SOIL SCIENCE AND ENDOPHYTIC DISCOVERY LAB

COASTAL ECUADOR
9 DAY IMMERSIVE COURSE ON ECUADORIAN FARMLAND

REGENERATION FIELD INSTITUTE

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DR. MUSTAFA MORSY AND MORSY LAB

REGENERATION FIELD INSTITUTE

MORSY LAB

UWA | The UNIVERSITY of WEST ALABAMA

Dr. Mustafa Morsy, PHD
Associate Professor of Biology
Director of Morsy Lab, UWA

Dr. Mustafa Morsy is a microbiologist innovator and researcher as well as an Associate Professor of Biology at the University of West Alabama. Morsy Lab has partnered with Regeneration Field Institute to create a research lab located on Los Arboleros Farm in Chone, Ecuador. This collaboration involves research that aims to discover and classify new endophytes, fungal or bacterial microorganisms in the soil, in coastal Ecuador. The ultimate goal of the work is to develop organic biofertilizers that channel the symbiotic benefits certain organisms provide from within the structure of plants. These can include increasing plants' resistance to extreme climate conditions such as drought or high temperatures as well as increasing yields. Students will directly participate in this research which will be provided to and benefit farmers throughout the region.

MORE INFORMATION ON DR. MORSY AND HIS LAB CAN BE FOUND AT:

Morsy Lab Website: www.morsylab.org/
University of West Alabama: www.uwa.edu/node/868

BY 307: ECUADOR BIOLOGICAL DIVERSITY with DR. MUSTAFA MORSY

4 credit course offered to students from all universities through the University of West Alabama

HANDS-ON ACTIVITIES INCLUDE:

1. Isolation of endophytic fungi from wild plants located on Los Arboleros Farm and the coastal area of Bahía de Caráquez using culture-based methods
2. Identification of bacterial diversity of soil from Los Arboleros Farm using rRNA sequencing using Nanopore technology
3. Perform large scale fermentations and productions of beneficial fungal endophytes and test its effect on plant growth
4. Conducting plant physiological analyses such as photosynthesis rates

LEARNING OBJECTIVES

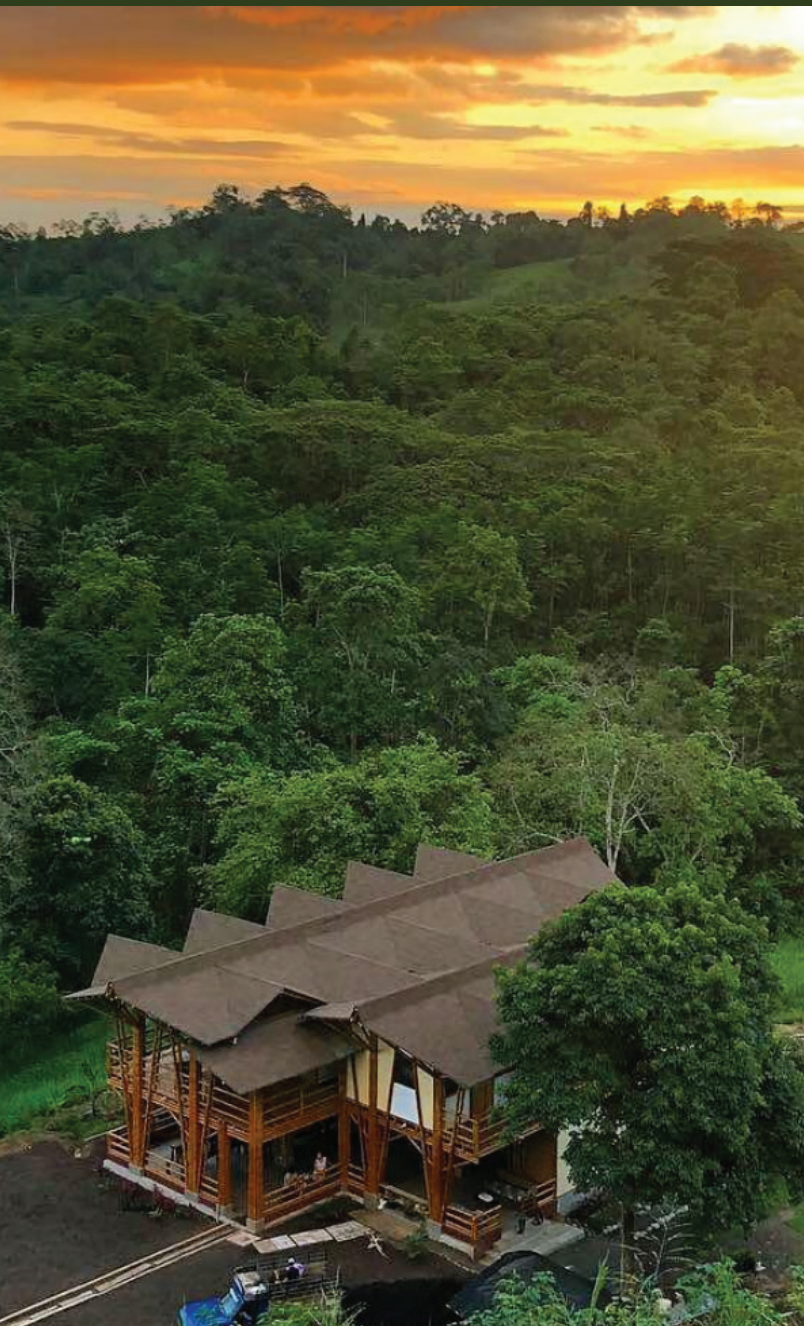
Our goal is to learn about the science behind methods used in regenerative agriculture and emphasize their importance. The course will focus on the role of plant and soil microbes. Students will identify bacteria and fungi from wild plants and soils of Ecuador. We aim to identify potentially beneficial microbes that can be used for improving crop productivity and soil health and develop more sustainable and environmentally friendly agricultural practices.

BIOREGIONALISM OF COASTAL ECUADOR

The bio-regionalism of Coastal Ecuador has historically provided the world with some of the high-value crops and natural resources, yet is currently one of the most vulnerable and degraded ecosystems. With a 98% deforestation rate, Ecuador holds some of the last remaining fragments of tropical dry forest, one of the most under-studied ecosystems in the world and host to thousands of species of endemic flora and fauna. By connecting soil science research, farmer training centers, and the cultural values in heritage crops, we aim to impact the development of our communities to be ecologically, economically, and socially regenerative.

REGENERATION FIELD INSTITUTE:

AN ENVIRONMENTAL ENTERPRISE



IDEOLOGY AND GOALS:

Regeneration Field Institute aims to empower students, professors, researchers, farmers, architects, builders, entrepreneurs and designers to engage in socially and ecologically regenerative work. We provide people with hands-on, interdisciplinary courses exploring regenerative bamboo building, design, and agroecological farming practices.

LOS ARBOLEROS FARM

AGROFORESTRY AND BAMBOO

REGENERATION FIELD INSTITUTE

In 2017, RFI partnered with Los Arboleros Farm to model bamboo cultivation, curing, and processing on a large scale as well as work to become an organic agricultural resource and training center for local farming communities. Los Arboleros is a 70-acre property below the Cordillera Costanera mountain range focusing on the production of timber bamboo species, banana, plantain, citrus, cacao, moringa, turmeric, diverse fruits and vegetables, and hardwood species. Participants stay and work on the farm during their course as the headquarters of RFI.

THE DESIGN FOR THE FARM INCLUDES:

- Greenhouses and propagation operations for bamboo and high-value crops to be used in agroforestry systems.
- The Morsy Lab to conduct and distribute research relevant to the surrounding agricultural region.
- Accommodations for up to 35 students, farm workers, builders, architects, engineers, professors, interns and community members to be present at anytime.
- The Regeneration Field Institute to host workshops on bamboo construction certifications, agroforestry, sustainable farming practices, entrepreneurship, agricultural business development, etc.