


Biotech Mailout

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**Friends of
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EU Member States urged to ban Monsanto's MON 810 seeds

On 8th September, the European Commission decided to list 17 genetically modified (GM) maize varieties derived from Monsanto's MON 810 in the European Union's Common Catalogue of Seeds. Although presented by the Commission as a formality, many onlookers considered the move to be highly controversial. The listing of Monsanto's 17 varieties of GM maize means that farmers throughout the EU can now sow these seeds. However, without proper co-existence legislation in place to protect the interests of the environment, farmers and consumers, this is a "recipe for disaster" according to Friends of the Earth. FoE is, therefore, urging the EU Member States to use their legal powers - laid down in the EU's Seeds Directive - to ban these seeds from their national territories.

Until now, the sowing of Monsanto's MON 810 maize had only been allowed in France and Spain. In France, for several years, 6 of the MON 810 varieties were already listed in the national catalogue of agricultural varieties. In Spain, 11 varieties of MON 810 were on the national seed list. The listing in the EU's Common Catalogue of Seeds is the last step towards cultivation of an agricultural variety in the EU, and happens on the basis of Directive 2002/53/EC. This Seeds Directive foresees that the Common Catalogue of Seeds shall be compiled on the basis of the national catalogues of the Member States.

Usually this would not cause a lot of debate, but it is totally different in the case of MON 810 since this is the first time that a GM seed has been listed in the EU's Common Catalogue of Seeds. The move by the Commission is also the first decision in six years to allow a GMO for (further) cultivation in Europe.

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In a leaked Communication (available from Friends of the Earth), the EU's out-going Commissioner for Consumer Affairs David Byrne defended the listing of Monsanto's seeds using the following arguments:

- The 17 varieties derived from GMO MON 810 have already been authorised.
- The formal listing in the Common Catalogue was delayed pending the adoption of the new GM Traceability and Labelling Regulations. Now these laws have entered into force the listing can go ahead.
- If the Commission fails to list the varieties now, it would mean that the 2005 growing season could be lost and that could make the Commission vulnerable to legal action.

In response to these arguments, Friends of the Earth has written to the Member States' governments and to the Commission, highlighting the following points:

- Monsanto's MON 810 maize, containing a Bt insect toxin, was approved under the old GMO Directive 90/220 for which only a limited environmental risk assessment was required. Since it was approved, however, more research has highlighted potential problems associated with MON 810. For example, research has been published showing that there may be fewer insects in fields of Bt maize, that earthworms feeding on litter from Bt crops lose weight, and that Bt crops actually "leak" their toxin into the soil (for more details, see page 3). Under the EU's new GMO Directive 2001/18, the risk assessment process is more thorough and requires examination of both long-term and indirect effects on the environment. Allowing MON

810 to be grown based on approval against the old directive is, therefore, a threat to the environment and not in line with the protective approach of current legislation.

- Currently there is no legislation in place to stop GM crops from contaminating conventional or organic crops. If contamination is to be stopped, and consumer choice and the environment to be safeguarded, measures such as co-existence rules and GM-free zones should be in place before GM crops are authorised for cultivation. Since MON 810 was approved under the old legislation, Monsanto or any farmer wishing to grow MON 810 are not even obliged to inform either neighbouring farmers or even national governments of their intention to sow this seed. Under such conditions, contamination is likely to occur and consumer choice will be jeopardised.
- Friends of the Earth believes that it is not the role of the EU's Commissioner for Consumer Protection to be concerned about loss of commercial opportunity (the 2005 growing season) for a multinational corporation. Moreover, the concern that further delay might trigger legal action from the company is not convincing at all, bearing in mind that the Commission has already delayed the listing of Monsanto's seeds for 6 years, during the EU's 'de facto' moratorium on GMO approvals, and most recently while waiting for the new Traceability and Labelling Regulations to enter into force. Why not, therefore, wait until the complete regulatory framework - including (national) co-existence laws needed to protect consumers and the environment - is in place?

Monsanto's GM Maize : reasons to ban growing of MON 810

Friends of the Earth believes there are valid and serious reasons for prohibiting the cultivation of MON 810. Commissioner Byrne stated in a recent communication that: "any Member State may object to the marketing on their territory of any such GM variety if they consider there is a risk for human health, the environment, or for agronomic reasons". FoE has, therefore, asked the Member States to apply to the Commission to prevent these seeds being planted on their territory.

Articles 16 and 18 of Directive EC/2002/53 state the grounds on which EU Member States can apply to prohibit the use of a variety or to lay down conditions for its cultivation. In particular, a Member State can apply if:

- the cultivation could be harmful to the cultivation of other varieties or species;
- where the variety is not comparable with varieties grown in that country, or where it is not suitable for cultivation because of its maturity class;
- "where it has valid reasons other than those already mentioned for considering that the variety presents a risk for human health or the environment".

Maturity class:

The varieties of MON 810 are largely suited for a southern climate and would not generally be suitable for cultivation in northern regions or

countries. Nevertheless, this is no guarantee that farmers will not plant them elsewhere, if only to "try out" the new varieties. In addition, it is highly unlikely that MON 810 would be comparable with maize varieties already accepted in northern countries.

Risk to the environment:

Under the old Directive 90/220, there was no obligation to carry out a thorough environmental risk assessment. The new Directive 2001/18 enforces a risk assessment that includes looking at the long-term and indirect effects of growing GMOs. In the absence of such assessments, the effects on the environment of growing MON 810 are largely unknown. Since originally approving MON 810 against the old Directive in 1998, there have been a host of studies that have shown alarming results, for example:

- A study by Swiss researchers found less flying insects in Bt maize fields ¹. Flying insects are important food sources for insect-eating birds, such as swallows, and for bats.
- A study published in 2003 found that earthworms feeding on litter from Bt maize showed a weight loss (compared to a weight gain of earthworms feeding on litter from non-GM maize) ². Earthworms are extremely important for nutrient cycling in soils.

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- A study in Switzerland found that the Bt toxin could still be detected in soil the following year after the Bt maize was harvested³.

Allowing MON 810 to be grown based on authorisation under the old directive is, therefore, both a threat to the environment and makes a mockery of existing legislation.

No co-existence:

Apart from a new law in Denmark, there are currently no co-existence measures in place to prevent the unintentional presence of GMOs in other products in accordance with Article 26a of Directive 2001/18. Consequently, this would lead to possible contamination of non-GM maize crops and the resultant food chain. There is also a higher risk of conventional maize seed production being contaminated.

Safety questions remain:

MON 810 is a relatively old GMO, originally approved in 1998 under now obsolete EU legislation. Developments in the meantime have shed new light on Monsanto's GM maize. For example, last year when the UK Government re-examined the data on MON 810, it concluded: "the UK considers that further consideration in the risk assessment of MON 810 is appropriate. In particular, the UK does not accept that the evidence provided establishes

that the vector backbone is absent and that the copy number of the insert is one"⁴. It is of serious concern that this most basic information on the GMO - what novel genes it contains - is not clear. MON 810 should not be allowed to be planted in Europe's fields until its safety is guaranteed.

No public registers or accountability:

Because MON 810 was approved under the old Directive, there is no obligation on Monsanto or farmers wishing to grow the maize to inform either neighbouring farmers or even national authorities. Farmers could, therefore, find their crops unexpectedly contaminated. Although Monsanto has voluntarily submitted a post-release monitoring plan, it has no legal obligation to state where the crops will be planted, thereby making scrutiny and oversight of such monitoring virtually impossible.

Based on the circumstances of the approval of MON 810, and the various evidence mentioned above that question the safety of this GM maize, it is difficult to understand why the outgoing Commission has seen fit to add it to the EU's Common Catalogue of Seeds (despite the lame reasons put forward by Commissioner Byrne). It now remains to be seen whether and which Member States will take matters into their own hands and adopt a precautionary approach by trying to impose a national ban.

References:

1 Biocontrol Science and Technology 14 (2): 129-170 MAR 2004.
2 Molecular Ecology 12 (4): 1077-1086 APR 2003.
3 Molecular Ecology 12 (3): 765-775 MAR 2003.
4 Response of United Kingdom Competent Authority Notification number: C/DE/02/09 - Insect resistant maize (MON 863 and MON 863 x MON 810) Date: 1 July 2003.

EU Commission Pushes to end National Safeguard Measures

The European Commission intends to ask Member States to vote against the eight national GMO bans or restrictions that various countries have introduced over the past seven years. The restrictions were all introduced under the safeguard clause (Article 16) of the old deliberate release Directive 90/220/EEC. According to some official sources, Commission proposals to end the restrictions will be put to the 2001/18 Regulatory Committee on the 29th November, although this could possibly get postponed to a later date. The move will undoubtedly be seen as yet another case of the Commission reacting to pressure from the WTO trade dispute initiated by a US-led coalition last year.

If the Member States fail to reach a qualified majority to either support or reject the

Commission's proposal, it is almost certain that the Commission will ask the EU Council of Ministers (Environment) to vote. If the Council also fails to support or reject the proposal, the door is open for the Commission to start lengthy legal proceedings against the various Member States. Whether the new Commission will start its term with such an unpopular move, and risk facing an even bigger backlash against GM foods, remains to be seen.

The table below shows the bans that have been implemented by countries using the GM environment regulations. In addition there are other GM foods banned in Italy using safeguard clause of the regulation 258/97 on food and they won't be voted on in November.

National bans or restrictions under Article 16 of 90/220 ¹:

Name of GMO	Date of approval	Date of invocation of Art.16	Country
Syngenta Bt 176 Maize	23/01/1997	14/12/1997	Austria
Monsanto MON 810 Maize	22/04/1998	01/06/1999	Austria
Bayer T25 Maize	22/04/1998	08/05/ 2000	Austria
Bayer Topas 19/2 Oilseed rape	22/04/1998	20/11/1998	France
Bayer MS1xRf1 Oilseed rape	06/02/1996	20/11/1998	France
Syngenta Bt 176 Maize	23/01/1997	04/04/2000	Germany
Bayer Topas 19/2 Oilseed rape	22/04/1998	03/11/1998	Greece
Syngenta Bt 176 Maize	23/01/1997	17/03/1997	Luxembourg

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Safeguard Clause

The safeguard clause under Art. 16 of Directive 90/220/EEC allowed the EU Member States to ban a product authorised at EU level provided there was new evidence to justify the restriction on health or environmental grounds. The same safeguard clause exists under Art.23 of the new deliberate release Directive 2001/18/EC.

Commission caves in to WTO and US pressure

As stated above, all the GMOs concerned were approved under Directive 90/220/EEC which was superseded by Directive 2001/18/EC. According to Article 17.1 (b) of Directive 2001/18, the renewal of GMOs previously approved under the old

directive should happen before 17th October 2006. In other words, in two years time all these GMO approvals should be renewed through the revised directive, although it is doubtful whether some of them will meet the new requirements or even be submitted for renewal. For example, it is highly unlikely that Syngenta will submit Bt176 maize for renewal since, by then, it will probably not be grown anywhere in the world and will be even banned in Spain, the only country in Europe so far to plant GM crops. With this in mind, it is clear that the Commission is playing for time by putting forward proposals against the national safeguard measures. Another motive for the Commission initiative is that it is determined to show the World Trade organisation (WTO) and the US that the European system is working well.

References:

1 See overview at: <http://europa.eu.int/rapid/pressReleasesAction.do?reference=MEMO/04/85&format=HTML&aged=0&language=EN&guiLanguage=en>

When will Romania clean up its genetic pollution?

Romania is a country torn between the pro-GMO position of the US and the more cautious approach of the EU. Over the last few years, Romania has consistently supported the US policy on GMOs, but is now faced with the situation that it will have to reverse pro-GMO decisions that are not consistent with accession to the EU.

Genetically modified Roundup Ready (RR) soya beans from Monsanto have been grown commercially in Romania since at least 1999. According to the 2002 edition of Romania's National Seed Register, seven varieties were allowed for com-

mercial cultivation. Different estimates of the area under cultivation indicate a range from 20,000 to 50,000 hectares, which equals 20-50% of the total soya bean production in the country. In autumn 2002, Monsanto's permit for the commercialisation of RR soybeans was renewed for a further 3-5 years.

Another genetically modified (GM) crop that is allowed for commercial cultivation is Monsanto's Bt potato. These GM potatoes contain a modified gene of the natural toxin *Bacillus thuringiensis* to provide a built-in pesticide against the

Colorado Beetle. The 1998 Romanian National Seed Register listed Monsanto's GM potato for the first time. However, actual cultivation of the American potatoes never really took off, due to diseases and failing harvests.

The approvals of GM potato and GM soya pose a problem for the Romanian authorities since neither of them is allowed for cultivation in the EU. If Romania wants to enter into the EU in 2007, it will not only have to change its policy on GMOs, but it will also have to ensure that the environment is decontaminated from GM potatoes and GM soya, since these crops would be illegal under EU law.

Contamination in the Balkans

The Romanian pro-GMO position is also posing problems in the Balkan Region. Romania is almost exclusively cited as the source of GMOs contamination of soya beans grown in Vojvodina, Serbia - a centre of seed breeding - with Monsanto's Roundup Ready gene. Serbia's policy is not to allow the cultivation of genetically modified crops.

Harmonisation

So far, the Romanian government has made some steps to harmonise Romanian law with EU law. Legal provisions on labelling of GM foods and the deliberate release of GMOs into the environment were put in place, but there are clear indications that implementation of these provisions is not happening:

- The new law on releases of GMOs (n°214/2002) was made by the Ministry of Water and Environment Protection, the authority on GMOs. However, since 2002, the Ministry has been undermined and transformed into an Environment Protection Agency under the Ministry of Agriculture.

- The law on labelling of food (n°106) came into force in February 2003 but no labelled products are on the market so far, despite the fact that GMOs are grown and imported.

Moreover, before Romania joins the European Union there are a few serious questions to resolve:

- Neither the GM RR soya nor the Bt potato has been authorised by the European Union, so Romania will have to remove these GMOs.
- All foods containing over 0.9% of GMOs or derivatives from GM plants will need to be labelled, according to a process-based system. At present, Romania does not even have a certified laboratory for testing GMOs.
- "The EU's revised deliberate release directive, 2001/18/EC, requires phase-out of GMOs with anti biotic resistance markers (ABR markers) approved for commercial release, "which may have adverse effects on human health and the environment", by 2004. This phase-out is extended another four years in the case of GMOs with antibiotic-resistance markers that are used in field experiments, thus banning release of all GMOs with potentially harmful ABR marker genes by 2008.

So far, Romania has not even started to plan how to remove GM plants from the fields. The country is taking a big risk through this lack of action since decontamination is likely to take several years. If Romania wants to be ready for EU accession in 2007, it is high time that it started doing its homework and adopted a more cautious approach on GMOs.

For more details, see the report "Romania: The dumping ground for Genetically Engineered Crops", at: <http://www.anped.org/docs/GMOs>

No agreement on Monsanto's GM maize MON 863

Only four Member States support controversial proposal

On 20th September, a regulatory committee composed of competent authorities of EU Member States was supposed to vote on a proposal by the European Commission to authorise the import of Monsanto's genetically modified (GM) maize MON 863¹. In the end, however, the Commission preferred to defer the vote after early indications made it apparent that only four of the Member States would support the proposal. The voting intentions of the Member States and the combined number of votes they represent under the qualified majority system were as follows:

In favour: Estonia, Finland, Netherlands, UK (21 votes);

Against: Austria, Belgium, Cyprus, Denmark, France, Greece, Hungary, Italy, Malta, Latvia, Lithuania, Luxembourg, Slovenia (57 votes);

Abstentions: Czech Republic, Germany, Ireland, Spain, Poland, Portugal, Slovakia, Sweden (46 votes).

Formally, the Commission could have ignored the strong opposition among the Member States, since under EU law only a qualified majority (88 out of 124 votes) can either reject or adopt a proposal to authorise a GMO. As in previous cases, the Commission could have asked for the vote and, after it had become clear that there was no qualified majority for or against, subsequently referred the proposal to the EU Council of Ministers.

Instead, however, the Commission decided - for the first time since the restart of the EU approval process for GMOs in November 2003 - not to insist on the vote, thus causing a further delay in the authorisation process of Monsanto's MON 863. Apparently the Commission realised that it would suffer an embarrassing loss of credibility if it were to push through a proposal to allow a genetically modified product with hardly any support among the 25 Member States. It may also have realised that it would further undermine public confidence in the authorisation process for GMOs if - for the eighth time in succession² - the Member States would not have supported a proposal by the Commission to allow a GM product onto the European market.

Health concerns

The reason for the opposition among Member States to Monsanto MON 863 is that there is an ongoing scientific debate about the safety of this GM maize. The focal point of the debate is a feeding study on rats, conducted by Monsanto. A summary of this study in the application dossier shows significant and worrisome differences between rats fed on MON 863 and rats fed on conventional non-GM maize. Among other things, white blood cell counts for rats fed on MON 863 maize were significantly different to those fed on non-GM maize.

However, the European Food Safety Authority (EFSA), an EU advisory body on whose opinion the Commission had based its positive draft decision, dismissed the result of the feeding study as "*not biologically meaningful*" because they "*fall within the standard deviation of the reference control population*". Differences in other blood cell parameters, kidney weights and kidney structure for rats fed on MON 863 were similarly dismissed by the EFSA. In contrast, however, the French Commission for Genetic Engineering (CGB) concluded that it was not possible to show the absence of harm to animals on the basis of the data. In fact, the Director of the French National Agricultural Research Institute (INRA), who examined the dossier as a member of the CGB, said: "*I hear the argument of natural variability, but what struck me in this file is the number of anomalies. There are too many elements here where significant variations are observed. I never saw that in another file*"³.

Not only did EFSA neglect these concerns raised by a prominent French scientist but, in its opinion, it also dismissed every one of the twenty or so concerns and questions raised by scientific committees of the Member States⁴. This seems

astonishing since it is difficult to believe that so many scientists across Europe could be wrong in their concerns. It appears, therefore, that EFSA takes a far less precautionary approach to food safety than many of the Member States' own scientific bodies.

No transparency

Monsanto has, so far, refused to make public the feeding study on rats that reveals that the animals fed on MON 863 maize exhibited a number of health abnormalities unobserved in rats fed on conventional maize. A request by Greenpeace to obtain the study via the German authorities was rejected after months of negotiations and the data is still classified as "confidential business information". As previously mentioned, the only information available to the public is a 19-page summary of a 1,000+ page study. Friends of the Earth considers that Monsanto is seriously undermining its own assertions that MON 863 maize is safe by refusing to give the public and independent scientists access to vital data.

Conclusion

It may be hoped that the new Commission will learn lessons from the obvious mistakes made by the outgoing Commission. It was clearly irresponsible to recommend MON 863 maize for approval, especially since this happened after several independent and authoritative scientists raised serious doubts about the safety of this Monsanto GM maize.

In Friends of the Earth's view, the Commission should take a far more cautious approach when it comes to assessing GM foods in the future. First of all, disagreements over safety between scientists should be taken seriously rather than being brushed aside. Secondly, the Commission should realise that there is limit to overruling the Member

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States. Even if there may not always be a qualified majority to reject GM food and GM crops, pushing through these products against the wishes of a considerable number of Member States creates an untenable situation and raises even more opposition against GM foods. Thirdly, the Commission should, as soon as possible, oblige corporations to publish all relevant studies on the safety of GM foods.

In the case of MON 863 (as well as other examples), FoE strongly urges the new Commission to bear in mind that food safety is far too important an issue to put at risk, and to end the great food gamble with GM foods.

References:

- 1 MON 863 maize is modified to contain the toxic protein *Bacillus thuringiensis* to protect it from the corn rootworm insect.
- 2 Since November 2003, the Commission has officially asked the Member States seven times to vote for the approval of a genetically modified food or feed product. In all seven cases the Commission's attempts have failed. For a detailed overview of the voting behaviour in these seven cases, see: http://www.foeeurope.org/GMOs/pending/votes_updated_Sep_2004.pdf
- 3 Le Monde, 22nd April 2004
- 4 On 19th April 2004, the EFSA issued its opinion on Mon 863 maize and Mon 863 x Mon 810 maize.

Indian Farmers Duped with GM Cotton

Monsanto breaks all the rules

"They came to us in the spring, the people from the company. They said that, thanks to the newest seeds from America, I could harvest three to four times more cotton from my land. For the first 60 days, everything went very well. The new cotton produced plenty of flowers. I was full of good hopes. But then my dream turned into a nightmare. There came heavy infestations of insects. I began to spray the cotton, exactly as the people from the company had told me to. But that did not help at all. Most of the flowers

dried out and the cotton bolls fell from the plant. I only managed to harvest four quintals (400 kilos), three times less than was promised to me".

This is Somakka speaking, a small farmer with about three hectares of land which she occupies near the small village of Wanaparthi in the Warangal district of the Indian state of Andhra Pradesh. In early summer of 2003, she bought a sack of genetically modified (GM) cotton seed from Mahyco-Monsanto, a joint venture between

the Indian company Maharashtra Hybrid Seeds Company (Mahyco) and Monsanto, the American genetech giant that supplies around 90% of all GM seeds world-wide. With the seed from Monsanto, Somakka was able to sow a half-hectare of GM cotton. She also planted a half-hectare of the native cotton variety Hima. On this cotton, she sprayed just as much chemical pesticide as on the cotton from Monsanto. But the native cotton did not require (expensive) irrigation and furthermore, the Indian seeds were much cheaper than those from Monsanto. In the end, this year, the native cotton variety yielded just as much cotton as the field of "high tech" GM cotton from the American company. That's why, says Somakka, the GM seeds have proved to be "a heavy loss". She knows for sure that next year she will not be using the GM seeds.

Good for small farmers?

Via its collaboration with Mahyco, since March 2002 Monsanto has had a licence to sell GM cotton in six southern Indian states. It is estimated that the company has sold around 200,000 sacks of GM cotton seed in the whole of India over the last two years. The so-called Bt cotton (sold in India under the brand name Bollgard) has been genetically modified to incorporate a gene from a soil bacterium (*Bacillus thuringiensis*) that enables the plant to produce a toxin (also occurring naturally) commonly known as Bt which the plant can use to defend itself against insect attack. Monsanto claims that the built-in gene ensures that farmers need to use between 30 to 40 % less chemical pesticides on the cotton plants. It also claims that GM crops can help small farmers in the south achieve higher yields and therefore more income. This claim attracts a substantial following, even in some European countries, as suggested by a recently published article in "Elsevier" magazine in which journalist

Simon Rozendaal accuses the Dutch environmental and development organisations of wrongly setting themselves against gene technology.

Monsanto's promises have also been alluring to Indian cotton farmers. Many of them have experienced great distress in recent decades due to the ever-increasing use of pesticides. Today in India, a massive 55% of pesticide use is on cotton, whereas the crop occupies just 9% of the total land area under cultivation. The situation has got so out of hand that the Indian cotton fields have been dubbed "killing fields". This is, of course, disastrous for the environment but the social consequences are, if anything, even more dramatic. Farmers are being driven deep into debt because of the rising cost of applying ever more amounts of poison to their fields. Sometimes they have fallen so far into debt that, after a bad harvest, some poor farmers have seen no way out other than to commit suicide. In the Warangal district alone, there have been hundreds of suicides by cotton farmers in recent years who felt pressured by debts they had no hope of paying off. Furthermore, throughout India, there are thousands of victims among cotton farmers who, due to a lack of proper safety instructions, accidentally absorb lethal doses of pesticides.

"Miracle seeds"

It is, therefore, no wonder that the farmers in Warangal were very interested when Monsanto promised them a new future with less pesticides and higher yields. Although the new cotton seeds were four times as expensive as non-GM seeds, according to Monsanto, counterbalancing this were so many advantages that the farmers would easily recuperate their extra investment. The GM cotton was presented as the latest big thing from America, which in a single action would solve all the farmers' problems. In a large-scale campaign,

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thousands of farmers were personally approached by seed merchants from Monsanto. On the TV, there were adverts portraying the Bollgard cotton as a sort of "supersonic octopus" with a sword in every tentacle with which it rapidly detached the heads of unwelcome insects. This made a deep impression on the mostly illiterate farmers, and all sorts of stories were soon going round about the "miracle seeds".

Average net income from the GM cotton is only one-third of that of normal cotton

Since then, most farmers in the Warangal district have learned better. Contrary to Monsanto's promises, even in the first season (2002-2003) during which the GM cotton was grown commercially, they had to apply poison sprays repeatedly. In an investigation by the Ministry of Agriculture in the state of Andhra Pradesh (in the possession of Friends of the Earth Europe), it appears that on the spraying of pesticides on the Bt cotton in the first season, an average of 5595 rupees per hectare was spent. These costs were for the conventional cotton only slightly higher at 5890 rupees per hectare. So the 30 - 40% reduction of pesticides claimed by Monsanto turned out to be a farce.

The chemical pesticides that were sprayed on the GM cotton were on top of the Bt toxin that

Monsanto's cotton had produced itself. Furthermore, the yield of the GM cotton was, in most cases, much lower than expected and the cotton produced was of inferior quality. As a result, it fetched a lower price on the market. According to the report by the state of Andhra Pradesh, the net result was that the farmers in Warangel - after subtracting all the costs of seed, pesticides, artificial fertiliser and irrigation of the GM cotton - earned, on average, 10,000 rupees (or 200 Euros - in India, a generous month's income) less per hectare than with conventional cotton. This means that the average net income from the GM cotton was just one-third of the common cotton.

As well as Andhra Pradesh, there are also negative noises about Monsanto's cotton emerging from the states of Gujarat, Karnataka, Madhya Pradesh and Maharashtra. According to a report by Gene Campaign, a non-governmental organisation based in New Delhi, it appears that the GM cotton plants can only be harvested for 90 to 100 days, whilst this period is 100 to 120 days with non-GM cotton. Dr. Suman Sahai is a molecular biologist and co-author of the report "*Bt cotton was developed for the large-scale agriculture of the United States. But what works in the US does not always work in India*". According to Sahai, in the tropics there are more numerous and diverse insect pests than in the US, and Bt cotton in India, therefore,

Net income/hectare from GM cotton and normal cotton in Andhra Pradesh 2002-2003 (in rupees)

Northern zone		Southern Zone		Dry zone	
GM	Non GM	GM	Non GM	GM	Non-GM
4798	14809	2406	18782	16827	22360

Source: Government of Andhra Pradesh, Department of Agriculture/Acharya N.G. Ranga Agricultural University (ANGRAU)

missed its targets. The in-built insect toxin only works for 90 days, whereas cotton in India is in the fields for a longer period of time.

Furthermore, the GM cotton was primarily developed to counter the American bollworm (*helicoverpa armigera*) but a large-scale infestation of that insect last occurred in India several years ago in 1997. Against all other common sorts of pests that affect Indian cotton growing, such as aphids and white fly, Bt cotton is not effective. In other words, Monsanto sold a product in India that is tailored to the needs of the markets of North America. In this way, the company makes extra profit without having to invest in more expensive research. Meanwhile, an extra "technology levy" was placed on Indian farmers in the form of more expensive seeds. The strategy works as long as companies are not made responsible for the social and ecological consequences of their actions, and as long as farmers can be convinced of the "advantages" of the product.

Compensation

Various Indian politicians have stated that, so far, the cultivation of Bt cotton has been a considerable mistake. Member of the Indian Parliament Madhusudan Mistry sent an outraged letter to the federal Minister of Science and Technology, Murli Manohar Joshi, on 18th October 2003, saying that, among other things: "*Bollgard has completely failed*" and that farmers who had hoped to need less pesticide still had to "*spend a lot of money on spraying of pesticides to kill the pests*". According to the MP, Monsanto must pay immediate compensation to those it duped.

The Agriculture Minister of the state of Andhra Pradesh, V. S. Rao, said that the GM cotton has failed in a number of important aspects. "*The sow-*

ing seed is much more expensive, but the farmers had to spray barely any less on the GM cotton. In this way their profit has been reduced". However, the Minister is against payment of compensation to the farmers involved, nor will he make a pronouncement for or against the Bt cotton, instead stating that: "*The farmers are responsible for themselves, they must make their own choices*".

Court case

"*What, then, do we have a leadership for?*" demands Dr. Pushpa M. Bhargava, who is a leading scientist and co-founder of the prestigious Centre for Cellular and Molecular Biology (CCMB) in Hyderabad. In his view, it is primarily poor, uneducated farmers (who have no way of gaining access to independent sources of information, such as trade newspapers) who are the easiest victims of the refined sales techniques of powerful multinationals such as Monsanto. The dealer who sells them the seed, the pesticides and fertilisers is often the only source of information for small farmers. Consequently, Bhargava believes that the Indian government should play a more active role in protecting these farmers. But in reality, the Genetic Engineering Approval Committee (GEAC), the authority in charge of ensuring whether gene technology companies fulfil all the terms of their licences, appears to be championing Monsanto rather than giving any support to the farmers. The American multinational enjoys a plethora of privileges that Indian companies do not. According to Bhargava, Monsanto in India has even "*broken all the rules*". In just one of the many examples he provides, he says that Monsanto has still not produced a single monitoring report outlining the results of the first year that Bt cotton was grown, although the company was obliged to do under the conditions of the licence it was granted.

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Afsar Jafri of the Research Foundation for Science, Technology and Ecology in New Delhi also accuses Monsanto of not staying within the law. He points out that the permission the company was given to import Bt cotton seeds into India was given by the Review Committee of Genetic Manipulation, an authority that has absolutely no powers to grant such authorisation. According to Jafri, Monsanto has also broken the guidelines for handling transgenic plants because it did not incinerate the remains of GM plants after field tests, whereas the incineration of plant waste and left-over seeds is necessary to prevent unwanted and uncontrolled dispersal into the environment.

Jafri's organisation has since lodged a lawsuit at the Supreme Court, the highest legal authority in India.

No openness

Meanwhile, Monsanto appears to be remaining stoical in the face of a mounting storm of criticism. The company continues in all possible ways to deny that it has done anything wrong. In its annual report for 2002-2003, Monsanto India Limited even states that its expects *"the acreage (under Bt cotton) to improve as farmers have seen the benefits of the new technology in controlling the bollworm"*. In the same report, Monsanto India's chairman of the board Brett D. Begemann states with pride that, in 2002, more bolls of cotton were grown on Bt cotton bushes than on their conventional counterparts. He omits, however, to mention that the Bt bolls in the 2002-2003 season were smaller and ultimately delivered less cotton than most of the other cotton varieties in India. Moreover, the company has, to date, systematically refused to make any hard facts about Bt cotton available. For example, the results of Indian field tests with this cotton from 2001 have still not been made public. Through such inaction, independent sci-

entists are unable to check on what basis Monsanto makes its claims.

Meanwhile, the company continues to bombard Indian farmers with advertising. Shortly after the failure of the 2002-2003 season, Monsanto placed large "advertorials" in regional Indian newspapers. In these adverts - which looked remarkably like editorial articles - so-called "showcase" farmers told how, thanks to the Bt cotton, they achieved far higher yields and used much less pesticide. There have also been adverts in which Monsanto offers a free bottle of the pesticide Tatamira with every two sacks of Bollgard seed purchased. The irony, of course, is that this is in direct contradiction to Monsanto's claims that it works to reduce pesticide use.

The biological treadmill

Devinder Sharma, formerly an agriculture journalist and now the director of the Global Forum for Biotechnology in New Delhi, wrote hundreds of articles in the '80s and '90s for the "Indian Express" about pesticides in India. He reported at first hand how insects were developing ever-increasing resistance to a growing range of chemical pesticides. *"First the farmers used DDT. When the insects no longer reacted to this, they switched over to the next generation. In the meantime, we have arrived at the fourth generation"*. But the insects have long ceased to react to this fourth and very powerful generation of pesticides. According to Sharma: *"You can now dunk a fly into a bottle of pesticide without anything happening to it. Afterwards, it just flies away"*. Like many scientists, Sharma predicts that within four years the American bollworm will be resistant to the Bt toxin that Monsanto genetically engineered into its cotton. In his view, Monsanto will then insert a second gene into the plant, one that produces the venom of a snake or a scorpion, for example. After that will come a third and a fourth

gene, and so on. Sharma: *"The farmers will then not only be caught on a chemical treadmill, but on a biological treadmill too"*.

According to Sharma, the only way out of this endless spiral is a total ban on the use of pesticides in cotton production. *"Alternatives, such as organic cotton growing or Non Pesticide Management (NPM) deliver good results and deserve far more support"*. In addition to the environmental benefits, poison-free cotton also has economic advantages, especially for small farmers (by far the majority of farmers in India) because the investment costs (and therefore the risks) are lower. On the other hand, this form of cultivation is labour-intensive and requires extra education. A mass conversion through the many small-scale initiatives in the Indian countryside is therefore not possible without external support, for example from the Indian government.

Bhargava also thinks that radical regulations are needed as soon as possible to bring Indian cot-

ton cultivation onto another track. He argues for a ten-year moratorium (temporary ban) on the growing of all GM crops. According to Bhargava, these ten years are badly needed in order to research and assess the environmental and health risks of GM crops. He stresses that these will not be imaginary but scientifically credible risks, such as the existence of new allergies and new poisonous substances, the loss of insects that are beneficial for agriculture, and the development of resistance to antibiotics thereby rendering these life-saving medicines useless.

Whether the Indian government will take the advice of the scientist and the many other critics will not become clear until March 2005, which is when Monsanto's licence for the cultivation of Bt cotton expires. The central government in New Delhi must then decide whether to extend or withdraw the licence. In the meantime, many Indian farmers will not be waiting for that decision and will be steering clear of Monsanto's GM cotton for good.

Trade dispute over GM foods delayed

The outcome of the transatlantic trade dispute in the WTO on genetically modified (GM) foods has been substantially delayed after the three-man panel overseeing the case decided, in August, to consult scientists on the arguments raised in the case. Although the WTO is still keen to have a first report finished by April 2005, past experience dictates that the process will take substantially longer. In a previous case over the use of beef hormones, the scientific debate lasted more than 600 days.

The move to call in scientists was a major blow to the Bush administration which, in recent months, had fought to stop any debate over the scientific safety of GM foods or crops, preferring instead to argue their case on narrow trade rules. The WTO has now written to international organisations asking for names of scientists to take part, and it is expected that the disputing parties will also suggest scientists. It is anticipated that the selection of scientists

alone will take until almost the end of 2004. Following that, the Panel, as well as the parties involved, will submit questions. The scientists will then write a report to answer the points made.

In a separate development, an alliance of environmental, farming and civil society organisations have written to the European Commission accusing it of "caving in" to the WTO pressure on GM foods. The groups highlighted that, since the trade dispute started, the Commission has forced through 2 GM products without the support of either the public or the Member States, and has pressurised countries to drop their national bans on GM foods and crops. The organisations were also critical that the Commission is arguing in the WTO that there is scientific uncertainty over the safety of GM foods, yet at the same time pushing products domestically in Europe.

Friends of the Earth Europe (FoEE) campaigns for sustainable and fair societies and for the protection of the environment, unites more than 30 national organisations with thousands of local groups and is part of the world's largest grassroots environmental network, Friends of the Earth International. FoEE gratefully acknowledges EU funding support.

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