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High risks, few rewards for Mexico with Monsanto's maize

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I'd come to Mexico to investigate the ongoing controversy over the proposed introduction of genetically modified (GM) maize into the birthplace of this important global food crop. The issue was hot, because last October a Mexican judge had issued an injunction halting all experimental and commercial planting of GM maize, a process that was well underway in six northern states. The ruling cited the need for precaution to ensure that Mexico's rich diversity of maize varieties were protected from inadvertent "gene flow" from GM maize. (See my [earlier article](#) on the injunction.)

As I began to investigate this most controversial of biotech initiatives, the question that most puzzled me was: why anyone in Mexico thinks the country needs anything that transgenic maize has to offer?

Monsanto, of course, had an answer to that question. I met with a group of company officials in their high-rise offices in Mexico City's transnational business district of Santa Fe. They offered their "Vision 2020", in which transgenic maize is key to feeding the world. In Mexico, they argued, it would help double Mexican maize production, reduce persistent rural poverty among the country's small-scale maize farmers, restore the country's self-sufficiency in its key food staple and reduce the negative environmental impacts of maize farming. They even used the term "food sovereignty" to describe their goal for Mexico. This was more than a vision; this was a hallucination.

GM benefits?

A recent [US Department of Agriculture study](#) of the first 15 years of US experience with transgenic crops concluded that the technology had produced only limited and uneven yield improvements over conventional hybrid varieties of maize. The main benefit, when there was one, came in the reduced need for labour, since insect-resistant transgenic maize reduces pesticide applications and herbicide-tolerant varieties reduce manual weeding by allowing the liberal spraying of entire fields with Monsanto's Round-Up weed-killer.

Mexico's rural poverty problem, of course, has everything to do with the lack of jobs, so it was hard to see how labour-saving technology would be a boon to the poor.

Monsanto, of course, does not actually have its transgenic sights set on the small-scale farmers who populate Mexico's central and southern regions. Fewer than [30 percent](#) of Mexican farmers even use conventional hybrid maize - high-yielding, single-use seeds, which need to be purchased every year. They prefer to stick with seeds they can save year to year, often varieties of the native "landraces" of maize the injunction is intended to protect.

Why would anyone think Mexican farmers would pay even more for transgenic seeds developed for the kind of industrial farms found in Iowa? Or in the Mexican state of Sinaloa, the heart of the country's irrigated maize belt?

That question got us past the rose-tinted "Vision 2020". Sinaloa is the market Monsanto wants, along with the other agricultural states of the north. In 2009, the Mexican government [approved](#) experimental planting in six northern states, where Monsanto and a handful of other biotech multinationals - DuPont, Dow, and Syngenta, among others - had applied for permits eventually to plant millions of acres of transgenic maize. Monsanto's permits were for Sinaloa.

The planting was restricted to the north because these are areas of presumed low densities of native varieties of maize. In recent years, these experimental trials have also been limited to yellow maize, the same varieties grown in the United States and exported to Mexico to feed the growing industrial production of meat and processed foods.

Just as the north was considered safer for environmental reasons, yellow maize was less objectionable because the product was not directly consumed by humans.

That regulatory distinction is common. Many countries that allow GM imports permit it only for animal feed or processed foods, such as vegetable oil. Health concerns abound regarding the direct consumption of transgenic food. Most recently, [tests showed](#) the presence of the [herbicide glyphosate](#), widely used with Monsanto's herbicide-tolerant GM soybean and maize varieties, in samples of mothers' breast milk in the United States.

High risks, low rewards

Almost no country consumes more maize directly than Mexico - in its rich variety of tortillas, tamales, soups, and other preparations that earned Mexico the distinction as the only country whose cuisine is [recognised by UNESCO as the patrimony of humanity](#). Mexicans have grown accustomed to yellow maize, via imports, but they don't have to eat it. White maize, much of it from Sinaloa and the other northern states, is a different story.

I asked Monsanto officials whether their goal was just to open up yellow maize markets in Mexico to transgenics. It made no sense to me. The seed provider already has the Mexican market for yellow maize seeds; [90 percent](#) of US maize is in GM seeds, and that is the source for Mexico's imports of yellow maize. Monsanto's seed market won't get bigger because some of the seeds get planted in Mexico.

The response was surprisingly clear.

"In order for the penetration of biotechnology crops to be successful, it will have to be for both white and yellow corn," said Jaime Mijares Noriega, the company's Latin America Director for Corporate Affairs. "If it was only yellow, we would not be investing."

I was shocked. Why would company officials, in the middle of a lawsuit, state so openly that their goal is to put transgenic maize into Mexican tortillas?

And why did they think anyone would buy their controversial seeds? Company representatives

presented, in very general form, the poor results from their own field trials. They didn't call them poor, I did. Monsanto's own corporate-funded trials suggested a 10 percent yield advantage over conventional hybrids. That's a small gain for a technology that will be more expensive for farmers. More to the point, though, Monsanto's own data show that Sinaloa's farmers, using non-transgenic varieties, already get yields higher than those on the company's carefully controlled experimental fields.

Wouldn't the company have a tough sell in Sinaloa? They nodded. It might take time to win over Mexico's farmers.

But why would Mexico, with its rich diversity of this important national and global food crop, want to take such high risks with such low rewards? One of Monsanto's researchers, Dr Juan Manuel Oyervides, had presented a long-view perspective on yield gains in Mexican maize. He chose to highlight his speculative estimate that the government's delay in allowing GM maize had resulted in a "lost decade" of productivity stagnation, sacrificing 12 percent of potential yield improvements worth \$9.3bn.

That bit of quantitative creativity caught my attention, but it's not what I asked about. Professor Oyervides's graph showed that the fastest yield growth in maize had come in that "lost decade", using conventional hybrid seeds and native maize varieties. One of the main arguments biotechnology companies make for the urgent adoption of their seeds is that yields are stagnating. His data showed the opposite.

Doesn't that imply that Mexico has not in fact exhausted the productivity potential of existing technologies? My [own study, with Mexican researcher Antonio Turrent](#), had shown exactly that.

"We need complex solutions to complex problems," says Victor Suarez, head of Mexico's largest independent organisation of grain producers. "Transgenics are simplistic. Our problems are not solved with one gene."

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