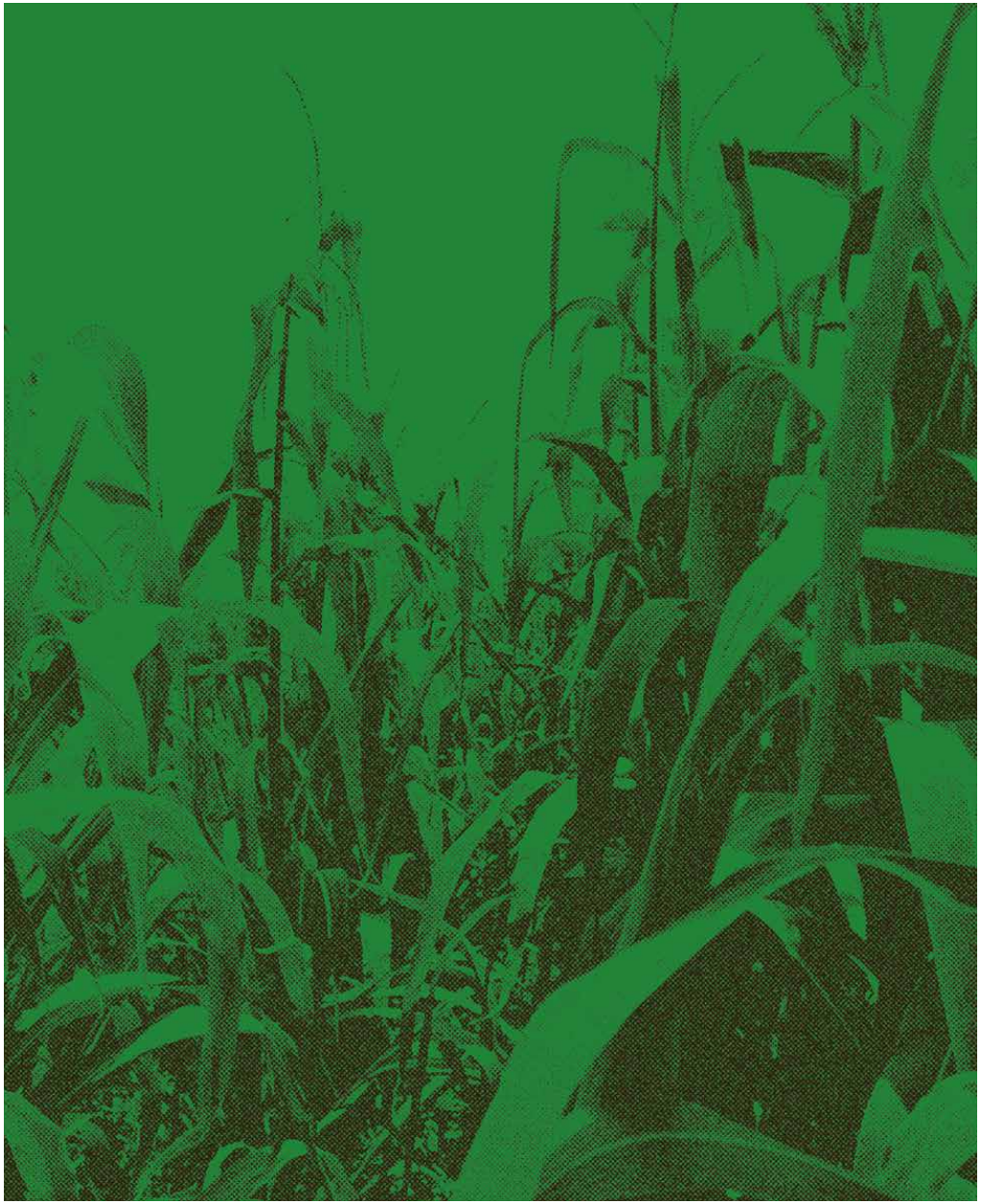


NATURE®

(PATENT PENDING)

The story of chinampa corn, and the efforts of corporations to own seeds

BY LYDIA CAREY

Photographs provided by the author

The mid-morning sun is already high, glinting off the water and bouncing up into Angel Galicia's flat-bottomed boat. Standing at the helm, he uses his long wooden remo to push off the murky canal bottom, and glides us through the water. His fluid movements are those of a seasoned expert—Angel has been maneuvering boats in the Mexico City canals since he was a child.

For the past four years, I have been bringing small groups of visitors out to see Angel's organic farm every few weeks. The labyrinthine 20-minute boat ride is normally full of chatter as visitors *ooh* and *ahh* over passing boats, some bursting with fragrant, bright-hued lavender plants, and others full of uniformed schoolchildren, nodding sleepily as their mothers paddle them into town. Hundreds of residents in nearby neighborhoods like Xochimilco and Tláhuac work in the city's southern canals, growing food and raising animals. It's a tradition that runs deeper than the foundations of the Aztec empire.

This is the first time I've seen Angel since Covid-19 came to Mexico, and I notice that the pandemic quiet that has descended upon the center of the city is present here as well. As we slip into easy conversation, Angel gives me the family update (everyone's safe so far), how the farm has been managing (they're surviving), and how the local neighborhood is dealing with pandemic precautions (poorly).

Angel's boat veers through the lilypad-lined side canals, and trees droop with the yellow trumpets of *Brugmansia suaveolens* with their intoxicating sweetness. Unlike most farmers in this part of Mexico City, Angel and his wife, Aurora, live full-time on their *chinampa*—a man-made island created over centuries from layers of organic material and lake mud.

Many of the chinampas are used as open-air greenhouses, every inch of available ground covered with ornamental plants in plastic bags. Others have been converted into soccer fields and weekend picnic spots. Some have been left uncultivated, home only to wild grasses and regal white egrets that stalk their shores for breakfast.

These days, there are fewer chinampa farmers—*chinamperos*—than ever before. Since the 1980s, there has been a steady movement away from the water and the *campesino* (rural) way of life. Fewer generations of chinampa kids now follow in their parents' footsteps, leaving some 16,500 once-cultivated chinampa farms fallow.

Angel and his son, Ernesto, are part of a small back-to-the-land movement bucking the trend. Eight years ago, the Galicias were approached by a local community-supported agriculture program, which, boosted by the local foods movement, had begun selling specialized, organic produce to nearby restaurants and individual families through a weekly delivery system. Eyeing a new opportunity and ever-conscientious of their responsibility to the land, Angel and Ernesto decided to work with the program and convert their chinampa—which they've owned for generations—to 100 percent organic production.

Since then, the Galicias have slowly developed their colorful menagerie of crops, animals, and scruffy *ahuejote* trees. But long before the microgreens and watermelon radishes, Angel's parents and grandparents grew Mexico's most important staple.

"We've always grown corn here," says Angel as electric green stalks wave at us in the midsummer breeze. "Even when we grew nothing else. It's a matter of tradition."

Early in the springtime, the seemingly abandoned chinampa islands all along the canals suddenly reveal their secret, sprouting rows of chinampa corn. The Galicias plant three of their four hectares with corn in February, and by mid-March, they have enough for chicken feed and surplus to sell in the local market.

The stalks may look utterly ordinary to an outsider, but chinampa corn has adapted with its unique environment over centuries of careful selection. Kernels are planted during the heart of the dry season, and for three months they survive solely on the soil's natural humidity and the early morning dew, which is seared off by midday under the intense central Mexican sun. For the next six months, the corn must withstand the torrential rainstorms that flood the valley daily during the rainy season.

Chinampa corn is so hyper-localized that it won't grow anywhere outside of these watery fields.

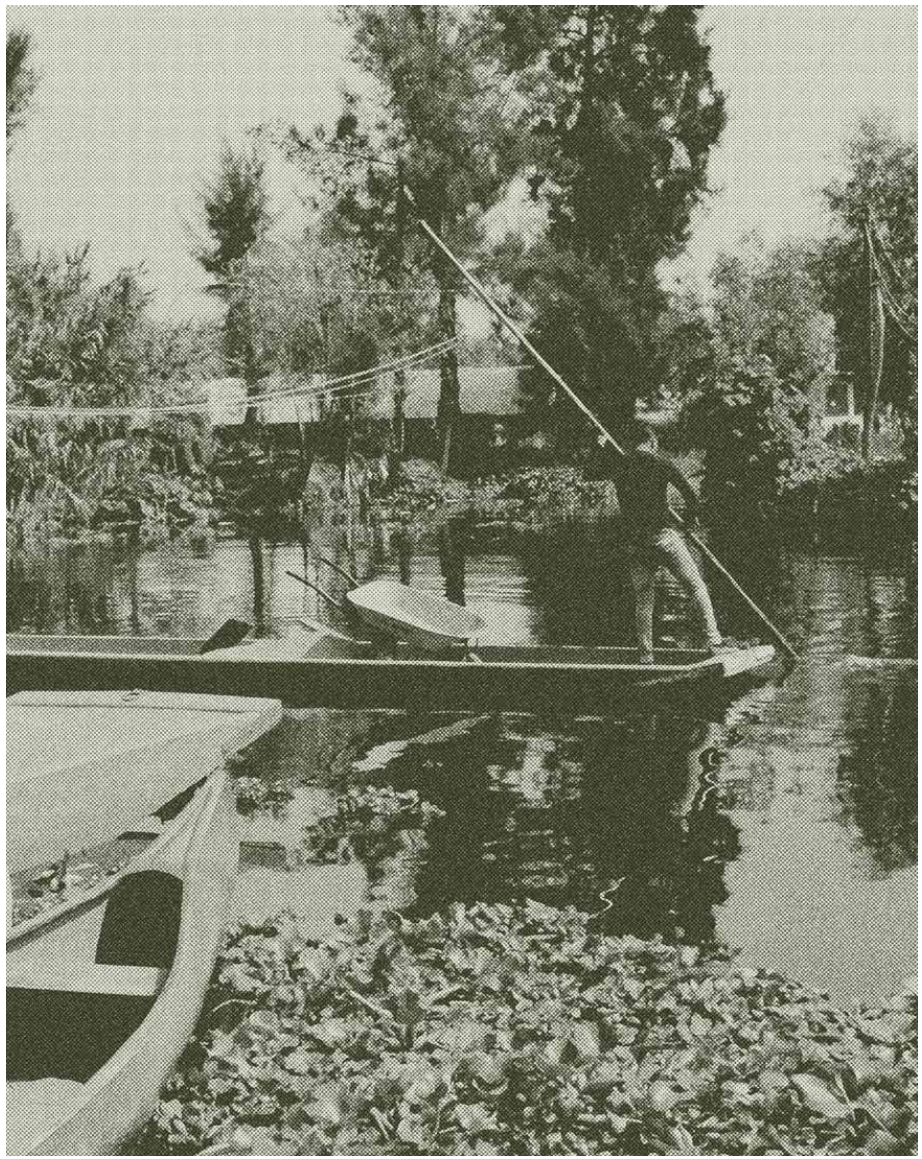
"It's extremely resistant to the high salinity," Angel says as he pulls out last year's blush-red kernels.

The famously high salt levels here are amplified by Mexico City's acid rain and pesticide use. This and other factors have caused the chinampa corn to become so hyper-localized that it won't grow anywhere outside of these watery fields.

"The high land of San Gregorio has totally different soil," Angel adds, referring to a rural borough just a few kilometers from his farm. "If you bring the corn from there and try to plant it here, it won't grow. It's the same if you were to take our corn there." Likewise, even so-called "improved" corn has trouble growing in the chinampa.

"My son was studying at the Facultad de Estudios Superiores de Cuautitlán, and one day he brought us some 'improved' seeds. We decided to plant a section with them, alongside the corn we regularly plant," Angel recalls. "The seeds looked high-quality, really beautiful, very different from the corn here, which looks rougher, more wild. It was supposedly more resistant to all kinds of disease, and supposed to grow much faster with a lot more production—he brought it thinking maybe we could get a faster yield, and in three months or six months have a harvest. They did sprout, but they stayed really small; they never developed."

This hyper-regionality is unsurprising in Mexico, the birthplace of domesticated corn over 8,700 years ago. There are 64 official native varieties of Mexican corn, and among those, a number are singularly adapted to a specific locale.



"At the core ... we don't think that nature can or should be patented." — Malin Jönsson

As the pandemic raged through Mexico City in the summer of 2020, farmers like Angel and Ernesto faced an additional threat making its way through the Mexican Congress. In July, lawmakers signed the United States-Mexico-Canada Agreement (USMCA). As part of the USMCA, the country will have to ratify UPOV 91, the latest version of the International Union for the Protection of New Varieties of Plants agreement, which pushes for expanded intellectual property rights for seed manufacturers and seed scientists.

Many of the world's most biodiverse countries, including Mexico and Brazil, have yet to ratify UPOV 91, due to pressure from groups that recognize how its imposition severely constrains the way small farmers like the Galicias can use seeds.

Perhaps the most alarming stipulation in UPOV 91 is that any seed previously unregistered (unless provided special protections by law) is up for grabs. This means that if a seed company were to get hold of the chinampa corn, it could patent the seeds. Suddenly, chinamperos would be compelled to pay royalties in order to grow the corn they've cultivated for this singular ecosystem over generations.

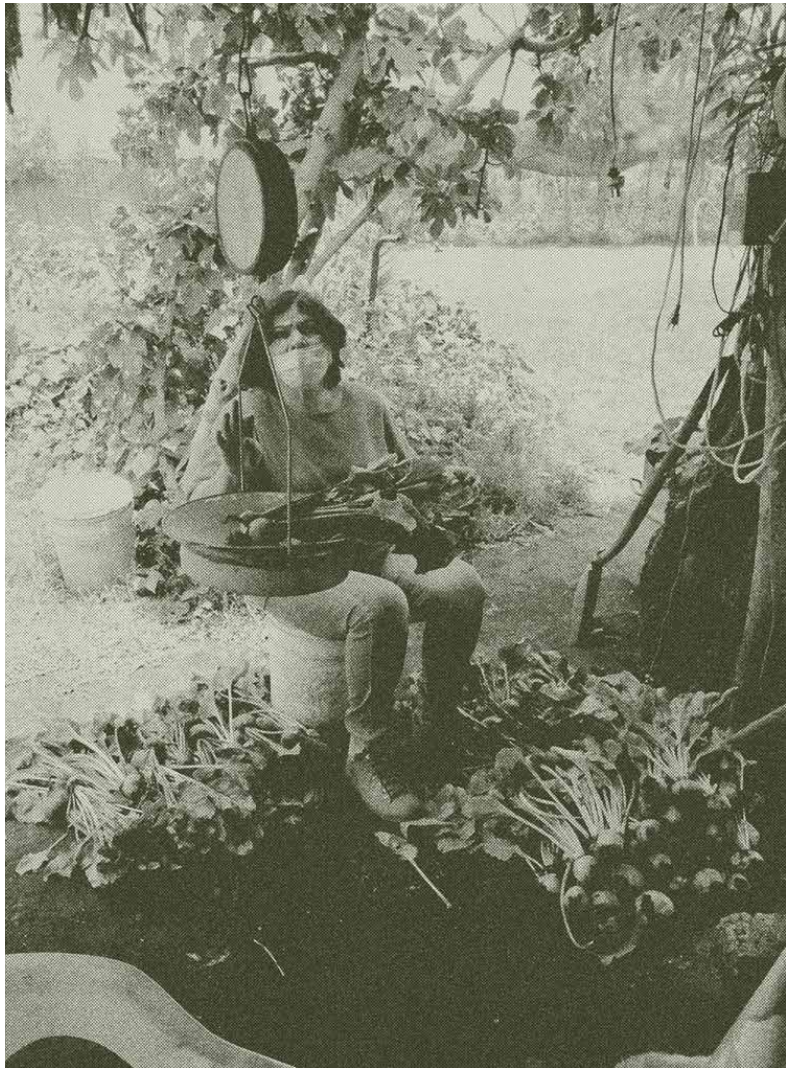
"I heard that Monsanto took some corn from here," Angel tells me conspiratorially, "and they 'improved' it. They came and took seed from someone out here. Specifically because of its characteristics."

Under the new rules, a company could also take the chinampa seed, modify it, and then go to the courts claiming ownership over the original seed as a "variety" of its modified product.

It sounds improbable, but in 1996, a U.S. farmer purchased *frijoles azufrados* (a type of native yellow bean) from a local market in Sonora and took them home to Colorado. After a few years harvesting the beans on his land, the farmer claimed that he had developed a new type of bean with a distinctive yellow color, and he applied for a patent that would give him the rights to any similar bean. The case was litigated for over a decade, until it was proven that this bean was native to Mexico, had been cultivated for millennia, and in no way had been "improved" or "developed" by the farmer into something new. As the case wound its way through the courts, Mexican farmers suffered under temporary restrictions on selling, producing, and exchanging frijoles azufrados.

The latest UPOV agreement also prohibits the practice of "further breeding"—essentially, saving select seeds for future plantings. Yet, Angel sets aside 85 kilos of chinampa corn every year for the following year's planting. His father Don Felipe carefully selects these seeds for the next crop, effectively intervening in evolution—breeding—by selecting for the traits they want most. Further breeding also means farmers don't necessarily need to buy seeds year to year (thus undermining patent holders' profits).

"This is what we always do, pick out the best seeds for replanting so that the harvest will reflect the highest quality of what we have," explains Angel. "All year long, my papá is selecting his seeds, which are bigger, which produce bigger cobs, or maybe more delicate or thinner stalks. Sometimes you want thinner cobs so there is more fruit overall. You look for a cob



with certain characteristics. You have to pay attention to the details, you can't just say, 'well, whatever.' You have to continue selecting and selecting each time."

When chinamperos must buy seeds, they buy from their neighbors.

"They know that if it's not from here, it's not going to grow, so why go looking for transgenic or hybrid corn?" says Angel. "The people from here know better than to buy those. In the same way that I couldn't sell them some transgenic corn because they'd come back like 'What the—?!' There'd be problems."

The last iteration of the UPOV provided for the confiscation of seeds selected, sold, and traded in these informal pathways. Now the entire harvest—even future harvests—are considered the property of the original seeds' owner. This means that a scofflaw farmer either has to pay royalties or hand over his crops.

Lawmakers recently proposed changes to Mexico's Ley Federal de Variedades Vegetales (Federal Law for Vegetable Varieties, or LFVV) so as to include burning fields, increased fines, and jail time as penalties for "illegal" seed use. These changes, the lawmakers claimed, were necessary to make the country compliant with UPOV 91. However, their efforts were blocked by the Mexican activist network Sin Maiz no Hay País (Without Corn There is No Country).

The legislature plans to revisit the issue at a later date, but it is notable that the proposals provided no specific protections for small farmers or native seeds. Farmers and activists are working to persuade Mexican lawmakers to include such provisions in the next round of negotiations.

The proposed changes to LFVV are purposefully vague, according to environmental lawyer David Rivero. Specifics about native seeds, rules around inspections, and examples of what can be provided as "proof" of a violation are all unclear. And local activists say specific protections aren't really the point.

"We just don't consider a seed something that someone can own," says Malin Jönsson of Semillas de Vida (Seeds of Life), part of the Sin Maíz No Hay País network. "At the core, it's not just about protecting marginalized groups or certain native seeds. It's that we don't think that nature can or should be patented."

The UPOV doesn't claim jurisdiction over national agricultural laws, but it's a bully of an agreement. If countries don't adopt stringent laws, they risk violating UPOV (and, in this case, the USMCA). While UPOV's supporters claim that the system allows small farmers to protect their own homegrown innovations, 94 percent of patented and registered seeds are in the hands of giant multinationals with deep enough pockets to take up legal challenges.

As Angel leads the way through his cornfields, pollen sprinkles down on us like fairy dust. Brick-red chickens scratch in the dirt below and two massive German shepherds named Rocky and Frida weave among the zigzagging stalks.

"It doesn't make any sense to me," says Angel, "that they could demand that they own something that isn't theirs. In Xochimilco, the chinampa corn is endemic to the area. It's not just from a year ago, it's been here for hundreds of years. These transnationals can't own Mexican patrimony, and not just here, but the rest of the Americas, too."

When Angel serves up some Mexican corn on the cob (coated with mayonnaise, grated cheese, lime, salt, and chile powder), the difference between the corn you normally find on the streets of Mexico City (what back home in the Midwest we call "field corn") and the chinampa corn he grows is palpable. The former is often white, with hard kernels and minimal sweetness. Angel's is colorful, sugary, tender, and melts in your mouth.

"People say the corn here is different, sweeter," says Aurora, "There's a famous *atole* (a hot beverage) made from this corn that people come all the way to Xochimilco to get."

The kernels are alternatively deep amber, purple-blue, and various shades of cream, white, and yellow. When Don Felipe was a young farmer, he selected his corn each year until not only were the kernels blue, but the husks that enveloped them were as well.

"That was a long time ago; those seeds have been lost," says Angel. "But we could do it again if we wanted to."

That depends. Congress is still debating what level of protection they will include for campesinos like the Galicias and native seeds in the face of the government's future obligations under UPOV 91. The Morena government professes a commitment to the environment, food sovereignty, and farmers' rights. This process will test that promise, and activists are hesitantly optimistic.

In a world of international trade deals and treaties, individual countries are losing the power to create special protections for their unique ecosystems. But when local farmers cannot retain control over their seeds, it's not only a threat to their livelihoods, but also a loss of the biodiversity created through traditional selection and exchange practices. The memory of crops like chinampa corn will never be as sweet as the real thing, nurtured right here by the skillful family farmers in Mexico City's twisting canals.