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Free Trade Agreements, Biosecurity, And Public Health: Maize and the Transformations of Foodscapes In Mexico, 1986-2024



“Today my Mexico is beautiful, as it never was, but when I was a child, my Mexico had a *je ne sais quoi!*” (*Hoy mi México es bello, como nunca lo fue, pero cuando era niño, ¡tenía mi México un no sé qué!*), wrote Chava Flores in his song *Mi México de ayer*, in the mid-twentieth century. Yet, these lines have resonated constantly throughout my lifetime. During several strolls or bike rides, I have found myself thinking about how much the city has changed. In *The Colossus of New York*, Colson Whitehead reflected on how the constant transformation of tangible aspects of New York City (NYC), mainly its skyline and buildings, rendered it unrecognizable in the blink of an eye. Changes in Mexico City’s architectural landscape may not seem as fast paced as NYC’s, but as Chava Flores suggested, its intangible elements (both in Mexico City and in other cities) are ever changing. Through my personal experiences and memories around maize, I address

how foodways in Mexico have been shaped by global trade and agro-industrial production, and the visible effects these forces have in our current everyday lives.

It is the first week of December, just a few weeks short of the beginning of winter. The night is several hours deep, but the moon is majestically lighting the cobbled roads through which we wander. Our stroll began in San Ángel, and after a few shared memories and experiences we continue towards Chimalistac. As we share our stories and the moon continued its journey, I begin to feel peckish. I am really craving something warm, like an *atole* (hot corn drink) or an *elote* (corn on the cob). This is probably why, on a late Thursday night, our journey takes us to a food stall in Coyoacán.

—“I only have sweetcorn on the cob and *esquites*”, says the street vendor.

My face cannot hide a certain disappointment. I am fully aware that it is not the season for it, but a grilled *cahuazintle*¹ with lime juice, salt and chili powder is what I really crave. Given my indecisiveness, it is not unusual

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for me to take time to choose, but in this case, it is exacerbated by the fact that there are just a few other food options left. Moreover, sweetcorn has never been my favorite. The *esquites* are made from white maize, but are now usually served in styrofoam cups. My eco-anxiety kicks in, so I ask for a grilled corn on the cob.

—“Oh! You went for the carcinogenic option!” says my friend, mocking me with a playful smirk.

I am left speechless, as she has made a good point. We continue our stroll, looking for a bench to enjoy our *elote* and *esquite*, and as we resume the conversation, an itching question remains in the back of my mind...

—“How did we get here?” I juggle ideas about my memories of past foodscapes in the city, my political biases, and a certain nostalgia for the Mexico City that once was.

—“I don’t recall having sweetcorn as an option when I was a child.” I keep rummaging through my memories to find the turning point.

This was not the first time I encountered sweetcorn as street food. I was very surprised when I first saw it in Zamora, Michoacán, a couple of years back. I approached a man selling *elotes* and asked for prices.

—“Purple and yellow cost \$25 pesos, and white ones cost \$20.”

When I asked about the price difference between the white and yellow, the man answered:

—“People like them more... they are sweeter.”

I immediately associated sweetcorn with the United States (U.S.) and thought that the reported preference for this type of maize could be read as a consequence of the constant migration between both countries. My assumption was biased, since I was aware that Michoacán was one of the Mexican states with higher migration rates to the U.S. Scholars such as José Antonio Vázquez Medina have studied how migration has shaped food consumption in Mexico and the U.S. This is quite interesting, in the light of the fact that Michoacán was a key player in the inclusion

of Mexican traditional cuisine in UNESCO’s list of intangible heritage back in 2010.² Local cooks (*cocineras tradicionales*) were fundamental in this process, with political consequences that extend to the present. Nevertheless, the population of Michoacán has not been exempted from adapting its eating habits to the availability of processed and agro-industrial products. The same can be said about Mexico as a whole. It is not surprising that in the following months I witnessed sweetcorn been offered in states such as Querétaro and Mexico City.

The availability of sweetcorn as street food is not the main concern, Professor Alma Piñeyro Nelson told me at the beginning of our conversation. Dr. Emmanuel González-Ortega, further contributed to this point when I spoke with him and observed that 90 percent of the maize grown in the United States is transgenic—this applies to yellow sweetcorn, but also to white varieties. This is worrisome as “Mexico has become the main importer of maize around the world, and maize is heavily imported from the U.S.,” said González Ortega. According to a seminal research paper from 2017, where both Piñeyro Nelson and González-Ortega collaborated,³ transgenic sequences were found in 82 percent of the 357 maize-based food items they analyzed for their sample. This presence increased to 90.4 percent of the sample with recombinant sequences, while glyphosate appeared in 27.7 percent of the sample. The study analyzed processed (maize flour, tostadas, tortillas, doughs) and ultra-processed foods (snacks and cereals) which now appear constantly in Mexican diets given their availability in supermarkets and other distribution channels. In several public appearances, Professor Piñeyro Nelson has declared that the pervasiveness of transgenic maize in Mexico is a challenge that cannot be detected at plain sight, and this also applies to traces of glyphosate in maize.

The large-scale use of herbicides and insecticides in agriculture is part of a longer historical process, argues Érica Lissette Hagman-Aguilar, Director of Policies and Normatives for CIBIOGEM (Comisión Intersecretarial de Bioseguridad y Organismos Genéticamente Modificados). For Hagman-Aguilar, the use of herbicides and insecticides goes back at least to the so-called Green Revolution of the sixties, which heavily relied on these technologies to increase productivity. While the Instituto Interamericano de Cooperación para la Agricultura (IICA, part of the Organization of American States, OAS) promoted these

measures, others opposed. Among the latter were Chicano activist groups led by Dolores Huerta and César Chávez, who protested the negative health impacts in farmers and pickers, the majority of whom were first- or second-generation migrants. The struggles have continued up to this day and extend beyond the Americas. In the case of Mexico, these changes became ever more present with the liberalization of the country's economy. In 1986, Mexico joined the General Agreement on Tariffs and Trade (GATT), which marked an important milestone as it allowed Mexico to sign free trade agreements with other nations around the world.

Cultural and medical anthropologist Alyshia Gálvez and Mexican sociologist Gerardo Otero are two among several academics in the social sciences and humanities who have studied how global trade deals, such as the North American Free Trade Agreement (NAFTA, 1994-2020) and its re-negotiation as the United States-Mexico-Canada Agreement (USMCA, since 2020), have had consequences on labor, food distribution and consumption, among other areas. Their work explains how the neo-liberalization of the economy changed the availability of and preference for certain types of foods and drinks. One of the more visible consequences of this is that Mexico became one of the main consumers of ultra-processed sugared drinks⁴ (most of them American brands), while non-transmissible diseases such as diabetes have increased significantly due to changes in diets. The consumption of highly-sugared drinks has had significant effects on people's health, as well as on water supply where the bottling factories are located. Furthermore, even in these drinks, maize-based sweeteners are also regularly used. As Piñeyro and her colleagues have researched, the traces of genetically modified maize are pervasive in products for animal consumption (human and non-human).

The consequences of the importation of transgenic maize respond to agro-industrial forms of production, but have expanded further due to the so-called "free trade deals." Their implementation is depicted mainly as agreements among nations based on mutual economic interests, but the outcomes are far more complex, as they have consequences on public and individual health as well as in the ecology of different geographical areas. According to Mexico's National Commission for the Knowledge and Use of Biodiversity (Conabio), there are currently 220 races of maize in Latin America and Mexico is one of the coun-

tries with greater diversity. Of the 64 maize races present in the country, 59 are considered to be native to the territory we now know as Mexico. Nevertheless, that diversity is ever changing, as it depends on human pollination. Migration and social interactions have created new strands and races. Genetically modified organisms (GMOs) pose a threat to this environmental and cultural diversity, as they tend to assimilate and reduce diversity.

Professor Sarah Bak-Geller has studied how maize has historically been a matter of concern beyond subsistence, as it has deep cultural underpinnings. Bak-Geller demonstrated that maize played an important part in nation building-strategies, beginning in the nineteenth century when Mexico obtained its independence from Spain (1821). Maize was considered the cornerstone of Indigenous diets, but also as a recurrent meal for people living in Mexican territory as a whole. The consumption of maize was constantly challenged, and thinkers attempted to replace it with wheat or animal proteins (dairy or meat), considered healthier. Yet, the importance of maize in Mexico has prevailed. For Hagman-Aguilar, maize is deeply linked to identity: "... each family that works the land has seeds that they inherited from their parents... and of course, if you and I are cousins then our seeds are related, and they are also part of our family..." Because of the diversity of climates and microclimates, maize can be more central to some Mexican communities than others, however, national campaigns such as *Sin maíz no hay país* (Without maize there is no country)⁵ have further contributed to the grain's reputation as a fundamental part of Mexican culture. Nevertheless, despite the long history of maize in the country and its cultural significance, importation from the U.S. continues to increase.

For Hagman-Aguilar, maize imported from the U.S. has negative economic, cultural, political and public health impacts in Mexico. Hagman-Aguilar was part of the USMCA negotiations around maize, and told me that even though the debate is far greater, if we just focus on yellow sweet-corn, it is important to know that it was selected and

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massively produced not “to nurture, but for its ingredients”. Given its higher glycemic index, yellow sweetcorn can be used as a sweetener, colorant or even a bioethanol. The first byproduct can be found in a broader range of ultra-processed foods. Unfortunately, these easily available foods have high calorie content with little nutritional value. In addition, González-Ortega also echoed Hagman-Aguilar when he stated that transgenic maize (not only sweetcorn) depends on the use of herbicides such as glyphosate for its large-scale production. This chemical has been linked to increasing digestive ailments and changing the immune system. In 2016, the World Health Organization (WHO) classified glyphosate as “probably carcinogenic to humans,”⁶ since there was “sufficient” evidence on experimental animals to claim it was carcinogenic, but “limited” evidence, given the scarce testing on humans.

Professor Piñeyro told me that in spite of international agreements that have tried to limit the farming and distribution of transgenes, such as the Cartagena Protocol of 2002, countries such as Argentina, Canada and the U.S. have not signed it, and some that have signed do not necessarily comply. This is problematic because Mexico holds economic relations with these countries and transgenes are present in processed foods and some seeds. Other risks apply since some transgenes have been grown in Mexico. Transgenic maize tends to weaken the soil where it is grown, given the reliance on pesticides, herbicides and exploitation of minerals for single crop harvesting. In contrast, Hagman-Aguilar acknowledges the “marvelous varieties of maize” and how these have “different colors, and it turns out that these pigments have anti-carcinogenic properties, because these work as anti-oxidants.” González-Ortega also touched on this when telling me that the properties of non-agro industrial maize are most important for our twenty-first century lives. The less disruptive methods of traditional farming (for the soil and for the people who consume it) have also created an important opposition to the cheaper agro-industrial maize; nevertheless, the risk is that the presence of transgenic maize hinders the diversity of others.

This journey began with a reflection on the presence of sweetcorn as street food, but this was just the starting point to address how everyday eating habits are shaped

by economic agreements and have consequences on ecology and health. This is relevant as in December 2024, the panel of controversies of the USMCA judged that transgenic maize should continue being produced and traded in these countries. The decision to support biotech maize on the grounds of protecting farmers in the U.S. has significant consequences. As González-Ortega emphasized, “the Mexican population is one of the main per capita consumers of maize worldwide.” Given the constant maize consumption, González-Ortega also sustained that the current food system “implies sanitary risks that are not being covered.” Transgenic maize and other crops were advertised as preventing plagues and reducing costs for extraction, but those promises have not been fulfilled. While I focused on maize, this is only but a grain of sand in the complex transformation of our foodways. Mobility of goods, services, and animals (human and non-human) undergoes constant changes, and so do our access to food, our consumption, and even its disposal. All of these have an impact on our lives, and thus, on our individual and collective health. While writing about maize, I did not aim to make a call to essentialize traditional forms of farming or go back to an idealized past, but to recognize the constant changes in the turn of the century and acknowledge their effects. Even though this country, as others, will never be the same as I or others remember it, we can still take small actions to reduce some of the negative impacts of recent decades. ■■■

Notes

- 1 This is a variety of corn with white, round and tender kernels. [Editor’s note.]
- 2 UNESCO, “Las listas del PCI y el Registro de Buenas Prácticas de Salvaguardia”, in <https://ich.unesco.org/es/RL/la-cocina-tradicional-mexicana-una-cultura-comunitaria-ancestral-y-viva-y-el-paradigma-de-michoacan-00400?RL=00400>.
- 3 E. González-Ortega, A. Piñeyro-Nelson, E. Gómez-Hernández, E. Monterrubio-Vázquez, M. Arleo, J. Dávila-Velderrain, C. Martínez-Debat, and E.R. Álvarez-Buylla, “Pervasive presence of transgenes and glyphosate in maize-derived food in Mexico”, *Agroecology and Sustainable Food Systems*, vol. 41, issue 9-10, September 15, 2017, in <https://www.tandfonline.com/doi/full/10.1080/21683565.2017.1372841>.
- 4 Matta Busby, “Sugar rush: how Mexico’s addiction to fizzy drinks fuelled its health crisis”, *The Guardian*, November 4, 2022, in <https://www.theguardian.com/global-development/2022/nov/04/sugar-rush-how-mexico-addiction-to-fizzy-drinks-fuelled-its-health-crisis-acc>.
- 5 See <https://sinmaiznohaypais.org/>
- 6 See International Agency for Research on Cancer, WHO, “Q&A on Glyphosate”, March 1st, 2016, in https://www.iarc.who.int/wp-content/uploads/2018/11/QA_Glyphosate.pdf