Ever since GMOs were first introduced in the mid-1990s, farmers' groups and NGOs have warned that they would contaminate other crops. This has happened, just as predicted. In this article we look at how communities in different parts of the world that have experienced contamination are developing strategies to fight against it.

Fighting GMO contamination around the world

GRAIN

When GM crops are planted they contaminate other crops with transgenic material. In places where GM crops are grown on a large scale, it has already become almost impossible to find crops of the same species that are free of GM material. And the contamination spreads even to areas where GM crops are not officially permitted.[1] The GM Contamination Register, managed by GeneWatch UK and Greenpeace International, has documented more than 216 cases of GM contamination in 57 countries over the past 10 years, including 39 cases in 2007.[2]

Monsanto and the other biotech corporations have always known that their GM crops would contaminate other crops. Indeed, it was part of their strategy to force the world into accepting GMOs. But around the world people are refusing to lie down and accept genetic modification as a fact of life; instead they are struggling against it, even in places subject to contamination. In fact, some communities experiencing contamination are developing sophisticated forms of resistance to GM crops. These usually begin with short-term strategies to decontaminate their local seeds, but often seek over the long term to strengthen their traditional food and agricultural systems.

We look at the experiences of communities in different parts of the world in dealing with GM contamination to see what insights they can offer others faced with similar situations. Each situation is unique, and gives rise to different processes. Common to all of them is the primary importance of collective action – of communities working at the grassroots to identify their own solutions and

1 See video interview conducted by GRAIN with Meriem Louanchi in November 2008 about the situation regarding GM contamination in Algeria. grain.org/videos/?id=195

2 GM Contamination Register Annual Report, 2008. http://tinyurl.com/79osjp

not depending on courts or governments, which, without strong social pressure, tend to side with industry.

The experience of communities in Mexico

For the indigenous peoples of Mexico and Guatemala, maize is the basis of life. In the creation story of the Maya, maize was the only material into which the gods were able to breathe life, and they used it to make the flesh of the first four people on Earth. For other peoples of Mexico, maize is itself a goddess. The plant has been the fundamental food of Mexicans for centuries, and thousands of varieties provide an amazing range of nutrients, flavours, consistencies, recipes, and medicinal uses.

In January 2002, researchers at the University of California in Berkeley announced their discovery that local varieties of maize in the highlands of Oaxaca state had been contaminated. Other communities of small farmers carried out tests on their own crops and were shocked to find that they too had been contaminated. For these people, it was a deep blow to their culture. They could not sit back: something had to be done.

At first, though, they did not know what to do. GMOs were new to them. They started by bringing together the nearby communities that might also have suffered contamination, as well as NGOs that they were close to. Workshops were held and people were mandated by their local assemblies to discuss on behalf of their communities. The strategy was thus collective from the beginning. This is the first point to be noted about the Mexican experience.

One fundamental point of agreement reached early on was that this GM contamination needed to be viewed as part of a war. It was not an accident or an isolated issue, but part of a war against farmers and indigenous peoples – in their words, a war against the people of maize. They needed to respond accordingly – defending not just their seeds but their livelihoods, their cultures, their whole way of life.

Initially, though, there were few practical ideas about how to decontaminate their maize and prevent further contamination. Concern was expressed that the communities might not have the technical capacity to deal with such a complex problem. But these communities and the NGOs working with them had a great deal of experience in finding grassroots solutions to the problems affecting them, and so, rather than look to outside experts, they turned the question upside down, focusing not on GM maize, which they did not know, but on their own varieties of maize, which they knew intimately.

They began by sharing their own knowledge of maize and what maize needs to be healthy. The most basic point was that to keep their maize alive and well they had to sow it and eat it. In many communities, traditional maize was disappearing because people were sowing it less. The first step in defending their maize was thus to plant more of it. It was also felt, in response to GMOs, that seeds were dangerous when their history was not known. So it was agreed that seeds should be planted only when their history was known, or when they came from a source that was well known to them.

As the communities put these principles into practice, they began to pay closer attention to the crops in their fields, and became aware of all kinds of serious malformations. They tested the deformed plants and found a high rate of contamination, so they began watching for these plants and weeding them out.

Another thing they knew about maize is that it out-crosses, so, to prevent GM contamination, they would have to keep GM maize from crossing with their maize. They began by implementing simple techniques such as planting trees around their fields. Some of the techniques they developed could be applied everywhere, whereas others were specific to certain communities. But the important thing was that they were setting up a system to avoid contamination.

There was much discussion about what to do with contaminated plants. It was strongly felt

that if a very old variety has been in your family for generations and all of a sudden becomes contaminated, this maize should not simply be destroyed. Contaminated maize is sick and needs to be cured, not killed. It may take a year or 100 years to cure it, but it has to be done, because the maize has been with their communities for generations.

The peasant communities of Mexico have probably developed the deepest strategies of any communities facing GM contamination around the world. There are many lessons that can be drawn from their struggle, with perhaps the main ones being:

1) The need to look at GM contamination as part of a wider attack on farmers and local communities. Defending your crops means also defending your land and your water, and this requires strong communities, strong collective decision-making processes, and strong networks with other groups at the national and even international level. Such a wide approach allows more people to participate in the struggle. Even if not everyone can take care of the seeds, there are other things that they can do.

2) The importance of not being beholden to time frames. For the Mexcian communities, GM contamination is part of a war waged against them that is permanent, and so their approach has to be long-term and capable of being permanent. Their decision is to defend their maize, no matter how long it takes. As they see it, when deadlines are brought in, people are faced with what they cannot do, and usually little can be done in the short term, so they compromise. This the Mexican communities refuse to do.

3) The importance of looking at the issue from your own perspective. The communities in Mexico spent a lot of time in the early workshops discussing spirituality and their views on deities and creation. They talked about the rituals that could protect maize. Those invited from outside to participate had a hard time explaining the technicalities of genetic engineering, because the concept appeared so absurd. But, in the end, the communities arrived at their own core understanding of genetic engineering as a method of taking control over agricultural livelihoods, and this core understanding was far more important than the technical information.

4) The need for the communities to control the process. In Mexico, communities were able to maintain control over the processes because they were their own processes from the very beginning. When they had control over the initial tests, they kept the results to themselves for a long time because they wanted to discuss first among themselves what steps to take. And the fact that decisions were taken collectively, by many people, has helped to prevent big mistakes from being made. Mistakes are always going to happen but when a lot of people are involved chances are much lower that there will be fundamental mistakes. When the contamination was uncovered by university scientists, the processes followed were totally different.

5) The need to emphasise social struggles over legal struggles. Among the Mexican communities, there was a lot of discussion about biosafety laws, seed laws and other relevant laws. At a recent workshop dedicated to laws, a time line was presented of all the various laws that the Mexican government has passed in the last 15–20 years. From this picture, the communities came to a clear conclusion that the legal route was not an important route for their struggle. You may lose the lawsuit but if there is enough social pressure you may win in other ways. For them legal options are only effective when there is enough social pressure on authorities. So the tactic is not discarded, but it is not central.

An invasion of illegal GMOs into Thai farms

GM contamination was first reported in Thailand in 1999 after cotton samples from field research conducted by BIOTHAI and the Alternative Agriculture Network (AAN) were found to be contaminated with *Bt* cotton – a genetically engineered cotton variety produced by Monsanto. In 2004, tests made by Greenpeace revealed that a local farmer's plantation in Khon Kaen province was

contaminated by GM papaya. That farmer was one of 2,600 who had bought papaya seedlings from the Department of Agriculture's research station where field trials of GM papaya were being conducted. At first, the government denied that GM crops were being grown in Thailand, but the contamination was so widespread that it reached another province, Ubol Ratchatani, where at least 90 farms had also received papaya seedlings. Most recently, in 2007, Chulalongkorn University's Faculty of Science and BIOTHAI found GM contamination in maize, soya and cotton samples that they tested from provinces all over the country.

The Thais believe that a two-pronged approach is necessary to address this situation. On the one hand, pressure should be put on the government to implement policies that protect the country from GM contamination. The Thai Working Group Against GMOs, which BIOTHAI coordinates, has organised numerous activities to keep the national moratorium on GMOs in place. They have sent petition letters, organised demonstrations in front of government offices, and pushed for a dialogue with top officials, including the deputy Prime Minister and Secretaries of Health and Agriculture. These efforts had an impact : on 25 December 2007, the Thai government announced its rules on GMOs which include, among other things, a mandatory public hearing prior to field testing, and a recommendation that approval from the local people in the field test area, as well as from independent NGOs and the academic community, should be obtained. From the perspective of BIOTHAI – which is currently running a campaign to develop a People's Biosafety Law – this was an important victory.

On the other hand, the Thais are working to increase local capacity to develop systems to detect contamination and deal with its impacts. The Khao Kwan Foundation (KKF), one of the founding organisations of AAN, has been mobilising farmers' knowledge to identify contaminated seeds and to control or eliminate them. The KKF runs trainings and workshops on seed breeding and selection, which indirectly deal with contamination.

KKF believes that farmers are able to notice anything abnormal in their crops, because of their in-depth knowledge of seeds and their skill in selection. Whether it is the colour, the hardness or the smell, every variety has peculiarities that farmers who have been working on seeds know in detail. So any alterations will be easily detected, even before the plant starts to flower.

Daycha Siripatra, founder of KKF, says: "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."

Filipino farmers deal with contamination

In 2002, the Philippines had the (dis)honour of being the first country in Asia to authorise the commercialisation of GMOs, when it approved the release of Monsanto's *Bt* maize amid nationwide protests. Since then, genetic contamination has been reported in maize-growing areas throughout the country.

In the north-western province of Isabela, a local variety of white glutinous maize grown by farmers for food has reportedly been contaminated by GM maize. No gene testing has been done but farmers identify the contamination by the yellow kernels that appear in the otherwise white maize. In Bayambang, Pangasinan, farmers typically plant maize after rice. But now they are complaining that they have lost practically all the traditional maize varieties in the province due to contamination by hybrid and GM maize. They also fear for their health, as there have been incidents of children being taken to hospital for incessant vomiting after accidentally eating GM maize. There was also a report of a farmer's cow that became sick and eventually died after being fed with *Bt* maize.

In Bukidnon, in the southern Philippines, some communities are responding to contamination by separating the lower-priced yellow kernels from the higher-priced white ones before selling to the market. In Capiz, another major maize-producing province in Central Philippines, farmers are saying that almost all the province's maize-growing area is contaminated with GM maize and that they can no longer find traditional varieties to grow.

MASIPAG is a national farmers' network with a maize programme that collects and improves traditional varieties throughout the country. Recently, the group's back-up farm in San Dionisio, Iloilo (not far from Capiz) was contaminated. The area is a major producer of hybrid maize, and about three years ago mass cultivation of GM maize began by way of a contract growing scheme managed by local elites.

At least three native varieties used for farmer breeding in the back-up farm were immediately

contaminated by the GM maize. At harvest, it was observed that there were yellow grains mixed with maize ears of *pilit-puti* and *mimis* – these are traditional varieties used by farmers for food. The area planted with maize on the back-up farm was only 50–100 metres from the nearest maize farms. Bamboo trees along the creek serve as natural barriers, but since the neighbouring fields are sloping, MASIPAG believes that pollen from the GM maize could nevertheless have been carried to these fields by the wind.

Researchers at the farm say that in the first year of planting after GM maize was introduced, they found 7–12 yellow grains in every maize ear. The following year, no maize was planted. This year, a small portion of the farm was again planted with white maize, adjacent to another farm planted with GM maize. Of the 50 grains counted in the average ear, only 18 were white and the remaining 32 were yellow. MASIPAG tried to explain the situation to the neighbouring farmers, but they are facing debt problems because of the contract growing scheme and are unable to stop growing GM maize.

In 2008, MASIPAG organised a national maize assessment meeting that brought together farmers from across the country. They agreed that it seems impossible to stop contamination, and that, while much is still unknown, it is crucial that they deal with the post-contamination situation. They believe that a range of approaches is needed to ensure that seeds will remain in their hands. One proposal is to develop visual indicators for detecting contamination. Some of the indicators initially identified include: abnormalities in the colour, size and appearance of maize kernels, and deformities in leaf formation.

Another idea is to collectivise monitoring at the community level. Each farmer could help to map out who plants GM maize and where. The map would be shared with the community and would allow farmers to time their planting so as to avoid contamination. Farmers believe that time isolation can potentially minimise, if not totally prevent, contamination by cross pollination. They also see that stronger links among maize farmers – and sharing sources of uncontaminated seeds – in different provinces will greatly help to minimise the impacts of contamination.

At government level, meanwhile, the push to promote GMOs continues. At a "2008 National Biotechnology Week", held very recently, two Cabinet officials stressed the need to harness biotechnology "to boost the country's food production, develop cheaper but effective medicines, and upgrade the production of commodities using higher-yielding crops with higher nutritional content". The Environment Secretary, Lito Atienza, went as far so to express his confidence in the "immeasurable benefits" of using biotechnology to protect the environment and to address the problems of food insufficiency.

Yet just a week before this, RESIST – a national network of farmers, NGOs and academics – held a forum to present and discuss the first results of their case studies of farmers' experience with *Bt* and Round-up Ready maize from three provinces in the country's main arable regions. Initial findings point to a worrying trend: yield and income from these two GM maize varieties did not improve significantly (in most cases they were the same with ordinary hybrids), but at the same time a recurring increase in pest incidence, chemical use, and debt was observed. Loss of genetic diversity due to contamination was also reported due to indiscriminate planting of these GM maizes, occasionally with subsidies from the government's maize programme.

Contamination on the Canadian prairies[3]

The province of Saskatchewan, in western Canada, is one of the country's main producers of wheat and canola, Canada's most important export crops. Compared with other provinces, it is also home to a large number of organic farmers, many of whom produce grains and canola for export markets. But the large-scale introduction of GM crops is threatening their ability to produce certified organic crops.

Soon after Monsanto introduced GM canola into the province in 1996, organic farmers began having

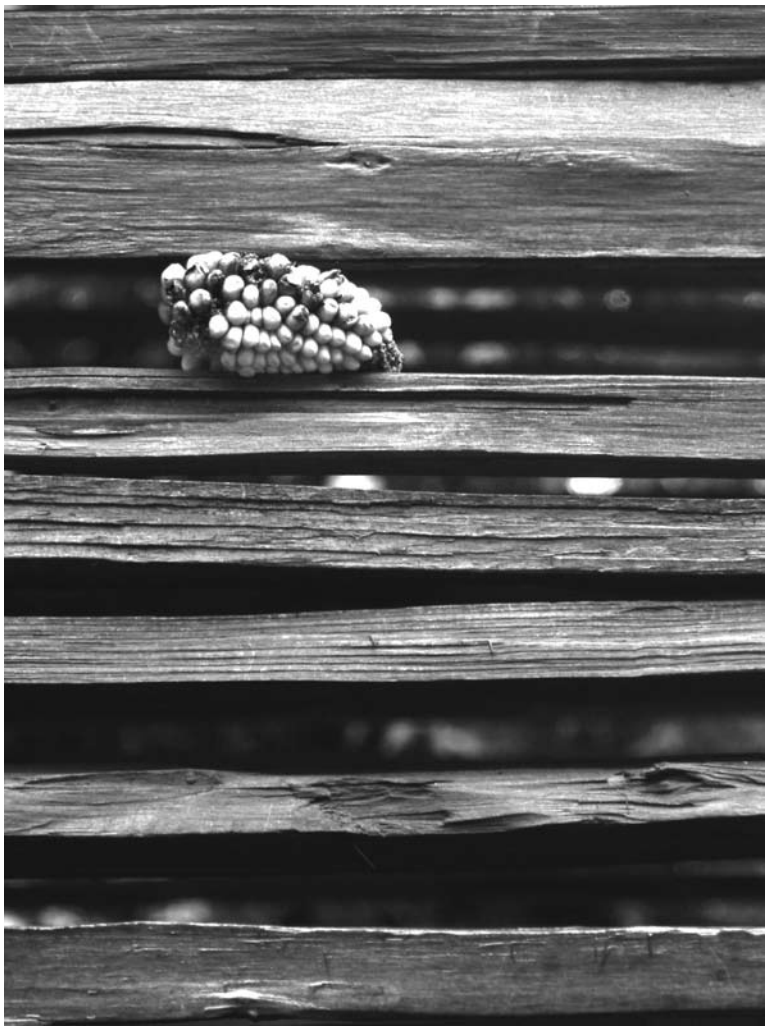
3 The section on Canada is based on an interview conducted by GRAIN with Cathy Holtslander in November 2008. This video interview can be viewed on GRAIN's website, grain.org/videos/?id=195

their crops rejected by organic buyers because tests were showing GM contamination. Today, with even the conventional seed supply completely contaminated by GMOs, it is virtually impossible to grow certified organic canola in the province. This has been a big loss to organic farmers, for whom canola is an important crop in their rotations. But the importance of canola is nothing compared to that of wheat, which is grown by nearly every organic farmer in the province. So in 2001, when Monsanto came forward with an application to introduce GM wheat, Saskatchewan's organic farmers decide to take a stand. They warned that the contamination that would surely ensue from the release of GM wheat would wipe out organic agriculture in the province.

In Canada, there are no regulations to make the corporations that profit from GM seeds liable for the damage that their introduction causes to others. The only possible avenue is to seek damages in the courts. In 2001, the Saskatchewan Organic Directorate (SOD), the umbrella group for Saskatchewan's organic farmers, decided to take collective legal action for an injunction against the introduction of GM wheat and for compensation for losses stemming from the introduction of GM canola. In early 2002, SOD formally launched a class action suit against Monsanto and Bayer. A class action is a lawsuit filed by a group of people, in this case all certified organic grain farmers in Saskatchewan, against an entity such as a corporation. It is supposed to facilitate access to justice for common people, to provide a way for people to be heard in court even if they don't have the resources of a big corporation. It allows people not only to pool their resources but also to reduce risks, because, if you lose a class action, costs are not awarded against you, which means that you don't have to pay the legal bills of the other side, which can add up to millions of dollars.

While their case was before the courts, SOD was also active with a broad coalition of groups at the local and national level fighting the introduction of GM wheat. Together they were able to generate a lot of public pressure, to the point where, in May 2004, Monsanto withdrew its application. At this point SOD dropped the injunction against GM wheat from its class action but continued with its claims for compensation for the contamination caused by GM canola.

In Saskatchewan, a class action suit has first to pass through a hearing to determine whether it is legitimate before it can go before the courts. For the SOD case, the judge at the hearing ruled that the class action was not valid. SOD then appealed



against the judgement, both at the provincial level and at the Supreme Court of Canada, only to have both appeals denied. The only legal option left was to pursue the claims through an individual action, but it was felt that the risks were too high and the chances of victory too narrow, given their experiences with the class action.

"We don't feel it was a complete loss", says SOD director, Cathy Holtslander. "We did a lot of really good work during the time that the legal action was active. The uncertainty that our case created in the corporate sector may have caused GM corporations to hold back from further introductions. People learned a lot about the issue of contamination and the issue of liability. They way things are now, because nobody is liable, the weakest players in the chain – the farmers – bear the costs."

Now the corporations are pushing ahead with the introduction of GM alfalfa, another essential crop to organic farming in Saskatchewan, and GM wheat is back on the table with the rise of biofuels. The SOD and its allies are preparing for a new round of struggle.