Tropical Forest Restoration in Agricultural Landscapes

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An online course organized by:
The Environmental Leadership & Training Initiative (ELTI)

Environmental Leadership & Training Initiative

Jacob L. Slusser - ELTI

Conventional agriculture practiced in the steep slopes of a biodiverse cloud forest ecosystem in the Chiriquí Highlands of Panama. These unsustainable farming practices help feed thousands, but also impair ecosystem services and increase the risk of natural disaster.

Background: Some of the world's greatest biodiversity is located within the tropical forest ecosystems of Latin America. Biodiversity maintains healthy and productive ecosystems to provide humans with a myriad of services required for daily life. Unfortunately, many of these tropical forest ecosystems are degraded due to the strain of conventional agricultural practices that eliminate forest cover and reduce ecological functioning. As a result, these degraded agricultural landscapes are more fragmented, have less biodiversity, produce fewer ecosystem services and are more vulnerable to the threats of climate change. Unless actions are taken to increase sustainable practices and augment the resiliency of forest landscapes, these degraded systems will fail to sustain both agricultural productivity and ecosystem service production and consequently decrease rural livelihood opportunities.

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The restoration of trees and forests into agricultural landscapes provides an opportunity to transform degraded agricultural areas into resilient ecosystems that provide both ecological and social benefits. Within Latin America there is a great need for training opportunities to help guide decision making about the management, use and restoration of tropical forests. There is a wide variety of tools, techniques and approaches to restoration that must be adapted to conduct sound restoration strategies to meet the different needs in complex biodiverse and social landscapes. Understanding the fundamentals of tropical forest ecology as well as the sociopolitical drivers of land use can guide decision-making and the development of a range of strategies for effective restoration within productive agricultural landscapes.

This online short course provided participants with an introduction to the concepts and techniques needed to plan and implement strategies for the restoration of tropical forests and ecosystem services in multiple-use agricultural landscapes in Latin America. The course aimed to help restoration practitioners find innovative ways to work with relevant stakeholders to design, implement and monitor effective restoration projects that meet diverse restoration goals and enhance the livelihoods for those who depend on the landscape.

Objectives:

- Present basic principles of forest ecology, natural and anthropogenic disturbances and how these disturbances affect regeneration potential

- Provide a variety of tropical forest restoration methodologies and how the biophysical and socio-economic conditions of a site influence decision-making on which strategies to use

- Help participants analyze social and cultural aspects, history of disturbances and the strategy of involving different stakeholders in restoration

- Introduce the fundamentals of restoration monitoring to evaluate project performance, quantify ecosystem services and allow for adaptive management

Course Structure: This four-week Spanish-language course included a series of videos, interactive presentations, discussion forums and live sessions with invited experts, all with a focus on guiding participants to apply the concepts learned to their work on-the-ground.

Course materials included pre-recorded lectures like this case study about the range of restoration strategies used in a small cattle ranching farm by Jacob Slusser, Panama Coordinator, ELTI Neotropics Training Program.

The thematic modules were:

- **Module 1**: Tropical forest ecology, disturbance and regeneration potential

- **Module 2:** Strategies to catalyze restoration in the tropics

- **Module 3:** Social and cultural aspects of restoration

- **Module 4:** Monitoring and ecosystem services

- **Module 5:** Development of a restoration management plan (optional)

Photo: ELTI

A group discussion between participants, ELTI instructors and invited guest expert, Dr. Florencia Montagnini.

Participants: The course was offered in Spanish to sixteen restoration practitioners working in Latin America, representing a variety of sectors including government, non-governmental organizations and private companies.

Instructors and Coordinators: Jacob L. Slusser (Panama Coordinator, ELTI Neotropics Training Program) served as the lead instructor for the course. Saskia Santamaría (Associate, ELTI Neotropics Training Program) facilitated the delivery of the course, with assistance from Gillian Bloomfield (Coordinator, ELTI Online Training Program). Dr. Alicia Calle (ELTI), Dr. Eva Garen (ELTI), Dr. Florencia Montagnini (Yale University), Zoraida Calle (ELTI & CIPAV) and Enrique Murgueitio (CIPAV) served as guest experts invited to the live sessions. Additionally, 10 international speakers presented theory and case studies in pre-recorded lectures delivered during the course modules.

Larissa Soto

Lancaster Farm, located in La Marta, Siquirres County, Limón Province, Costa Rica, featured in the "Lancaster Wetlands Restoration Plan" produced by course participant Larissa Soto. This restoration management plan was a product of the optional project assignment, where newly acquired knowledge is put into action.

Outcomes and Follow-up: All participants were actively engaged throughout the course and benefited from the feedback they received from the instructors, invited experts and their peers. Twenty-five percent of participants completed the optional restoration management plan and received comments from instructors. The course received an overall 4.8 rating (out of 5) from participants, with many participants expressing interest in participating in the subsequent 2021 short courses on agroforestry and silvopastoral systems.