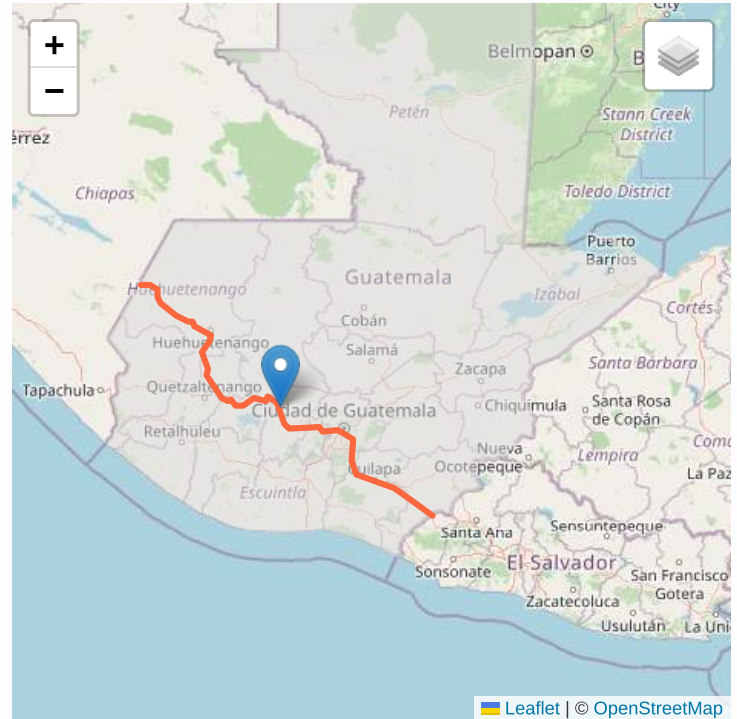




Maize: Sacred Plant, Global Commodity

Julia Fine

The year was 2014, and many Guatemalans were incensed. With a population of 14 million, approximately 120,000 took to the streets. Protesters blocked traffic along the Pan American Highway and other major roadways to voice their opposition to the “Law for the Protection of New Plant Varieties,” or, as it was popularly known, the “Monsanto Law.” The law “outlawed the replanting, transportation, or selling of privatized seeds without permission, and made these actions punishable by one to four years in jail and a fine of 1,000 to 10,000 quetzals (US\$130 to \$1,300).”¹



⋮ During the 2014 protests against Monsanto's Law,... ⌂

While the law sought to regulate the use of particular maize seeds engineered by Monsanto to withstand the company's glyphosate-based herbicide, Roundup, the Guatemalan public saw several problems with this protection for privatized seeds, or genetically modified seeds subject to a patent or copyright. This included anticipating that the law would increase farmer dependence on big agribusiness. Opposition to the law swelled, bringing together, according to cultural anthropologist Liza Grandia, a motley crew of protestors, including "peasant federations, health workers, biologists, Maya spiritual leaders, environmentalists, Pentecostals who regard Monsanto as an anti-Christ, opportunistic politicians, college students, and even Guatemala City foodies."²



⋮ Protests against Monsanto in Guatemala, 2014.... 📷

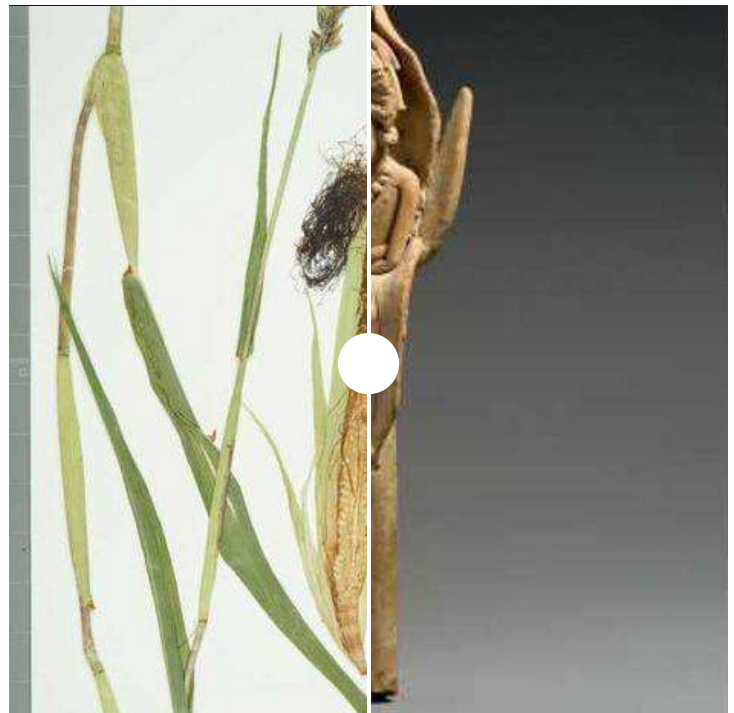


⋮ Protests against Monsanto in Guatemala, 2014 📷



⋮ Protests against Monsanto in... 📷

Why did this new policy about maize inspire such strong reactions? Since its domestication over 9,000 years ago, achieved through the ingenuity and acumen of Mesoamerican communities, maize has provided necessary sustenance. In turn, these communities constructed their societies, cosmologies, and cultures around the plant. The Monsanto Law would dissolve this sacred symbiosis between local communities and maize. The history of maize thus demonstrates the complexities of human relationships to plants, which resist categorization solely as units to be bought, sold, or patented under capitalism.



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❏

A Kernel of Science

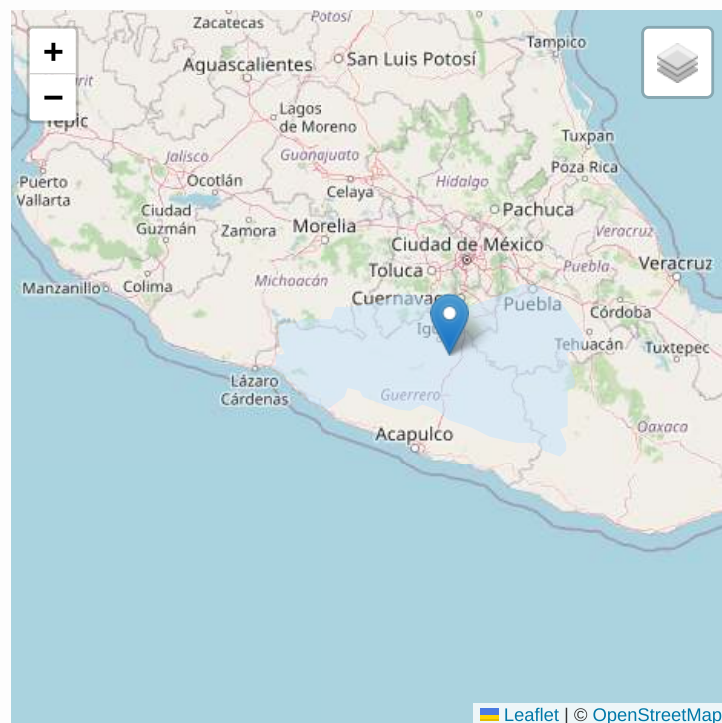
What is maize? How did it develop? These questions may seem simple, particularly given the ubiquity of corn-based products, but the large body of scholarship on the crop shows the answers to be anything but straightforward. Maize, in taxonomic parlance *Zea mays* L., is a cereal grain consisting of a stalk, tassels of pollen, and ears filled with cobs of kernels (averaging 800 kernels spread across 16 rows).



: John Audobon, Common Purple Crow-Blackbird, 1.... ❏

The reliance of many human societies on maize, the “[most dominant and productive crop](#)” for their survival, is well known. Less understood is the plant’s reliance on humans for its survival. Maize most likely was domesticated from teosinte, a grass with tassels and several small-clustered ears. However, there are clear differences between modern-day maize and teosinte: while teosinte is made up of 6–12 kernels held in two rows surrounded by a protective shell, maize proffers a cob with approximately 20 rows of kernels without a hard outer shell.³ These differences are so profound that, as [one article in PNAS](#) notes, “19th-century botanists failed to recognize the close relationship between these plants, placing teosinte in its own genus, *Euchlaena*.” Present-day scholars have shown that maize was domesticated from teosinte through humans selecting for a larger ear size and more kernels.

Indigenous groups in what is now southwestern Mexico played a major role in the domestication process and subsequent plant transfer. Recent phylogenetic analysis has shown that maize most likely arose from a single domestication event, which probably occurred in the Rio Balsas (Balsas River) Valley around 9,000 years ago.⁴ Agrobiodiversity researchers have noted that “much of the evolution of maize during domestication may have been gradual, and there is evidence of increases in cob size over the first 2,000 years of selection.”⁵ An incredible diversity in terms of types of maize occurred after its initial domestication. Many scholars describe maize as a “mirror” to its cultivators, and different Indigenous groups domesticated and cultivated various types of maize depending on “environmental and also [on] social and cultural factors,” suggesting the role communities played in developing different types of maize most suited to their needs.⁶



⋮ The Origin of Maize.



By 7,000 years BP, humans had dispersed maize from the Rio Balsas region into South America as a partial domesticate, though, as scholars have noted, there were “multiple waves of dispersal” of maize into South America. There, the crop underwent “secondary improvement in the southwestern Amazon before diversifying across the continent. Humans then dispersed this domesticated variety back into Central America and to the north, demonstrating the “clear evidence of two-way movements of plants and people lasting millennia between Central and South America.”⁷ Maize is therefore a notable example of the mobility of plants in relation to humans.



⋮ Approximate timing and location of maize...

In addition to domesticating maize and dispersing it throughout South America and back toward Central America, humans worked to cultivate maize, which could not have survived if left to its own devices. Wild teosinte is very fragile and its pod can be shattered by the wind. By contrast, maize relies on humans to disperse its seeds. The scientific history of maize thus reveals the central and active role early Mesoamericans played in its domestication through making conscious decisions about the cultivation process.



⋮ Some European imperi...



⋮ The Cruz-Badiano Codex is...

Milpa and Mesoamerica

After its domestication, maize quickly became an important crop for Mesoamerican people, both nutritionally and culturally. Scholars and food policy experts have noted that maize is one of the most productive and nutritious crops in terms of calories per acre and [extol](#) the Maya peoples' practice of milpa agriculture, an agroecosystem that relies on extensive intercropping as a means to promote biodiversity and address food insecurity. Under this system, maize was intercropped with plants including beans, [squash](#), peppers, tomatoes, and potatoes, allowing for greater soil and landscape regeneration when compared to monocrops. This practice was incredibly productive: scientists have shown that in a milpa "[the maize stalk supports the climbing bean](#), increasing the latter's access to light, while the bean plant fixes additional nitrogen in the soil."⁸ Maize thus not only represented an important source of nutrition in and of itself, but also enabled the growth of other nutritionally significant crops. Using carbon isotope analysis of human bones and teeth, archeologists have shown how "maize was an important dietary component throughout life" for populations throughout the Maya area.⁹



⋮ Illustration of Milpa agriculture. In this intercroppin...⋮

To obtain the utmost nutrients from maize, Mesoamericans practiced a process called nixtamalization, a word derived from the Nahuatl terms for lime and maize dough. While, as scholars have noted, the “origin and development [of the nixtamalization process] remain archeologically unclear,” the lime treatment of maize has been used in Mesoamerica for at least the past 3,000 years to produce a “reduction of the labor required to grind maize, by breaking down the kernel’s durable external pericarp or shell; and enhanced nutrition, by releasing niacin and amino acids inherent in the maize and contributing additional calcium from the lime.”¹⁰ While nixtamalization reduces the effort of grinding maize, it was still very labor intensive for Mesoamerican women, who traditionally grind maize kernels into masa, or dough, over a metate or grinding stone. Further, maize is not only used to produce masa; Mesoamerican peoples make use of the maize stalks to produce maize beer, referred to as tesquino, in certain parts of Mesoamerica and chicha in others.



⋮ The process of nixtamalizi... ⋮



⋮ Tortilleras Nebel ⋮

The nutritional importance of maize cannot be separated from its cultural significance. In the *Popol Vuh*, which recounts the Maya creation story, humans were quite literally molded out of maize by the deities. Scholars have long recognized motifs of maize in Olmec and Maya iconography. However, in the past four decades, scholars have begun to identify a specific “Maize God” that has an “elongated, tonsured [head](#) [that] mimics the long tasseled cob,” and often has “maize grain ... infixed into his head,” among other qualities.¹¹ While there is much about the Maize God that remains to be explained in the scholarly literature, it is clear “that the corn cycle was the central metaphor of life and death for the Maya and the nucleus around which much of their religiosity was formed.”¹²



⋮ Bowl with Anthropomorphic Cacao Trees from Earl... ⋮

For the Maya, maize was and is more than simply a metaphor and powerful image in the Mesoamerican visual lexicon. Seventeenth-century records reveal how in highland Guatemala, upon the birth of a son, the Maya community would burn the blood of the umbilical cord. Then, they would “pas[s] an ear of maize through the smoke,” which would subsequently be planted in the maize field. Ethnographers have recorded that “parents used the maize from this small patch of land to feed the child ‘until he reached the age when he could plant for himself, saying that thus he not only ate by the sweat of his brow, but of his own blood as well.’”¹³ In certain regions, mothers “place an ear of maize into the palm of their newborns, and eat only dishes made from maize while breast-feeding to ensure that the child grows ‘true flesh.’”¹⁴ Maize, for Maya people, thus represents more than both calories or symbol: it is a sacred plant from which all life grows.



⋮ Florence, Biblioteca Nazionale Centrale, MS...

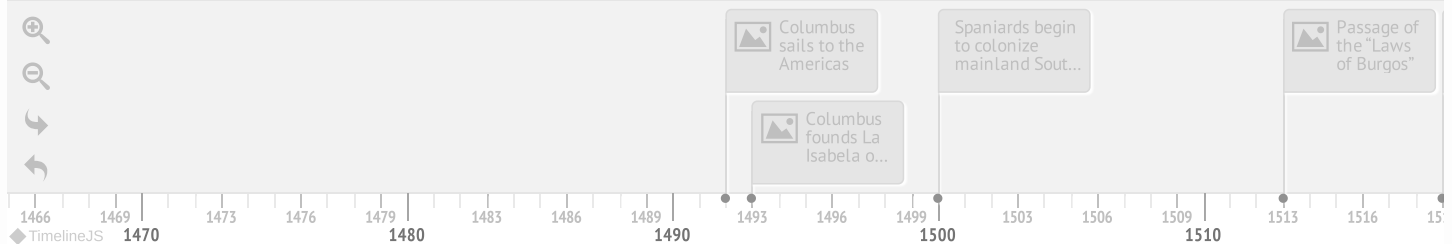


Colonial and Postcolonial Eras

During the colonial era, Maya beliefs in maize as a sacred plant clashed with European understandings of the crop. Spanish colonizers often publicly denigrated foods like maize as “dangerous to the European constitution.”¹⁵ But even as the Spanish publicly disdained maize, there is ample evidence that they recognized the utility—and scrumptiousness—of the crop. Inca Garcilaso de la Vega (1539–1616) recounted how one group of conquistadors inhaled maize “as if it were sugared almonds.”¹⁶ Indeed, there are records of conquistadors enjoying atole, a maize beverage, and eating puddings made of maize.¹⁷

BEGINNINGS OF SPANISH COLONIZATION IN THE AMERICAS

1492–1533



From the nineteenth century onward, the crop began to attract the attention of scientists from Europe and the United States due to its productivity and economic potential as a domestic and export crop. In the early twentieth century, scientists from the United States and Europe traveled to regions in Mexico, Peru, and Guatemala, among others, to identify unique “landraces,” or locally adapted domesticates, of maize. Historian of science Helen Curry has detailed how scientists attempted to transpose putative science of the human race onto maize taxonomies: “At the most fundamental level, the raw material and motivation for classification arose directly from the imperative of ‘improvement’ in both crops and people.”¹⁸ These scientists presented a vision of “early, stable indigenous races, transformed by racial mixing with newly arriving populations from other geographical regions, giving rise to valuable new ‘incipient’ but still-unstable racial types.”¹⁹



⋮ Zea mays

Bolstered in part by this racialized understanding of maize, scientists around the world began to breed maize for preferred traits, namely, quick growth and high productivity. In the 1940s, the Rockefeller Foundation began to partner with the Mexican government to increase production rates of staple crops, including maize. These attempts to turn maize into a scientific commodity attracted both local and global concern: one American geographer noted that this endeavor proffered the potential “disastrous destruction of local genes.... Mexican agriculture cannot be pointed toward standardization on a few commercial types without upsetting native economy and culture hopelessly.”²⁰ As one Mexican scientist detailed, some communities refused to sell types of maize used in rituals, no matter what price was offered.²¹



⋮ Distribution of different landraces of maize in...

These examples illuminate the resistance of communities in Central and South America to the commodification of maize. Maize became a symbol of Central American cultural and political independence in the 1980s, when U.S. President Ronald Reagan prohibited trade with Nicaragua in an attempt to erode the power of the Sandinistas, a left-wing political group. What this meant in practical terms was that Nicaragua was unable to obtain a sufficient supply of wheat, usually imported from the United States. In response, Nicaraguan artist Luis Enrique Mejía Godoy released a song titled “Somos Hijos Del Maiz” (“We Are the Children of Corn”) to rally support for the Sandinistas and resist American political influence. The song begins with the lyrics (in English), “If they take away our bread/We will see ourselves in the obligation/to survive as our grandparents did/with fermented corn/in the blood of the heroes.” The sanctity of maize became a way to express independence from colonial and neo-colonial powers.

Maize’s cultural, political, and economic significance persists in Central American communities today. Maya farmers continued to practice Milpa agriculture and it has been hailed as “[central](#)” to the preservation of Mexico’s biodiversity. However, this is not to say that the symbiotic relationship between Indigenous communities and the plant has remained unchanged—scholars have noted the immense out-migration of farmers in maize-growing communities, which can lead to a “narrowing of the agroecological conditions under which maize is farmed.”²² Further, multinational corporations have industrialized and commodified traditional beverages like atole.



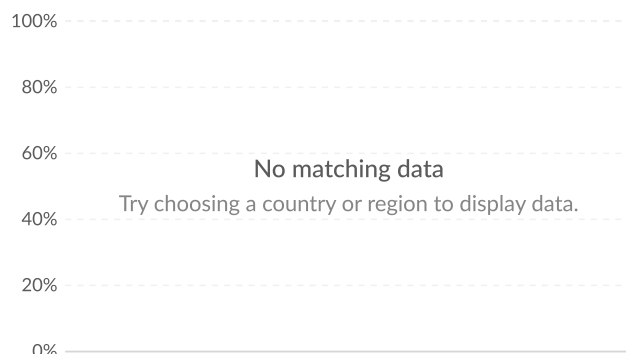
Do more people live in urban or rural areas? MEX?static

Our World in Data

“Majority urban” means that over 50% of the population resides in urban areas, whereas “majority rural” means that 50% or more resides in rural areas.

Table Map Chart

Change



Data source: United Nations, Department of Economic and Social Affairs, Population Division (2018); HYDE (2023) – [Learn more about this data](#)

Note: Because the estimates of city and metropolitan areas are based on national definitions of what constitutes a city or metropolitan area, cross-country comparisons should be made with caution.

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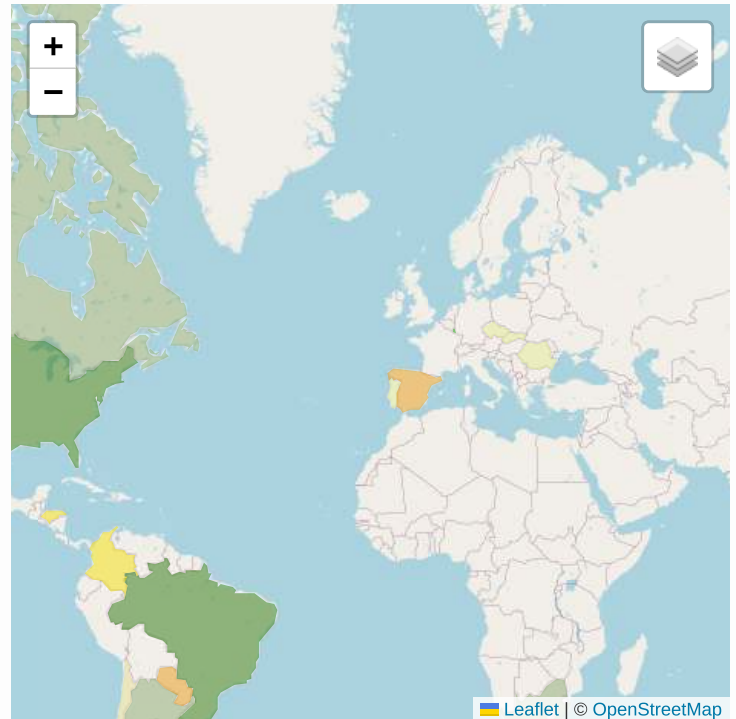
Explore the data →

Monsanto: Rise and Resistance

As a result of the forces of globalization and industrialization, threats to maize diversity are more acute than ever. Since the 1940s, scientists have warned that “the whole genetic pattern of *Zea mays*... has been catastrophically overhauled.”²³

The reduction of maize’s genetic diversity has been exacerbated since the 1990s, when Monsanto began to produce its transgenic maize products. Further, the passage of NAFTA in 1994 meant that U.S. maize could be sold at incredibly cheap prices in Mexico. “The sheer amount of contamination from a very homogenous source drives diverse populations into narrow genetic backgrounds,” argued Ignacio Chapela, an ecologist at University of California, Berkeley.²⁴

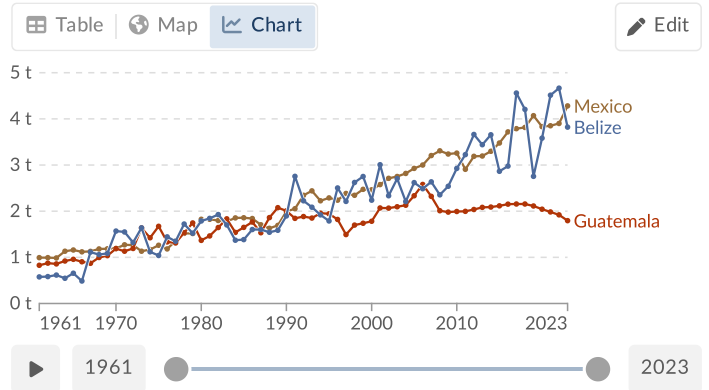
This contamination has alarmed scientists, farmers, and activists around the world for a variety of reasons. Zapatistas fighting for autonomy in Mexico argued that transgenic industrial maize threatened to overwhelm local varieties and thereby make Central American economies reliant on U.S. corporations. Since the 1970s, agronomists have been concerned about the potential loss of crop diversity and the catastrophic consequences for global food security. And local farmers and community members worry about relying on global agribusiness for their main source of sustenance, as well as the potential disruption to their moral economies and local cosmologies.²⁵



Map showing the area of genetically engineered...

Corn yields, 1961 to 2023

Yields are measured in tonnes per hectare.




Data source: USDA National Agricultural Statistics Service (NASS) (2024); Food and Agriculture Organization of the United Nations (2025) – [Learn more about this data](#)

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[Explore the data](#) →

The 2014 protests in Guatemala are not the only example of dissent over transgenic maize. Historian Helen Anne Curry describes local movements in Mexico that, in the early 2000s, declared “sin maíz no hay país” (“without maize there is no country”).²⁶ According to Curry, Zapatista rebels “took matters into their own hands” by “developing locally managed preservation measures ...that connected Indigenous peoples with scientists and activists.”²⁷ And, as reported by Timothy Wise, from the Institute for Agriculture and Trade Policy, Mexican president Andrés Manuel López Obrador promised to gradually eliminate the use of glyphosate and the production of GMO maize.²⁸



MAP OF THE WORLD OUTLINED IN MAIZE.

Segunda Fiesta del Maíz, Oaxaca, 2007. Ron Mader via Flickr, CC BY-SA 2.0.

RECENT RESPONSES TO TRANSGENIC MAIZE

In the past few years, countries have been divided in their responses to GMO maize. See how different countries have responded.

SOUTH AFRICA

South Africa

TimelineJS

2019

While some protests against Monsanto's promotion of transgenic maize have been successful, Liza Grandia has observed that it is “hard to predict whether [events like] the victory over Monsanto in Guatemala [were] a once- or twice-in-a-generation occurrence or a signal of expanded democratic unrest.”²⁹ What is clear, however, are the perils of detaching maize, a complex crop of global significance, from the rich cultural and biological context of its original domestication and the sophisticated practices of Indigenous agriculture and land management. Maize, as a sacred crop, is more than mere fodder for scientific development: rather, it is the lifeblood of many communities.³⁰



⋮ The many meanings of maize. L to R: Zea mays... 🔍

Additional images used in this essay: Banner image by Gustave Baumann, *Study for Hopi Corn*, c.1938, Indianapolis Museum of Art. Image of a young corn god via Wikimedia Commons, The Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979. Specimen via Wikimedia Commons.

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Explore the cultural histories of plants and their influence on human societies