obtain organic certification (thus opening up world markets to India's organic farmers). Only 6,000 farms, with a total area of 76,000 hectares, are currently certified as organic

<http://www.thehindubusinessline.com/life/2007/03/02/stories/2007030200130400.htm>

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## **VIDHARBA CRISIS: The tale of three widows**

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**Jaideep Hardikar**

It's a tale of three widows bound by a common thread of cotton; and policies of the state that their husbands vocally blamed for their plight before their death.

Savita Ghugul's husband Dinesh fell to the bullets of police in December 2006 at Wani cotton procurement centre when a mob of cotton growers erupted in anger over delay in procurement of cotton. Dinesh, 35, had left his home in Mendholi village the morning he died; his body returned the next day in police protection.

Sunita Girsawale's man Pundalik chose to end himself in the Tehsil Agriculture Office when he ran out of patience and money. He was seeking help to buy a bullock under the Prime Minister's much-trumpeted relief package, but someone in the tehsil office demanded bribe. A cheque of Rs.4500

was found on his person after his death. People of his Tejapur village allege it was planted after his death.

And 20-year-old Pratibha Kuchankar's husband Rameshwar consumed pesticide in Pandharkawda cotton procurement centre, ending his days of desperation. A stoic silence grips Pratibha's maternal home in Veerkund village, where she has moved in after Rameshwar's death on November 28, last. It was only six months that they had been married, and the young farmer felt his condition would improve. Still in shock and grief, Pratibha speaks, but only through silence.

Says Savita: "I asked the Home Minister what was the fault of my husband? He told me, what has happened has happened, now the government will stand firmly in your support." She says the family never thought selling cotton would be so deadly.

Sunita, on the other hand, doesn't have time to mourn the loss. Her struggle for the livelihood deepened the moment her husband quit the world. "Since I can't work, it's upto Savita and these children to earn money," laments Parvatabai, Pundalik's old mother.

Savita, Sunita and Pratibha are women from different contexts, background and age groups, yet engulfed by a tragedy that emanates from a single source: The wrong policy. Well over a thousand farmers committed suicide in 2006 and close to 120 in the New Year so far in Vidarbha's cotton districts. Notwithstanding the government's rejection of these suicides as fallout of an agrarian emergency, the number of widows is growing at a frightening speed in the cotton country.

"This one's the fastest growing constituency of this region," quips Kishor Tiwari, the convenor of Vidarbha Jan Andolan Samiti (VJAS) in Pandharkawda. With an average one farmer committing suicide every six to eight hours, as per the state government's own figures, the region is seeing a staggering surge in the number of widows and orphans. This past month saw a father and his son take their own lives following years of desperation that the farming household was in.

Tiwari points out that a growing number of widows are left alone to fend for themselves and their families. "The most disturbing feature of late is the suicides by young farmers, who were married two, three or five years ago," he points out. The widows are young and have a long life ahead. "And there is no support."

The gender face of the crisis often remains neglected or unheard. Farm leaders say the government must waive off the loan of such households where the headman has committed suicide. It would relieve the pressure on the widows.

On the other hand, the farmers taking their own lives are increasingly becoming more vocal in their criticism of the government's policies, and the suicide notes are being directed now straight to the Chief Minister or his deputy.

As Rameshwar Kuchankar, 27, put it in his dying note before consuming poison in the market yard, "Mr CM, give us the price. Mr R R Patil, if you don't give us Rs.3000 a quintal, this issue (of farmers' suicide) will only aggravate."

Rameshwar knew he was in losses after the cotton prices crashed to Rs.1700-1900 this year from over Rs.2200 a quintal. Then, in one poignant stroke, he wrote a line for his wife on one corner of that note. "Pratibha, I am sorry, please forgive me and get remarried." In the end, he mentions: "No one in my family should be blamed for my death; if some one does that I won't forgive him."

Pundalik, on the other hand, had had four years of crop failure. "He went at least 15 times to get the cheque from the agriculture office to buy a bullock, but some one there demanded bribe," says his mother Parvatabai. "He had purchased two doors for this hut, but had to sell one to pay for his visits to Wani," she informs. Sunita, his widow, has since taken to working as a farm labourer to earn a living and her three daughters – aged 14, 12 and 10 – look after the household chores.

Apparently, it was a slight provocation by some one in the agriculture office that proved the last straw for Pundalik. He had threatened them that he would end his own life if they did not release his cheque; the officer said do as you like, and a desperate Pundalik consumed poison to take his own life, a villager says.

In both Pundalik and Rameshwar's cases, the government has declined the Rupees one-lakh compensation, saying these were 'non-genuine' suicides, meaning the two farmers' death was genuine, "but was not due to any agricultural crisis". The government says that in the case of Pundalik, money had been released by the bank, but that there was no sign of distress. This, while his widow grapples for a two square meals back home. And since Rameshwar ended his life, there has been no communication from the state government to his young widow, Pratibha.

In Dinesh's case, luckily, there's no question of applying any parameter. He fell to a bullet that pierced his stomach and slit open his intestine. In one way though, Dinesh was a victim of the government's neglect towards procurement of cotton. Had the centres worked round the clock to buy farmers' yield the unprecedented protests may not have erupted in first place, and Dinesh would have lived on.

These three families lost their bread-winners in a span of one month. The same month, over a hundred farming households in Vidarbha also lost their head men, all choosing to take their own lives through different modes.

"The three farmers present shades of misery gifted by the government. One lost his life for no reason in police firing; the other was denied the relief that the Prime Minister himself declared in Nagpur; the third one felt, like all farmers of this region feel, he was denied a decent life," Tiwari.

"All of them had good family life and none was an alcoholic; it was the state's policy and bureaucratic sham that took their lives," he charges.

The questions staring Savita and her children are no less different than those facing Pratibha or Sunita and her three daughters. Alas, no less easy too.

<http://www.indiatogether.org/2007/feb/agr-widows.htm>