

Seedling

Biodiversity, Rights and Livelihood



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GRAIN is an international non-profit organisation which promotes the sustainable management and use of agricultural biodiversity based on people's control over genetic resources and local knowledge. To find out more about GRAIN, visit www.grain.org.

Seedling

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Jatropha curcus seeds, within and without their black shells
Photo by GRAIN

Back cover:

Local jatropha variety, Bolangir district, western Orissa, India
Photo by GRAIN

In this issue...

Even if we weren't there, most of us remember COP 8, which was held in Curitiba in Brazil in March 2006. Demonstrations by farmers, peasants, indigenous peoples and civil society compelled government representatives from all over the world to uphold the ban on GURTs (Genetic Use Restriction Technologies). GURTs are experimental forms of genetic engineering technology, sometimes referred to as "terminator" technologies, that provide the means to restrict the development of a trait in a plant variety by turning a genetic switch on or off. It seemed that the "Ban Terminator" campaign had succeeded in putting suicide seeds and other such technologies into a deep freeze. It was a moment of triumph which reaffirmed the power of social movements and popular organisations to influence the course of history.

But, as is demonstrated in the opening article in this issue, first published in our sister Latin American publication, *Biodiversidad*, the push for GURTs continues, even within governments that supported the ban. Just a few months after the Curitiba meeting, the European Union began the Transcontainer Project to develop genetically modified crops that are "biologically contained". It is the same terminator technology but dressed up with a new coating of greenwash. The Transcontainer website describes what they are doing as an environmentally friendly way of "significantly reducing the spread of transgenes of GM crop plants to conventional and organic crop plants and to wild and weedy relatives". COP 9 is to be held in Bonn, Germany in May. As it approaches, it is time to challenge this technology yet again.

Terminator technology is only one of a range of "second generation" genetically modified organisms (GMOs). In this issue we are publishing an important article by Guy Kastler from the Peasant Seed Network in France. He explains in careful and concise language the new strategy that the European biotechnology companies have assembled, with the support of the authorities. On the face of it, European consumers appear to be winning the battle against GMOs. The European authorities are no longer pressing for the

acceptance of US-led "first generation" GMOs. Indeed, Monsanto's tactics in chasing farmers for the payment of royalties have been criticised as far too aggressive. But, as Kastler demonstrates, Europe's reappraisal only amounts to a tactical retreat. Behind the scenes, European companies are quietly developing a second generation of GMOs that will be far harder to combat.

These new GMOs will be equipped with GURTs, or they will be developed by new high-tech breeding techniques that will permit the companies even greater control over seeds through legal mechanisms such as plant breeders' rights. Since many of these new genetically manipulated products will fall outside the strict definition of a GMO, they will be exempt from the mandatory assessment and specific authorisation that are required for GMOs. Many consumers opposed to GMOs will unwittingly end up purchasing them.

In our special issue on agrofuels in last July's *Seedling*, we paid insufficient attention to India, which is emerging as a leading producer of biodiesel, mainly manufactured from *jatropha*, a bushy tree. As it grows well on dry, infertile soil, *jatropha* is often cited as an ideal crop for agrofuels, as it can be grown on waste land. However, what appears as "waste land" to outsiders can often play a crucial role in the life of rural communities who have to make full use of scant resources to survive. *Jatropha* has long been a useful plant for many of these communities, but today it is being used as a tool in the corporate take-over of rural India.

Our interviewee in this issue is Daycha Siripatra, a leading grassroots activist in Thailand. He talks about the farmers' profound knowledge of seeds and plants, which means that, even without carrying out scientific tests, they realise when their crops have been contaminated by GMOs. There are more than 6,000 varieties of rice in Thailand, he says, and these varieties need to be grown in the fields where, in the skilled hands of local farmers, they can adapt to changing climatic conditions. It is the experience of people like Daycha Siripatra that led GRAIN recently to argue that it is far more important to have seeds growing and being adapted in the fields, rather than to conserve them in vaults.* They must remain a living resource.

* *Against the grain*, "Faults in the vault: not everyone is celebrating Svalbard", February 2008 grain.org/articles/?id=36



A couple of years ago it seemed as if mass-based movements throughout the world had won the battle to ban Terminator seeds. But the biotechnology companies are back on the offensive, arguing that the urgent need to combat global warming makes it imperative to use Terminator technology. Many peasant farmers around the world believe this to be yet another spurious argument used by the companies to gain acceptance for their unnecessary and dangerous technology. In the run-up to COP 9 in May 2008, we reproduce an edited version of an article* first published in our sister Spanish-language magazine, *Biodiversidad*.

Seeds of passion

VERÓNICA VILLA



If a neighbour were to sow Terminator seeds, the community would have to drive him out", says José Pequeno, a peasant in the state of Paraíba, Brazil, when reflecting on what would happen if Terminator technology finally came on the market. "Farmers are passionate about the seeds they sow in the fields. They love them, in accordance with the trust they have in each variety. I don't know the Terminator seed and I don't want to know it. We do things differently here. We are in favour of seeds that have life, that have passion, that will bring joy and not death."

Terminator technology runs counter to the peasant conception of life and work by creating genetically modified crops that have seeds that poison themselves and become sterile, so that farmers cannot save the seeds produced in the harvest and sow them again. They will be forced every year to buy new seeds from the companies (or, as we shall discuss later, to buy another product from the companies to "activate" the seeds).

In 1996 Terminator technology was publicly attacked by peasant organisations, including Via Campesina. In 2000, after mobilisation by peasant and environmental movements, the Convention on Biological Diversity (CBD) adopted Decision V/5, a de facto moratorium on Genetic Use Restriction Technologies (GURTs), which is the official name for the new technology that includes the Terminator. The Decision recommended that field trials should be stopped and that crops developed from this technology should not be sold on the market. Despite this, the seed industry pressed ahead with its research. In 2005 and 2006, Decision V/5 was strongly attacked by some of the companies, and several governments tried to have it withdrawn. However, further demonstrations by farmers, peasants, indigenous peoples and civil society throughout the world led governments at the eighth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 8), held in Curitiba, Brazil, in March 2006, to decide unanimously to reaffirm and strengthen Decision V/5.

* This article was compiled on the basis of public statements by Hope Shand, Pat Moonney and Silvia Ribeiro, from the ETC Group.

Terminator back on the agenda

This battle, it seemed, had been won. But the companies did not give up. Only three months after COP 8, the European Union began a three-year research project called Transcontainer, with a €5 million (US\$7.3 million) budget, to investigate the development of suicide seeds. A month later, in August 2006, Monsanto acquired Delta & Pine Land, the world's biggest cotton seed company, which owns patents on genetic sterilisation technology and has been conducting Terminator field trials in greenhouses.

This is not the first time the biotechnology companies have refused to take 'no' for an answer with respect to the Terminator, but today they have marshalled more persuasive arguments. They have long presented the Terminator as an environmentally friendly tool that can prevent GMO contaminations. They have claimed that, if the genes of a Terminator crop were to escape, the seeds that resulted from any accidental pollination would not germinate, so there would be no risk of contamination. But until recently there seemed no good reason, to the European public at least, for farmers to cultivate GMOs, as they brought no great advantage. But this is changing. Today agro-industrial giants and oil companies are joining forces to promote the idea that, in the face of the threat posed by climate change, the world needs a new generation of genetically modified crops and trees to produce agrofuels more efficiently. The industry clearly wants to present the environmental crisis as a single, overwhelming argument in favour of the new GMOs. Terminator technology, they say, will ensure the "safe" production of both agrofuels and crops designed to produce industrial drugs and chemicals.

Transcontainer project

It is within this context that the European Union is developing the Transcontainer project. Europe is the region of the world where there has been most resistance to GMOs, and this project has been specifically developed to combat European fears of GMO contamination. It states on the official Transcontainer website:

The overall goal of Transcontainer is to develop genetically modified (GM) crop plants that are "biologically contained", in order to reduce significantly the potential spread of transgenes of such GM crop plants to conventional and organic crop plants and to wild or weedy relatives, when such exist.¹



Fruit and vegetables for sale at Mercado Chachagüí, Nariño department, Colombia

Photo: Maria Eugenia Jeria

There is no doubt that transgenic contamination is a serious problem. Neither industry nor government authorities have been able to control or contain GMOs. Between 1996 and 2006 at least 146 cases of transgenic contamination were documented in 42 countries on six continents. Genetic contamination has massive legal and economic implications, not only for farmers, but also for agribusiness and the food processing industry. A single case of contamination (caused by Starlink maize in the United States in 2000) has to date cost the companies more than US\$600 million. In 2006 Bayer's transgenic rice, Liberty Link, affected 40 per cent of United States exports of rice and represented a financial loss of US\$520 million for that country's farmers and food industry.

The goal of the European Union project is to develop biological containment strategies that permit the coexistence of transgenic and conventional crops. The project has 13 partners, from both public and private sectors, from eight European countries. Partners include universities, government agencies and seed companies. The project is co-ordinated by Wageningen University in the Netherlands. Along with the Terminator, one of the project's activities is to develop "reversible transgenic sterility". The ETC Group calls it "zombie technology", because the idea is that the seeds will "return from the dead" with the application of an external stimulus, which could be a chemical agent or heat. It means that farmers will be able to restore the fertility of the seeds for each new agricultural season. The companies insist that the aim of the new technology is to promote biosecurity, not to stop farmers from illegally planting patented seeds.

¹ All quotations in this article are from the Transcontainer website: <http://tinyurl.com/35fjn6>



But there is no doubt that the farmers will have to pay for the “reversible” technique and that the companies will try to maintain a monopoly on the new technology.

The companies like to say that farmers will not be forced to use Terminator or Zombie seeds. However, the most likely scenario is that companies will do everything possible to convince farmers to use these technologies. They will offer new transgenic traits that are supposedly more productive, always affordable and are genetically sterile “to prevent accidents”. They will keep the price low, at least at first, to test their product. Once they have trapped farmers into adopting their technology, they can raise the price of restoring fertility as high as they want. This is not a conspiracy theory. It is the inevitable logic of market forces, where a handful of companies is dominant, where public programmes for improving biodiversity have been destroyed, and where there is no such thing as “free choice”.

Biocontainment seeds

Terminator seeds can pollinate related plants in neighbouring fields, because its pollen remains fertile and the seed is programmed to poison itself only when it is completely formed. But the seeds that result from this pollination will not germinate and will be sterile. Neighbouring farmers will not know what percentage of harvested seeds will be sterile, until they can see with their own eyes that they have not germinated. In the same way, farmers who depend on food aid risk devastating crop losses if they sow seeds provided as food aid – a very common situation – and these contain Terminator genes. Of course, poor farmers will not knowingly plant Terminator seeds, but they might end up doing so if agencies introduce them in the technological packages they provide as aid.

Will biocontainment work? It is important to realise that biocontainment based on genetic sterility is NOT a trustworthy mechanism to avoid the escape of transgenes. It is perfectly possible that something will go wrong in such a complicated system and that these crops will introduce new biotechnological dangers. In the question-and-answer session on the Transcontainer website, the question is asked: “Will biological containment strategies always be entirely fail-safe?” The answer: “Possibly, but in reality the complete, hundred per cent prevention of transgene spread cannot be proven scientifically. One can experimentally determine only that transgene spread is lower than a certain frequency.” In other words, molecular biocontainment based on the sterility of genes is

NOT a mechanism that can be trusted to avoid genetic flux.

But would it really matter if Terminator were imposed on us? What are the dangers? More than 1.4 billion people in the South depend on seeds saved from the harvest as their principal source of seeds for the following cycle; and three-quarters of the world’s farmers exchange saved seeds with their neighbours. We are talking about a huge number of people, with their communities, territories, histories and languages. Community selection and improvement of crops are the basis of local food security.

The researchers in the Transcontainer project insist that their suicide seeds are not designed to stop farmers saving seeds. They say their objective is the biological containment of GMOs and that the sterility is a biological safety tool. However, it seems undeniable that these same biocontainment strategies that are being developed to avoid the escape of GMOs will make it difficult for small-scale farmers to go on keeping and using the seeds collected from their harvest. To quote again the Transcontainer website:

Will GURTs or biological containment strategies not decrease the possibility for European farmers to save seeds from crops they grow on their farm for planting in the next season?

Not necessarily. Transcontainer will study and develop technologies that prevent transgene spread from GM crops, while at the same time their fertility can be restored. Moreover, Transcontainer is specifically targeted at European agriculture and European crops, and European farmers do not generally save seeds from crops they grow.

This is not a very reassuring response from the very authority that is promoting the new technology.

Indeed, it seems clear that Terminator technology is an assault on local communities: it may well reduce the capacity of farmers to produce food and it threatens biodiversity. And this is without mentioning the harm it will do to communities and the way of life of people like José Pequeno, who know about the passion contained in seeds.

Before COP 9 (May 2008)

According to the Transcontainer website: “The results of Transcontainer will contribute to an informed decision whether the moratorium should be continued or modified in the context of



supporting EU coexistence measures". This suggests that the industry will argue that sterile seeds are not a problem because sterility is reversible. It is clear that the moratorium is fragile. After two or three additional arguments and more pressure we could find the technology on the market before we know it.

The European Union broke an important agreement with the Group of 77 developing countries when it launched the Transcontainer project. Other countries, such as Canada, New Zealand, Australia and, of course, the United States, have also decided to promote these technologies. It is also clear that countries such as Brazil, Mexico and Argentina will take a position in response to their short-term interests. It is clearly important for activists to defend the moratorium at the Convention on Biological Diversity (CBD) during COP9, outside and inside the conference hall, as occurred in Curitiba in 2006. However, in the last resort, it will be national bans that will make companies pause for thought before they descend like vultures on peasant seed varieties and technological packages in our countries.

What do they really want to control? Seeds are the first link in the food chain. The companies want to control them because this is how they can ensure their power along the whole chain. This is why manipulation of seeds has so many implications, and why the genetic diversity of crops threatens company profits. The companies want to eliminate genetic diversity so that their GMOs are the only seeds available. The greater the presence of GMOs in a country, the easier it is to criminalise farmers' varieties. Evil laws increasingly make the latter illegal and hand over control to the big chemical, pharmaceutical and seed companies.

Terminator and Transcontainer are not about controlling GMOs. They are about controlling farmers, restricting their rights and eliminating the practice of saving, exchanging and enriching peasant seeds. What is at stake is not only the impact of the Terminator on our health and the environment but also what it means for food policy: who is to be in charge of this policy, the people or the companies? Companies say that GMOs have higher yields and that they will solve the problem of hunger, cure new diseases, counter climate change and improve the food we eat. Until now, however, the only quality possessed by 80 per cent of GMOs produced and marketed in the world is resistance to herbicides. The only thing they feed is company profits.



Photo: María Eugenia Jeria

Stallholders at Mercado Consaca, Nariño department, Colombia, in 2006

Unmodified seeds have passion and speak to the people who sow them and work the land. They are the starting point for achieving the food sovereignty and the food security that make countries stronger. A technology that reduces the capacity of farmers and peasants to produce food, and that puts an end to their age-old right to save the best seeds threatens food sovereignty, food security and biodiversity. It is a danger to crops and therefore to people. From an ethical and logical point of view, genetic sterility is not in any way "safe" or "acceptable". Public money should not be used to subsidise company programmes. If governments do not react and ban Terminator, the technology will become available on the market. Brazil and India have already tried to take this step. Not all the news is bad: a bill banning the Terminator was sent to the Canadian Parliament in June 2007. COP 9 should move in this direction, strengthening the moratorium on GURTs and completely banning the Terminator.



The battles lines in the power struggle over seeds are shifting in Europe. Authorities are dropping plans to push US-led “first generation” genetically modified organisms (GMOs), so that European companies can develop “covert” GMOs and new “double-locked” seeds instead. In 2008, the Sarkozy regime will use the French presidency of the European Union to promote its own corporate-led agenda on these issues. It is becoming more important than ever that farmers assert their collective rights over seeds. Guy Kastler of the Peasant Seed Network in France explains.

New threat from covert GMOs

GUY KASTLER



6



Guy Kastler

has a small organic farm in southern France. He is coordinator of the Réseau Semences Paysannes (Peasant Seed Network), a member of the Confédération Paysanne (Peasant Confederation) and European representative in the Biodiversity Committee of Via Campesina.

Two recent events show that an upheaval in the French (and global) seed landscape is picking up pace and exposing new agendas at work. The first of these was the four-month-long French debate known as the “Grenelle de l’environnement”,¹ which was organised by President Nicolas Sarkozy and ended in October 2007. It resulted in a ban on the planting of the latest genetically modified (GM) crop that had been authorised for cultivation, and an allocation of €45 million (US\$ 66 million) for biotechnology research. The second event was the meeting of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in Rome at the end of October. It occurred at a time when Europe was preparing to overhaul its seed laws, as part of the “Better Regulation” simplification process, and when France was planning to take advantage of its

upcoming presidency of the European Community to organise a “European Gene Summit”.

The outcome of the “Grenelle de l’environnement” on GMOs and intellectual property

Ditching first-generation GMOs

President Sarkozy surprised the world by halting, at least temporarily, the expansion of Bt crops² in the largest maize-producing country in Europe. Although it was unexpected, his declaration confirmed a general tendency in Europe to abandon first-generation GMOs³ and was in line with other recent decisions. Other European countries (Italy, Austria and Germany) are demanding a European moratorium on GM crops until there has been a full review of the assessment methods used by the European Food Safety Agency (EFSA).⁴ Research

institutes are also abandoning first-generation GMOs. For instance, the French National Institute for Agronomic Research (INRA) will focus instead, as far as European edible crops are concerned, on marker-assisted selection techniques. Some corporations are also abandoning these first-generation GMOs. Pioneer let it be understood at the last meeting of the governing council of the ITPGRFA that it wants to distance itself from Monsanto's "aggressive" policy, preferring to defend its market position based on the "quality" of its seeds rather than by chasing farmers to get them to pay royalties on the GM seeds that they reproduce.

It is clear that the battles lines are moving in the power struggle over GMOs and seeds. It seems that the European Commission has taken note of the social movement against GMOs, which is buoyed by relentless consumer opposition, and is gradually dropping the idea of imposing the cultivation of these first-generation GMOs.⁵ For example, the Commission has decided not to challenge the Austrian government's ban on the growing of certain GM crops (Monsanto's MON 810 GM maize and Bayer's T25 GM maize), even though it has rejected the same government's attempt to take the same action with respect to the sale of these GM crops. The European Environment Commissioner, Stavros Dimas, has also proposed to the Commission that it oppose the growing of certain herbicide-resistant crops (Syngenta's Bt 11 and Dupont and Dow Agro-Sciences' Bt 1507 GM maize), while again not including the sale of these crops within the ban.

Instead, the European Commission seems to be creating space for European seed companies that are investing in the development of a new generation of GM "suicide" seeds (such as Zombie seeds, Pull-the-Plug plants, Exorcist technology,⁶ and so on), which, they claim, protect the environment and allow GMOs to coexist with conventional crops. To ensure the companies' profits, these GMOs are "double-locked" in that they benefit from the twin legal protection of Plant Breeders' Rights (PBR) on the variety and patents on the genes.

Covert GMOs

For seed companies, the great benefit of a patent on a traceable gene is that it allows them to track their intellectual property into farmers' fields and through the food chain, where they can insist on payment of royalties. The flip side, though, is that this gene also ends up on the plates of European consumers who do not want to eat it. Thus,

GMOs become commercially counter-productive in Europe the moment they are labelled in food products sold to consumers. They can still, however, be used in animal feed (as long as the consumer of the animal products is not told that they have been used) and in industrial crops (for example, crops used to produce starch or agrofuels), as long as they do not risk contaminating non-GMO crops. That is how Europe is trying to reconcile differences with the World Trade Organisation (WTO): by accepting imports of transgenic animal feed and GM crops for industrial use that do not contaminate through pollen (such as plants that rely on vegetative propagation, like potatoes, or plants that are genetically modified to be sterile), and by pursuing the development of a new generation of "double-locked" GM crops, all the while allowing its member states to prohibit the introduction of first-generation GM crops on their territories if they wish.

The upcoming reform of the EFSA should provide the necessary scientific justification for this new division between "acceptable" and "unacceptable" GMOs. But it may also mean that in the future European governments will no longer have the freedom that they have now to take political positions based on a qualified majority that is not necessarily in line with scientific expertise. Indeed, European corporations have learned through experience that governments are less docile than scientists. Moreover, by using to their advantage the burdensome assessment procedures so that only the largest companies will be able to stay the course, they will guarantee themselves exclusive access to the whole European market, without any possibility of European member states standing in their way. The corporations, free of political restraint, will in this way gain complete control over the definition of non-tariff barriers (such as environmental and safety concerns) through which they can eliminate the competition.

The corporations have not relented in their efforts to confiscate the seed. Beyond the new generation of "double-locked" GMOs described above, they have already developed ways to overcome the barriers that they themselves have created. Indeed, they have long realised that Plant Breeders' Rights (PBR) coupled with new patented biotechnologies could be more effective in strengthening their control over the market than a mere patent on a GMO. Ever since the first European directives on GMOs (1990 and 2001), new biotechnologies that do not involve transgenesis – such as mutagenesis and cellular multiplication and fusion – are classified as "traditional plant breeding methods" and their

1 From the name of the negotiations that brought an end to the huge cultural crisis of 1968: the "Grenelle agreement", which was signed in Paris on the rue de Grenelle.

2 Crops that have been genetically modified to resist pests through a gene spliced into them from *Bacillus thuringiensis* (Bt), a soil microbe.

3 First-generation GMOs consist of a small number of crops that have been genetically modified to be resistant either to herbicides or to certain pests. About 90 per cent of these GMOs are patented by the US corporation Monsanto.

4 The EFSA is responsible for the official scientific evaluation of GMOs.

5 GMOs that either produce an insecticide or are resistant to herbicides.

6 Zombie seeds contain both a gene which causes seeds to fail to germinate and another gene, called the Recovering Construct, which, when activated by an environmental or chemical trigger, makes it possible to bring the seed "back from the dead". Pull-the-plug plants have a lethal gene inserted into them, alongside the trait of interest, that is triggered by a chemical or environmental stimulus. Pull-the-plug plants differ from Zombie technology in that the default position is not automatic death: for Pull-the-plug plants to commit suicide, the promoter must be triggered. Exorcist technology would permit the removal of all transgenic DNA out of a transgenic plant at some stage in its development – before the plant flowers and produces pollen or before it becomes food. As a result, companies will be able to argue that their products are 'GM free' for the purpose of food labelling. See ETC Group, "Terminator: The sequel", Communiqué, Issue 95, May/June 2007, <http://tinyurl.com/37b8hp>





From the ETC Group's Terminator: The sequel, *Communiqué 95*, <http://tinyurl.com/37b8hp>

products are not classified as GMOs. Therefore, they are exempt from any mandatory assessment, specific authorisation for commercialisation or cultivation, and labelling. As for nanotechnology, there is no legal framework for it, which makes it possible to put nanotech-derived products on the market in complete secrecy. Consumers who would wish to avoid these covert GMOs are already buying them without knowing, simply because these manipulated products do not fall under the strict definition of a GMO.

The ultimate control: PBR and patents combined

These biotechnologies, which artificially modify crop genomes, used to give highly unpredictable results. Today, they have been scaled up to an industrial level thanks to progress in "marker-assisted selection". This explains why seed companies are doing their utmost to perfect a legal framework that guarantees their control over these techniques – one that is as effective as patenting, but without the disadvantages. Essentially this entails a combination of plant breeders' rights on varieties plus patents on genes. A patent requires disclosure of information to the public about the plant breeding method used. PBR, on the other hand, does not force the breeder to give out any information on the plant breeding method or

the origin of the varieties used, thus legalising biopiracy and the cheating of consumers. In terms of regulation, European breeders have ensured that patents are restricted to "the gene and its function", molecular markers and breeding methods, without letting them cover plant varieties as the US system does. This allows breeders to protect themselves from competitors who want to reproduce the manipulated gene, including farmers who plant farm-saved seeds. They can do this without any obligation to inform the consumer, who is not purchasing a gene and its function, a molecular marker or a selection method, but a manipulated variety protected by PBR.

PBR protection was once far less effective than patenting. But in 1991, the International Union for the Protection of New Plant Varieties (UPOV) established that "essentially derived varieties" and farm-saved seeds are "counterfeits". In spring 2006, the seed lobby won the ratification of this 1991 agreement in France, despite strong resistance from a French society that is culturally attached to farm-saved seeds.

It is still, however, extremely difficult for a seed company to prove that its own variety was regrown in the field of a farmer from whom it must receive royalties. Indeed, a plant variety is defined in the PBR system in terms of its physiological and



agronomic traits. As these change through each growing cycle, it is hard to distinguish one variety from that of a competitor. Breeders in the UK have resolved this problem through private agreements with seed cleaners. The cleaners collect royalties for the seed companies by including them in the price they charge to farmers for cleaning their farm-saved seeds. This does not work, however, if the farmer decides not to use the services of a cleaning company.

True to the interventionist traditions of their country, French breeders have used a different approach: getting the State to impose an interprofessional agreement for the collection of these royalties, dubbed the Compulsory Voluntary Contribution (CVC). The CVC is levied on all farmers delivering bread wheat to an accredited storage facility who are not able to prove that they purchased certified seeds. Seed companies thus pick up these royalties collectively and then split them between themselves in proportion to their sales. This allows them to relieve themselves of any burden of proof. It is no longer the seed company which has to prove that the farmer was guilty of “counterfeiting”, which is impossible to do on the basis of the stability of physiological or agronomic traits on which the PBR hinges. It is up to the farmer instead, now, to prove that he or she has not produced “counterfeit” seed by showing a receipt.

In spring 2007, the seed companies got a law passed in the French Senate designed to allow the extension of these interprofessional agreements to all crop species, but they have not yet succeeded in getting this bill through parliament. During the discussions at the “Grenelle de l’environnement”, however, they managed to get a law approved that makes it impossible to exclude farm-saved seeds from investigations of counterfeiting. As a result, any French farmer saving seeds is now vulnerable to prosecution for violating PBR, except where a CVC has been paid. The breeders argue that this will bring the farmers themselves to support the extension of the CVC to all species.

The CVC system contains a number of flaws. While it is technically easy to implement with crops, such as bread wheat, which farmers are obliged to bring to an accredited centralised storage unit, this is not the case for crops with no centralised storage system. Moreover, its feasibility relies on interprofessional agreements, the very principle of which could be challenged by the European Commission on the grounds that they block competition. Yet another problem

is that it can be argued that the shifting of the burden of proof to farmers, who gain exemption from the payment of the CVC only if they can produce a receipt for the purchase of certified seeds, infringes the right of farmers to resow seeds from their harvest, whether it comes from a non-protected variety or a variety in the public domain listed in the catalogue or a non-registered plant genetic resource. The CVC thus runs counter to the UPOV agreements, which guarantee the right of breeders to “legitimate remuneration” solely in the case of re-use of a protected variety, and to the IRPGRFA, which recognises farmers’ rights to save, use, exchange and sell farm-saved seeds.

At the same time, as if to make up for the limitations of the CVC, breeding companies are pushing ahead with research to develop simple methods of identifying varieties and proving counterfeiting through the use of molecular markers. They are also developing, together with seed distributors, integrated and closed systems of “identity preservation” that completely disallow farm-saved seed and provide no information to consumers apart from commercial advertising. Some of these systems include:

- *obligatory membership in a club* to be able to use a specific variety. This obliges farmers to deliver their harvests to designated distributors and is becoming a widespread approach in the flower and fruit sectors.
- *reserved or industrial varieties*, not listed in the European Common Catalogue, of which the seed and the harvest belong to the company. In this system, normally regulated market transactions (involving the seed or harvest) are replaced by an unregulated service agreement under which the farmer delivers the harvest to the seed company and invoices it for the service of growing the crop. This is practiced with bread wheat, durum wheat, vegetables for the processing industry, and others.
- *contract production or public subsidies* that require the purchase and use of certified seeds. When the French cereal cooperatives decided to promote GMOs in 2007 it was not for the money from royalties on GM seeds, which would only end up going to Monsanto, but because the threat of contamination would allow them to force non-GM producers to purchase certified non-GM seeds from them.

Such tactics extend to organic farmers as well. European legislation on organic certification



“Better regulation”

In early 2007, the EC set up a working group tasked with completely overhauling, simplifying and reducing the costs of seed regulations and the common catalogue (as was done recently for the organic regulations). Following “widespread” consultation in early 2008, the first conclusions of the group will be presented in July 2008 and the first proposals from the Commission should be published in October, during the French presidency. The European Seed Association (a lobby group of European seed companies, in which the French firm, Florimond Desprez S.A, plays a key role) is planning another offensive against farm-saved seed, and plans to replace the administrative burdens of the current seed certification system with a “self-certification” scheme accredited by the public authorities that would basically validate the internal control systems that only large firms use. Such systems are impractical and beyond the reach of small seed houses which, because they personally know their growers, do not need and do not have the financial resources to have them verified on an ongoing basis by private certifiers.

now requires them to use certified seeds, thereby excluding the use of local or farmers’ varieties that are not registered.

The European Gene Summit and EU seed laws

Amidst the glittering media celebrations, two measures put forward by the “Grenelle de l’environnement” went unnoticed. The first recommends taking advantage of the French presidency of the European Union, starting in July 2008, to promote the French seed system at the European level. In concrete terms, this means getting Europe to adopt a renewed PBR system: PBR plus the extended CVC. It also means promoting the adoption of the French assessment and certification system, including the extension of tests for Value for Cultivation and Use (based, like pesticides, on performance in four or five major European regions) or of identification through molecular markers. The second measure concerns GMOs. The French government wants to organise a “European Gene Summit” designed to promote its renewed PBR on the grounds that it would be fairer than patenting varieties. Combined with gene patenting and the Common Catalogue, this renewed PBR system is much worse than patents. It is designed to prohibit all farm-saved seeds, whether they come from protected varieties or not. It also legalises biopiracy and leaves consumers uninformed about covert GMOs.

The challenges of the ITPGRFA

The ITPGRFA, which was ratified by 116 countries (including all countries of the EU, but not the USA) has been in effect since 2004. It incorporates two new concepts introduced by the 1991 Convention on Biological Diversity: the

sovereignty of states over their genetic resources and the sharing of the benefits derived from their use.

The Treaty has three main objectives:

- to put in place a multilateral system of access to genetic resources, managed by the signatory states, that is based upon free consent and the sharing of the benefits derived from their use, and that contributes to the financing of the two other objectives;
- to ensure that developing countries have the capacity to assume sovereignty over their genetic resources by financing “*ex situ*” collections and by producing inventories of resources conserved “*in situ*”;
- to support *in situ* conservation and breeding, and to enable farmers to play their part in conservation, in particular by recognising their rights to save, use, exchange and sell farm-saved seed.

All commercial varieties are derived from varieties collected in farmers’ fields – the industry’s sole “raw material”. As commercial farming has replaced subsistence farming, peasant varieties were replaced by industrial varieties and locked up in *ex situ* collections. Farmers in southern countries producing subsistence crops are not viable markets for seed companies: they have no access to commercial seeds or to the technological package that comes with them. They have kept their own varieties, which are better suited to their farming systems that the seed industry is not interested in. The recognition of farmers’ rights by the ITPGRFA is supposed to let these farmers



maintain a sufficient portion of biodiversity to replace that which is being eroded in the collections.

Since its inception, the Treaty has granted seed companies access to over 130,000 free samples of plant genetic resources, despite opposition from southern countries. Led by Brazil, these countries have opposed the signing of a Material Transfer Agreement (MTA) until the question of benefit sharing has been clarified. Indeed, in the current context of intellectual property rights, this sharing is not happening and is a complete illusion. Plant breeders' rights – which can be granted to varieties that have been “discovered”, not only invented – carry no obligation to indicate which parental lines were used. And patents make it possible to hide this information amidst hundreds of pages of unreadable technical descriptions. In addition, the legal status of the “farmers” who are supposed to benefit from this system has not yet been clarified, apart from a few exceptions that have been the subject of widespread media coverage.

The Treaty thus re-imposes the old concept of “common heritage of humanity” – a concept that was totally rejected at the end of the 1980s when it was understood that there is nothing “common” about this heritage when genetic resources move in one direction only, from South to North, to then be patented. The situation is the same today: the Treaty takes something that is collectively held by farming communities, transforms it into a common heritage of the seed industry and institutionalises the worldwide biopiracy operated by seed companies. It does this by ensuring access for the companies while doing nothing for farmers.

While they abandon national and regional seed collections, the World Bank and a number of major private donors (including multinational seed companies, Bill Gates and others) have also set up a fund designed to secure the *ex situ* conservation of biopirated resources, especially through a huge, naturally cold cave in Svalbard, Norway, and through the development of information technology (meaning digital gene banks, an invaluable tool to industrialise mutant plants and synthetic biology).

Big seed countries – France, Germany and the USA – try to block the Treaty

The second meeting of the ITPGRFA's Governing Body, which was held in Rome from 29 October to 2 November 2007, had on the agenda, among

other things, the financing of capacity-building for developing countries and, at the request of Norway, farmers' rights. From the very beginning of the meeting, major seed-producing countries headed by France, Germany and Australia (representing the interests of the United States, which is not party to the Treaty) tried to neutralise the functioning of the Treaty by blocking financial contributions from developed countries, which are meagre but nonetheless necessary for the operation of the secretariat.

This attitude reveals the French government's strategy during the ratification of the Treaty by the French parliament in late 2006: to prevent the Treaty from going further in the recognition of farmers' rights and from strengthening the capacities of southern countries, now that the seed industry's access to protected resources is assured. This is in line with the French national policy on the conservation of plant genetic resources, entirely focused on *ex situ* collections in centralised genebanks. *In situ* conservation on the farm, as recommended by the the FAO Global Plan of Action on Plant Genetic Resources, is to be restricted, through the French government's approach to the EU directives on “conservation varieties”, to allowing a handful of old cultivars, uniform and stable enough to be registered, to be grown strictly within their regions of origin.

These three countries, however, were quickly isolated within the international community. All the other countries protested against this blocking strategy using two arguments:

- emerging industrial countries, in particular Brazil and India, demanded first and foremost the establishment of a mechanism to share benefits derived from patents or PBR. Apart from being an illusion in the current international framework of intellectual property law, this position unfortunately encourages the transformation of farmers' rights into a private intellectual property right that brings with it a denial of farmers' collective rights with respect to seeds.
- the other, put forward by the farmers' organisations and NGOs present at the meeting in Rome (Via Campesina and the IPC), and supported by numerous southern countries, demanded the recognition of the collective rights of farmers and financial support for their contribution to *in situ* conservation and participatory plant breeding, in both the North and the South.



While Europe shuns GM, its seed industry takes it elsewhere

by GRAIN

The European public and their policy-makers may be holding the line against GM crops, but with Europe's seed corporations it's an entirely different story. Of the world's top six seed companies, four of them are European.¹ Syngenta, based in Switzerland, and Bayer CropSciences, based in Germany, both major agrochemical firms, have been involved with GM crops for pretty much as long as Monsanto and DuPont – the US-based agrochemical corporations that dominate GM seed markets. These European corporations are the Americans' main competitors (and allies) in the countries growing GM on a large scale (Argentina, Brazil, Canada and the US) and, together, they lead the global lobby pushing for the opening of GM markets.

France's Vilmorin and Germany's KWS, the other European seed corporations among the global top six, keep a lower profile on the GM scene, but they too sell GM seeds in the major markets through their joint venture, Ag Reliant. The difference is that these firms have yet to commercialise their own GM traits, choosing instead to license the patented transgenes of the bigger agrochemical companies for incorporation into their lines. Yet both companies have long-term strategies for securing a stronger place within the GM market, which, for now, focus on developing a global production base and a next generation of GMOs and "pseudo-GMOs" to conquer new emerging markets for GM seeds and, eventually, to burst into the EU with their GM wares. Europe's hesitation in approving GMOs actually gives these companies a chance to catch up with the giant agrochemical companies that control the first generation of GM crops – and this is precisely what they are trying to do.

Vilmorin, which is controlled by the Limagrain Group, invested heavily in the 1990s and early 21st century in various European biotech programmes, such as Biogemma and Génoplante. But, frustrated by what it sees as an inhospitable environment for GM crops, it is shifting more and more of its GM research elsewhere – outside Europe – where there are lower costs and fewer regulations.² Most of its field trials for GM cereal varieties take place in North America, while, in Israel, it is developing GM fruit and vegetable varieties through its subsidiary, Hazera Genetics, with the support of Israel's Ministry of Industry. Rami Dar, CEO of Hazera, says that although "GMOs won't come to the vegetable industry for a long time", the ultimate emergence of GM fruits and vegetables "is only a matter of time".³

It is in this perspective that much of Vilmorin's long-term planning is now going into Asia, where the company feels there is more research and development and market potential for GM crops. According to Daniel Chéron, general director of Vilmorin, "Europe is losing ground and we are becoming dependent on the Americans. The Chinese and Indians, they're trying to prevent that happening."⁴

Vilmorin's first big move into Asia came in 2006 when, together with French food corporation Danone, it signed a deal with Indian biotech firm Avesthagen, giving Vilmorin 4.3 per cent of the shares in the company and setting up two holding companies in India to make acquisitions. Shortly after, the Avesthagen joint venture purchased two Indian seed companies: Swagasth, which focuses on cereals, and Ceekay, a vegetable seed company. Then, in November 2007, the companies announced that they were in the final stages of negotiations to take over one of India's top private seed companies for US\$4–5 million. Avesthagen's CEO, Viloo Morawala Patell, tried to play down the company's interest in GM crops. "I'd not call these genetically engineered crops; they are 'environmentally adjusted' crops", he said.⁵

During this time, Vilmorin was equally active in China. In June 2007, it signed a deal to take a 46.5 per cent stake in Yuan Longping High-tech Agriculture, a leading Chinese hybrid rice and vegetable seed company. This followed a deal struck by Vilmorin's Dutch joint venture, KeyGene, with the Shanghai Institutes for Biological Sciences to set up a Joint Lab for Plant Molecular Breeding. It also came on the heels of a series of deals inked by other European seed companies in China, including Bayer's two joint hybrid rice seed ventures and Syngenta's purchase of a 49 per cent stake in Sanbei, reportedly the 12th largest seed company in China, as well as its signing of a five-year research collaboration with the Institute of Genetics and Developmental Biology in Beijing.⁶ Another major European seed and pesticide firm, BASF, didn't mince words in explaining the rationale for its 2008 deal with China's National Institute of Biological Sciences. "Asia is emerging as a key player in plant biotechnology both in research and cultivation and we are striving to intensify partnerships in this dynamic region. Europe, on the contrary, is losing its competitiveness due to slow and contradictory political decisions", said Hans Kast, President of BASF Plant Science.⁷

1 http://www.vilmorin.info/vilmorin/CMS/Files/Analyses_financieres/vilmorin050706.pdf

2 Anne Pezet, "Les OGM aiguisent l'appétit des semenciers", *Usine Nouvelle*, 16 May 2006.

3 Corporate Profiles, 1 July 2006, Genetic Engineering and Biotechnology News: <http://tinyurl.com/4kxoe2>

4 Laetitia Clavreul, "Pour le semencier Vilmorin, l'Inde est devenue un marché prioritaire," *Le Monde*, 13 avril 2007.

5 Seema Singh, "Avesthagen to buy Delhi seed firm for \$5 MN," *Livemint.com*, 6 November 2007: <http://tinyurl.com/4axlsy>

6 GRAIN, "China: Vilmorin lays claim to top hybrid rice seed company," 20 July 2007: <http://www.grain.org/hybridrice/?lid=187>

7 "BASF expands GM activities in competitive Asia Pacific," *Food Navigator*, 24 January 2008: <http://tinyurl.com/y6kfjr>



Their isolation within Europe was also apparent. Italy and Spain unblocked the situation by putting the US\$4.5 million needed for the operation of the Treaty's secretariat on the table. Norway agreed to contribute to the funding of a working group on farmers' rights.


Farmers' rights at the heart of the seeds debate

Norway's initiative to set up a working group on farmers' rights has prompted the inclusion of a review of the current situation in respect of farmers' rights in the various signatory countries, taking into account not only their contributions but also those of NGOs and farmers' organisations, on the list of tasks given to the Treaty's secretariat. This review should feed into the decisions taken at the next meeting of the governing body, in Tunisia in early 2009. The governing body has also undertaken to involve farmers' organisations in its future work. Unfortunately, Canada's opposition prevented the financing of an ad hoc working group, which forces farmers' organisations and NGOs to contribute by using their own funds.

These events force farmers' organisations to acknowledge two things:

- The collective rights of farmers are at the centre of current international developments. These collective rights to conserve and renew cultivated biodiversity in the field by producing for the market, and therefore protecting, using, exchanging and selling their seeds, are relevant not only for international struggles around plant genetic resources, but

also for the struggle in Europe to refuse the application of both the CVC and intellectual property rights on seeds. They absolutely clash with the reduction of farmers' right to cultivate genetic resources to just a few stable and uniform local varieties recorded in a conservation catalogue, as the French position would have it. This position is completely contrary to the ITPGRFA – which France has nevertheless ratified. Instead of implementing regulations to respect farmers' rights as laid out in the Treaty, France is holding on to regulations that deny them completely.

- The year 2008 will be decisive, both at the international level in preparation for the next meeting of the ITPGRFA, and in Europe where the reform of the EU's seed laws and a possible "Gene Summit" are on the agenda. 

Going further

A speech given in French by Guy Kastler for Via Campesina at a FAO meeting in November 2007 can be accessed at:

<http://tinyurl.com/62dgl6>

Réseau Semences Paysannes:

<http://www.semencespaysannes.org/>

Industry's wish list for the next revision of UPOV:

The end of farm-saved seed? GRAIN Briefing,

November 2007,

<http://www.grain.org/briefings/?id=202>



FTA, by any name, can be worse than a tsunami

GRAIN

If one happens to be at Phuket international airport in the south of Thailand these days, it's easy to get the impression that the province has completely moved on from the aftermath of the 2004 tsunami. Almost every hour throngs of tourists come and go. Flights are often fully booked. Come evening time, both the beach area and Phuket city vibrate with an endless stream of economic activities. Just over three years after the tsunami, Phuket is back in business with a vengeance.

Tourism, of course, is the central dynamo. A powerful one, in fact, with the swell of tourists rolling out to Phuket's adjacent province, Phang Nga. Of the six provinces in southern Thailand affected by the tsunami, Phang Nga was the worst hit, with 4,224 lives lost and 7,000 hectares of land devastated. Phang Nga is primarily an agricultural province, covering an area of 4,170 square kilometres with 240 kilometres of coastline and 105 islets. The most important cash crop is rubber, although food crops such as rice, vegetables and fruits are also produced. Fishing and farming are the main source of income for most local residents – the very livelihoods that were damaged by the 2004 tsunami. Many fisherfolk believe that it is only logical that rehabilitation efforts should take these activities as their starting point.

However, the Thai government sees it differently. They view Phuket as the model, and they want more income and more employment to come from tourism. In fact, to the dismay of many local residents, the government wants to convert Phang Nga bay into an "alternative Phuket". Indeed, these residents say that tourism development dominates the government's post-tsunami rehab agenda, not only in Phang Nga but for the rest of Southern Thailand. This, they believe, is leading to the increased marginalisation of small-scale farmers and fisherfolk as their food and livelihood systems get compromised in the process. Already many of them have been displaced or absorbed by the tourism industry. It is common to find a former fisherman working at a beach resort, or farmers who have become paid labourers in fish farms.

But in this shift towards tourism and

aquaculture, much more is at stake than a mere switch in jobs for local residents. In Bang Phat village, for instance, as part of the government's rehabilitation programme, fisherfolk were asked to raise snakehead and coral fish to supply neighbouring Phuket and other parts of Thailand. But the scheme hasn't worked out: the snakeheads have grown big and the villagers are finding it hard to feed them, much less sell them. Small fishes that could have been the family's meal end up being fed to the snakeheads. And there is no ready market to sell the fish either locally or in the rest of Thailand. Thailand's fishing industry was liberalised under the banner of free trade, with all kinds of promises made about the increased income that would result. Yet these poor residents of Bang Phat cannot sell even a single snakehead because of the lack of a market!

In another area, in Phak Kao district, where shrimp paste is very much part of the food culture, a yacht club was established nearby and residents can no longer catch any of the local shrimp. Many consider shrimp paste to be essential to their diet, and making it is their main source of income. Further complicating the situation is that people have been encouraged through contract arrangements with Charoen Pokphand (CP), the largest industrial conglomerate in Thailand, to raise *Penaeus vannamei*, an alien species of shrimp from the Pacific coast of Latin America. This "white shrimp", as it is called, is known to be vulnerable to several viral diseases and other illnesses, which have on occasion wiped out the entire stock of the farmed shrimp. The species was banned in the Philippines until last year, when the country signed an economic framework agreement with China. As it grows very rapidly, this white shrimp is perfect for aquaculture and it is being increasingly farmed in Phak Kao and other parts of Phang Nga. But there is the very real danger that this species could escape into the open sea and wipe out the entire stock of every other shrimp species with which it breeds! The residents we spoke to were shocked at the idea, but at the same time, out of desperation perhaps, they use the alien species to make shrimp paste.

The local people in Phang Nga are wondering what is going on, with this flurry of new activities. Although the authorities have said little, they suspect that the initiatives are linked to the numerous free trade agreements that the Thai government has been signing with different countries. They seem to have grounds for their suspicions. For example, much of the development in Phang Nga bay is bankrolled by the EU. Might this not be linked to the EU-ASEAN FTA that is currently being negotiated, they are asking? Will the situation of farmers and fisherfolk get even worse as a result?

Elsewhere in Asia, more and more fisherfolk groups are becoming wary of these free trade agreements. Various groups in the Philippines have opposed the Japan-Philippines Economic Partnership Agreement, saying that one of the consequences will be that many Filipino fisherfolk will lose their livelihoods, as Japanese fleets will get free access to Philippine waters, particularly to tuna fishing. In Kerala in India fisherfolk groups are also worried that the EU-India trade and investment agreement will threaten local fishing communities. Under this agreement, it will become possible to import certain species of fish, such as sardines, mackerel, mullets, anchovies and flounder, under minimum tariffs, which will damage the livelihood of India's traditional fishworkers.

After years of talk and preparatory processes, the EU and ASEAN finally agreed in May 2007 to start negotiating an FTA. This FTA is poised to include several agreements that would put strong emphasis on structural reforms in investment, services and intellectual property in ASEAN countries, in exchange for improved market access for ASEAN exports into the EU. Fisheries are amongst the sectors that would be further liberalised under this FTA. Call it a partnership or cooperation or a framework agreement – which is how it's generally presented – an FTA is essentially about increasing business opportunities in a liberalised, privatised, deregulated environment, which is perfect for big TNCs. As always, big corporations will win while small folks will lose. 



Responding enthusiastically to the world agrofuel frenzy, the Indian government has promised a flurry of initiatives to encourage the large-scale planting of agrofuel crops, particularly jatropha. Without waiting for the government support to be spelt out, corporations are already moving in, taking over resources that have traditionally been used by rural communities. As a result, local people will find it harder to satisfy their food and fuel needs. Once again, it is the rural poor who will bear the cost of the agrofuel boom, while reaping few of the benefits.

Agrofuels in India, private unlimited

GRAIN

Today India is seen as an energy-hungry giant whose needs are growing as fast as its population. But an important qualification is needed: not everyone in the country makes the same demand on the formal energy sector. People's needs are as diverse as their situations, and energy use per person varies vastly. If you visit a rural community in India, two things would strike you. One is people's self-reliance and creativity in using available resources to meet their everyday needs. A large proportion of rural households – and even some urban ones – still rely on biomass-based fuels such as wood, crop residues and cow dung to meet their fuel requirements. The second is the sheer number of those leading an off-the-grid life. Despite the difficulty in getting reliable data, it seems that basic energy needs – that is, for cooking and for light – are still not being met by the state for about 86 per cent of rural households.¹ Clearly, it is important to take measures to satisfy these

needs, but it is quite another thing to use these statistics as a rationale for giving incentives to corporations to produce biofuels, which is what the government is doing. In fact, as we shall see, this policy will only widen the disparities.

The bulk of the fuel crops is intended to replace petrol, and it is not people in rural communities who are driving the large cars that need the fuel blends or biodiesel. The new fuels will not be used by "captive pedestrians", a term coined for very poor people in cities such as Delhi, who have to travel by foot or bicycle since they cannot even afford bus fares.² Indeed, the urban poor throughout India mostly use non-motorised transport. These people simply don't figure in the current debate on alternative fuels, which is heavily geared towards motor transport and industry. So for whom is India striving to produce massive crops for bio-energy?³ Will these new fuels improve the lives of the disadvantaged majority?



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1 National Sample Survey of the Government of India 1999–2000.

2 Geetam Tiwari, "Transport and land-use policies in Delhi", <http://tinyurl.com/2a7nsh>

3 K. P. Prabhakaran Nair, "Bio-fuelling the world's hunger", *The Hindu Business Line* 4 January 2008, <http://tinyurl.com/2bzg62>

4 CSIR's Central Salt and Marine Chemicals Research Institute laboratories in Bhavnagar, Gujarat, is the research partner. Technical inputs have come from the University of Hohenheim in Germany. DaimlerChrysler is spending Rs 33 million (US\$0.69 million) on the project. "Daimler to set up co-op to source biodiesel", <http://tinyurl.com/26fnkl>; see also <http://tinyurl.com/2br5y9>

5 See <http://tinyurl.com/5pfjlb>; <http://tinyurl.com/4ojnag>; <http://tinyurl.com/5yp8eb>

6 See <http://tinyurl.com/3oehas>

7 The case of the state-owned company, Rajasthan State Mines and Minerals Limited (RSMML), is telling. According to a Rajasthan government report, "45,000 litres of very high quality bio-diesel conforming to European standards have been produced and are being used as blended diesel in heavy mining equipments. RSMML is the only mining company in India using biodiesel in mining machineries..." By using an "eco-friendly" fuel, this company is able to give a "green" label to its mining activities, which in reality harm the environment and bring no benefits to the local community.

8 This term was suggested at an Indian national workshop on biofuels. <http://www.grain.org/agrofuels/?india2007>

9 See <http://tinyurl.com/yonbhb>

10 BDAI's website is at <http://www.bdai.org.in/>

11 See <http://tinyurl.com/26ko3w>

There is little indication that they will. DaimlerChrysler encourages the production of bio-diesel for its Mercedes and other "modern vehicles";⁴ Indian Railways leases its land to Indian Oil Corporation for agrofuel plantations to fuel its trains; the leading cement company, ACC, sets up jatropha (*Jatropha curcas*) and castor tree plantations for energy to run its captive power plants;⁵ the real beneficiaries of new fuels are the big corporations, which are using them to increase profits and to drive their assault on rural populations. These large private operations, which use huge amounts of resources (crops, land, water), could deliver a severe blow to community plans to achieve self-sufficiency in food and fuel. There is talk of government schemes for rural energy and "family type" bio-gas plants to provide energy security at the village level,⁶ but these projects are dwarfed by the state's support for huge corporate agrofuel refineries and large-scale plantations. The magnitude of these operations contrasts starkly with the smallness of what a local community would need to make its own fuel from bio-resources.

As regards the source for these fuels, the attention today in India is heavily focused on deriving ethanol from biomass, particularly sugar sources, and even more on developing biodiesel from jatropha, pongamia (*Pongamia pinnata*, an Asian tree), and other trees that bear oils. Together these are loosely termed "biofuels". (This term is highly contested by NGOs and activists, who tend to call them "agrofuels"). The concept is not new, for the energy that rural communities have long used is biomass-based, but now companies and governments are planning very big plantations and industries, with complete disregard for their impact on local communities and ecosystems. Despite the corporate hype, these new fuels are not "eco-friendly".⁷ Another term floated is "corp-fuels", because they are being promoted by corporations and are turning small-farm agriculture into a corpse!⁸

A flurry of government initiatives

At a rhetorical level, the government has been enthusiastic in its support of biofuels as India's response to both climate change and its rising petrol import bills. It is using all possible state machinery, from the highest office of the President to the district level Panchayat, to promote them. There has been a flurry of initiatives. In 2003 a National Biodiesel Mission was launched. That year's report of the Planning Commission's Committee on Development of Biofuel proposed that the proportion of agrofuels to be mixed with petroleum should be increased from 5 per cent



Jatropha fence round a wheatfield, Orissa, India

to 20 per cent by 2012. Other reports by the government's Planning Commission (particularly the "Integrated Energy Policy Report, 2006") speak of new economic policies in support of biofuels. Even so, specific policies have not yet been formulated: clear guidelines on rural credit for biofuels have still to be issued by the National Bank for Agriculture and Rural Development (NABARD); and, although a national biodiesel policy was promised by early 2008, the draft text has not yet been made available for public comment. In 2005 the Indian Government actually announced a Biodiesel Purchase Policy. Though few are aware of it, this policy was withdrawn, owing to the high cost of ethanol and an inadequate supply of raw material.

Provincial governments have been moving into the vacuum left by the national government. Several states in India have established a variety of incentives to promote biofuel cultivation in their states, particularly in association with corporations (see Box 1). Even so, the companies want more support, particularly at the national level. In 2006 biodiesel suppliers and others formed the Biodiesel Association of India (BDAI).¹⁰ It has become the main group lobbying for legal and policy changes to create a more industry-friendly environment. BDAI's main demands are for more land on which to grow the raw material, easy conditions for importing ample volumes of biofuels until the home plantations deliver,¹¹ a guaranteed price for biodiesel (to be raised from Rs 26.50 [US\$0.66] to at least Rs 33.00 per litre [US\$0.83]), tax exemptions and the creation of a national Biofuels Board, headed by the Prime Minister, to deal with all the key policy



Box 1: Provincial governments have caught the jatropha fever

In Uttarakhand, the state's Biofuel Board is promoting plantations under its joint forest management programmes. In Punjab's Agriculture University, the Department of Forestry and Natural Resources is evaluating 35 different source varieties of jatropha while "training" farmers in jatropha cultivation. In Central India the Chhattisgarh Biofuel Authority was set up by the state government in 2005 with a single-minded focus on jatropha and ambitious targets to convert all state-owned vehicles to jatropha-derived oil. This was followed by the creation of a Chhattisgarh Renewable Energy Development Authority¹ which claims that by August 2007 it had sponsored jatropha plants to the tune of Rs 40 million (about US\$1 million) in the state. In neighbouring Madhya Pradesh, the government has its own Biofuel Mission,² with a view to bringing one million hectares of land under jatropha cultivation in 20 years. With 70 per cent of the population relying on agriculture for their livelihoods, and many of them already using jatropha as a "live fence", the government believes that it can convince them to change over to jatropha monoculture, with the state supporting them through training and high-yielding varieties.³

Some provincial governments have set up biodiesel plantations in association with corporations. This is the case in Andhra Pradesh, where the Rain Shadow Areas Development (RSAD) Department has asked Sagar Sugars & Allied Products Ltd to be responsible for the jatropha nurseries.⁴ There is also a new model of partnership between the state, private companies and the panchayat (body of elected representatives at the village level). Called Rural Business Hubs (RBHs), these are being tried out in selected locations across the country.⁵ The idea is to link the industry directly with the village groups. D1 Oils plc, which is now controlled by the multinational oil giant British Petroleum (BP), is setting up three jatropha biodiesel hubs in Haryana.⁶ Many state governments are vying to provide the most conducive environment to attract investors, and companies are responding: IKF Ltd,⁷ an IT company that has diversified into biofuels, has expanded into 14 states, including Meghalaya and the north-east, with help from the Indian Council of Agricultural Research (ICAR),⁸ and has now moved into Thailand.⁹ In Andhra Pradesh the state government has agreed to cover total costs for small and marginal farmers to convert their land to biodiesel plantations, particularly of pongamia and jatropha.¹⁰ Under the Andhra Pradesh Rural Employment Guarantee Scheme (APREGS), public-private partnerships have been forged, paving the way for the expansion of 14 private companies¹¹ (which include Nandan Biomatrix Ltd [which, incidentally, has a joint venture with D1 Oils], Titagarh Bio-Tech (P) Ltd. and Jatropha Growers and Bio-Fuel Development Cooperative Ltd).

1 The authority is also a member of the Renewable Energy and Energy Efficiency Partnership (REEEP), an international organisation. See <http://credacg.com/>

2 See <http://biofuelmissionmp.com/>

3 See http://www.destinationmadhyapradesh.com/state-profile/Short-project-profiles/13-Jatropha_Plantation.pdf

4 See <http://www.rd.ap.gov.in/CRDAAction%20plans/actionplans/nellore.htm>

5 See <http://www.thehindubusinessline.com/bline/2006/12/26/stories/2006122603480100.htm>

6 See <http://www.d1plc.com/>

7 See <http://ikf-technologies.com/>

8 See <http://myiris.com/shares/company/writeDet.php?icode=ikfsoftw>

9 See <http://tinyurl.com/4z692p>

10 Andhra Pradesh Government Memo 478, 6 November 2006, http://www.rd.ap.gov.in/EGS/EGS_GO_478.htm

11 Andhra Pradesh Government Memo 23153, 8 December 2006, http://www.rd.ap.gov.in/EGS/BIO_Diesel_Memo_23153.htm

issues.¹² The Core Group on Biofuels, from the Federation of Indian Chambers of Commerce and Industry (FICCI), has made recommendations to the Agriculture Ministry for a 10-year tax holiday for large-scale corporate jatropha farming.¹³ FICCI also called on the government to use the National Rural Employment Guarantee (NREG) Scheme¹⁴ (under which the government has to provide 100 days of guaranteed waged employment per financial year to every rural household) to make villagers plant crops like jatropha. The sugar industry lobby – Indian Sugar Mills Association – is using the ethanol boom to bargain for more deregulation of the sugar industry. It is calling for the percentage of ethanol to be added to fuel to be increased from

5 per cent to 10 per cent, and this is expected to be made mandatory later in 2008.

Not surprisingly, social movements have been complaining about the level of government support for the corporates. A newly-formed People's Coalition on Biofuels is demanding a "pro-people energy policy" from the government and has asked for the policy process "dominated by the corporate sector, business associations, energy entrepreneurs, industrial houses, private firms, government agencies and large PSUs (public sector units)" to be opened up to the public.¹⁵ Social action groups have been protesting against the use of NREG to promote the "corporatisation" of land.

12 "Biodiesel body seeks more subsidy for jatropha farmers"

<http://tinyurl.com/ypy9jw>

13 See

<http://tinyurl.com/yu425d>

14 See <http://nrega.nic.in/>

15 "Open letter to minister for new and renewable energy"; Deccan Development Society, <http://tinyurl.com/6bjs6q>



Box 2: India's biofuel equipment manufacturers go global

Praj has spread across the globe: it has a 60 per cent share in a joint venture with a European company¹ and a 54 per cent stake in a Brazilian company² for ethanol production; it provided the equipment for the UK's first ethanol plant, commissioned by British Sugar; it was awarded machinery contracts for cassava-to-ethanol plants in Thailand; it owns an engineering firm in the US; and it has a presence in another 40 countries. The Indian-American venture-capitalist billionaire Vinod Khosla, who promotes ethanol fuel worldwide, has bought a 10 per cent share in Praj. The Japanese Marubeni Corporation also has a share in the company. Back home, the Praj Chairman heads the Confederation of Indian Industry's National Committee on Biofuels. The company is also reaping the benefits of the Government's Special Economic Zones (SEZ), setting up a new production unit by the port in Kandla SEZ in Gujarat.³ The seaside location facilitates the transportation of the equipment to foreign markets. The impact on local people is much wider: as one local said, these large plants and plantations are themselves becoming like giant new SEZs.

Many other companies are also looking overseas.⁴ In Andhra Pradesh's port city of Kakinada, three or four biodiesel plants are planned. One of them – Naturol Bio Energy Limited, set up in collaboration with an Austrian energy company and a US investment firm – is the first integrated oleo-chemical biodiesel facility in India.⁵ Established in 2003, it commenced operations in 2007. It will produce biodiesel and glycerin from palm oil, jatropha and pongamia feedstocks. Most of its production will be exported, its main markets being North America and East Asia. The state government is working to finalise its draft biodiesel policy to accommodate the requirements of such projects.⁶

1 The company BioEnergy Europa B.V. based in the Netherlands will supply to the European biofuels market. www.biocnergy.eu

2 Jaragua Equipamentos Industriais Ltda.

3 See <http://www.kasez.com/index.asp>

4 "Indian firms scout for farms overseas", <http://www.thehindubusinessline.com/2007/12/03/stories/200712030860500.htm>

5 See <http://tinyurl.com/6zg4g4>

6 See <http://greenbusinesscentre.com/images/Photos/ads53.pdf>

Many of the industry's demands have found favour with the Planning Commission of India, which is guaranteeing full support for renewable energy and favours the granting of tax incentives to make biofuels economically feasible. But, as was mentioned earlier, the government has been slow to take concrete measures. One of the reasons for the delay is that several government ministries are involved in one way or another and, though none of them is against biofuels per se, there are inter-ministerial turf wars. For instance, while one group of ministers, headed by the agriculture minister, is working on the proposed policy document, renewable energy minister Vilas Muttemwar, while in Europe, publicly welcomed 100 per cent foreign direct investment in the sector.¹⁶ The BDAI is openly unhappy at the delays, particularly the indecision over government subsidies.¹⁷

Private operations forge ahead

What is astounding is the extent to which private industry has bounded ahead, in the absence of a coherent government policy.¹⁸ There are many reasons for this: the "opening up" of the Indian economy to large enterprises, including foreign companies; cheap production costs; plentiful natural resources; affordable human labour; lax environmental regulation; and generous incentives (encouraged by the competition between the

provincial governments to attract the investment). By contrast, in China foreign stakes in biofuel companies have been limited by law to 49 per cent since 2007. All this means that it makes business sense for the big foreign players to have operations in India for their global production. Those moving in include BP (which owns D1 Oils) and Daimler (tied up with ADM and Bayer). Some of the home-bred corporates, such as Praj, which deals with ethanol processing machinery, have also gone beyond the Indian shores and become transnational corporations (TNCs) themselves. Many have criss-crossing links with foreign companies (*see* Box 2).

Sugar back in favour

While many of the first projects have concentrated on jatropha, palm oil and pongamia for biodiesel production, biofuel fever is also kindling an interest in producing ethanol from sugar. India is expected to overtake Brazil this year as the world's largest producer of sugar, and its sugar-cane production is chemical-heavy, water-intensive monoculture. Today, the planners want to develop sugar cane as a multi-product crop, that is, one that can be used to produce other things apart from sugar.¹⁹ This would hitch the crop forever to the export market, as well as orienting agricultural research towards varieties for "non-traditional" uses, such as ethanol production. India is also seeking to

16 "India seeking 100% FDI on biofuels: Minister" <http://tinyurl.com/297ej4>

17 India in slow lane in drive for greener fuels, <http://tinyurl.com/244mxn>

18 According to Rabobank's Report, <http://tinyurl.com/24u6hs>

19 Sugarcane Vision 2025 of the Sugarcane Breeding Institute, ICAR, Coimbatore in South India <http://tinyurl.com/22n8b9>



Box 3: Agribusiness firms riding high on the “biofuel” wave

Agribusiness firms are cashing in on the “renewable” energy subsidies. For instance, Adi Biotech, which includes a former Vice President of Syngenta India in its management team, is moving into the export of jatropha seeds. Nuziveedu Seeds Pvt. Ltd., a hybrid seed firm, is working with General Electric to set up this US company’s first wind project in India, in the Davengere District of Karnataka, for which it has also received support from the Ministry of Renewable Energy, through the Indian Renewable Energy Development Agency (IREDA). Labland Biotech Pvt. Ltd., a plant biotechnology company from Mysore in Karnataka, is producing tissue-culture-derived jatropha plants for distribution in India, Africa and Latin America through the global major D1 Oils plc. The government of Sarawak in Malaysia has invited the Indian company Labland Biotech to establish a bio-energy park there. The company has also been shortlisted to partner a Portugal-based company to develop about 10 lakh (1 million) hectares of land in Mozambique for jatropha cultivation. Gujarat State Fertilizers and Chemicals Ltd (GSFCL) has also selected Labland as one of its two service providers for its 1,100-hectare jatropha plantation being developed in the harsh, saline regions of Kutch in Gujarat.¹

1 See Seema Singh, “Mysore biotech firm takes the lead in jatropha tissue culture”, 10 January 2008, <http://www.livemint.com/Articles/2008/01/10000249/Mysore-biotech-firm-takes-the.html>

develop technology to produce ethanol from sweet sorghum and sugar beet.

The introduction of sugar beet, which comes from the temperate zones of the world, would mean accepting Syngenta’s products, particularly its proprietary Tropical Sugar Beet, developed to suit tropical conditions.²⁰ Indeed, Praj Industries is already working with Syngenta for the processing of feedstock made from this variety of sugar beet. Varieties such as these may pave the way for the development of other hi-tech bio-energy crops, including genetically modified organisms (GMOs), with all the problems that this will entail. Not for the first time, these products will probably be introduced on a wide scale without appropriate safeguards. As research is already being carried out into the next generation of genetically engineered crops and trees,²¹ the risks of contamination for local crops and local biodiversity are becoming more severe.

Jatropha fever nationwide

Although there is some interest in producing ethanol from sugar, many companies appear to be more interested in importing sugar from Brazil.²² But this is not the case with jatropha (locally termed “ratanjyot”, “jungle erandi”, “kadaharalu” or “jepal”, depending on the region), which is used to produce biodiesel and is being promoted on a war footing all across India. Many different government bodies are involved. In 2005–6 the Ministry of Rural Development provided financial support to nine states for the production of about 180 million seedlings of jatropha.²³ In 2006 the India Council of Agricultural Research identified

for commercial cultivation in the semi-arid and arid regions a jatropha variety – SDAUJ I – which has seeds with a particularly high oil content (49.2 per cent). An exercise is currently under way at the Department of Biotechnology to discover which varieties of jatropha are best suited for biodiesel production, and to develop these varieties.²⁴ The National Oil Seeds and Vegetable Oils Development Board (NOVOD) at the Ministry of Agriculture is also overseeing a countrywide project for the identification and development of elite jatropha planting material. The Uttarakhand Biofuel Board has established a jatropha gene bank to preserve high-yielding seed varieties. Not surprisingly, the big corporations are showing great interest in the varieties of jatropha that are being discovered. D1 Oils has already been accused of biopiracy in its quest to acquire high-yielding jatropha varieties.²⁵

There is also considerable discussion about where jatropha should be grown. The first areas being targeted are the so-called “waste lands”, which gives the idea that the country will put to good use something that produces nothing at the moment. In 2005 the Ministry of Rural Development produced a “Wasteland Atlas of India”.²⁶ And a study from the Energy and Resources Institute (TERI) identified six categories of waste land as suitable for jatropha plantation.²⁷ The Indian Space Research Organisation also has an ongoing remote-sensing project to identify waste-land sites for plantations.²⁸ But what may look like barren, “waste” pieces of land to outsiders provide sustenance for millions of people. They are the “commons” and the pasture lands of many communities. Just as people need food and land, so cattle need fodder and ground. As well as traditional pastoralists, who use these lands

20 See <http://tinyurl.com/ypowv6>

21 See <http://www.forestbiotech.org/>

22 Big Indian sugar companies (Bajaj Hindustan) seem to be investing in Brazilian sugar and ethanol. Bharat Petroleum too has made big investments in Brazilian biofuels. It appears that they plan to export to India.

23 Indian government press release, 3 December 2007 <http://tinyurl.com/ypadgm>

24 Presentation at discussion on “Energy Biosciences Strategy for India”, 10–11 September 2007, <http://tinyurl.com/28ovyl>

25 Kanchi Kohli, “Who decides on bio-security?”, The Hindu Business Line, 10 October 2007, <http://tinyurl.com/yvqmlz>

26 This “atlas” is a series of snapshots of “waste land”, and can be seen at <http://tinyurl.com/2crtc5>

27 Varun Jaitly and Anupama Airy “Many miles to go for bio-fuel”, *Financial Express*, 27 August 2007, <http://tinyurl.com/2bh4yk>

28 Government of India, Department of Science and Technology press release, 22 November 2006, <http://tinyurl.com/292t49>



BOX 4: ICRISAT'S Sweet Sorghum Ethanol consortium – how sweet?

Many companies have become part of the Sweet Sorghum Ethanol Consortium (SSERC), set up by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), which is yet another public-private partnership established by a Consultative Group on International Agricultural Research (CGIAR) centre. ICRISAT is behind the world's first sweet sorghum ethanol. About five years ago in its campus in India, it began a two-pronged approach to this end, developing hybrid varieties which, it claims, have higher sugar content than conventional sorghum, and supporting the development of the process technology. This has now lured large companies to join the Consortium, first Tata, quickly followed by Praj. Tata Chemicals is in the process of setting up a pilot biofuel manufacturing unit in Nanded in Maharashtra, which will be operational in 2008–9. In January 2008 the ICRISAT-NAIP Sweet sorghum ethanol value chain development project was started,¹ which, with Rusni Distilleries Pvt Ltd as part of the team, yet again shows the growing cosiness amongst International Agricultural Research Centres, National Agricultural Research Systems and the private sector. Rusni erected its first distillery in the town of Rosales in the Philippines in January 2007.² The company holds a patent for the production of ethanol from sweet sorghum stalk. A project has also been initiated in Kampala, Uganda, by a private sector company, J N Agritech International Ltd. The partnership with the Ugandan company was built by the Rusni Distillery with the support of the Agri-Business Incubator at ICRISAT.³ ICRISAT is also involved in another public-private partnership which, along with the German government's GTZ, the World Bank's IFC and the USA's Rabobank group, supports Southern Online Biotechnologies Ltd. with biodiesel expansion projects in alliance with the German Lurgi Life Science company.

1 See *Icrisat happenings* No. 1294, 25 January 2008, <http://www.icrisat.org/Flashline/1294.pdf>

2 See *Sun Star Pangasinan*, 25 January 2007, <http://tinyurl.com/6kq3x9>

3 See "ICRISAT sorghum for ethanol now a sweet reality", CGIAR news release, 11 October 2006, <http://tinyurl.com/6hpn6j>

29 Rajasthan Land Revenue (Allotment of waste land for bio-fuel plantation and bio-fuel based Industrial and processing unit) Rules, 2007.

30 "DMC to buy land in Rajasthan for agri-farming", *Business Standard*, 27 December 2007, <http://tinyurl.com/2yob6b>

31 See Workshop Report, "Sheep pastoralism in Rajasthan: still a viable livelihood option?" 31 January–1 February 2005, <http://tinyurl.com/2dzjnc>

32 See "Protests against unfair land allotment in Rajasthan", *Down to Earth*, 15 September 2007, <http://tinyurl.com/yv3lt2>
Aseem Shrivastava, "Rajasthan padyatra highlights pressing rural problems", *InfoChange News & Features*, September 2007, <http://tinyurl.com/25rw2j>
and the invitation to support the Jan Adhikar Yatra in Rajasthan, August 2007, <http://tinyurl.com/29r9y7>

33 Navdanya press release, "Biofuel hoax: Jatropa and land grab" 5 December 2007, <http://tinyurl.com/39sqjw>

on a permanent basis, refugees from development projects, displaced persons, jobless labourers and small farmers facing crop failure often rely on these lands as places where they can put their cattle during an emergency. If these lands are enclosed, the lifelines of many already disadvantaged people will be jeopardised.

"Culturable wastelands"

One of the states in which biofuels has emerged as a contentious land-use issue is Rajasthan. There the state government has designed a "green patta" policy, which permits waste land to be leased out to private companies and government enterprises for up to 20 years.²⁹ Though 70 per cent of these "culturable wastelands", as they are called, are to be allotted to farmers' groups and only 30 per cent to companies, there is concern that, in collusion with administrative agencies, companies may take over more than their permitted amount. This is a real risk, as companies do not find it convenient to collect from scattered plots. There have been other changes that endanger local communities, such as the abolition of both the maximum size of a plot that can be held by an individual or company and the ban on the sale of tribal lands. It is now possible for a special government committee to approve up to 1,000 hectares of land to be given to private companies for jatropa plantations. Such relaxing of the controls makes land investment a far more

attractive proposal for large companies like DMC International, a real estate developer.³⁰ Activists believe that *sarpanches* (village leaders) have very often had their arms twisted not to oppose these changes in government policy. Even so, there is opposition. The category "culturable wasteland" covers almost all of the *orans* – traditional sacred groves – that are the lifeline of the 7.5 million pastoralists in Rajasthan. They are now demanding legal recognition of their customary grazing rights on these and *gauchars* – grazing lands.³¹ People are finding creative ways to highlight these issues.³²

Land grabs for biofuel cultivation are also occurring in Central India.³³ Orissa is one of the states where private investors have been most active in duping villagers to gain access to their land. It is clear that in this state it not just so-called "wastelands" but also farmers' lands that are being targeted. Farmers from Chouhanpali village in Luisingha Block in western Orissa, who are growing jatropa, say agents from the Majhighariani Institute of Technology and Science (MITS) have often visited their village.³⁴ Despite these visits, the farmers have not yet received the promised loan facility. Indeed, not many financial institutions have shown much interest in financing jatropa cultivation. Bankers appear to be sceptical about the much-heralded high yields, particularly from "barren" lands. And perhaps the authorities share some of the doubts. The Orissa Renewable Energy Development



Agency (OREDA) – the leading government agency handling biofuels – is treating the Orissa draft biofuels policy as a poverty alleviation programme and are planning jatropa plantations in the districts of the state (Kalahandi–Bolangir–Koraput) with the greatest food shortages.³⁵ Long-time activists who have been fighting the takeover of the state by large companies believe that it is time for those fighting poverty and land grabs and those fighting the corporations to integrate their struggles. They say that, if biofuel cultivation is to be permitted at all, the crops and oils should not leave the village: the local people should use them to satisfy their own energy needs.

Lands that have been assigned for large-scale jatropa plantations are often situated in highly impoverished rural areas where the farmers don't have the strength to protest.³⁶ Elsewhere they lack the organisation. Baiga tribes in Central India, who have long used torches at night made from bamboo stuffed with lit jatropa seeds, were not to know that this useful plant was one day to turn their lands into prize booty for the corporations. This is something new, for in the past tribal people in Madhya Pradesh have lost their land to tourism projects and large dams. Even though they are for the moment still on their lands, there are new threats. Farmers told GRAIN that they were afraid that they would be locked into jatropa for years, without being allowed to use their land for anything else. The crop takes three years to come to maturity, and until then farmers will be cultivating it at a loss. They were told that contract farming deals for jatropa would be an admirable long-term investment and bring them good economic returns, but this does not seem likely. Worse still, with all the emphasis on jatropa, farmers are not being given support for their biodiverse agriculture. Agro-biodiversity, nutritional security and food sovereignty are all in jeopardy.

Water privatisation

If vast areas of waste lands are to be turned into jatropa plantations, some water will be required for irrigation, however hardy the plant is. This raises concerns that water could be diverted from legitimate local uses. The priorities of the government and the community are clearly at odds. CGIAR has already warned that the biofuels boom in India and China could worsen the water situation.³⁷ Even so, the authorities are pushing for water to be given to jatropa. Many district water agencies, such as that in Andhra Pradesh, are being told to give priority to jatropa cultivation.³⁸ Similarly in Madhya Pradesh and Maharashtra, both self-help groups and those running the



Photo: GRAIN

Small-scale farmer contemplates the jatropa saplings planted by a private company that has taken over this land in Ghumer village, Bolangir district, western Orissa, India. Mahua trees stand in the background.

government's programmes for integrated watershed management are being encouraged to promote jatropa cultivation. The governments in Punjab, Karnataka, Maharashtra and Andhra Pradesh are offering to subsidise drip irrigation for jatropa plantations. Industry representatives in Tamil Nadu are asking for a similar scheme, and the state government, claiming that it can't afford to pay this subsidy, is seeking help from the national government. However this squabble is resolved, it is clear that drip irrigation companies, such as Jain Irrigation Systems Ltd, will make a lot of money. And the message to the small grower is clear: you will get irrigation only if you agree to grow jatropa and to put your own needs second! Even if the small grower agrees to the rules of the game, it is not clear how long s/he will be able to afford the irrigation. With both the World Bank and USAID pressing for the privatisation of water resources in India, it is likely that in the future only the wealthy will be able to afford it. So it is a win-win situation for the industry: they get government support until the privatisation of water has occurred and then the big private users, who can afford their prices, will be producing the jatropa.

34 As told to GRAIN staff in December 2007. MITS has an active biotechnology department. <http://tinyurl.com/2sx889> See also "Promotion of bio-diesel plants mooted in State" *The Hindu*, 10 July 2007, <http://tinyurl.com/3afsla>

35 Government of Orissa, Science and Technology Department, draft policy guidelines for raising of energy plantations and bio-diesel production, undated, <http://tinyurl.com/2kcjdl>

36 See, for example, Shashikant Trivedi, "MP to allot land to 11 firms for jatropa cultivation", *Business Standard*, 21 December 2007, <http://tinyurl.com/2whqxa>

37 CGIAR press release, 11 October 2007, <http://tinyurl.com/374how>

38 See G. Ravikiran, "Krishna selected for jatropa cultivation" *The Hindu*, 23 November 2005, <http://tinyurl.com/2olubv>





Jatropha curcus seeds, within and without their black shells

Jatropha fever is spreading everywhere. The Centre for Research and Application in Plant Tissue Culture in Hisar, Haryana, has provided over 100,000 jatropha plants to the farmers, and the Haryana Forest Department is creating 300 hectares of model jatropha plantations. Similarly, the Forest Department in Himachal Pradesh is itself distributing jatropha saplings for planting. Ironically, the promotion of jatropha is being carried out as part of a project to “green” the state. Meanwhile, there is growing concern about the future of ecologically sensitive areas – such as the Barnavapara National Park in Chhattisgarh – which will find themselves surrounded by a sea of jatropha.

Exacerbating famine

In north-east India, the corporate takeover is being achieved by buying up tea estates which have a ready-made plantation structure. D1 Oils signed an agreement to that effect with the Williamson Magor Group, one of the world's largest producers of tea.³⁹ *Jhum* lands, where traditional shifting cultivation is practised, have also been penetrated by jatropha promoters. In Mizoram, the state government signed a memorandum of understanding with D1 Oils in 2005 for the supply of jatropha seeds. Godrej Agrovet Ltd, a large agroindustrial company, is already producing palm oil, and announced plans in 2007 to establish 20,000 hectares of jatropha in the state. All this is happening in a state which was declared a “disaster area” in December 2007 because of famine. The move into intensive jatropha cultivation will make the problems worse, for only traditional food crops

and their seed stock are capable of withstanding the vagaries of nature, which are only likely to increase as the climate changes. The Indian Agricultural Research Institute study has already indicated a loss of 4–5 million tonnes of wheat owing to an increase in temperature as a result of global warming.⁴⁰

Often farmers do not have access to complete information about what is going on in their regions. Take the instance of Mission India Ltd, a subsidiary of Mission Biofuels Ltd of Australia, which has signed a long-term deal with “an Indian district” for the purchase of all jatropha seeds harvested there. The company does not disclose in any of its public statements the name of the Indian district or of the state agency with which it has signed a contract. Yet its media release of September 2007 talks of its wish to replicate this deal in other districts.⁴¹ And, indeed, in January 2008 it signed a second agreement with another Indian district that granted it exclusive long-term access to jatropha seeds from already planted lands, as well as access to additional land in the district that is to be planted with jatropha over the next three years.⁴² The managing director of the company simply states that details cannot be disclosed for “confidentiality reasons”.⁴³ However, the Annual Report does reveal that his company has signed contracts with Tata Energy Research Institute (TERI) for collaboration over research and development, has an agreement with the Tamil Nadu Agricultural University's Centre of Excellence in Biofuels for planting materials, and has reached contract farming arrangements with Kalanjium Thozilagan Limited (KTL), a farmers' enterprise aided by the DHAN foundation.

Research plans and ideas for the next generation of biofuels are already in the pipeline. The Sardar Swaran Singh National Institute of Renewable Energy (SSS-NIRE) is being set up in Punjab for research on bioenergy and synthetic fuels. Along with its own research and development areas on biofuels, the Department of Biotechnology within India's Ministry of Science and Technology has set up a Centre of Energy Biosciences in Mumbai for cutting-edge biofuels for transportation.⁴⁴ The research partnerships bring together the Mahyco Research Centre and several US research institutes. At the same time India's Petroleum Conservation Research Association has set up a National Biofuel Centre at its corporate office and, in order to encourage the production and use of biofuels, it offers annual awards, based on credit points, to organisations for a variety of activities linked to biofuels. High numbers of points are allotted to anyone who procures a patent or suggests any new use for the biofuel byproduct glycerin.

39 Samudra Gupta Kashyap, “Goodbye tea, welcome jatropha”, *Indian Express*, 23 November 2007, <http://tinyurl.com/2kx08y>

40 Surinder Sud, “Agriculture may decline due to climate change”, *Business Standard*, 21 January 2008, <http://tinyurl.com/36y256>

41 Mission Biofuels Ltd press release, 3 September 2007, <http://tinyurl.com/2vddaz>

42 Luke Hallam, “Mission Biofuels signs second agreement for Indian Jatropha”, *Envirofuels website*, <http://tinyurl.com/3c3lvh>

43 In response to an email query from GRAIN, 9 February 2008.

44 Biopact website, “India launches first biofuels and bioenergy science centre at University of Mumbai to develop advanced fuels”, 31 January 2008, <http://tinyurl.com/2ltobw>



The government has ambitious plans. In the words of the Indian Minister for Science and Technology and Earth Sciences:

We also have about 63 million hectares of wasteland, of which about half has been earmarked for tree plantation.... But we need to do more research and development on genetically modified jatropha varieties with still higher oil content and devise optimal processing technologies.... Also, we have the ability to completely rewrite the geopolitics of oil if we ensure that the efficiency of transportation in the country – specifically diesel transportation – is improved and bio-diesel substitution takes place on a war footing.⁴⁵

Conclusion

Energy crops make their presence felt at a time of crisis in small-scale farming in India, due to problems within the agriculture sector itself, compounded by the impact of industrialisation. In such a situation crops that appear to provide an assured return, such as jatropha, become the only option rather than a preferred choice. In reality, neither plantations of biofuel crops nor the energy that results from them are really offering anything to small peasants, traditional pastoralists, indigenous peoples, tribal communities, forest dwellers or the urban poor. But the decline of multi-cropping and agrobiodiverse practices creates an environment in which such plantation crops gain easy entry. If agrobiodiverse farming and traditional crops received proper support, there would be no space for large-scale jatropha or any other plantation crop.

This is not to suggest that the crops used to produce biofuels are inherently bad. One hears of how effective jatropha can be as a fence to keep out cattle and how pongamia has traditionally been sown in paddy fields because of its nitrogen-fixing qualities and its usefulness as green manure. Likewise the story is often told of how a small village in Chhattisgarh has been electrified by jatropha.⁴⁶ But, as has been seen in relation to many other ecological problems, anything that gets big tends to upset the balance. This is the first time that these crops have been promoted for large-

scale, commercial production. India should learn from the experience of other Asian countries such as Indonesia and Malaysia, and carry out a sound social audit before embarking on such a course of action.

Instead, government is using a wide range of instruments – welfare schemes, village microfinance, poverty alleviation programmes, agricultural research systems, rural extension services and so on – to make biofuels work. But it appears that they will work for only one group: not those for whom they were originally intended but for large business interests, who, through these schemes, are able to make deeper inroads into the land and other resources that have hitherto belonged to the people. The focus is now on feedstock production. The private sector is making huge investments, and its expectations are of the same magnitude. If companies don't get the returns they hope, they are likely to move towards the vertical integration of the industry, so that they can control all stages of production, from the growing of feedstocks to the distribution of the biofuels.

As the situation deteriorates, certain things need to be said. First, no new technology will alone secure local people a better future. What is needed is that their relationship with their lands and their resources be properly respected and recognised. Unless this happens, they will always be affected for the worse, whether it be dams, wind farms or energy cropping that is introduced. With every wave of “development” the disparities and displacement will increase. Second, unbridled support for the private sector in India will have a serious impact, not only on the small and local in the country itself, but overseas as well. So this must be challenged collectively. Third, it is high time to question “development” models that create artificial energy demands that are ecologically unsustainable and socially destructive. For those private companies that are grabbing the land, “clean green energy” is only a marketing banner. While they falsely claim to be “saving the Earth”, they are actually seeking to extend their power and expand their profit. Such expansion is a threat to the survival of the planet and its many voiceless communities.



⁴⁵ From the text of the keynote address delivered by the Minister for Science and Technology and Earth Sciences, at the inauguration of the 95th Indian Science Congress, Andhra University, Visakhapatnam on 3 January 2008.

⁴⁶ Showcased by WINROCK India at the 5th International Biofuels Conference in Delhi 7–8 February 2008, supported by, among others, USAID and corporates, <http://www.winrockindia.org/>



Roundup Ready diplomat

The US State Department is still pressing for a massive programme of aerial fumigation in Afghanistan, despite serious reservations by the Pentagon and Afghan President Hamid Karzai. Despite the failure of aerial spraying in Colombia, where coca production has actually increased, the US officials believe that it is the only way to halt the booming cultivation of poppies for opium. Afghanistan produces 92 per cent of the world's opium.

US officials pour scorn on any concern about the impact of the glyphosate-based herbicide on local communities and the environment (even though the Ecuadorian government has filed a lawsuit against the US government for damage caused to the health of its citizens by herbicide used in the spraying, which was blown across the frontier by wind). The US ambassador to Afghanistan, William Wood, has offered to be sprayed with Roundup to demonstrate how safe glyphosate is. His action would be strongly backed by President George W. Bush, who during his 2006 trip to Afghanistan told a group of government leaders and US counter-narcotics officials, "I'm a spray man myself."

Land conflict in Egypt

According to a report issued by the Land Center for Human Rights in Cairo, 126 farmers were killed, 445 injured and 634 arrested in Egypt in 2007. The conflicts were the result of disputes over land ownership, borders and irrigation. The report also documents many cases of abuse and negligence by the authorities. It says that the authorities have taken away land from farmers without paying compensation, have distributed irrigation water unfairly and have been negligent in maintaining and renewing water resources. (www.lchr-eg.org)

Increased pesticide use in GM crops

The biotechnology industry has long asserted that one of the most valuable benefits of GM crops will be a marked reduction in the use of pesticides. But, as Friends of the Earth International shows in its latest report in the "Who benefits from GM crops?" series, this is not the case. A study by Charles Benbrook, a leading US agricultural scientist, shows that the adoption in the USA of GM soya, maize

and cotton led to the application of 55 million more kilos of herbicides from 1996 to 2004 than would have been applied if these GM crops had not been introduced. Part of the reason for the heavier-than-anticipated use of herbicides has been the emergence of resistant weeds that have required heavier and heavier doses of herbicide....

The response of the bio-tech industry to the dilemma? Another technical fix, of course. According to FoE's report, "the most significant development in biotech agriculture is new GM crops that tolerate heavier applications of pesticides and that tolerate two herbicides rather than one."

Chickens growing faster

Because of their short reproductive cycle and their popularity as food, poultry have been more intensely bred than any other livestock. Broilers (chickens reared to be eaten) have been selected to develop traits that reduce costs of production. One of the most remarkable results of the breeding has been a rapid increase in the speed at which the chicks grow: according to a UK study into 51,000 chickens carried out by Toby Knowles of Bristol University's Division of Food Animal Science, "in the past 50 years broiler growth rates have increased by over 300 per cent, from 25g per day to 100g per day."

Good for the poultry company but not so good for the chickens. The study showed

that at 40 days (which is the age at which most of the chickens are sent to the slaughterhouse), 27.6 per cent showed poor locomotion and 3.3 per cent were almost unable to walk.

The study concluded that worldwide there are about 20 billion broilers reared in husbandry systems that are "biased towards economics of production and detrimental to poultry welfare". It called for an informed debate about current practice, with a balance drawn "between profitability and our moral obligation to maintain good standards of animal welfare".

Indonesians take action over soya prices

In January 2008 about 10,000 people took to the streets in Jakarta to complain about the rising cost of soya, one of Indonesia's staple foods. President Susilo Bambang Yudhoyono was forced to announce emergency measures to boost the local soya supply.

Indonesia, which has neglected its agriculture sector, now imports two-thirds of the soya beans it consumes. It has been hit by a combination of rising shipping costs and higher world prices for soya, which have stemmed from the decision of many US farmers to switch to maize, growing Chinese demand, and poor harvests in Argentina and Brazil.

And not a drop to drink



A severe drought in Chile has led to the declaration of an emergency in 50 rural districts, but the rich are still enjoying themselves in the world's largest swimming pool, built at a vast hotel complex in the coastal resort of Algarrobo.

Daycha Siripatra is an agriculturist, farmer, rice breeder and one of the leading grassroots activists in Thailand. He is also the founder of the Khao Kwan Foundation (KKF), an organisation involved in promoting sustainable agriculture and ecological alternatives. KKF is one of the founding organisations of the Alternative Agriculture Network in Thailand.

"Seeds should be in the hands of farmers"

Daycha Siripatra



Why is the issue of GM contamination important to farmers?

The seed is the most important factor in farming. Contamination affects the seed and makes it alien to farming, especially when the seed is controlled by seed companies. Everything can be destroyed by contamination: the seed, the farming system, even the wisdom of the farmer. It is a very serious issue. Everything starts from the seed. In the Green Revolution, they changed from local varieties of seeds to high yielding varieties (HYVs). The gene revolution is doing the same: it introduces genetically modified seeds to replace local ones. Contamination will bring GM seed with or without one's consent. If you're an organic farmer and you get contaminated by a GMO, then you are no longer an organic farmer. The farming system is central to farmers' livelihoods. If you change something in it, the change can affect the rest of the system. So when seeds get contaminated, it can potentially change everything.

What are the other aspects/dimensions of contamination that should be prevented?

The most dangerous trend in the future is when policy makers themselves are the ones who bring GM seeds into the country. For example, Bt Cotton was brought in ten years ago and GM papaya (pawpaw) five years ago. Until now, we have not been able to solve the problem of contamination because government policy protects and promotes GMOs. For years we have tried to stop them experimenting with GMOs in the open field. But even the interim government tried to reverse the previous ban on open field trials of GMOs. So the policy makers could be the foremost, and most

dangerous, agent of contamination in Thailand's farming system.

Tell us about the current situation of papaya contamination.

The government says it's no longer a problem, that they have everything under control. But, of course, we know that that's not true. Nobody knows the true situation, except that the GM papaya continues to contaminate more. As a result, we cannot export papaya any more. It's a serious problem, especially for the papaya farmers. It will be the same for rice, for the farmers will be in big trouble once their rice seeds get contaminated.

So is it likely that rice will also be contaminated in Thailand?

It's very possible. We have GMO rice at an experimental stage. Our government sent some jasmine rice to the US to make GM jasmine rice resistant to diseases. Now they say that they've stopped the experiment. But, with genetically engineered (GE) rice in China, contamination can occur very easily. You can smuggle GM seeds – and it's very easy to do this in Thailand – by land, by air, by water. Anybody could just smuggle seeds and bring them here from China. The government will allow open field trials again soon, so it's possible that some companies will bring their GM rice for trial in Thailand. Contamination of rice will occur in the near future in Thailand.

How then could farmers prevent contamination?

Some groups with awareness can help promote the alternative way of farming. They can inform other farmers and at the same time protest against the government's policy. But that's not enough. It must be a collective effort, with mutual support.

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GM maize has “leaked” into Thai farms

In December 2007 GM maize was found at a local farm near an experimental station run by agribusiness giant Monsanto in Phitsanulok province in Thailand. The discovery, reported by the Bangkok Post, was made by BIOTHA1, a non-governmental organisation that works with local farmers to defend biodiversity.

BIOTHA1 collected samples from local farms and sent them for testing at Chulalongkorn University's food research and testing centre. Contaminated maize was found in samples taken from a farm just a few hundred metres from Monsanto's plantations.

Although the commercial planting of transgenic crops is banned in Thailand, experimental cultivation is permitted in laboratories and in closed greenhouses. In 1999 Monsanto received permission to import from the USA five kilograms of GM maize to plant on an isolated farm for experimental purposes.

This is the third time that GM crops have leaked into the country. GM cotton spread in Loel province in 1999 and GM papaya escaped from the government's experimental fields in Khon Kaen in 2004. After these incidents, the government imposed a ban on field trials of GM crops.

“This case is much more serious than the two previous leakages, because maize is one of the country's top export products”, commented BIOTHA1 director, Witon Lianchamroon. “Its pollen can spread very far and easily breed with conventional maize varieties. Clean-up and containment operations are urgently needed to prevent the GM crop spreading further.”

The detection of GM maize comes as farmers' groups and biodiversity activists are protesting against the agriculture and cooperatives ministry's push to lift the ban on field trials of GM crops. “[The spread of GM maize] reflects flaws in the government's control of transgenic crop plantations. Therefore, the ban should be maintained”, said Mr Witon.

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For example, non-exporting farmers should join forces with farmers exporting organic rice. There should even be solidarity between the importing and exporting farmers. However, this will not stop contamination completely, because contamination through illegal cultivation of GMOs is everywhere. So farmers must have another solution. We must do everything, not only to change policy, but also to develop technical capacity. Farmers must know how to identify contaminated seeds, and how to control or eliminate them. These are the techniques farmers must develop.

GM rice is said to be no different in appearance from non-GM rice, so wouldn't it be difficult to detect it?

No, because in our group even the varieties of jasmine rice that we select have particular characteristics, and farmers can tell the difference between a common jasmine and a variety a farmer has selected. Our farmers' groups have developed a very precise technique of selecting and identifying seeds. For example, when we select brown rice, we open the husk. If contaminated seeds are grown, our farmers will be able to identify them easily, because something will be different from common rice or the variety that they have carefully selected. The

farmers will notice anything different or abnormal, because of their in-depth knowledge of seeds and their skill in selection. Whether it's the colour, the hardness, the smell – every variety has peculiarities that farmers who have been working with them know in detail. So any alterations will be easily detected, even before the plant starts flowering. This is the principle of local adaptability. We've made our seeds recognise their environment and use that environment to express their potential. An alien seed, like a GMO, will not automatically thrive in our area and, even if it grows, farmers will be able to notice it right away, just from its appearance.

What are the big lessons for farmers from Thailand's contamination experience?

Despite the seriousness of the experience, the majority of farmers don't know much about it. The government controls the media so the media can't inform the people properly. The media often report only the good side of GMOs. The media are a problem. But it's not only the government that controls the media. Journalists and reporters are also being supported by multinational companies, for example, to travel abroad, and to report about GM plantations (e.g. in Austria). The people then



get very wrong information about GMOs from the media.

Do government policies and the work farmers do on the ground complement each other? Or is there a great divide?

If the government were neutral, it would be much easier for farmers to influence it by showing examples, solutions to contamination, and the best way to farm. If the government were sincere in solving the problems, the farmers might even work with it. But the government is biased and supports the companies. This means the farmers have to confront the government. And there are lots of ways of fighting.

Will the government change its position, given the slump in Thailand's papaya exports?

We waited for years for the government's assessment of the contamination situation, but the government committee simply cleared it [that is, it says it's been dealt with and no longer a problem]. They are very open in their support of GMOs, genetic engineering, and hi-tech agriculture, without regard to the consequences. It's because they have a different paradigm. They don't see things the way farmers do. They see GMOs in a different light and thus see a different future for Thai farmers. They have a different language, which makes it difficult for us to communicate with them.

In the Confronting Contamination workshop in 2005, you mentioned the idea of a "Noah's Ark" as a way of protecting seeds from contamination. What's the principle behind that, and can you tell us more about how it's done?*

The idea is that seeds – local, traditional seeds – must be in the hands of the farmers. Right now the seeds are practically in the hands of the government, which controls them. We have at least 6,000 varieties of rice in Thailand but almost all of them are kept in the government's seed bank. Fewer than 1,000 varieties are in the hands of farmers. If you want to control seeds, you must take them out of the seed banks and put them back into the hands of farmers, for the farmers to multiply and keep for themselves. That's the first step. Farmers can then select, improve and breed the seeds, adapting them to their farming system. Those seeds can then compete with hybrids and GMOs or HYVs. When farmers grow them, these seeds will mutate naturally, they'll adapt to climate change and so on. This means that there'll be diversity again. You can empower the farmers this way – by ensuring they have more choices. Then there will be strong grounds for refusing GMOs because there are plenty of other seeds. If you

have nothing, you have no choice but to accept what's being offered by seed companies and the government. So it's basically a case of taking back the seeds, improving them, and adapting them to local needs and conditions. Each farmer becomes a Noah's ark.

You think every farmer has the capacity to absorb the seeds and keep them and improve them?

Not every farmer. But there are specialists and experts in the farmers' groups and they can support the other farmers. Like a rice breeder, for example. It's not necessary that each farmer becomes a breeder. Maybe one breeder in each province is enough. The farmers must have their own breeders, seeds and technology, that they have control over. Not be dependent on the ones controlled by the companies and government.

Can those seeds in the hands of farmers still get contaminated by GMOs?

Yes. But, as I've said, we can develop the techniques to identify GMOs. It's not difficult. If someone has bred and selected seeds, they'll be able to do it. In the beginning they might need support from scientists and experts. But after that, farmers will develop the expertise themselves. The same thing happened with seed breeding. In the beginning, we asked for support from scientists to breed our own seeds, not in the scientist's way, but in the farmers' way. We learned from them and we adapted what we learnt to our own experience and environment. Eventually farmers have to develop their own techniques and not be dependent on scientists. Each one – scientists and farmers – can learn from each other.

In your many years of experience, what is the best way to strengthen or empower farmers?

From my experience I don't trust government policy. It just exists on paper. In practice, policy makers do nothing. For instance, we have a good law about seed contamination but even so people find illegal ways to contaminate. So the best way forward is to train the farmers, so that they can do everything by themselves without needing much help from anybody else. They must develop both the expertise and the consciousness. They must have both; they will not be successful if they just have one.

* An informal regional workshop organised by GRAIN and BIOTHAI in October 2005, in Bangkok, Thailand, to discuss the issue of contamination, and possible strategies around it.

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The Future Control of Food: a guide to international negotiations and rules on intellectual property, biodiversity, and food security

edited by Geoff Tansey and Tasmin Rajotte

Earthscan. ISBN 978 1 84407 430 3 (hardback); 978 1 84407 429 7 (paperback)

also available online at: www.idrc.ca/en/ev-118094-201-1-DO_TOPIC.html

review by GRAIN

Social movements and activists who want to defend food sovereignty will want to read this book. It shows how intellectual property systems have been imposed, improperly in the view of many people, on food systems that depend on natural resources and local knowledge. It is a readable but disturbing narrative which juxtaposes detailed descriptions of the systems that privatise nature with examples of peoples' defence of agricultural biodiversity, that component of biodiversity that has co-evolved with and has been developed by people for our food.

The legal system of Intellectual

Property Rights – not 'rights' in any vital humanitarian sense, but what the editors of this book call monopoly privileges – are one of the barriers to realising food sovereignty. As they highlight, intellectual property regimes are a new factor in most countries, along with a changing trade regime and new agreements on biodiversity. It is these that are likely to shape agricultural development in the future.

The book chronicles the systemic perversion of legal systems to advance the interests of those intent on controlling our food system without liability for social and environmental costs. In so doing, it

unmasks the collusion of governments and governance structures in providing disembodied corporations with monopoly privileges over life and the consequent bankrolling of the biotech engine.

A dozen authors cover all the key negotiations concerning IPRs. Ten chapters cover the rules governing IP, global processes, agreements and prospects. It is a thoroughly researched book, evidenced by more than 15 pages of carefully chosen references that cover official, academic and grey literature. For those who want to defend food sovereignty, it is essential reading.

La bataille des OGM: Combat vital ou d'arrière-garde?

Birgit Müller

Ellipses (France), 2008, 173 pages

review by GRAIN

In this book, Birgit Müller, an anthropologist and researcher with LAOIS-CNRS, Paris, takes us to the heart of the political struggle surrounding genetically modified foods, deftly describing the profound clash between the vision of proponents and that of opponents. The book focuses on Europe, and France in particular, where Müller is active within social movements, but Müller also draws examples from around the world. Through her exploration of the situation in France, she is able to highlight the fundamental elements of the struggles

against GMOs and the underlying reasons why they are so aggressively promoted. She finds the same logic at work in many different parts of the world.

Müller's book will be useful as a reference text for experienced activists and as an introductory text for those less familiar with the issue. It provides clear basic explanations of what GMOs are and the key points of controversy (such as the notion of "substantial equivalence", the precautionary principle and the patenting of life) and smoothly draws the reader

into the deeper questions at stake. Müller's discussion of contamination and liability and the efforts of people to assert and defend democratic control over a technology that raises profound social questions are particularly well done. She also provides us with a clear explanation of the beliefs and interests that underlie support for GMOs. By the end, the reader will come away with a deep understanding of why the struggle against GMOs is so vital and with valuable wisdom about how to pursue it.



Stuffed and Starved: Markets, Choices and the Battle for the World's Food System

Raj Patel

Portobello Books, 2007, 438 pages

review by GRAIN

In *Stuffed and Starved*, Raj Patel weaves together a solid story of the corporate takeover of the world's food system. The book brings out the key mechanisms through which this transformation has come to pass – from the Green Revolution to trade agreements to the rise of supermarkets. Patel exposes the deep inequalities and contradictions of today's food system and its brutal impacts on most of the world's

farmers and consumers. He devotes much of the book to explaining how and why this system moves forward on the farm, showing us how decision-making has been effectively taken over by a small number of people in corporate circles. Although the book is somewhat targeted at Northern middle-class consumers, Patel is able to make links across a range of experiences, seamlessly drawing connections between such things as US

obesity levels and the North American Free Trade Agreement. Farmers' suicides and Brazil's landless movement become focal points through which we may reach a deeper understanding of the consequences of this system and the potential for it to be taken apart and built anew. As a follow-up to the book, Patel also runs a website and an interactive blog where he continues to expand on the issues covered in the book (www.stuffedandstarved.org).



GRAIN's latest publications

Bird flu in eastern India: another senseless slaughter

GRAIN, February 2008

<http://www.grain.org/articles/?id=35>

The carnage of poultry, in which 3.7 million birds were culled, in the eastern Indian state of West Bengal is a striking testament to the failure of the global response to the bird flu crisis. In a flash, one of the world's most dynamic areas of poultry farming has been practically ruined, a priceless stock of biodiversity wiped out, and the livelihoods of millions of poor families pushed to the brink. This has been caused not so much by bird flu as by the response to it.

Fighting FTAs

Edited by bilaterals.org, BIOTHAI and GRAIN, February 2008

<http://www.fightingftas.org>

While global trade talks at the World Trade Organisation (WTO) stagnate, governments and corporations are busy spinning a complex web of bilateral free trade and investment agreements (FTAs). *Fighting FTAs* looks at what this FTA frenzy is really about, how social movements are fighting back, and what strategic lessons emerge from these struggles.

Available in English, French, Spanish and Thai.

Hard copies available on request from fightingftas.org@gmail.com.

See also: <http://www.bilaterals.org>

Bilaterals.org is a collective effort, in which GRAIN participates, to share information about, and stimulate co-operation against, bilateral trade and investment agreements that are opening countries to the deepest forms of penetration by transnational corporations.

Whose harvest? The politics of organic seed certification

GRAIN, January 2008

<http://www.grain.org/briefings/?id=207>

Millions of farmers around the world practise organic agriculture, and over a billion people get most of their food from these

farms. Currently only a small proportion of what they produce is certified and labelled as organic, but the global market for such foods is growing. While some believe that certification is needed to create market opportunities for small farmers, others fear that existing systems are doing the reverse – setting the stage for agribusiness to take over. Now these tensions are coming to a head with seeds. Today, new regulations governing seeds in organic farming, more attuned to the needs of seed corporations than seed savers, are popping up everywhere, with potentially devastating consequences for farmers' seed systems. This Briefing provides the first global overview of regulations concerning seeds in organic farming and assesses what such regulations mean to the future of organic farming and the millions of farmers who sustain it.

A new Green Revolution for Africa?

GRAIN, December 2007

<http://www.grain.org/briefings/?id=205>

For some time now, there has been talk of a new Green Revolution for Africa – because “Africa missed the first Green Revolution” or because “the first Green Revolution missed Africa”. Now a new project, the Alliance for a Green Revolution in Africa (AGRA), is trying to put the concept into operation. This paper describes what a Green Revolution really signifies, why such projects haven't worked before, and why AGRA won't work either – in order to help people trying to take positions at local, national and regional levels.

IRRI Inc – IRRI's betrayal

GRAIN, November 2007,

<http://www.grain.org/articles/?id=33>

On 9 November 2007, in the midst of the Asian Seed Congress, IRRI announced the formation of its Hybrid Rice Research and Development Consortium. This lays the foundation for a direct relationship between IRRI and private seed companies: IRRI supplies the parent lines, while corporations, who gain exclusive rights to the varieties, handle the marketing.

These varieties from which IRRI is willing

to make a profit are based on seeds that it holds “in trust”, seeds that were collected from farmers' fields. Although IRRI may talk about the public benefits of this new Consortium, it cannot gloss over the betrayal that lies at the heart of the operation.

Hybrid rice blog

<http://www.grain.org/hybridrice>

During the first quarter of 2008, GRAIN's hybrid rice blog reported that some seed companies in Bangladesh were again using floods as a pretext to open the door to hybrid rice. We also covered new developments in Malaysia, where the push for hybrid rice continues primarily through joint ventures with Chinese seed companies. One of the new corporations stepping into hybrid rice is the Malaysian conglomerate Sime Darby. While its traditional focus is oil-palm plantations, Sime Darby recently set up a Malaysian joint venture with the global supermarket powerhouse Tesco, and is seeking vertically integrated contract farming schemes to supply Tesco in Malaysia and beyond. To make things easy for the company, the Malaysian government put Sime Darby in charge of developing an economic development “master plan” for the northern part of the country. The linchpin of Sime Darby's plan is a multimillion-dollar seed centre, partly financed by the government, that will seemingly be under the company's control. It says that the centre will focus on developing high-yielding varieties for 10 cash crops, including rice, and, in line with this, it has already signed an R&D agreement with the Chinese Academy of Agricultural Sciences for the transfer of germplasm and their know-how with biotechnology. Nestlé is involved in the plans too, through a joint venture partnership to develop and grow red rice in the northern Kedah state. It seems that one of the top five seed companies is also involved, though no names have yet been divulged.

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