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FOR GOOD MEASURE:
Establishing a baseline for agroforestry projects in Haiti

INTRODUCTION:

Agroforestry is the art and science of growing trees and other crops together in the same unit of land for a range of benefits (Huxley, 1999). These systems represent the most widespread form of small-scale tree planting in the world (Long & Nair, 1999). Addressing existing and expected rates of global population growth and subsequent increases in poverty and hunger will likely require a range of agricultural production methods. Conventional farming methods rely heavily on plant breeding and chemical inputs to achieve high yields of annual crops grown in monocultures (single-crop systems). From a food production standpoint, the problem with these methods is twofold: they rely on increasingly expensive nonrenewable petrochemical resources, and they compromise food security – since monocultures are more susceptible to catastrophic failure.

Agroforestry includes a wide variety of indigenous land-use practices to meet local needs – practices that predate any formal definition of agroforestry (Huxley, 1999). Since the 1970s, efforts in the tropics have supported the expansion and refinement of agroforestry systems, but substantial challenges still exist. Anthropological research indicates that one of the primary challenges in increasing adoption of agroforestry is tailoring technical information to the social and economic circumstances of farmers (Long & Nair, 1999; Murray & Bannister, 2004).

PROJECT SETTING:

Haiti is the poorest country in the Western Hemisphere. Chronic demand for charcoal and construction timber has left only 2-4% of the country's original forest cover. The relationship between demand for forest products and subsequent land degradation is clear. What is less clear is why millions of trees that have been planted as reforestation initiatives in the past fifty years have failed to produce long-term solutions (Bannister & Josiah, 1993). The evidence indicates that reforestation projects have not done enough to examine and respond to social and cultural factors critical to long-term success. These factors include farm-scale microeconomics, land and water tenure, and perception and use of trees.

Haiti's deforestation problem is connected to a long history of land-use and sociopolitical strife. The need for reforestation, soil conservation, and economic growth presents a unique opportunity to demonstrate techniques that simultaneously address these issues.

More than 20 years of anthropological research indicates that reforestation success in Haiti is tied to: adaption of projects to local tenure and market systems, clear

economic benefits to landowners, a joint-venture mode between farmer's and NGOs, and a project management system which encouraged farmer deviation from project assumptions on tree production and harvesting (Murray & Bannister, 2004). Trees, Water & People (TWP) is a nonprofit organization based in Ft. Collins, Colorado that has produced or planted over 4.6 million trees in Latin America and Haiti since 1998. Anse Rouge, Haiti is in the arid northwest region of Haiti and the site of a new TWP 5-year nursery/reforestation project that will provide trees to individual farmers in villages across the region.

PROPOSED METHODS:
1. Establishment of a spatially-explicit baseline:
   Remotely sensed data will be collected from a variety of sources including: aerial imagery from Landsat and Google Earth; coarse-grain GIS data from Esri; and previously collected site-specific data by Trees, Water & People. Ren, Yan, et al. (2012) and others have demonstrated methods for studying forest structures using Landsat TM images combined with adequate field methods. This information will be used to create a project inventory that includes landscape features such as topography, streams, and existing forest cover. Base maps for use in field research will be generated from this inventory.

   Field methods will be focused supplementing and ground-truthing preliminary maps by conducting field observations and measurements of tree data including canopy cover, species diversity, and diameter at breast height (DBH). Upon return from Haiti, these maps will be updated using geographic information systems (GIS) software.

2. Mapping desired future conditions:
   Another component of field research will be interviews and farm visits with Haitian farmers. These interviews will seek to determine individual farmers' spatially-explicit goals for the agroforestry project on their land. This information will be recorded using a range of descriptive methods, including maps, GPS data, diagrams, and field sketches. Upon return from Haiti, this information will be digitally mapped using GIS software.

RESEARCH OUTPUTS:
The goal of this research is to design and test a method for recording and evaluating results of agroforestry projects from multiple viewpoints, including the views of the participating landowners.

Anticipated project outputs will consist of: field verified maps of baseline information for the study area(s), maps of Haitian farmers' desired future conditions for their farms, and a repeatable method for establishing a baseline of existing and desired future conditions from which to measure project success.

PROJECT PARTNERS:

- Sebastian Africano, International Director of Trees, Water & People, a nonprofit organization conducting international development projects, Fort Collins, Colorado
- John McGreevy, Master's student in Cultural Anthropology at Colorado State University, Fort Collins, Colorado
- David Hulse, Ph.D., Department of Landscape Architecture, University of Oregon, Eugene, Oregon

References

Bannister, M. E., & Josiah, S. J. (1993). Agroforestry training and extension: The experience from Haiti. *Agroforestry Systems*, *23*(2-3), 239-251.

Huxley, P. A. (1999). *Tropical agroforestry*. London: Blackwell Science.

Long, A., & Nair, P. r. (1999). Trees outside forests: agro-, community, and urban forestry. *New Forests*, *17*, 145-174.

Murray, G., & Bannister, M. (2004). Peasants, agroforesters, and anthropologists: A 20-year venture in income-generating trees and hedgerows in Haiti. *Agroforestry Systems (in cooperation with ICRAF)*, *61*(1), 383-397.

Ren, Y., Yan, J., Wei, X., Wang, Y., Yang, Y., Hua, L., et al. (2012). Effects of rapid urban sprawl on urban forest carbon stocks: Integrating remotely sensed, GIS, and forest inventory data. *Journal of Environmental Management*, *113*, 447-455.