



Environmental  
Leadership &  
Training Initiative

## COURSE REPORT

# Agroecology and Agroforestry Systems

February 1 - March 8, 2021

### An online course organized by:

The Environmental Leadership & Training Initiative (ELTI)

Center for Research on Sustainable Agricultural Production Systems (CIPAV)



*Agroforestry system designed and implemented by ELTI alumni Julián Andrés Giraldo and Sandra Giraldo in El Dovio, Colombia.  
© Julian Andrés Giraldo*

**Background:** Several Latin American countries are planning to undertake forest restoration on an unprecedented scale. However, a possible risk of initiatives that focus on reestablishing forests in rural landscapes is the displacement of agricultural activities and livestock production that will cause degradation elsewhere. Forest Landscape Restoration (FLR) attempts to resolve the tension between agriculture and restoration by integrating different land uses into multi-functional landscapes that benefit people and biodiversity. Efforts to recover the region's unique natural ecosystems will be more successful if they simultaneously contribute to enhance food sovereignty, livelihoods and local economies. This will require the integrated planning of restoration activities to make agriculture, livestock production and forestry more sustainable.

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ELTI is an initiative of:

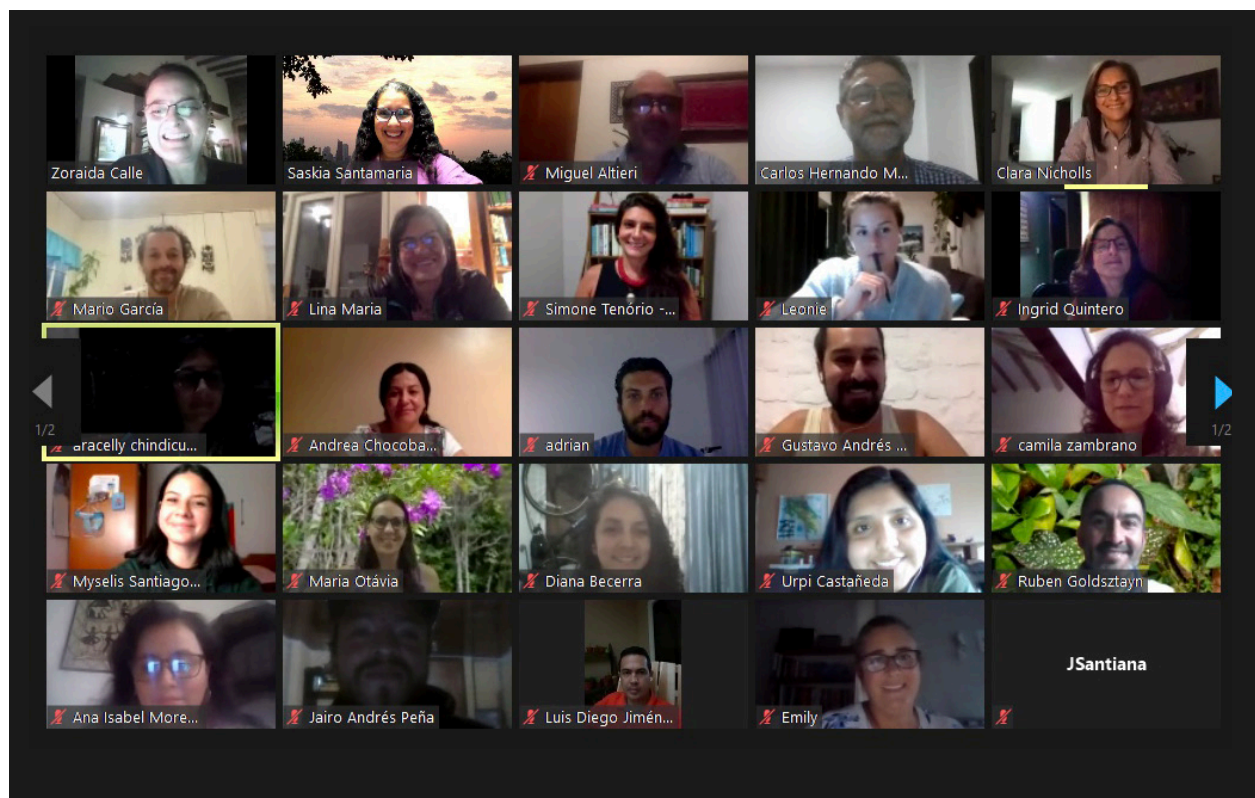
**Yale** SCHOOL OF THE ENVIRONMENT

Agroecology and agroforestry have long been recognized as approaches that help reconcile the needs of people and nature by providing healthy and nutritious food while accelerating the recovery of degraded land and strengthening climate change resiliency. Both sciences offer a variety of principles and tools that can be applied to redesign rural properties and agricultural landscapes to increase their long-term productivity and ecosystem services. Restoration initiatives planned to complement farming systems will improve the quality of life of rural communities while conserving biodiversity and storing significant amounts of carbon in the soil and vegetation.

This course explored the principles and practices of agroecology and agroforestry and the contributions of both sciences to FLR in Latin America. With a holistic view of the multiple roles of trees in rural landscapes and the productive, economic and ecological dimensions of agriculture, this course was an invitation for participants to open their minds to integrated land uses that respond to the needs of society and nature.

### Objectives:

- Present the basic principles of agroecology and agroforestry, and explore their integration in forest landscape restoration initiatives in Latin America;
- Illustrate farm, community and landscape scale applications of agroforestry systems and agroecological restoration through case studies; and
- Offer tools to enhance the long-term sustainability of rural properties and landscapes by redesigning farming systems and planning the ecological restoration of fragile and marginal land.



A group discussion between participants, ELTI instructors and guest experts, Dr. Miguel Altieri (Professor emeritus, University of California-Berkeley), Dr. Clara Nicholls (University of California-Berkeley), Carlos Hernando Molina (CIPAV). © ELTI Archive



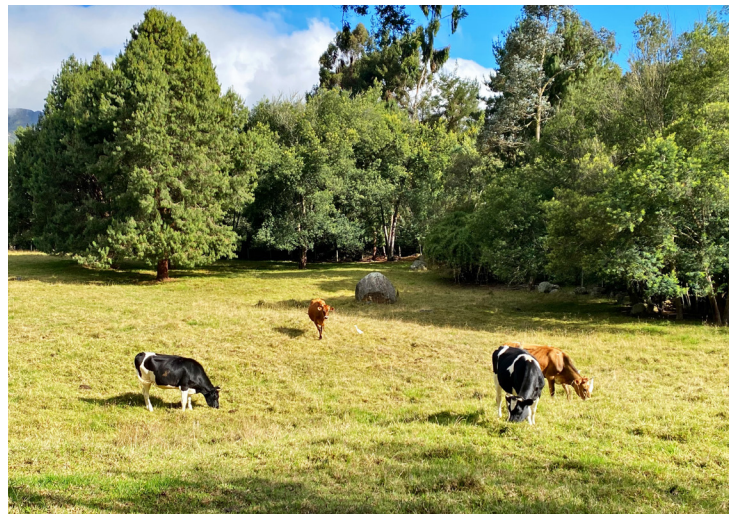
Course participant Diana Carolina Becerra is a founding member of Ingeniería Verde Integral, an NGO dedicated to forest restoration. "We apply organic techniques to our restoration work and involve rural communities in the process, from planting to measuring tree diameters and heights and keeping records." © Diana Carolina Becerra

**Course Structure:** This four-week online course combined a series of pre-recorded lectures, case studies, clickable presentations, videos, discussion forums and live sessions with expert lecturers. The first two modules explored the principles and applications of agroecology and agroforestry systems on the rural property and local community scales. The following two modules motivated participants to think in terms of landscapes and watersheds. In the final optional module, participants were encouraged to integrate knowledge from the previous four modules into their own agroecological restoration projects.

The thematic modules were:

- **Module 1:** Agroecology
- **Module 2:** Agroforestry systems
- **Module 3:** Agroecological restoration
- **Module 4:** Planning and sustainability
- **Module 5:** Development of a personal project (optional)

Participants who completed the course requirements received a certificate of participation.



Site of participant Camila Zambrano's optional project "Agroecological Restoration of Mingalaba farm", located in Guasca (Eastern Andes of Colombia). © Camila Zambrano

**Participants:** The course was offered in Spanish to 34 participants from 13 countries. These participants represented a range of disciplines and professions, including biology, forestry, agronomy, international relations, law, medicine, ecology, agroecology, agricultural engineering, agribusiness engineering, botany, geodesy, architecture, and business, along with one high-school student.



Photos associated with the optional project of course participant Myselis Santiago Reyes, entitled “Proposal for the agroecological development of the Reyes Díaz family farm in Gurabo, Puerto Rico.” Secondary forest (left), fresh cocoa fruits used to prepare artisan chocolate (center) and pitahaya or dragon fruit (*Hylocereus undatus*) nursery (right). © Reyes Díaz family

**Instructors and Coordinators:** Zoraida Calle (Colombia Coordinator, ELTI Neotropics Training Program) was the lead instructor for the course. Saskia Santamaría (Associate, ELTI Neotropics Training Program) facilitated the course delivery, with assistance from Gillian Bloomfield (Coordinator, ELTI Online Training Program).

Dr. Miguel Altieri (Professor emeritus, University of California-Berkeley), Dr. Clara Nicholls (University of California-Berkeley), Carlos Hernando Molina (CIPAV), Dr. Alicia Calle (ELTI), Enrique Murgueitio (CIPAV), Julián Andrés Giraldo (CIPAV) and Dr. Carlos Venegas (CET Chiloé, Chile) presented pre-recorded lectures or case studies, and were invited as guest experts to the live sessions.

Other pre-recorded lectures and case studies were presented by Dr. Florencia Montagnini (Yale University), Agustín Infante (CET Biobío, Chile) and Zoraida Calle.



Course participant Caterina Cárdenas at the site of her optional project “Agroecological conversion of a family farm in Punta de Bombón, Valle del Tambo, Arequipa, Peru.” © Raúl Alvarez Rossi

**Outcomes and Follow-up:** The course promoted a dynamic exchange across disciplines, backgrounds and geographies, with lively discussions in forums and break-out groups during live sessions. For several senior experts this was an opportunity to explore online training formats and engage a mixed audience beyond the conventional learning environments.

Ten participants (29%) presented original projects to enhance agricultural landscapes and rural properties from the arid ecosystems of Chile, Peru and Mexico, to dry forest areas in Panama and the moist lowlands and mountain ecosystems of Puerto Rico and Colombia. Some participants developed their projects in collaboration with spouses and parents, bringing in different perspectives to rethink land use in rural properties.

*This event was possible thanks to Arcadia Fund, whose Environmental Conservation grants support programmes that protect and enhance biodiversity and provide field training and academic research.*