



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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Trip Report: Ecuador March 23-25, 2006

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Purpose of Trip: Establish contacts for collaborative research in Chimbo watershed

The purpose of this trip was to meet potential collaborators, assess current state of knowledge, and assess physical condition of agroecosystems in the Chimbo watershed, focusing on mid elevation systems. Unfortunately our arrival there coincided with national unrest that prevented road access to the watershed. We were however able to meet with several key people in Quito and at INIAP stations, and gathered considerable GIS database resources for the watershed.

Travelers: Jonathan Lynch and Raul Jaramillo, Penn State, in coordination with Paul Backman

Description of Activities:

Meeting with Víctor Barrera:

Victor Barrera is the Ecuadorian leader of the project and the contact among the Ecuadorian actors and the American researchers. He will be the person in charge of the socio-economic studies and diagnostics.

Victor mentioned the work in the higher elevations (> 3000 m) of the Chimbo watershed, in which several years of studies can be used as means of comparison and as a pattern for the activities in the middle-elevation zone (1800-3000 m). His group has participated with many CIALs in the entire watershed. There is no definitive selection in the watershed for any soil-related study.

Meeting with Franklin Valverde and the DNMSA staff.

Franklin Valverde is the leader of the Department of Soil and Water Management, which will be the collaborator for the actual execution of soil-related studies. The DNMSA has a laboratory in which basic chemical and physical analysis can be carried out. The laboratory process around 6000 samples a year which cost around 12 USD for a 'complete' analysis.

The DNMSA technician assigned for the project is Jamil Cartagena, Jamil will coordinate with Victor Barrera the hiring of a student for the area. The cost of a student will be around 1200 USD per year.

We saw photos of the Chimbo watershed and we heard a presentation on limited tilling in maize. We also collected information of soil analyses from the region and a yearly report from the department.

There was no clear understanding on the topics for research. We suggest the comparison of different culture systems (crop associations, mono-cultures and forestry) on the effect in organic matter dynamics, carbon sequestration and nutrient flows. We will start collecting literature around this topic and suggesting an approach for variables feasible to collect and equipment that could be improved or acquired for the DNMSA.

Possible focus/title: 'Biogeochemistry of cropping systems in the steep highlands of Ecuador'

Meeting with Hernan Velasquez at SIGAGRO.

Hernan Velasquez leads the recently formed division on Geographical Information Systems for Agriculture (SIGAGRO) in the Ministry of Agriculture. After a general discussion on the logic of the project we received information on the soils of the region at 250 000 scale and information on climate, land use, topography and political division for the Bolivar province, where the Chimbo watershed is, and the Chimborazo province, the neighbor province to Bolivar in the Sierra.

Recommendations:

Another visit will be required to actually assess the watershed and select research sites, but all indications are that soil erosion and soil quality are principal constraints to sustained production in this watershed. From this initial visit it looks as if we have good prospects for GIS work that could be coupled with ecosystem models to assess current and future edaphic limitations to crop production. Measurements of C cycling and soil quality under contrasting management regimes may be possible via Ing.Agr. thesis students under the supervision of INIAP colleagues.

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