Picture: Grassroots International

Combatting Monsanto

Grassroots resistance to the corporate power of agribusiness in the era of the 'green economy' and a changing climate

La Via Campesina, Friends of the Earth International, Combat Monsanto

Friends of the Earth International

Combat Monsanto

POUR QUE LE MONDE DE MONSANTO NE DEVIENNE JAMAIS LE NOTRE

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EXECUTIVE SUMMARY

This report provides snapshots of frontline struggles against Monsanto and other biotech corporations pushing genetically modified (GM) crops.[1] It shows that small-holder and organic farmers, local communities and social movements around the world are resisting and rejecting Monsanto, and the agro-industrial model that it represents. There is intense opposition to this powerful transnational company, which peddles its GM products seemingly without regard for the associated social and environmental costs.

These vocal objections from social movements and civil society organisations are now having an impact on policy-makers tasked with regulating the food and agricultural sectors in relation to GM crops and pesticides, as this report demonstrates.

In India, for example, a moratorium has been implemented on the cultivation of Bt brinjal, a GM version of a key Indian food staple, and Mahyco-Monsanto has been formally accused of biopiracy by India's National Biodiversity Authority. After a decade of popular opposition in India, a movement rejecting Monsanto's colonial-style approach is gathering under the 'Monsanto, Quit India!' banner, with a view to ejecting the company from the country. This would free India's cotton industry of Monsanto's current stranglehold, and help to stop the suicides of small farmers driven into debt by the ever-increasing costs of GM and chemical inputs.

The movement against Monsanto is also growing in Latin America and the Caribbean. The powerful farmers' movement in Brazil continues to promote alternative food sovereignty initiatives; and mass mobilisations in Haiti roundly rejected Monsanto's hybrid seed 'donations' after the Haitian earthquake, because of the threats this 'assistance' would pose to small farmers and food sovereignty in the country. A ten-year moratorium on GMOs has been introduced in Peru, and legal cases now restrict pesticide use near homes in regions in Argentina. Guatemalan anti-GM networks are issuing warnings against impending legislation and about US aid programs that could lead to the entry of GM seeds and food.

The majority of Europe's public remains opposed to GM food production, and several countries in Europe now have national bans on Monsanto's MON810 maize and BASF's Amflora potatoes, despite the European Commission's opposition to these bans. A range of direct actions continue as well, including France's 'voluntary reapers' protecting local food production, and Spain's activists raising public awareness of the Spanish government's isolated support for GM crops.

Anti-GM actors still face many challenges though, in France and elsewhere. These include food crop trials, moves to undermine existing moratoria in Europe, and aggressive tactics being deployed by the industrial food lobby. This also involves using the French and EU courts to have the French ban on Monsanto's MON810 maize overturned,[2] although the French government has since announced that it intends to maintain the ban anyway.[3]

Monsanto and other biotech corporations are also facing legal challenges in the US, including lawsuits aimed at stopping GM crops spreading into national wildlife refuges.

The Alliance for Food Sovereignty in Africa is encouraging local communities to avoid the bad example currently being set by South Africa, which has adopted this failed technology even though the GM varieties in question have been shown not to live up to claims that they are drought and flood resistant. Malian farmers and NGOs are also continuing their struggle - which has been successful so far - to prevent the commercialisation of GM crops in Mali.

In every continent then, communities are fighting against GMOs and for food sovereignty. Yet there is an unprecedented agribusiness offensive underway, under the banner of the new 'green economy', a concept that is – in the run up to Rio+20 – being framed with a view to creating an even greater role for corporations and markets. This could allow agribusiness, including Monsanto, to reassert and tighten its grip on food and farming, and facilitate the spread of genetic engineering – worsening the food and climate crises.

It is thus hoped that the testimonies and analysis contained in this report will be heard and heeded by those who define the ways in which environmental protection and sustainability are managed, as well as inspiring and uniting those consumers, activists and

movements already determined to dismantle Monsanto's power. Policy-makers must take a new approach: by empowering local communities, sustainable initiatives can render GM crops, pesticides and other agribusiness practices obsolete.

The use of GM crops destroys essential crop diversity, homogenises food, and eradicates associated local knowledge and culture. In this and other ways social inequality, poverty and the exploitation of natural resources are able to thrive within the existing neoliberal capitalist food system, which focuses on profit generation rather than sustainable food production.

Yet food sovereignty is a real and feasible alternative. It is not purely for agricultural communities but a practice that needs to be integrated into a wider approach to developing sustainable food systems. Bringing together those struggling against Monsanto specifically and those challenging agribusiness in general will help us to develop common goals and a shared vision with which we can transform our societies. Now is the time to act against Monsanto.

Company profile - Monsanto

Founded	1901
President and CEO	Hugh Grant
Headquarters	St. Louis, Missouri, USA
Net sales (2011)	US$11.8 billion
Profits (2011)[4]	US$1.6 billion

Monsanto website: www.monsanto.com

Monsanto – the leading source of genetically modified (GM) crops[5] – has its headquarters in Missouri, USA, and over 400 facilities in 66 countries. It generated net sales that amounted to more than US$11.8 billion in 2011.[6]

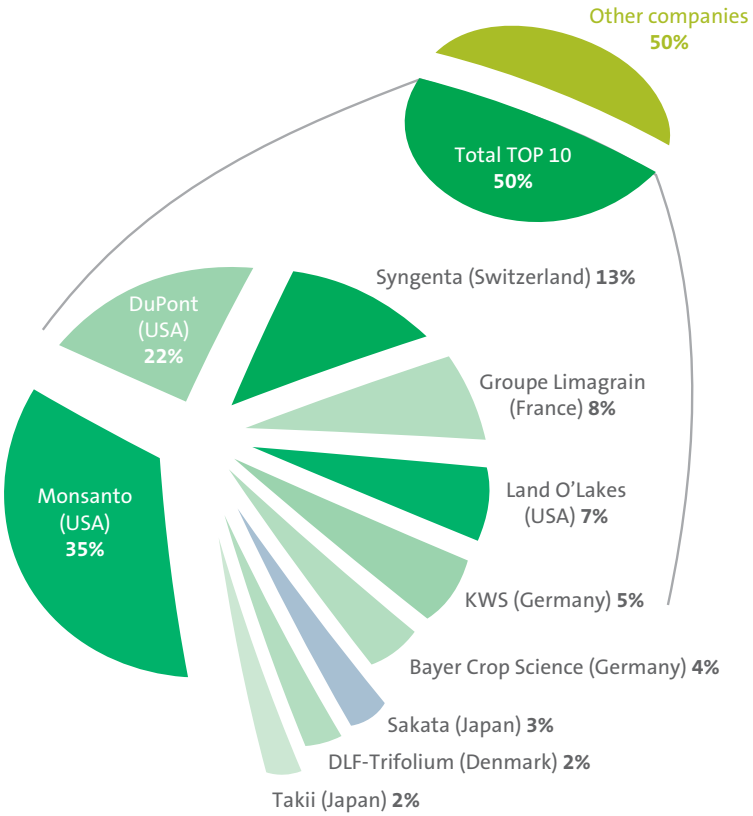
The Monsanto enterprise was originally founded in 1901 as a company manufacturing chemicals. As it grew, Monsanto started producing sweeteners for food companies, agricultural chemicals including DDT,[7] toxic PCBs[8] for industries, components of Agent Orange[9] for the military, and bovine growth hormone.[10]

In the 1980s and 1990s, Monsanto reinvented itself by focusing on genetic modification processes. This shift was consolidated as GM crops became commercialised in the mid-1990s, and the global sale of seeds became dominated by Monsanto as it bought up major seed companies.[11] By 2005, Monsanto was the world's largest seed company, providing the technology for 90% of GM crops around the world.[12] Monsanto controls 27% of the commercial seed market.[13] It controls 90% of the seed market for soy.[14] However, the application of the genetic modification process has been confined to a limited number of commercial crops such as soy, maize and cotton.

Monsanto's control over seed varieties has been bolstered by its aggressive implementation of patent rights: it frequently compels farmers who purchase its patented seeds to sign agreements that ban them from saving seeds and replanting them. Farmers breaking this agreement can face legal action.

Despite becoming a leader in the development of GM traits, only two main gene traits have resulted in significant commercial production over the last sixteen years: herbicide tolerance and insect resistance.[15] Specifically, the majority of Monsanto's GM seed varieties have been developed to be compatible with the company's glyphosate-based Roundup herbicide sprays. However, this best-selling herbicide is linked to serious illnesses and birth defects: communities living in the vicinity of monoculture GM crop plantations have been blighted with poisoned lands and major health problems.[16]

Top 10 corporations' market share of the global seed market



Source: 3D (2010)[17]

Monsanto and other agribusiness corporations also claim that GM crops are a solution to hunger, carbon storage and the effects of climate change including drought and flooding – even though trials have repeatedly failed. Analysis has shown that there is no evidence that GM crops produce greater yields than conventional crops,[18] and there are no 'miracle' crops available that tolerate drought,[19] flooding or salt. Neither do GM crops store more carbon in soils due to decreased tillage or the 'no-till' techniques associated with GM crops and pesticides.[20] What has happened though, rather than solving hunger, is that the corporate grip on agriculture has tightened as we head towards one billion people going hungry globally.[21]

GM worldwide: few crops and limited to a handful of countries

In 1996, the US was the first country to significantly cultivate GM crops for commercial use. A decade later, just 80 million hectares were devoted to GM crops worldwide, the vast majority in the US, followed by Argentina and Canada.[22]

Today, according to the pro-biotech industry body, ISAAA, GM crop cultivation has increased and in 2010 occupied 148 million hectares[23] out of the total area of global agricultural land, which is 4.9 billion hectares.[24] Therefore, the combined area of all GM crops covers just 3% of agricultural land worldwide. 97% of agricultural land around the world remains GM-free.

GM crop cultivation is predominantly limited to a few countries: 90% of GM crops are grown in the US, Brazil, Argentina, India and Canada.[25] Almost 60% of GM crop field trials are carried out in the US.[26] The large majority of GM crops are grown for animal feed or agrofuels destined for rich nations rather than food for the poor and hungry.

Food sovereignty

La Via Campesina coined the term 'food sovereignty' in 1996 to advocate a model of peasant-based, sustainable, agro-ecological farming. Since then it has become a vital concept that reflects the practices of communities around the world.

Food sovereignty is the right of all peoples to produce and consume healthy and culturally appropriate food which has been produced through ecologically sound and sustainable methods. It is also their right to define and own their own food and agriculture systems.

Food sovereignty puts those who produce, distribute and consume food at the heart of food systems and policies, rather than forcing those systems to bend to the demands of markets and corporations. It defends the interests and the inclusion of the next generation.

It offers an alternative to the current trade and food regime, and promotes food, farming, pastoral and fisheries systems that are determined by local producers. Food sovereignty prioritises local and national economies and markets that empower peasant and small-scale sustainable farmer-driven agriculture, artisanal fishing, and pastoralist-led grazing.

The Nyeleni Forum on Food Sovereignty in Mali, in 2007, was a milestone in the movement's progress, when peasant farmers, environmentalists, pastoralists, fisherfolk, indigenous peoples, agricultural and industrial workers, women, youth and urban consumer groups came together to consolidate their efforts.

OPPOSITION TO MONSANTO IN EUROPE

Monsanto and the biotech industry have faced strong public opposition to GMOs across Europe, as demonstrated by direct actions to remove GM crops, and the regulation of GM crops by a number of countries in the European Union.

At the moment the only two GM crops approved for cultivation in the European Union are Monsanto's insect-resistant maize, MON810, and BASF's high-starch potato, Amflora.[27] However, there are now bans on MON810 maize in place in France, Germany, Austria, Greece, Hungary and Luxemburg; these are complemented by a *de facto* ban on all GM crops in Bulgaria. The European Commission's controversial approval of a new GM potato, Amflora, in 2010, has also resulted in bans on the potato in Austria, Luxembourg and Hungary.[28]

Furthermore, between 2008 and 2010, the total area of agricultural land under GM crops in the EU declined by 23%.[29] In 2009, only 0.05% of European agricultural land was used for growing GM crops, which is less than 1% of the land dedicated to growing GM crops globally.[30]

Picture: Guillaume de Crop - Combat Monsanto

A decade of French resistance to GMOs

The first and only GM crop to be grown in French fields was Monsanto's MON810 maize; the French government gave the green light for its cultivation in 1998. In 2005, MON810 was officially grown over 500 ha, and farmers were not required to report GM crops to the authorities or neighbouring farmers. This decision was followed by years of major, countrywide campaigns against GM crops. However, in 2007, new regulations made it mandatory for farmers to register GM cultivation of MON810.[31] The same year, many people started to take part in hunger strikes to obtain a moratorium on GMOs.[32]

In 2008, MON810 was finally banned by the French government after a decade of struggle by various sectors of French civil society.[33] However, this safeguard measure was ruled illegal by the European Court of Justice in September 2011 and the French moratorium on MON810 was cancelled by France's highest court on 28 November 2011.[34] One of the plaintiffs in this case was Monsanto.

Scientists assist in finding Monsanto guilty

A key characteristic of the French struggle against GMOs has been its ability to raise awareness of the risks of GM food. Certain scientists[35] alerted the public to health hazards, breaking away from their colleagues who were advocating for the use of GM in agriculture. These scientists thus exposed themselves to disapproval and retaliation in their workplaces, which in turn opened up a national debate on whistle-blowing in France.

Scientists also demonstrated that Monsanto's Roundup herbicide is dangerously toxic even though it was being misleadingly marketed and sold in France as being biodegradable and not harmful to the environment. In 2007, environmental groups brought

a legal case against Monsanto, which resulted in the company being sentenced by a French court for false advertising and fraud.[36] In 2009, France's highest court confirmed the earlier judgment, and ruled that Monsanto had lied about the safety of it best-selling herbicide, Roundup. The corporation was fined 15,000 euros and required to stop making false assertions about their product, Roundup.[37]

Defending food sovereignty and transparency

The struggle against GMOs in France mobilised various civil society actors, ranging from environmental organisations to farmers, unions, and consumer organisations defending local products. As a consequence, the debate on GMOs went beyond concerns about food safety, prompting people to consider ethical dimensions in relation to patenting seeds.

Concerns were raised about: the risk of contaminating crops and food produced by traditional and organic farming; the disappearance of small farms; and a potential increase in poverty and hunger due to the loss of food self-sufficiency and the destruction of traditional farming and food production processes. In this context, La Via Campesina's concept of food sovereignty resonated strongly with French society.

A French member of La Via Campesina, La Confédération Paysanne farmers' union, is the second largest union in the country. It is highly critical of the agricultural model used over the past four decades which has led to overproduction, public health crises, the deterioration of natural resources and soils, regional and international inequalities, and the decline of the farmer population.

Other environmental organisations, such as Greenpeace France (which started its anti-GM campaign in 1996) and Friends of the Earth France/Les Amis de la Terre, have also raised concerns about the total lack of transparency in the food chain with regard to cross-contamination from pollen in open GM fields.

Greenpeace organised a massive campaign with its activists to carry out random field tests in order to expose GMO contamination, and published information showing which food products contained 'hidden' GMOs, in order to discourage consumers from purchasing GM products and thus exert pressure on GM producers. This struggle led to a strict mandatory labelling regulation for food products that contained more than 0.9% of GMO content. In 2006, a public survey commissioned by Greenpeace and conducted by the CSA Institute, a Paris-based polling organisation, showed that 66% of French citizens expressed concerns about GMOs in their food and 86% were in favour of a ban whilst assessing their safety.[38]

'Les Faucheurs Volontaires': tactical non-violent resistance against GM

The Voluntary Reapers or 'Faucheurs Volontaires' are a group of self-organised non-violent French activists that have led several direct actions to 'neutralise' field tests set up by GM corporations and, to a lesser extent, unauthorised fields cultivated by pro-GM farmers. Jose Bové[39] has been an important actor in the movement and a spokesman for the anti-GM activists, although this organisation does not recognise any leadership as such.

The Voluntary Reapers act openly and unmasked, and they claim responsibility for all their actions, sometimes turning themselves in to the police. They argue that civil disobedience is necessary in order to strengthen democracy and defend the common good against private interests backed by public authorities. They personally assume the civil and penal consequences of their actions in court, and use these trials to deliver their views against Monsanto and GMOs to the public.

In August 2010, 60 faucheurs volontaires and 15 farmers were sentenced to two months suspended prison sentences, after they tore up 70 GM grapevines, which were being cultivated as part of a GM trial in Colmar in Alsace, in north-eastern France.[40]

Combat Monsanto

In France in 2008, a network of NGOs teamed up to form the Combat Monsanto coalition and organise a massive campaign to expose and challenge Monsanto's systematic propaganda and harmful practices. Friends of the Earth France, ATTAC, Greenpeace

Picture: Guillaume de Crop - Combat Monsanto

and other organisations make up Combat Monsanto, which aims to share information and promote coordinated actions and campaigns against Monsanto's human rights and environmental abuses.

The coalition's goal is to establish a dialogue with those adversely affected by Monsanto in order to help protect fundamental rights and exert pressure on the corporation. Combat Monsanto is currently investigating numerous conflicts of interests with respect to experts within regulatory bodies in charge of food safety, both at the European and French levels.

Another important initiative that has helped to raise awareness in France over the last decade is Inf'OGM, an organisation dedicated to monitoring and providing critical information on GMOs globally.

In addition, in March 2008, when the GM debate was at the top of the French political agenda, the French broadcaster, Arte, showed an in-depth investigative documentary by Marie-Monique Robin, "The World According to Monsanto" that highlights the corporation's dark past, and its present role around the world.[41]

Saving and sowing biodiversity

In 2004, the International Treaty on Plant Genetic Resources for Food and Agriculture[42] entered into force. This treaty has played an important role in recognising the farmers' struggle to save and conserve their seeds in the face of the threat posed by the multinationals' patented seeds. In article 9, it "recognizes the enormous contribution that the local and indigenous communities and farmers of all regions of the world... have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world."[43]

Based on this treaty, a French campaign called Sowing Biodiversity (Semons la biodiversité), was launched in 2008 by the network, Peasant Seeds (Réseau Semence Paysanne). This campaign aims to defend local varieties and promote the free exchange of seeds among farmers, in order to restore rural biodiversity and guarantee consumers a large range of local products. Networks to protect farmers' seeds are being developed in many parts of the world to resist the aggressive promotion of industrial seeds (see box below).

Anti-GM actors still face many challenges though, in France and elsewhere. These include food crop trials, moves to undermine existing moratoria in Europe, and aggressive tactics being deployed by the industrial food lobby. This includes using the French and EU courts to have the French ban on Monsanto's MON810 maize overturned,[44] although the French government has since announced that it intends to maintain the ban anyway.[45]

In order to deal with weak state enforcement of anti-GM regulations, European civil society organisations and movements are also obliged to focus on monitoring and actions to ensure that European countries remain GM-free.

Peasant farmers defend their seeds around the world

In March 2011, La Via Campesina held an international meeting of small-scale farmers in Bali, Indonesia, focusing on the critical importance of peasant seeds.[46] Representatives from around the world came together to share their experiences and develop strategies regarding the battle for control over seeds, which determines daily sustenance and therefore human survival. Peasant farmers and indigenous peoples are re-discovering and re-valuing the conservation and exchange of native seeds, which can increase the genetic biodiversity that underpins our world food systems. By prioritising agro-ecology we can help tackle hunger and poverty in a changing climate.

Challenging the dominance of the seed industry is central to protecting peasant seeds. The seed industry is profiting from the use of genetic engineering and pesticides, which are being used to push farmers into dependence on corporate-owned seeds. The seed industry has found multiple ways that effectively allow it to steal this agricultural heritage, through patenting processes and by marketing patented seed to farming communities, who are then forced to buy new seeds every harvest.[47]

The end result of these developments is that just a few genetically uniform seed varieties are replacing thousands of local varieties, eroding the genetic diversity that sustains our food systems.

Farmers' abilities to mitigate and respond to our changing climate is also severely hampered: seed diversity in sustainable peasant agriculture can help to reduce greenhouse gas emissions and allows communities to adapt food production in response to climate change.[48]

It is peasants and family farmers that have preserved and reproduced seeds within local peasant and indigenous seed systems for centuries. Seeds are a treasured heritage that farmers have placed at the service of humanity.

Spanish movements against GM crops

In the last two years, there were national anti-GM demonstrations in Spain, which mobilised more than 8,000 people in Zaragoza in 2009, and 15,000 in Madrid in 2010. Furthermore, there is a burgeoning 'field liberation' movement in Spain, with activists prepared to take direct action, tearing up GM crops, and bravely risking arrest to help protect public health and the environment.

While the government has been exceptionally receptive to the introduction of Monsanto's GM maize compared with other European countries, there is widespread local and regional resistance due to public pressure. Five regions and around 200 municipalities have now declared themselves GM-free: Galicia, Asturias, the Canary Islands, the Balearic Islands, and the Basque Country.[49] Growing public opposition to GM crops throughout Spain has led to these GM-free declarations, which are significant initial steps in response to activists' demands for full bans.

No GM contaminated honey in Europe

A new legal ruling holds out some hope for farmers wishing to protect their organic crops in Europe. In September 2011, the highest court in the EU banned honey that contains traces of pollen from Monsanto's maize, MON810.[50] This ruling stems from a case brought by farmers in the German state of Bavaria, who are situated 500m from a test field of Monsanto's GM maize. They claimed that their honey had been contaminated by pollen from the crop and that they could not market it anymore. The ruling strengthens EU policy on GMOs and the Bavarian Court is set to decide rules for the compensation of beekeepers.[51] Importantly, this case highlights the fact that co-existence between GM crops and conventional crops does not work.

This is a critical issue of great significance for farmers. As of January 2011, over 300 cases of GMO contamination are known to have occurred worldwide, causing social, economic and environmental harm.[52] While the EU has relatively strict regulation over GM crops themselves, there is a decided lack of protection for non-GM farmers whose crops are threatened with contamination.[53] Existing laws also permit traces of GMOs in animal feed.[54] In Spain, where contamination is widespread, GM-free farmers have borne considerable socio-economic costs.[55]

German farmers' movement for GM-free regions

Faced with the first cultivation of GM maize in 2005, La Via Campesina Germany and Friends of the Earth Germany initiated a grassroots movement to promote GMO-free regions. Farmers from various communities drew up declarations to avoid the use of GMOs, and so far more than 30,000 farmers, cultivating more than 1.1 million ha of land have safeguarded over 200 GM-free regions throughout the country.[56] Additionally, more than 300 municipalities have declared themselves GM-free.

However, while Europe has strict rules to label GM food and feed, there is a loophole that permits the sale of products produced from animals fed with GMOs. Thus, for several years food producers labelled their dairy, meat and egg products as being GM-free when this was not strictly true. Fortunately, there is now a national labelling system that defines what constitutes GM-free with respect to animal products.

Organising a movement for food sovereignty in Europe

A movement for food sovereignty is being organised across Europe, inspired by the 2007 international Nyeleni Forum for Food Sovereignty in Mali.[57] More than 400 farmers, environmentalists, consumers and activists took part in a European food sovereignty conference in Austria in August 2011.[58]

The final declaration called for a determined struggle against the use of GMOs and the recovery of a wide diversity of non-GM seed varieties. This tallies with public opinion: popular opposition to GMOs in Europe has increased to 61%.[59] This rejection of GMOs is part of "working towards resilient food production systems, which provide healthy and safe food for all people in Europe, while also preserving biodiversity and natural resources and ensuring animal welfare."[60]

MONSANTO, QUIT INDIA!

Bt brinjal ban and biopiracy

In February 2010, the government faced massive public opposition including from farmers and scientists concerned about the negative impacts of Mayhco-Monsanto's Bt brinjal[61] on livelihoods, human health, the environment and local varieties.[62] A moratorium on Bt brinjal was subsequently implemented.[63] Despite the continued push for its commercialisation by biotech industry groups, this is a victory for food sovereignty in India.

Brinjal is a staple crop in India, being widely consumed and generating livelihoods for farmers across the sub-continent, who have developed and use local seed varieties adapted to their local environment. This decision should stop Monsanto contaminating these local varieties with its Bt gene, and puts a barrier in the way of Monsanto's seemingly relentless drive to profit from expensive seeds and unsafe food. The moratorium remains in place.

Furthermore, in August 2011, the Indian government's National Biodiversity Authority issued a legal action against Mahyco-Monsanto[64] and their collaborators for biopiracy. The company used six local varieties of brinjal in its development of a genetically modified version of the crop, Bt brinjal, which is an insect-resistant version. However, the company did not have approval from the relevant authorities. Environmentalists argued that Monsanto had illegally used indigenous varieties of brinjal from the Indian state of Karnataka to make a GM version of the vegetable.[65] Monsanto initiated its research on Bt brinjal in 2005 but legal mandates were breached as it failed to consult with local communities who have traditionally conserved local varieties.

Nationwide actions

In August 2011, energised by the success in achieving a temporary ban on Bt brinjal, farmers and activists carried out 'Monsanto, Quit India' protests across the country to coincide with Independence Day, drawing parallels with the anti-colonial, civil disobedience 'Quit India' movement that campaigned against British rule.[66] Just as political sovereignty was demanded previously, farmers and consumers are now calling for food sovereignty. Monsanto is targeted as it is an archetypal, aggressive foreign corporation that hurts farmers and small-scale, safe domestic food producers.

The Tamil Nadu Farmers' Association, for example, organised a day of action in Coimbatore, mobilising in solidarity with other farmers opposing the monopolisation of the Indian seed industry by corporations like Monsanto.[67]

In Uttar Pradesh, the Bhartiya Kissan Union led a five-day long protest against GM crop trials, celebrating the agro-ecological approaches that have successfully produced high rice yields in the region. Other protests have taken place in the states of Orissa, Andhra Pradesh, Bihar, Karnataka, Maharashtra, Punjab, Madhya Pradesh and Gujarat.[68]

The Bt brinjal scandal is not an isolated case of farmers' food rights being put at risk. In July 2011, Greenpeace and a local TV channel exposed the fact that Monsanto started producing seeds for two varieties of GM maize by flouting biosafety regulations and thus jeopardising local farmers and the environment.[69] In Karnataka, the leading farmers' union in the state, Karnataka Rajya Raitha Sangha (KRRS) together with other organisations, demanded an immediate ban on all open field GM experiments throughout the country.

Picture: KRRS (Karnataka State Farmers' Association) – Via Campesina India.

Bt cotton dominates cotton sector

India is the fourth largest grower of GM crops in the world, after the US, Brazil and Argentina, and has been lauded by the pro-biotech industry because "stellar growth continued with 6.3 million farmers growing 9.4 million hectares of Bt cotton".[70] In July 2011, the Indian government announced that 90% of the total area of cotton production is under Bt cotton, implying a virtual monopoly for Monsanto's gene technology.[71] Monsanto controls 60 Indian seed companies through licensing agreements.[72]

Bt *(Bacillus thuringiensis)* cottonseeds are modified with the toxin Cry, to be insect resistant.[73] Bt cotton known as 'Bollgard' has been specifically modified to control the bollworm pest. However, bollworm has developed resistance to Bt cotton meaning that a further version of the Bt cotton has had to be developed. 'Bollgard II' contains two additional toxic genes. This cycle is likely to be perpetuated: as pests become ever more tolerant, more toxic characteristics have to be developed.

Bt cotton is the only GM crop approved in India and it has been linked to a suicide epidemic that has been sweeping across the country. These deaths are rooted in a national agrarian crisis that affects millions of smallholder farmers. In the last two decades, India has seen its agriculture opened up to the global market, which has increased costs without remunerative returns and mired many farmers in vicious cycles of debt. The highest rates of suicides coincide with the areas producing the highest amount of cotton.[74]

Spiralling debt still triggering suicides

During the past 16 years, more than a quarter of a million farmers have committed suicide in India: constituting the largest wave of suicides ever recorded in human history. Unbearable economic hardships faced by farmers have resulted in suicides taking place on a massive scale, often by swallowing the poisonous pesticides that are used to spray their Bt cotton crops, resulting in agonising and drawn-out deaths.[75]

Between 1995 and 2010, over a quarter of a million farmers committed suicide in India; and over 50,000 of these farmer suicides took place in Maharashtra, the richest state during that period.[76] In 2010, official figures highlighted that 15,964 farmers committed suicide. These statistics are likely to be significant underestimates especially considering the fact that women are often excluded from such figures due to their lack of land titles, which are commonly required for anyone to be officially recognised as a farmer.

The reorientation of the Indian agrarian economy towards cash crops has resulted in the increasing dominance of multinational corporations and given rise to increased costs for small-scale farmers. As the Indian Government has encouraged this shift to cash crops, foreign multinational corporations like Monsanto have marketed their expensive biotechnology as a solution for farmers struggling to compete in the global market. For example, Monsanto has promoted Bt cotton as producing higher yields than other cotton seeds because it is resistant to agricultural pests, arguing that this means it needs fewer insecticide sprays.[77]

However, a survey carried out in Vidharbha, the eastern region of the Maharashtra state, by Navdanya (a network of seed keepers and organic producers spread across 16 states in India) showed that pesticide use had increased 13-fold there since Bt cotton was introduced.[78] These findings are reinforced by a recent study in the Review of Agrarian Studies that also indicated that pesticides for Bt cotton are associated with higher costs.[79]

In terms of yields, Monsanto has been exposed for dramatically exaggerating the potential of Bt cotton.[80] Nevertheless, Monsanto's more expensive Bt cottonseeds and inputs including pesticides have displaced cheaper local seeds, and traditional seed knowledge has been undermined as a result.[81] As GM cottonseeds dominate the market, they leave many farmers with little choice but to opt for more expensive GM seeds: other seeds may be hard to source. Moreover, farmers have provided testimony that Bt cottonseeds demand larger amounts of scarce water resources in comparison to native seeds.[82] They are also more vulnerable to deteriorating climate conditions.

The higher costs associated with Bt cotton have no doubt helped push subsistence farmers into spiralling debt, forcing them to resort to financial support from moneylenders. Poor harvests of cotton crops that do not cover the costs for seeds, pesticides and other inputs, ramp up farmers' debt burdens. It is important to note that the majority of suicides are committed by farmers engaged in the cash crop sector, which is vulnerable to the vicissitudes of the global market.[83] These farmers also lack state support such as subsidies geared towards the sector.[84]

Stopping Monsanto's new public-private partnerships

Monsanto has adopted a new strategy to expand the reach of their crops, through public-private partnerships with state governments. Several state governments in India, such as Jammu and Kashmir, Rajasthan, Orissa, Himachal Pradesh and Gujarat, have signed memoranda of understanding (MoUs) with Monsanto.

However, this has generated public outrage and certain agreements have been put on hold as a result.[85] In July 2010, the Indian state of Rajasthan signed an MoU for a public-private partnership with Monsanto[86] and six other domestic and foreign biotech seed companies.[87] This move was unprecedented; bringing together four state agricultural universities, the Rajasthan State Seed Corporation and the Government of Rajasthan, as represented by the Department of Horticulture and the Department of Agriculture. This would open up state research facilities to biotech companies. However, farmers' organisations protested and the MoU has not been enforced.[88]

In Orissa, after pressure from farmers and civil society organisations, the state government has similarly not implemented its public-private partnership with Monsanto.[89] Due to strong public opposition, other state governments such as Kerala, Bihar, Chhattisgarh, Karnataka and Madhya Pradesh have stopped field trials of GMOs altogether.[90]

RESISTANCE TO MONSANTO IN LATIN AMERICA

The movement against Monsanto is gaining strength in Latin America and the Caribbean as well: movements and local communities in Haiti, Brazil, Argentina and Peru are fighting for bans on GMOs and pesticides, and independent local control of seeds and agriculture.

Brazilian peasant farmers' movement against agribusiness

Since 1984, the Brazilian landless farmers' movement has grown to over 1.5 million members and has peacefully occupied unused land to promote land reform and agro-ecological farming. Over 350,000 families have now been settled on unused land across the country, which is legal under the Brazilian Constitution.[91]

In March 2011, La Via Campesina's Landless Farmers' Movement (Movimento dos Trabalhadores Sem Terra - MST) and other social movements protested against the excessive use of pesticides in Brazil.[92] During this period, along with various other civil society organisations, they launched the 'Permanent Campaign against Pesticides and for Life',[93] aiming to denounce and raise awareness of the negative impacts of the current agricultural model and the potential for a new model based on food sovereignty.

The use of pesticides is an inherent problem with the current agricultural model. Since 2008, Brazil became the world's largest user of pesticides, and over one million tons were sold in the 2009/10 harvest.[94] In 2010, the National Health Control Agency (ANVISA) estimated that 28% of the food consumed in Brazil contains dangerous levels of pesticide residues.[95]

This growth in pesticide use has grown in tandem with the increase in GM crop cultivation, particularly GM soy. In 2009, Brazil displaced Argentina as the second largest grower of GM crops in the world. In 2009/10, 23 million ha of soy were planted in Brazil, of which 70%, or 16.5 million ha, was reportedly GM Roundup Ready (RR) soy.[96] Monsanto's RR soy is engineered for resistance to its glyphosate-based herbicide, Roundup.[97]

It is estimated that in the 2009/10 season alone, Brazilian soy producers reportedly paid one billion Brazilian Reais (US$530 million) in royalties to Monsanto for the use of their Roundup Ready technology.[98] In 2006, La Via Campesina members including MST camped in front of the Santa Rita farm in the state of Paraná, to protest against the fact that the owner, Abelardo Lupion from the right-wing Liberal Front Party, bought the farm from Monsanto in return for using his political influence to legalise glyphosate in Brazil.[99] La Via Campesina Brazil has also denounced industrial producers of GM soy that have contaminated small neighbouring rural farms.

Syngenta and the murder of MST leader, Valmir Mota d'Oliveira

Agribusiness interests have also been engaged in violent conflicts over land in Brazil. In October 2007, the MST leader, Valmir Mota d'Oliveira, was murdered during the peaceful occupation of a GM field trial in the state of Paraná when around 40 private armed guards employed by NF Segurança, the private security company hired by Syngenta to protect the farm, attacked the peasant camp.[100]

La Via Campesina Brazil had occupied the plot of land since March 2006, in response to Syngenta illegally testing GMOs there. In July 2007, 70 families eventually left the site, but in October, fearing Syngenta's resumption of GM trials, the land was occupied once again. This peaceful occupation was met with a brutal armed assault, resulting in the death of Valmir Mota who was shot in the leg and then in the chest at point-blank range.[101] In addition, Isabel Nascimento de Souza was almost killed, after she was shot in the top of her head, which shot out her eye and punctured her lung. She was then beaten and dragged by the gunmen.[102]

These grave human rights violations sparked protest actions around the world, not only against the corporation's role in the abuses but more broadly targeting GM seeds and the corporate control of agriculture.[103]

Land reform and food sovereignty as an alternative to GMOs

In Brazil, three GM crops have been authorised for cultivation: soy, maize and cotton. Soya continues to be the main GM crop.[104]

Peasant and family farmers are responsible for producing 78% of food in the country and make up 84% of all farms in Brazil, employing three times as many people compared to agribusiness, but controlling only 24% of farmland.[105] These farmers are at the forefront of the battle against the growth in GM crops,[106] since they are promoting and putting food sovereignty into practice. The neo-liberal agrarian model could be supplanted if peasant-led family farming, which currently provides much of the nation's food, were to receive public investment rather than industrial farming enterprises such as the sugar cane ethanol, soya and other monoculture agro-industries.[107]

The enforcement of community rights, combined with investment in food sovereignty as part of a national agrarian reform, could protect local farmers and local communities from socio-economic inequality and human rights abuses. According to the 'Second National Agrarian Reform Plan', it is estimated that Brazil has nearly 200 million ha of vacant lands and 130 million ha of unproductive lands,[108] where thousands of landless rural workers could establish themselves, producing healthy food, generating employment, building housing, and generating small-scale bio-energy for local communities, in addition to preserving the environment.

Ten-year moratorium on GM in Peru

In November 2011, Peru's Congress approved a ten-year moratorium on GM cultivation and imports, including seeds, livestock and fish, in order to protect biodiversity, domestic agriculture and public health.[109] The approval of this bill is a momentous decision and reinforces President Ollanta Humala's opposition to biotechnology, unlike his predecessor, Alan Garcia.[110] This development, by a leading exporter of organic food, serves as a blow to US corporate interests including Monsanto, especially since Peru was identified by the US government as one of the "key countries" for GM expansion, according to a Wikileaks cable.[111]

Landmark ruling on toxic soy in Argentina

An Argentine court has upheld a 2010 court injunction banning the spraying of pesticides near homes in Chaco province. The pesticides named in the case include glyphosate (Roundup), endosulfan, methamidophos, chlopyrifos, and picloram, among others.

The court banned spraying with chemicals within 1,000m of housing if the method is terrestrial and 2,000m if using aerial methods. The court re-asserted the precautionary principle – in other words, if irreversible environmental damage is likely, it is necessary to take protective measures – and stressed that priority should be given to the health of the population over agricultural production. The court also banned spraying near waterways.[112]

Rulings that enforce no-spray zones are important steps that help protect local communities from direct impacts. However, this is just one step in the necessary intensification of international struggles against industrial GM soy production, which must be stopped before it claims more victims because of the associated use of toxic pesticides, the mass displacement of local communities, and the marketing of unsafe GM food and feed.[113]

An increase in the spraying of soy crops has occurred in parallel with increases in birth defects, as shown by scientific analysis.[114] Monsanto's glyphosate-based, herbicide-tolerant GM crops are mainly grown in the US, Brazil and Argentina. In Argentina, pesticide use has increased by 330% since the introduction of GM soy.[115] Strong evidence links exposure to glyphosate to the development of cancer, hormonal imbalances, birth defects, and neurological illnesses including Parkinson's disease.[116] This conflicts with Monsanto's claims that its Roundup herbicide allows simple, environmentally-responsible weed control.[117] Monsanto claims:

"Roundup herbicide has excellent environmental features such as rapid soil binding, biodegradation (decreased persistence) and extremely low toxicity to mammals, birds and fish."[118]

Picture: Leonardo Melgarejo

Local accounts provide further evidence that the spraying of Roundup on soy is causing negative health impacts including birth defects.[119] An interviewee, Viviana Peralta from Sante Fe province in Argentina, won a lawsuit against soy producers, which led to the ban on the spraying of Roundup.[120] Peralta suffered from health problems when herbicide spraying began nearby, and then her new-born baby fell seriously ill. In her own words, "One day, they sprayed from dawn till night. That day my baby turned blue. I ran to the hospital, I thought she was dying. When I saw my baby like that, I said, 'Enough. This cannot go on.' "[121]

Haitians oppose seed aid

In June 2010, more than 10,000 Haitians took to the streets under the initiative of Papaye Peasant Movement (MPP), a member of La Via Campesina, to oppose Monsanto and demand food sovereignty, including local control over native seeds.[122] This popular opposition to Monsanto stems from its announcement, in May 2010, that it had made a shipment of over 60 tons of hybrid maize and vegetable seeds to Haiti and anticipated sending another 400 tons over the next year, with the support of USAID.[123] But these hybrid seeds cannot be replanted from one season to another and require massive amounts of pesticides, making farmers dependent on corporate seed and chemicals producers. Monsanto stated that this decision was made at the World Economic Forum in Davos, Switzerland, and it seems that Haitian officials were not involved in the discussions.[124]

Haitian peasant leader Chavannes Jean-Baptiste from the Peasant Movement of Papaye (MPP), part of La Via Campesina, has described Monsanto's seed aid as the "next earthquake."[125] This donation sparked suspicion and anger as the local seed heritage is vanishing because of the increasing domination of multinational seed and agrochemical corporations. Globally, FAO estimates that in the last century around 75% of genetic diversity of agricultural crops has been lost.[126] In Haiti, around 65% of the population is made up of subsistence farmers living in rural areas.

Guatemalan networks warn of new biosafety proposals

In November 2011, the Network for a GM-Free Latin America (RALLT) and the Central American Alliance for Biodiversity Protection (ACAPDB) released a statement warning that Guatemala has a legal loophole when it comes to biosafety, because there are no strong national laws governing the import and export of GMOs.

There are also fears surrounding the potential adoption of a proposal for a 'Framework Law on the Biosecurity of Improved Genetically Engineered Organisms', which aims to exploit the rich biodiversity of Guatemala and promote GM crops.[127] The adoption of this bill would seriously affect food sovereignty as consumers and family farmers are vulnerable to the entry of GM seeds and the contamination of crops. This risk is exacerbated by food production programmes that are designed and implemented without properly addressing the need to protect the country's agricultural diversity.[128]

The 'Feed the Future' campaign is of particular concern to both international and national NGOs and social movements.[129] It is being driven by the US government and will be coordinated by the US Agency for International Development (USAID) in African, Asian and Latin American countries, including Guatemala. This programme foresees alliances with national institutions, NGOs, research centres, and corporations like Wal-Mart, DuPont, Pioneer, Coca-Cola and Monsanto.[130] Monsanto has responded positively, clearly recognising the opportunities presented by the Feed the Future programme. [131]

The implementation of such programs could go beyond the distribution of GM food destined for the undernourished population in Guatemala: it could also influence national legal reforms relating to the use of seeds. This matter is particularly worrying because Guatemala is considered one of the original centres of maize production, even though it now suffers from widespread malnutrition, poverty and corruption.

BATTLE-LINES DRAWN IN THE UNITED STATES

The US – which produces 45% of GM crops worldwide[132] – has rewarded Monsanto's White House lobbying efforts by promoting its seed technology both nationally and internationally.

Between January 1999 and June 2010, Monsanto spent over US$50 million on lobbying Congress and various government agencies, including on the regulation of GM crops, patent protection reforms and subsidies.[133] According to Food & Water Watch, the top food and agricultural biotechnology firms spent US$547 million lobbying Congress between 1999 and 2009.[134]

In one of the most recent battles to disrupt the US government's relationship with Monsanto, environmentalists and lawyers launched an initiative to prevent Monsanto's GM crops contaminating national wildlife refuges.[135]

Stopping the spread of GM crops into national wildlife refuges

According to the non-profit alliance of Public Employees for Environmental Responsibility (PEER),[136] the US government has been collaborating with Monsanto to secure agricultural export markets, removing barriers to the spread of GM crops, including into national wildlife refuges.

However, most of these crops are modified to be resistant to Monsanto's Roundup herbicide, which is causing an over-reliance on these toxic agricultural chemicals that have spawned an epidemic of herbicide-resistant 'superweeds'.[137] The spread of these superweeds within national wildlife refuges could have a devastating impact on biodiversity.

Nevertheless, in recent years farming on these refuges has been opened up to GMOs, primarily Monsanto's Roundup resistant crops. However, legal battles led by PEER and the Centre for Food Safety (CFS) forced the US Fish & Wildlife Service (FWS) to end the planting of GM crops in 12 states.

The Biotechnology Industry Association (BIO), whose most prominent member is Monsanto, has lobbied the White House for assistance. BIO works with the US government's 'Agriculture Biotech Working Group'[138] to promote GM agriculture with the support of more than 35 government officials from ten government departments including State, Justice, Agriculture and the Environmental Protection Agency (EPA).

This Working Group aims to protect existing GM crops in the refuges from legal actions that could lead to bans. Furthermore, it has exerted pressure on the US Fish & Wildlife Service, which manages the National Wildlife Refuge System, to rescind policies that restrict GM plants, unless they serve the refuge's specific objectives. State officials are also collaborating with BIO to open up legal avenues to facilitate GM cultivation in 75 refuges in 30 states.[139]

PEER Staff Counsel Kathryn Douglass, who filed the legal action under the Freedom of Information Act in July 2011, stated: "With all the environmental challenges facing this country, why is the White House priority putting wildlife refuges under the thumb of Monsanto?"[140]

In July 2011, PEER brought a legal action against the US government to force the release of documents detailing their partnership with the agricultural biotech industry.[141] In November 2011, PEER, Beyond Pesticides, and the Center for Food Safety (CFS) filed another lawsuit against the US Fish & Wildlife Service, seeking to end cultivation of GM crops in 54 national wildlife refuges across the Midwest.[142]

Roundup, 'superweeds' and secrecy

Monsanto's Roundup is the world's best selling herbicide, despite industry regulators including the European Commission having known for years that it is linked to birth defects, according to research conducted by independent scientists. The Commission dismissed these findings, based on a rebuttal from the German Federal Office for Consumer Protection and Food Safety that cited unpublished industry studies.[143] Considering that the Commission has previously ignored other independent scientific studies, this is cause for concern as Monsanto and other GM seed producers attempt to get the glyphosate-tolerant crops approved in the EU.

Monsanto GM seed varieties are designed to be utilised along with the company's glyphosate-based Roundup. The growth of GM crops has led to a massive rise in pesticide use.[144]

However, in the US an epidemic of resistant 'superweeds' has been caused by the continual application of glyphosate on crops that are marketed as glyphosate-tolerant crops. New analysis also suggests that Monsanto GM maize is failing in terms of insect resistance to Bt toxins.[145] Other research has shown that pesticide applications have risen dramatically since the introduction of GM crops. Monsanto's glyphosate-based Roundup, which is marketed to be used with its Roundup Ready (RR) crops, saw a 46% increase in sales in 2007 and 2008.[146]

In August 2011, the US Geological Survey (USGS) reported that glyphosate used on GM crops was found in rainfall and rivers in the Mississippi Basin – jeopardising human health by contaminating drinking water and aquatic life. Glyphosate use in the Mississippi River basin has risen eight-fold in 15 years, to 88,000 tons in 2007.[147]

Furthermore, Monsanto has sparked a herbicide 'arms race' as weeds have become increasingly tolerant of glyphosate and spread further.[148] As a result there is increasing competition from other companies manufacturing cheaper toxic chemical applications to satisfy widespread demand for herbicides in the US. New GM crop applications that can resist even more toxic herbicides are now pending approval as well, even though these herbicides are linked to cancer and other serious illnesses and were set to be phased out.[149]

AFRICAN RESISTANCE TO GMOs

In Africa, GMOs are primarily limited to South Africa[150] but Burkina Faso and Egypt have commercialised GM crops and several other African countries, such as Nigeria[151] and Kenya,[152] have, controversially, adopted pro-GM legislation.

Malians fight to keep GM out of agriculture

Mali is yet to succumb to biotechnology despite pressure from USAID and Monsanto. In 2005 and 2006, the government of Mali decided to embark on an innovative process to place farmers at the heart of its first set of agricultural policies.

On 16 August 2006 a new farm bill was agreed – but it was effectively shelved, and thus failed to meet the expectations of peasant farmers. However, this legislation recognised the importance of food sovereignty, social security, and access to land, and the need for funding, training and fair incomes for farmers. Hopes were raised at the prospect of this new agrarian law, and its implementation should have been a high priority considering that 75% of Mali's population rely upon agriculture.

The official approach to biotechnology now seems to be shifting though, seemingly in response to pressure from USAID and Monsanto. Through a possibly corrupt process that lacked transparency, a new bill called 'Security in Biotechnology' was promoted by the Ministry of Environment and Sanitation, adopted by the government, and deposited with the National Assembly for ratification. On 13 November 2008, the bill was passed, allowing GMOs to enter the country.

In theory, this decision allows multinational seed companies to undermine Mali's reliance on traditional farming methods. Political elites have betrayed Mali's peasant farmers and exposed them to new dangers.

In practice however, resistance to the implementation of the bill has been strong. NGOs and peasant movements reacted rapidly: on 13 November 2008, a sit-in was organised outside the National Assembly in Bamako by the National Coordination of Peasant Organisations (CNOP), a member of La Via Campesina, and other actors of Malian civil society such as Helvetas, the NGO Federation of Collectives (FECONG), the Coalition for Africa Genetic Heritage (COPAGEN) and the Forum for Another Mali (FORAM). Despite the authorities mobilising security forces, protestors denounced the lack of transparency surrounding the bill and the implied loss of national sovereignty. Monsanto and its GM seeds were condemned in chants and on banners.

Farmers and civil society organisations continue to push for food sovereignty and the maintenance of GM-free agriculture, so far with considerable success: although the government of Mali has issued a decree that allows field trials, GM crops have not yet been commercialised in Mali.

South African farmers reject GM maize

A solid body of scientific evidence shows that organic matter is the most important trait in making soils more resilient to drought and erratic rainfall.[153] No such evidence exists for GM crops. Biotechnology has proved unable to develop drought-resistant seeds, which would require major changes to the plant's metabolism; and no GM crops have yet been developed that are yield enhancing.[154]

In October 2011, however, South African authorities approved imports of Bayer CropScience's GM rice, LL62, which is engineered to be resistant to glufosinate ammonium. Famers and civil society organisations strongly opposed this decision on the grounds that it may contaminate non-GM rice varieties. Moreover, the herbicide glufosinate is toxic, can be harmful for reproductive health, and is therefore slated for an EU ban in the near future.[155]

In the same month, the Lutzville Emerging Farmers Forum and the Food Sovereignty Campaign protested alongside residents of this West Coast region, to reject the GM maize experiments for drought resistance being conducted by Monsanto in collaboration with South Africa's Agricultural Research Council (ARC). Monsanto's engineered traits are present in an estimated 75% of all GM maize cultivated in South Africa.[156]

Picture: Martin Drago – FoEI

The African Centre for Biosafety has also learned that 19 new varieties of GM maize, engineered by Monsanto, Pioneer and Syngenta, have been granted approval by government authorities.[157]

Davine Witbooi of the Lutzville Emerging Farmers Forum stated that, "The land should rightfully belong to the people, and the poor should have first option to feed themselves from the land. Now the land is being used for experiments that will serve to make some rich corporation even richer. This picket is a warning. We are still polite. The time will come when we will simply take the land."[158]

Alliance for Food Sovereignty in Africa

In December 2011, at the UN climate talks in Durban, the Alliance for Food Sovereignty in Africa was launched. This alliance includes pastoralists, fisherfolk, indigenous peoples, small farmers' networks such as La Via Campesina Africa and environmentalists, including Friends of the Earth Africa. This alliance of networks aims to strengthen the growing African movement in order to influence policy and promote community-led solutions as an alternative to the existing corporate-driven trade and food regime.[159]

Throughout the continent, diverse seed varieties have been developed for centuries, as part of traditional knowledge to foster nutrition, health, medicine and local culture. Faced with climate change, unfair terms of trade and poverty, traditional farming methods including seed saving are vital for survival.

GLOBAL GOVERNANCE

Rio+20 and the green economy

Global governance aimed at solving environmental crises currently involves complex interactions between a series of transnational actors including UN bodies, international financial institutions like the World Bank, governments, corporations and non-governmental organisations (NGOs). However, the existing structures and balance of forces is very much tipped in favour of corporate power, as part of an unjust and unsustainable global economic system that relies on climate-damaging fossil fuels and the depletion of natural resources.

The Rio+20 summit planned for June 2012 should be a historic opportunity to demand profound structural change to our economies including the industrial food production system. The summit marks two decades since the Earth Summit in Rio 1992, which launched two new international agreements: the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC).

Governments at the upcoming Rio+20 summit[160] plan to assess international approaches to halting environmental destruction, but the current trajectory is designed to further entrench neo-liberal capitalism, now with a green facade. Unfortunately, it was reliance on market-based approaches that led us into current food and financial crises in the first place.[161]

Agriculture is a priority area for action. The Food and Agriculture Organization (FAO) is looking to design a roadmap to "green the economy with agriculture",[162] which is likely to contain many of the market-based elements of 'climate-smart agriculture' that are discussed below.

In general, the 'green economy' concept is being used in the run up to the summit to promote corporate-dominated, market-led approaches to the ecological threats we face. It is not being defined in a way that recognises and supports the local community-led solutions already known to be effective, such as the diverse agro-ecological practices already used to produce food, fuel, fibre and medicine sustainably.

To illustrate this, the United Nations Environment Programme (UNEP)'s highly influential report, 'Towards a Green Economy', which highlights the approaches being taken by governments and businesses on the road to Rio+20,[163] advocates the use of market-based instruments and the trading of new commodities such as biodiversity and carbon offsets, including in the agricultural sector.

But the creation of new markets risks the further expropriation and privatisation of natural resources by economic interests. UNEP promotes "green agriculture by partnering with leading agribusiness," claiming that "corporations can play a major role in supporting a transition to green agriculture."[164] Yet these statements ignore the role that industrial agriculture has played in accelerating climate change and the mass displacement of farmer communities.

UNEP's analysis clearly shows that national and international policy-makers aim to rely on markets, corporations and private finance to create new commodities to be bought and sold, whether carbon or biodiversity.

Climate-smart agriculture

The World Bank, FAO, and the Consultative Group on International Agricultural Research (CGIAR)[165] research centres are promoting 'climate-smart agriculture' (CSA), which they say includes practices that will increase productivity for food security, increase resilience and hence adaptation to climate change, and sequester greenhouse gas emissions.[166] As part of this approach, the World Bank and FAO – among other agencies and corporations – are pushing 'climate-smart' initiatives that could turn farms into carbon offset projects.[167]

Picture: CNOP – LVC Mali

Yet analysis shows that soil carbon markets will not work for smallholders as such a system is most likely to be geared towards large landholdings. The insecurity of land tenure faced by poor farmers is likely to be exacerbated as the value of land rises and its acquisition becomes more attractive to project developers. Moreover, offset projects would finance continued greenhouse gas emissions in rich industrialised countries that pose serious risks to developing country agriculture.[168]

Advocates of CSA farming frequently refer to Conservation Agriculture (CA) that involves 'no-till' farming – a technique that does not require ploughing or digging the soil when cultivating crops. This technique helps to reduce erosion and sequester carbon in the soil. Monsanto's Roundup Ready (RR) soy has been heralded as an important component of no-till farming practices, as farmers use Roundup rather than plough to get rid of weeds.

Yet the argument that GM promotes no-till cultivation[169] conveniently overlooks the fact that no-till agriculture is not exclusive to GM crop farming methods. The combination of GM crops and no-till techniques has also led to dangerously high levels of Monsanto's Roundup Ready pesticides being used on monoculture crops such as GM soy and maize in the US and Southern Cone of Latin America.[170] Studies suggest that this has not led to any more carbon being stored in soils.[171]

It is also important to note that while international bodies like the FAO avoid direct references to GM, they do not explicitly exclude biotechnology. Moreover, the biotech industry is promoting GM crops as part of the proposed 'climate-smart' agricultural framework, even though climate-resilient GM crops including trees are not currently commercially available, as trial after trial has so far failed.[172]

Peasant versus industrial agriculture

Multinational corporations are becoming ever more deeply entrenched as the 'tools and tyrants' of governments – making it increasingly difficult to distinguish between corporations and state power.[173] Tim Lang, professor of food policy at City University in London, has stressed the embedded nature of corporations within the UN policy framework: "They don't need to lobby increasingly, and mostly they are part of the architecture of power."[174]

This intertwined state-corporate architecture is also reflected in the current industrial food system. International NGO, GRAIN, argues that the current global industrial food system is responsible for 44-57% of all greenhouse gas emissions – taking into account total food industry impacts including land use changes, petroleum-dependent farming technologies, chemical fertilisers, processing, packaging, transportation, refrigeration and waste.[175]

In stark contrast, small-scale peasant agriculture, which reintegrates organic material into the soil – storing carbon naturally – can reduce emissions by up to 30%.[176] As emphasised by Olivier De Schutter, the UN Special Rapporteur on the Right to Food, malnutrition and hunger are caused by "imbalances in the power in the food systems and the failure to support the ability of small-scale farmers to feed themselves, their families, and their communities."[177]

Hence, more than 50 NGOs are urging governments taking part in Rio+20 to implement a ban on GM foods and replace large-scale industrial production with small-scale, agro-ecological policies.[178] Furthermore, a social movement-led 'People's Summit' will demand an end to the commodification of nature and the defence of the commons.[179] 'Green economy' solutions that equate to corporate-led false solutions will be denounced and sustainable alternatives showcased.

Transforming agriculture would go hand-in-hand with a reconstruction of the systems that underpin our industrial societies, so that countries can embark on just transitions that reduce unsustainable consumption and production; invest in public infrastructure including appropriate renewable energy production; create jobs; secure community rights; and sustain community-led biodiversity conservation.

Risks for agriculture at UN climate talks

Proposals on the table at the UN Framework Convention on Climate Change (UNFCCC) talks are paving the way for corporate land-grabbing, including for the cultivation of GM crops and trees as part of new carbon offset proposals.

Offsetting exists in all carbon trading schemes and is a loophole allowing those countries and/or companies that are supposed to reduce their emissions to purchase the right to pollute from industries and projects in countries elsewhere.

In other words, this is a system that allows polluters to continue polluting unabated. It is also one that is marred by the complexities and volatility of the carbon trading system, and its vulnerability to fraud. In particular, projects may have been planned anyway, meaning that they are not creating additional emissions reductions at all.[180]

Moreover, offset projects involving forests and agricultural soil carbon are especially risky, because of the impermanence of carbon stored in trees or the soil. Such projects wrongly equate short-term carbon storage by forests or soil with long-term carbon sequestration underground in fossil fuels. Soil and forest conservation does not permanently remove CO_2 from the atmosphere as this carbon can be released back into the atmosphere through soil tilling, fires and die-back.[181]

Yet carbon offsetting, particularly through the Clean Development Mechanism (CDM), constitutes a central feature of the current system for addressing climate change. The CDM allows the 37 rich industrialised countries[182] to buy their way out of the weak emissions reductions commitments (of around 5% in the period 2008-2012) which they made under the UNFCCC's first Kyoto Protocol commitment period.

The CDM currently includes projects in developing countries that reduce potent industrial gases and invest in 'clean' energy such as hydropower, gas, biomass, and carbon capture and storage (CCS). But offsetting projects linked to soil carbon,[183] GMOs and forest conservation (or avoided deforestation) are currently excluded from the CDM specifically because of the lack of permanence and environmental integrity associated with short-term carbon storage. Many CDM projects have displaced local communities and harmed the environment.[184]

However, the biotech industry is contesting what is and what is not included within the CDM. Since 1998, Monsanto has been lobbying hard for chemical 'no-till' agriculture to be allowed in the CDM although their attempts have failed so far.[185] In addition, although there is currently no international soil carbon market, the World Bank[186] and FAO are also promoting soil carbon offset credits, arguing that it will increase productivity and private sector investment in small-scale agriculture.[187]

It is critical to note that similar forest carbon offset proposals, which are advancing rapidly at the UN climate talks under the banner of 'reducing emissions from deforestation and forest degradation in developing countries' (REDD+)[188] already seem set to unleash a global land grab and the mass displacement of local communities in the global South, as companies and countries strive to compensate for industrial pollution in the North. Industrial plantations, potentially involving fast-growing genetically engineered trees, could also be included under REDD+. Another threat is that companies like Monsanto will be able to include GMOs by promoting agricultural initiatives under REDD+.[189]

In tropical rainforest countries, harmful REDD-related projects are already underway, such as the Kalimantan Forests and Climate Partnership (KFCP), which is a bilateral forests and climate agreement between the Governments of Indonesia and Australia. This agreement generates offsets and thus allows continued fossil fuel emissions in Australia. It also fails to recognise land rights, and the fact that land clearance is still continuing nearby,[190] seriously undermining the project's effectiveness in reducing deforestation.[191]

At the UNFCCC, agriculture has been specifically dealt with under a 'mitigation' work-stream, as developed countries in particular – including the US, EU and New Zealand – are interested in creating market-based mechanisms in the agricultural sector to help meet their emissions reduction pledges.[192] This could lead to the inclusion of developing country soil carbon offset projects in global carbon markets such as the CDM.[193] However, many developing countries are more concerned about how agriculture will be affected by and adapted to climate change. These conflicts of interest led to no agreement being reached on these issues at the climate talks in Durban at the end of 2011.[194]

Despite the massive investment in the carbon market and REDD+ projects, and the new interest in soil carbon credits, the viability of carbon market mechanisms is seriously in doubt as climate talks are failing to set the binding emissions reduction targets that drive demand for offsets. If there is no demand for offsets, the neoliberal economic argument for creating offset projects from agriculture and forests evaporates.

The outcome of the climate talks in Durban, known as the 'Durban Platform', was disastrous,[195] because it means that a new climate regime will only be negotiated to a 2015 deadline, to enter into force after 2020 (even though the first commitment period of the Kyoto Protocol expires this year).[196]

The resulting political uncertainty about the continuity of the international climate regime is creating a great deal of volatility in carbon markets.[197] The fluctuating price of carbon, which dropped to nearly its lowest level ever in December 2011,[198] means that returns on offset projects are unpredictable and insufficient to justify their development. Pursuing further investment from governments to prop up these failing carbon markets would divert critical public resources from real climate solutions like agro-ecology.

However, even if international carbon markets decline further, sub-national, national, regional and unregulated voluntary carbon markets (geared towards individuals and companies) are still likely to end up including soil carbon offsets as part of a complex web of multiple, smaller carbon market initiatives.[199] In 2007, for example, Monsanto joined the US voluntary carbon trading program, the Chicago Climate Exchange (CCX),[200] to generate carbon offset credits from 'no-till' farming agricultural projects. The World Bank's flagship soil carbon project in Kenya will also try to sell its credits on the voluntary market.[201]

Friends of the Earth International and La Via Campesina reject all forms of carbon trading and offsetting due to the fact that they lock in high-carbon infrastructure, cause social and environmental harm through offset projects, and distract from sustainable approaches to tackling climate change. Placing agriculture and forests into carbon markets would undermine efforts to promote community rights, food sovereignty and emissions reductions.

Elizabeth Mpofu

Elizabeth Mpofu from Zimbabwe, a Via Campesina spokeswomen at the UN climate talks in Durban in December 2011 said, "They can keep their money, I keep my land", explaining that farmers are not begging for funding from carbon markets, but that they are asking for fundamental changes in the global system of production and consumption.

Picture: Boaventura Mojane – LVC Africa

Market mechanisms and the UN Convention on Biological Diversity's geo-engineering moratorium

Market-based mechanisms are also being heavily promoted in other intergovernmental fora. In the UN Convention on Biological Diversity (CBD) for example, the final texts that emerged at the conclusion of talks in Nagoya, Japan, in October 2010, called for new financial mechanisms including a green development mechanism[202] modelled on the UNFCCC's Clean Development Mechanism, which could generate offsets from land areas managed in compliance with the CBD. However, in the end this decision was not adopted, as it was blocked by the Bolivarian Alliance for the Americas (ALBA),[203] led by Bolivia. The ALBA grouping expressed its concerns that such market-based proposals could cause the "commodification" of nature, harm biodiversity and violate human rights.[204] This reflects the concerns of social movements and progressive environmentalists.[205]

A further important positive outcome emanating from these talks was a *de facto* moratorium on geo-engineering,[206] which sets an important precedent ahead of Rio+20. Strengthening this moratorium on geo-engineering would constitute a major step towards debunking risky new technologies, including biotechnology, that have the potential to wreak havoc on eco-systems and divert investment from safe, sustainable approaches to climate mitigation.

Geo-engineering – Earth grab

Geo-engineering proposals are increasingly prominent in the global debate about climate change, and are often framed as necessary solutions to irreversible climate change.[207] The pressure to deploy these risky and dangerous schemes will increase as we reach tipping points in the climate system.

There are two main strands of geo-engineering technologies being researched and developed at the moment. These are solar radiation management (SRM), and negative emissions technologies (NETs) which are intended to remove carbon pollution from the atmosphere.[208] Both of these approaches include biotechnology proposals.

Despite the CBD *de facto* moratorium on geo-engineering, which has been strongly backed by civil society organisations,[209] Christiana Figueres, Executive Secretary of the UNFCCC, has explicitly promoted geo-engineering techniques in an interview stating that, "We are putting ourselves in a scenario where we will have to develop more powerful technologies to capture emissions out of the atmosphere."[210] Geo-engineering advocates have attempted to get such techniques approved under the CDM.[211]

Solar radiation management (SRM) aims to block sunlight in order to reduce the Earth's temperature.[212] 'Albedo enhancement' is one of the technologies proposed under SRM, and would involve cultivating shiny, reflective crops through biotechnology or plant breeding.

Other non-GM geo-engineering proposals include:
* 'Cloud whitening' by spraying seawater into the atmosphere to increase clouds' reflectivity and condensation.
* Space sunshades made up of trillions of small space mirrors to reflect the sun's rays.

These SRM technologies entail major risks in terms of disrupting complex ecosystems and weather patterns, such as the monsoon seasons upon which millions of people depend.[213]

Negative emissions technologies (NETs) could also include genetic modification, as in these examples:
* Genetic modification of algae to capture CO_2.[214]
* Biochar, which is produced by planting huge quantities of biomass, potentially including fast-growing GM trees,[215] followed by pyrolysis of the harvested biomass, and burying the resulting fine-grained carbon in soil.[216]

Other non-GM NETs proposed involve:
* Ocean fertilisation with iron or nitrogen, to stimulate the growth of phytoplankton in order to further sequester CO_2.
* Using giant pipes to bring nitrogen or phosphorous-enriched waters up from the deep ocean in order to cool surface waters and enhance ocean sequestration of CO_2.
* Carbon capture machines[217] and other carbon capture and storage (CCS) technologies which are being designed to capture CO_2 at source and store it in the oceans or in geologic formations such as aquifers.

Again, these techniques demand major land or ocean use changes that could have unpredictable and adverse consequences on complex ecosystems and the local communities that depend upon them. A small clique of mainly North American scientists are attempting to frame the geo-engineering debate, lobby for public funds and secure patents.[218]

Moreover, given the timescales required to develop such highly technical and risky interventions, it may be impossible to implement such technologies quickly enough to have any effective impact on dangerous climate change.

CONCLUSIONS

As shown in this report, Monsanto and agribusiness in general are increasingly unwelcome wherever they operate. They ruin local agriculture and harm communities with their attempts to dominate food production systems.

As a result of Monsanto's presence, local seeds are becoming illegal, biodiversity is disappearing, land is being contaminated, and farmers and agricultural workers are being poisoned, criminalised and displaced from their land. Local food producers aiming to feed communities have to compete with huge corporations whose sole objective is to make profits.

The struggles highlighted in this report illustrate some of the many inspiring actions being waged against agribusiness by La Via Campesina, which represents around 200 million farmers, and Friends of the Earth International which has two million members around the world. Together, we will continue to work in alliances with indigenous peoples, local communities, trade unions, women's organisations and youth organisations, to challenge the dominance of Monsanto and other agribusinesses.

Since 2007, when the international grassroots Forum for Food Sovereignty took place in the village of Nyeleni in Mali, the global food sovereignty movement has taken root more deeply at national and regional levels.

With the current economic and environmental crises, global resistance against transnational corporations has become an urgent necessity. A fair society organised to address people's needs and guarantee their rights cannot be built in co-existence with corporations that grab power and finite resources.

We are calling for collective action from all of those who share our vision of a sustainable world. There has never been a more important time to globalise our struggles, and globalise hope.

Campaign websites

For more information on campaigns against Monsanto and GMOs referred to in this report see the following websites:

Combat Monsanto: www.combat-monsanto.co.uk (EN, FR, SP)
Friends of the Earth International www.foei.org (EN, FR, SP)
La Via Campesina www.viacampesina.org (EN, FR, SP)

For national and regional campaigns see:

Europe

Friends of the Earth Europe www.foeeurope.org/GMOs/Index.htm
European Coordination Via Campesina www.eurovia.org

France
Inf'OGM www.infogm.org

Spain
Amigos de la Tierra España www.tierra.org

Latin America
CLOC - Via Campesina www.cloc-viacampesina.net

Brazil
Movimento Sem Terra www.mst.org.br

United States
Friends of the Earth US www.foe.org

India
Coalition for GM-Free India http://indiagminfo.org

Africa
Via Campesina Africa http://viacampesinaafrica.blogspot.com

South Africa
African Centre for Biosafety www.biosafetyafrica.org.za

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La Via Campesina is the international movement which brings together millions of peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers from around the world. It defends small-scale sustainable agriculture as a way to promote social justice and dignity. It strongly opposes corporate driven agriculture and transnational companies that are destroying people and nature.

La Via Campesina comprises about 150 local and national organizations in 70 countries from Africa, Asia, Europe and the Americas. Altogether, it represents about 200 million farmers. It is an autonomous, pluralist and multicultural movement, independent from any political, economic or other type of affiliation.

More on www.viacampesina.org

Friends of the Earth International

Friends of the Earth International is an international federation of diverse grassroots-based environmental organizations with over 2 million members and supporters around the world. We challenge the current model of economic and corporate globalization, and promote solutions that will help to create environmentally sustainable and socially just societies.

Our vision is of a peaceful and sustainable world based on societies living in harmony with nature. We envision a society of interdependent people living in dignity, wholeness and fulfilment in which equity and human and peoples' rights are realized. This will be a society built upon peoples' sovereignty and participation. It will be founded on social, economic, gender and environmental justice and free from all forms of domination and exploitation, such as neoliberalism, corporate globalization, neo-colonialism and militarism. We believe that our children's future will be better because of what we do.

Please contact the FoEI Secretariat or check www.foei.org for FoE groups' contact information.

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Combat Monsanto
POUR QUE LE MONDE DE MONSANTO NE DEVIENNE JAMAIS LE NOTRE

Combat Monsanto was founded in 2008 following the documentary by Marie-Monique Robin "The World According to Monsanto" in the form of a Citizen Interest Group (ICG) gathering the following associations: a.t.t.a.c, Fondation sciences citoyennes, Greenpeace, La Via Campesina, Les Amis de la Terre (France), and Sherpa.

Combat Monsanto is now an association working for the realization of targeted collective actions. Our objectives are:
1) Share information on: Monsanto's controversial operations; Monsanto's involvement in conflicts; Victims' reports.
2) Create dialogue: between Monsanto's victims all around the world; amongst media; amongst public representatives; between concerned shareholders and business leaders.
3) Ensure coordination and/or lead civil society campaigns against Monsanto, in order to expose its wrongdoings and condemn the violations of people's fundamental rights (health, fundamental liberties, environmental rights...).

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