What’s next for GMO corn and herbicides in the wake of Mexico’s latest presidential election?

Thomas Jefferson famously noted that “[T]he greatest service which can be rendered any country is to add a useful plant to its culture…” Outgoing Mexican President Andrés Manuel López Obrador (AMLO) did not get that memo.

At AMLO’s direction, on 13 February 2023, the Government of Mexico published a decree purportedly aimed at enhancing Mexican food security and sovereignty. The decree “prohibits the use of genetically modified corn for dough and tortillas” and directs health authorities to “carry out scientific research into the possible impacts of genetically modified corn on people’s health.” These measures are undertaken allegedly to safeguard the integrity of indigenous breeds of corn and to evaluate whether or not “genetically modified” corn threatens human health. The decree also reaffirms the Government of Mexico’s responsibility to ensure “that phytosanitary decisions must be based on scientific evidence.”

In view of the multiple factual errors in the decree the United States, appropriately, objected and requested consultations in Geneva to discuss the conflict between the decree and Mexico’s obligations under WTO rules. But in the interval, reality has inconveniently intruded, leading to AMLO subsequently pausing his proposed ban on “GMO” corn.

Then on June 2, Mexico elected Claudia Sheinbaum to succeed AMLO. Formerly the mayor of Mexico city, and hand-picked by AMLO, Sheinbaum is a physicist and atmospheric scientist who has promised to continue the populist policies of AMLO’s Morena party. Despite a blemished record as mayor, her reputation as a pragmatist has led to high hopes in some quarters that some of AMLO’s anti-science policies might be repaired.
Will Sheinbaum have the courage and executive force to take the necessary actions?

**Trade win(ds)**

Let’s take a more granular look at the forces behind the Mexico-US GMO and glyphosate dispute. What is it about maize improved through biotechnology that led AMLO to try and block it?

Culinarily and culturally, maize is arguably more important in Mexico than anywhere else in the world. Mexico is its center of origin, and its role as a dietary staple and mainstay has been central for millennia. The first rallying cry raised by “GMO” corn opponents is thus, unsurprisingly, “food sovereignty.” The term as used here invokes the freedom of smallholders to raise their own maize, traditionally from seeds they have saved. Anti “GMO” corn campaigners paint imported corn as a threat to smallholders, falsely claiming imported GM maize is unsafe, and a threat to the integrity of native varieties, although the real issue seems to be that it is often available at a price point with which local small producers cannot compete. Campaigners claim they are fighting “to support the right of the people of Mexico to determine their relationship with corn” but, it seems, only as long as they shun “GMO” corn. They also claim a ban is necessary “to protect native corn from GM contamination,” a claim that is amusing to anyone familiar with the origin of corn.
The extent of historical human manipulation of maize genetics is so extensive that half of the genes in modern corn are derived from non-maize lineages, mostly of viral origin. These sequences have been drivers of maize evolution, and a Nobel Prize was awarded to Barbara McClintock for beginning to figure out what was going on. The genes show us that corn is far from a “natural” plant (what “natural” means is a topic for another day). It is, in fact, a purely human artifact, the intended result of thousands of years of genetic manipulation by smallholders in what is now Mexico, who are some of the most successful informal innovators in human history.

The ancestor from which modern corn is descended is a species of grass that is actually something of a weed in southern Mexico and Central America: teosinte. Plant geneticists have long debated vigorously the exact relationship between teosinte and maize, and a clear picture has now begun to emerge thanks to modern molecular techniques. The essential facts are clear – the indigenous stewards of heirloom varieties of maize actively hybridized them among each other, saving and maintaining results they liked and discarding those they didn’t. Fifty years ago, researchers collected at least 59 distinct landraces from one Mexican state. The true number from the entire country is unknown, but undoubtedly much larger. The most important finding from all this research is just how dynamic the stewardship of these myriad varieties has always been. The informal innovators who have been growing these ever-changing varieties for the past 9,000 years swapped their genes back and forth in every way imaginable. Were it not for the propaganda campaigns of professional opponents posing as ‘green’ their certain response to news of a maize variety resistant to pests would be to plant some, cross it with their preferred varieties, and work with the results to develop new and more desirable varieties, as they’ve done forever. Indeed, there is some indication that the process may already be underway.

The specific maize grown in the United States to which AMLO sought to deny his countrymen access, has been improved through biotechnology with the addition of a gene that encodes for the production of a protein toxic to the European corn borer, a major pest. The protein, originally discovered in a bacterium, Bacillus thuringiensis, is approved and widely used by organic farmers because of its safety and efficacy. The safety and efficacy of crops improved through biotechnology is now well established. It is abundantly clear that they also deliver major progress in the direction of improved sustainability. Farmers around the world are obliterating obstacles to their access to these improved seeds and relishing the results. Indeed, it is now clear that the greatest service Claudia Sheinbaum could bestow on the small farmers who make up an important part of the base of her political party would be to reverse AMLO’s ill-considered anti-innovation policies towards ag biotech innovation and allow them access to biotech improved seeds as soon as possible. History will judge.

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