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Addressing Food Insecurity Among the Mayans: Agroforestry Cooperatives

Similar in size to the state of Pennsylvania, the country of Guatemala is small, yet it is divided not only by mountains, but also by ethnicity and class. The World Factbook describes the geology that creates different weather conditions and separates groups of people: “Two east-west trending mountain chains divide the country” into the mountainous highlands and the northern and southern lowlands. The better-off Ladinos, or Spanish speaking Guatemalans, are concentrated in the southern region and Guatemala City. The Highlands are home to most of the indigenous Mayan population, who also make up the majority of the impoverished and food insecure. This paper examines how agroforestry can improve food security for Mayan farmers in the Highlands (Steffens, 2018).

The heavily populated Highlands consist of rugged mountains with few decent roads. The people here are isolated and distant from most jobs and stores. Take Elvira, a twenty-two-year old Mayan mother, who watches helplessly as her corn stalks shrivel in the parched soil. Like many people in the Highlands, she depends on subsistence farming to produce the corn for tortillas, which is the staple of her diet. Even when she has a successful harvest on her small plot of rented land, there is little else to eat, and her diet lacks essential vitamins and nutrients. Her daughter suffers from stunting due to malnutrition, an all-too-common problem in rural, indigenous villages. Ninety percent of Mayan children suffer from this issue (Kennedy, 2021). Besides stunting, the tortilla diet leaves many small farmers susceptible to a host of diseases stemming from vitamin deficiencies; for example, people who mainly eat corn and/or beans may suffer from fatigue and delayed body growth from the lack of vitamin A and vitamin B-12 (USAID, 2016).

Elvira’s corn keeps failing due to an extended dry season and marginal soil on her rented plot. Because local job opportunities are hard to come by, her husband has gone off to the city. The huge responsibility of feeding and caring for their daughter rests on Elvira alone. Their home has no running water or electricity, so she must collect drinking water and firewood. Drought conditions force her to travel ever farther in search of both. She has only received a primary education and has very limited access to health care; she cannot afford birth control or maternity care. Currently, Elvira relies on cash relief from the European Commission’s World Food Program. For now, Elvira can buy nutritious meals with foreign aid, but she does not know when the funds will run out (Vargas and Gie, 2017).

Elvira’s Mayan ancestors produced maize, beans, and squash (the “three sisters”) using an intercropping technique that efficiently retains water, fixes nitrogen, and anchors the plants. Even today many Highland

farmers continue to combine corn with at least one other crop, usually faba beans. Though Mayan farmers still use traditional farming practices, they struggle to produce enough to feed their large families, composed of roughly six people on average. Those families with small plots are more likely to grow only maize and to experience severe hardship when that single crop fails due to drought, high winds, or pests (Lopez-Ridaura, 2021). As farmer Don Carlos Enrique Caal explains, “We only plant corn. Corn this season, corn next season. We would like to plant trees and other crops, but the seeds cost money, and we have very little.” (ContourLines -Tatin Village, 2019). Failed harvests are becoming more common due to longer dry spells and hotter days. How can indigenous people adapt to climate change and grow adequate food? They need to incorporate forestry into their traditional land use practices.

Agroforestry, or the mixed cropping of plants and trees, is recommended by the United Nation’s Food and Agriculture (FAO). FAO Deputy Director General for Climate and Natural Resources, Maria Helena Semedo emphasizes that agroforestry can “help diversify and sustain (food) production.” She points out that trees bring pollinating insects that increase overall farm productivity by up to 24% (IANS, 2019). Agroforestry is the best fit for the region in Guatemala where most indigenous people live. Environmental Minister Hugo Moran explains that the Highlands, “characterized by steep slopes, is more suitable for forestry than agriculture” because trees have deeper roots to prevent water and soil run-off (Moran, 2018). Agroforestry is, in fact, the best way to make use of these marginal lands in a land-poor country.

Agroforestry on collective farms has helped some of the poorest farmers in Guatemala improve their incomes and their families’ access to nutritious food. One success story is the Federation of Cooperatives of the Verapaces (FEDECOVERA). This particular organization, founded in 1976, has grown to forty-two cooperatives and encompasses some 35,000 Mayan families. Its farmers produce the following crops “under agroforestry arrangements”: cardamom, coffee, pine, allspice, cocoa, turmeric, tea, and vegetables (Moran, 2018).

FEDECOVERA supplies its members with loans for renting land and equipment. It also runs a tree nursery that distributes plants acclimated to the changing climate. Indigenous women provide the labor for 75% of the nursery’s activities. In 2017, Federation workers produced more than four million certified organic plants that do not rely on artificial pesticides and fertilizer, and they plan to expand the program (Love, 2018).

Other valuable FEDECOVERA services include 1) agricultural and technical training for adults and youth; (2) helping members achieve organic certification so they can earn higher prices in foreign markets; (3) and guaranteeing a standardized, ethically branded product that can be marketed under the Federation’s label. A Chicoj cooperative member expressed pride in the FEDECOVERA brand: “Visitors on our coffee tour know that good forest management has been done” (Forest Stewardship Council, 2022).

Not everyone can meet FEDECOVERA’s requirements for membership. Before a cooperative can join the Federation, its members are required to take training courses, and this can be difficult for indigenous

women. Sometimes their husbands will not let them do fieldwork in distant locations. Other times they have no one to look after their young children. If FEDECOVERA and other agricultural cooperatives are to grow and help more farmers, they will need to bring training programs directly to rural locations. This will require more foreign aid. FEDECOVERA's services (including medical care and schools) have always been subsidized by non-profit groups; funding is given to the Federation, bypassing corrupt government officials (Kennedy, 2021).

When COVID-19 and hurricanes Eta and Iota pushed many Mayan families into famine-like conditions, the members of the FEDECOVERA Federation did better than most. Though restrictions on travel meant that the farmers could not earn an income through foreign sales, the farmers were able to barter their produce locally. Unlike many less fortunate families, who did not belong to a cooperative, they had the means and access to resources to take care of their families during the prolonged period of state-mandated isolation (Kennedy, 2021).

FEDECOVERA is only one of several Guatemalan cooperatives that specialize in agroforestry. Some fifty members of the Association of Integrated Development "OX EEK" Santa Maria Cahabón (ADIOESMAC), founded in 2004, have enjoyed the benefits of cocoa agroforestry. They collaborate with the Lutheran World Relief organization, which has helped them to develop their international cocoa business. The Association has used outside funding to "establish a network of youth community trainers who provide technical assistance to partner families." Working with youth is critical because many indigenous Mayans do not speak Spanish, and bilingual youth can translate rental agreements, certification paperwork, and seed planting instructions. ADIOESMAC farmers intercrop their cacao trees with timber, cardamom, and fruit trees, as well as cinnamon and chili peppers (Schmid, 2021 and 2022). The biodiversity of their farms, the accessibility of locally grown food, and the long-term support of the Lutheran World Relief organization has improved their food security.

In the Eastern Highlands, the non-profit Contour Lines has partnered with indigenous communities to "promote reforestation and regenerative agriculture." The company's website does not mention partnering with cooperatives but includes an application that cooperatives could use to apply for their services. On barren pasture lands, they plant lines of fruit trees and shrubs to protect the community's water and soil supply from drought and flooding. The method that gives the company its name is similar to the ancient Mayan practice of planting on graduated terraces. Contour Lines staff also train local youth in their techniques and help them to set up community gardens of cassava, banana and Chaya spinach (Contour Lines, 2022).

Lush Cosmetics, a self-proclaimed "green" for-profit company, sponsors another small-scale agroforestry program in the Eastern Highlands of Guatemala. The company has partnered with "hundreds of indigenous farmers" to transform "a worn cattle ranch into a tropical multi-use forest" with avocado, mango, orange, lime, and cardamom trees. Cardamom seeds produce an essential oil that the company uses in its cosmetics. The Lush Cosmetics company's project is notable for using sustainable farming methods and offering "fair wages". Though locals are glad for employment, they are workers, not partners in the project. The company's promotional media promises to restore the land but does not say anything about distributing food grown on the plantation to the neighboring community. For this to be a workable

model, Lush would have to show equal concern for the health of the land and its inhabitants (Lush Cosmetics, 2022).

Neighboring Central American countries have set up mixed forestry projects that could serve as models for indigenous Guatemalan communities. Small farmers in El Triunfo, Honduras, have organized cooperatives around cashew agroforestry. The World Food Program has been working with Caja Rural, a cooperative of thirty-eight women farmers, who integrate corn, beans, and yuca with cashew trees (Johnson, 2022). Cashew agroforestry has not only increased food resilience but has also provided meaningful roles for women. In Costa Rica, Bribri women, members of the Association of Indigenous Women of Talamanca (ACOMUITA), grow a variety of fruits and medicinal plants in the rainforest. Some plants that they grow include orange, lemon, star fruit, banana, and cocoa trees. Pigs, chickens, and horses also forage in their agroforestry plots. These plantings meet all the community's dietary needs (Pelliccia, 2021).

A stunning success story outside of Central America is the impact of regenerative agroforestry in the Loess Plateau of western China, a region about the size of France. The Chinese government gave farmers long leases on land and directed them to plant trees on it. Thanks to funding from the World Bank, the whole ecosystem of the Loess Plateau has recovered, and millions of people's lives have improved. Diverse orchards now produce fruits and nuts, and the Loess has become a leading exporter of apples and apple juice. This project demonstrates that agroforestry is a highly effective way to address the combined problems of food scarcity and deforestation (Blaustein, 2018).

Future agroforestry projects should deliver funds and services directly to indigenous cooperatives and/or associations of villages. The direct link between cooperatives and charitable organizations allows them to bypass persistent government corruption. It would be a mistake to monetary food assistance through Guatemalan politicians who are prejudiced against indigenous people. Although Mayans make up between 40% and 60% of the population (sources vary), they have very little representation in the government (Valladares, 2019). The current Guatemalan President Alejandro Eduardo Giammattei Falla is openly hostile to the Mayan people. Last year in an interview with National Public Radio, Falla said: "Just don't ask the government to invest one filthy cent on that population" (NPR, 2021).

Luckily, funding is available from other sources. The Biden Administration has appropriated billions to slow "climate migration" from Guatemala. It makes sense to target the root of the problem: Guatemalan farmers with starving families leave in order to earn money to purchase food (Abbott, 2022). Since hunger is the key driver of migration, the United States should help indigenous farmers develop more productive agricultural practices so they don't have to leave (Aguilera, 2021).

The best way to help food-insecure Guatemalans is to support agroforestry restoration projects. Cooperatives like FEDECOVERA and ADIOESMAC provide an excellent way to deliver foreign aid and agricultural training, and a means to deliver seeds, saplings, and small livestock adapted to dry conditions. Water collection and drip irrigation systems should also be a part of subsidized agroforestry

projects. Agroforestry isn't an all-compassing or simple solution, but it is the most sustainable practice to restore farmlands while helping bring food security to the most vulnerable people of Guatemala.

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