

First published by the [Triple Crisis Blog](#)

May 12, 2014

Monsanto Meets Its Match in the Birthplace of Maize

Timothy A. Wise

On April 21, a Mexican judge dealt a blow to the efforts of agricultural behemoth Monsanto and other biotech companies to open the country to the commercial cultivation of genetically modified (GM) maize. The ruling upheld the injunction issued last October that put a halt to further testing or commercial planting of the crop, citing “the risk of imminent harm to the environment.”

In a fitting tribute to Mexican surrealism, Monsanto had accused the judge who upheld the injunction of failing to be “impartial.” I don’t know if the presiding judge smiled when he denied Monsanto’s complaint, but I did.

I had just arrived in Mexico to look at the GM controversy, and I could tell it was going to be quite a visit.

The original injunction came last October as the result of a class action suit filed by 53 citizen plaintiffs, including farmers, environmentalists, and consumers. They claimed the Mexican government’s approval of permits for planting genetically modified maize violated the country’s laws guaranteeing the protection of native varieties.

The legal case is complex, but the core issue couldn’t be simpler.

Mexico is recognized as the “center of origin” for maize, and is home to many diverse strains of the crop’s seeds. Each of these core strains—known as landraces—evolved over thousands of years in Mexico to adapt to both local environmental conditions and human tastes and desires. Each landrace has evolved further into a rich array of local varieties.

Southern and central Mexico have long been known as the homes of maize biodiversity. Every year, indigenous communities there select their best seeds for planting the next crop cycle. That simple process, and the free exchange of seeds with other farmers, has produced the complex diversity that we find today.

A recent study by Mexico’s National Commission for the Knowledge and Use of Biodiversity (known by its Spanish acronym CONABIO) identified 65 distinct landraces of maize in the country, including several that had never before been catalogued. From those 65 confirmed landraces, the CONABIO study identified more than 22,000 different varieties of maize in Mexico.

Experts fear that if genetically modified maize comes into the mix it could alter these landraces by pollinating native varieties and undermining the genetic integrity of the crops. This isn’t just a question

of conservation. These maize varieties are the living, evolving base for modern plant-breeding, a resource drawn on by conventional maize breeders (and GM breeders like Monsanto) when they look to create hybrid varieties that can increase yields, resist drought, or provide other useful adaptations to changing climates and cropping environments.

The native varieties are of such high value that samples of them are stored in ultra-secure locations around the world in the event of a catastrophe.

For people from the United States—who tend to be familiar only with sweet corn on the cob and the yellow dent corn (unfit for human consumption) that feeds our animals and, through ethanol, our cars—this diversity is striking. One Mexican variety, for instance, is used almost exclusively for *pozole*, a subtly spiced soup with large whole kernels of white maize. Others are used for local tamales, which can be found in different forms throughout the country. Many are used for a rainbow of tortillas—white, blue, green, red.

Mexican law recognizes this diversity. Its biosecurity law, approved in 2005, includes special protection for maize. GM maize, the law stipulates, is not to be sown in proximity to any area known to be a “center of origin” for maize. With no legal definition of this term, the Mexican government in 2009 approved biotech company requests to begin experimental trials in six northern states where maize diversity was considered negligible. The government was set to approve large-scale commercial planting of GM maize there when the injunction put a stop to all GM permits.

To the naked eye, northern Mexico does not look like a center of diversity. It is dominated by huge irrigated farms that look like they could be in Iowa. These farms use hybrid white maize seeds developed either by national maize breeders or foreign multinationals. Their high yields provide a significant share of Mexico’s production of maize for direct human consumption, which totals more than 20 million tons a year. About 10 million additional tons a year come from the United States, but nearly all of it is yellow maize, and nearly all of that is genetically modified.

Mexico’s industrialized white maize is the market Monsanto wants, even though field trials have been limited to yellow varieties. Mexico is one of the world’s largest producers and consumers of white maize. In an interview at the company’s high-rise headquarters in Mexico City, Jaime Mijares Noriega, Monsanto’s Latin America Director for Corporate Affairs, was surprisingly frank. “In order for the penetration of biotechnology crops to be successful, it will have to be for both white and yellow corn,” he said. “If it was only yellow, we would not be investing.”

I was surprised. Wouldn’t Mexicans rebel en masse at the prospect that biotech companies were planning to put GM maize into their beloved tortillas and tamales? I asked him if he didn’t think it might be a harder sell, since consumers even in the United States are skeptical of directly consuming GM maize. He acknowledged that it “would take some time.”

He dismissed concerns about gene flow, saying that their field trials had shown minimal pollination beyond 25 meters from the field.

That’s not good enough for José Sarukhan, director of CONABIO. Gene flow is gene flow, and once a plant is contaminated with GM maize pollen it will then pollinate other plants. Sarukhan said that

CONABIO researchers found a surprising number of native varieties in northern Mexico, precisely the regions where experimental GM plots were authorized. Sarukhan told me the strong presence of native seeds in the north made him rethink his previous support for limited GM maize trials in those states.

According to Antonio Serratos, a researcher involved in CONABIO's recent maize study, the entire country should be considered a center of origin. "You can't just isolate the communities where you find native maize," he said.

Serratos also reminded me that the most pervasive form of gene flow isn't pollen on the wind, it's kernels of maize in people's pockets. Peasant farmers are relentless experimenters, trying every type of maize they get their hands on to see if it produces something useful. They can't know from looking at a kernel of maize whether it's genetically modified or not. They assume it isn't. If they plant it, its pollen will flow to neighboring plants.

This is precisely what happened in the southern state of Oaxaca in 2002, when a farmer presumably took grains of maize from a food distribution, which contained imported GM maize, and planted them in his fields. Serratos says this kind of contamination was already prevalent in Mexico, even before the recent GM field trials. [His own study](#) found a surprisingly rich diversity of maize even within the borders of Mexico City itself. But he also found transgenic contamination.

"We're creating something new: transgenic native maize," he warns.

I asked Monsanto officials how they expected to control this more pervasive form of gene flow. "We can't really ensure how grains are transported and where they end up," said Oscar Heredia, the company's Agronomic Regulatory Affairs officer.

For CONABIO's Sarukhan, that is the final straw. "I don't believe this country has the capacity—nor the will—to regulate transgenic maize," he said.

The injunction put a stop to the expansion of transgenic maize, for now. Monsanto and other biotech companies have joined with Mexico's agriculture and environment departments to file a blizzard of legal challenges, 62 different appeals and legal complaints so far. Up to now, Mexico's notoriously corrupt judicial system has refused to overturn the injunction. Observers expect the legal proceedings to take a year or two to resolve.

When the class action suit on the danger of genetic contamination is finally heard, the plaintiffs will have the opportunity to present a raft of evidence, from governmental, non-governmental, and university sources, on the [history and the presence of GM contamination of Mexico's native maize](#). "We look forward to that opportunity," says Adelita San Vicente, one of the spokespeople for the plaintiffs.