Viewpoint

Who Knows Agroforestry Best?
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Who Knows Agroforestry Best?

Current scientific approaches to agricultural sustainability may in some contexts prove counterproductive to environmental preservation.

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Commodity-driven agricultural practices account for at least three-quarters of the world’s deforestation. Roughly one-third of these losses have occurred in Brazil alone. Multiple ecosystems in the country—including but not limited to the Amazonian rainforests—have suffered drastic reductions in forest cover and biodiversity. The widespread and uncontrolled use of agrochemicals and pest control has also led to substantial soil, water, and air contamination. Socioeconomic consequences include dwindling rural populations and the displacement of Indigenous communities.

The problem is about epistemology as much as it is about economics. Traditional and Indigenous knowledge of agricultural practices in Brazil is rapidly being replaced by monoculture practices, which are promoted by scientific methods that decontextualize agriculture, emphasize controlled experimentation, and optimize around a single variable of interest—typically crop yield. These approaches fail to account for the value of agricultural systems that are highly complex, context-specific, difficult to measure, and deeply intertwined with social and cultural arrangements.

Brazilian nonprofit CEDERva (Center for the Development and Education of Traditional Erva-Mate Systems) is tackling this problem head on. CEDERva is at the forefront of efforts to combat the commoditization of erva-mate (also known as yerba mate), a tree native to South America’s subtropical forests whose leaves are traditionally used to make teas and infusions. In parallel, the organization also promotes traditional and Indigenous shade-grown erva-mate cultivation practices across the region. Based in Curitiba in the state of Paraná, CEDERva leads the Observatory of Traditional and Agroecological Systems of Erva-Mate, an integrated support network composed of public policy makers, industry representatives, civil society organizations, and scientists. This observatory seeks to promote the conservation and regeneration of traditional knowledge systems that will enable smallholder family farms, as well as Indigenous and traditional communities, to protect and regenerate native forest ecosystems through erva-mate production while maintaining their livelihoods.

Traditional Erva-Mate Production

Erva-mate has featured prominently in the origin stories and cosmologies of the local Guarani and Kaingang Indigenous peoples for centuries, if not millennia. Shade-grown erva-mate is also common among other groups in South Brazil, including traditional settler groups such as quilombolas, who are descendants of runaway slaves, and the Faxinal, descendants of Eastern European settlers who leave their land as a community commons for grazing animals. In southern Brazil, Indigenous groups, small-scale farmers, and traditional settler communities have, over multiple generations of experimentation, developed sustainable agroforestry cultivation practices around erva-mate. This intercropping uses a wide diversity of native and introduced plant and animal species, offering a form of diversified on-farm land management. Through their continued use, these practices have had an important role in sustaining native forests in the region.

However, a recent economic study on the erva-mate value chain suggests that traditional practices are insufficiently productive to be economically viable for small-scale farmers. The study advocates shifting to monoculture, based on narrow scientific studies demonstrating that open-field erva-mate production is higher due to increased light exposure. Omitted, however, is the price of that increased productivity, not only in terms of inputs but also in terms of the externalities around the deterioration of the sociocultural and ecological environment in which the erva-mate tree grows. The framing of this discussion—centered upon financial viability and productivity—therefore crowds out other important aspects of traditional shade-grown erva-mate.

Such production has its own benefits that are underappreciated. It requires little investment in terms of inputs and labor. The natural cycle of the forest generates nutrients for the trees and the ecosystem to thrive, despite regular harvesting. Pursuing the monoculture approach advocated by scientific and corporate interests, on the other hand, necessitates the removal of shade offered by the forest canopy. Although this removal may increase yield, it disrupts a delicate balance in the ecosystem: Pests and diseases of the erva-mate plant, normally kept in check by natural predators and alternative food sources, proliferate through the open-field crop, requiring the use of expensive and damaging pesticides and other chemicals. The push
to adopt monoculture practices is also ill-suited for smallholder farms that harbor important forest reserves.

**Supporting Traditional Alternatives**

What alternative solutions can support the continuation of traditional farming practices that are so essential to maintaining biodiversity and food security? To answer this question, CEDErva has been implementing a series of steps to empower traditional communities and smallholder farmers to protect the social-ecological systems and the cultural heritage of traditional erva-mate production, which is part of their identity as traditional communities.

**Developing community identity/ies and knowledge** | Traditional agroforestry systems are found in Indigenous communities, traditional settler communities, and small-scale family farms; erva-mate production, based on the use of local and agroecological knowledge and practices impacted traditional communities and smallholder farmers. To address these challenges, many farmers have experimented with regenerative practices—based on agroforestry techniques—that enable them to restore forest cover and rejuvenile natural springs on their properties. CEDErva and its partners are studying, facilitating implementation, and monitoring these systems.

**Bringing awareness and recognition to local traditional knowledge systems** | CEDErva is also leading an effort to obtain recognition of traditional erva-mate systems through the Globally Important Agricultural Heritage Systems (GIAHS) program, bestowed by the Food and Agriculture Organization of the United Nations (FAO). This program recognizes agricultural systems that have developed over generations and are intimately tied with the unique ecosystem and culture in which they are found. This program brings together elements of cultural heritage and social organization with agrobiodiversity conservation, sustainability may in fact be doing more harm than good for communities who live in—and make their livelihoods from—traditional social-ecological systems.

The continuation of traditional practices that have existed over many generations is essential to the stewardship of local social-ecological systems.

and the preservation of the native forests, is the link that ties these communities together. CEDErva realized that, although these groups have diverse histories, their shared knowledge and practices and attachment to the land have similar roots and a clear impact on the landscape. In addition, the identities, histories, and memories of erva-mate producers are deeply intertwined with the practices of cultivating diverse forest environments, harvesting trees, and consuming erva-mate with friends and family.

**Promoting local and innovative solutions to forest conservation and regeneration** | CEDErva has also supported local models of forestry and agriculture that have proven to be more sustainable than monoculture. In recent years, the region where CEDErva works has been affected by some of the worst water shortages and droughts on record, interspersed with periods of excessive and damaging rainfall, which has disproportionately affected traditional communities and smallholder farmers. To address these challenges, many farmers have experimented with regenerative practices—based on agroforestry techniques—that enable them to restore forest cover and rejuvenate natural springs on their properties. CEDErva and its partners are studying, facilitating implementation, and monitoring these systems.

**Seeking alternative compensation for communities** | Finally, CEDErva is seeking to boost the economic vitality of traditional farming practices. Although forecasting through conventional financial and scientific metrics is certainly insufficient to address the needs of traditional erva-mate communities, completely neglecting economic viability can also pose a threat to their survival. In response, CEDErva and its partners from the Observatory are investing in promoting fair compensation to farmers for the vast array of ecosystem services that they provide to the region, including clean water and air, biodiversity, healthy soils, and habitats for natural pollinators, among many others. They are thus engaging multiple stakeholders at regional and national levels in these discussions.

While carbon markets and other schemes have caught the attention of large corporations looking to neutralize their carbon footprint, these processes often leave small-scale farmers and traditional communities behind, with limited access to compensation schemes. Advocating for this community-of-practice is an important step in ensuring that its members are compensated for their role in protecting and regenerating the ecosystems where erva-mate naturally grows.

In conclusion, conventional approaches to sustainable agriculture are no longer working. The emphasis on agribusiness and economically oriented solutions to sustainability may in fact be doing more

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