intense pressure from companies continues. What is at stake in Mexico is the heritage of millions of peasants and members of indigenous communities who have helped define the whole of humankind, and the genetic diversity of the food industry in Mexico. It appears that subsequent governments have regarded these as picturesque facts addressed only to tourists. To protect native corn necessarily implies recognition and respect, on its own terms, of the integral rights of indigenous and peasant peoples. In order to avoid transgenic contamination of the original locus of maize production, a good start would be the immediate ban of transgenic crops throughout the country. Currently, many alternatives exist to the agro-industrial food system; exiting the agro-industrial food system; exiting the agro-industrial food system; exiting the agro-industrial food system; exiting the agro-industrial food system; exiting the agro-industrial food system. Perhaps more than any other land-intensive operation, corn cultivation in Mexico embodies the ecological, cultural, and economic fallout of the polarized, NAFTA-generated landscape.

The cultivation of maize (Zea mays), or corn, has defined the lifestyle, legacy, and landscape of the Mexican territory for thousands of years. But after NAFTA passed in 1994, corn from the United States—genetically modified, mechanically produced, and heavily subsidized—began to flood Mexico's markets and the country's culturally diverse and decentralized production of crop (without pesticides), and their consumption in local markets. Only in this way can we begin to reconstruct Mexican soil—the destruction of which hinders carbon absorption and exacerbates global climate change—and seriously work towards improving life on this planet.

**Notes**

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**Landrace: Zea Mays and the NAFTA Landscape**

The cultivation of maize (Zea mays), or corn, has defined the lifestyle, legacy, and landscape of the Mexican territory for thousands of years. But after NAFTA passed in 1994, corn from the United States—genetically modified, mechanically produced, and heavily subsidized—began to flood Mexico's markets and the country's maize agricultural system was gradually dismantled. Mexican producers simply could not compete with cheap American corn. Today, a small number of large-scale farms in the lowlands dominates the export agricultural economy, leaving millions of small-scale mestizo and indigenous farmers jobless, unable to compete in an economy ravaged by trade liberalization. Perhaps more than any other land-intensive operation, corn cultivation in Mexico embodies the ecological, cultural, and economic fallout of the polarized, NAFTA-generated landscape.

Domesticated over 9,000 years ago in the Balsas River drainage in the Mexican state of Guerrero, corn evolved from teosinte (Zea), an tall, annual grass, through the natural and artificial selection and cultivation of its key mutations—rows of kernels rotating along a central axis (i.e., cob), a sealed seed head (i.e., husk), and high nutrient content. Milpa, chinampa, and other symbiotic agricultural systems were developed in tandem by indigenous farmers, whose breeding practices propelled at least 59 landraces adapted for climatic and altitudinal conditions from 0 to 2700 metres above sea level. Today, over 95 percent of arable land in Mexico is used for the production of corn, and of this approximately 75 percent is produced by indigenous or local farmers. Over 90 percent of corn producers are classified as small-scale farmers, with plots on average of 2.5 hectares or less, and which do not produce a yield large enough to export to market. Because the corn crop of most farms doesn’t make it to market, policy makers in Mexico and the United States predicted that NAFTA would not greatly affect the corn production sector in Mexico, but rather enhance it—resulting in benefits for the consumer. In reality, exports from the United States tripled from the institution of NAFTA through 2008, while prices in Mexico were cut in half for the sale of corn, despite steady gross production at a national scale.

Mexico’s preference for small-scale farming can be traced back to the 1917 Mexican Constitution in 1992, allowing for foreign companies to buy land within the country. Not only did this set the stage for NAFTA, but it also signalled a change within the Mexican agricultural mindset, which had largely privileged the communal negotiation and tending of land since the Mexican Revolution. This change in regulations had major social implications, as well as impacts on the ground throughout the country. Before the privatization of land after NAFTA, only 16 percent had formalized irrigation structures in place, and the majority of arable land within the country was still being cultivated under the ejido system—encompassing 28,000 different communities and plots of land. [See Fig. 1]

The increase in corn demand and new irrigation techniques that allow for expanded production have shaped the post-NAFTA... and the NAFTA Landscape
 economies of former ejido farmers in many rural regions. Rain-fed land produces less than half as much corn per year on average (1 ton per hectare) as does irrigated land (2.1 tons per hectare). Studies conducted by the Mexican Secretariat of Agricultural Reform show that the most determining factor for whether a farmer is a market seller is their access to formalized irrigation. Additionally, commercial irrigation is more widely available in lower-lying areas of Mexico with poorer, rockier soils such as xerosol and regosol, so fertilizer is also necessary. This makes market exportation commercially non-viable for small-scale farmers in the face of larger commercial production.

Fig. 1 Large and small-scale agriculture distribution post-NAFTA.¹²

Indigenous agricultural practices are traditionally designed to strengthen the genetic resources from which new landraces of maize may draw. In situ conservation—that is, the dynamic process of seed bank cultivation on site (i.e., mostly through peasants’ fields) through the movement and interchange of seeds on a scale exceeding the field itself (from migratory pollination to seed selection and exchange among farmers)—is considered to be the most effective method for safeguarding biodiversity, according to the World Trade Organization’s Convention of Biological Diversity.³ These landscapes, often patch-cuts in the rich and diverse rainforest ecology, function as agents and canvases for seed dispersal, promoting and nurturing spontaneous plant growth.

However, the shrinking number of small-scale plots due to trade liberalization has undermined maize species’ capacity to adapt to environmental impacts by drawing on a gene pool to strengthen and fortify its lot. [See Fig. 2] Since NAFTA and the dissolution of the economic viability of most corn agricultural practices in Mexico, farmers are relying more and more on wild, edible plants, or quelite (such as Brassica rapa, Chenopodium, and Amaranthus), for more than just species diversification. Instead, they’re relying on them as a new commodity, primarily as livestock feed but also for medicinal uses.¹⁰

The consolidation of agricultural fields in Mexico shifted the ground from communally tended and spontaneous vegetation dependent to privately operated and heavily controlled. By allowing for the privatization and neoliberalization of this communal resource, the move from state-led to market-led agrarian reform within the country has marked a societal and ecological move within the territory. The landscape articulates the relationship between formal and informal environments, notions of efficiency, and cultural associations and social relations with the land. Embedded in the ground of the Mexican maize field is a culturally specific meaning of land tenure, as well as representations of the dynamic between human and non-human agents in the process of generating landscape material.¹¹
maize, beans, and squash within the same plot of land. The squash covers the ground and beans climb up corn stalks. The system protects the plants from detrimental water erosion and efficiently utilizes sunlight and rain. The milpa cycle utilizes a plot for two years followed by eight years of letting the area lie fallow. Chimanpa is a technique to create artificial islands in order to cultivate agriculture in the Valley of Mexico, which was once a formerly shallow lake bed.


7 Ibid., 1954.

8 “The important thing is that we clean out and plant the fields but don’t break the connection to the surrounding ecosystem. These fields are part of the natural system; they’re not apart from it,” says an indigenous farmer quoted in Peter Canby, “A Retreat to Subsistence.” The Nation, 5 July 2010, 32.

9 Also, see “Maize and Biodiversity: The Effects of Transgenic Maize in Mexico,” a report prepared in 2004 by the Commission for Environmental Cooperation.

10 “In fact, the Convention rec- ognizes in situ conservation as the primary approach for biodiversity conservation,” Lyle Golker, Françoise Burhenne-Guilmin, and Hugh Syngue, “A Guide to the Convention on Biological Diversity Global Islands: Switzerland, IUCN, 1994.” In addition to in situ practices, ex situ conserva- tion methods such as seed banks are also being utilized in the country in an attempt to preserve all known strains of corn.


13 Agribusiness is found in the popu- lated cropland grid, and most exten- sively in the remote cropland areas. For more information on how land-use layers are defined, visit the Laboratory for Anthropogenic Landscape Ecolo- gy’s website: http://eocope.org/an- thromes/ex1/guide. croplands/default. aspx. Large-scale corn production operations gener- ally are situated below 1,200 m. The 1,200-metre contour line is highlighted. Sources: S.B. Cline, Hugo R. Perales, “A Maize Landscapes of Ethnicity and Agro-Biodiversity in Chiapas Mexico,” Agriculture, Ecosystems, and Environment 121 (2007): 211; and Earl C. Ellis, Navin Ramakutty, “Putting People in the Map: Anthropo- gogenic Biomes of the World,” Fron- tiers in Ecology and the Environ- ment 8 (2008): 441, Fig. 2.