



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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Trip Report: Ecuador 2-13 July 2007

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Purpose of Trip: A) Complete replication sets (n=3) for each land use treatment at our three study locations in the watershed
B) Conduct a farmer's field day on soil conservation in Chillanes

Sites Visited: Alto Guanujo, Guaranda, and Chillanes, Bolivar Province, Ecuador

Description of Activities:

This was a very productive trip in terms of sample collection, in-depth scientific discussions, and also community outreach. We collected soil samples to one meter at ten additional sites within the Río Chimbo watershed and dug six soil pits. We shared our results with various INIAP and MAG researchers. We held an instructional field day in Chillanes with more than 30 participants to discuss our research and soil conservation, particularly the importance of incorporating crop residues.

Overview of Observations:

Results from the land use/erosion study were shared with Ecuadorian colleagues. These results anomalously show a greater carbon content in Chillanes soils compared to other location in the watershed, despite higher erosion levels as described by our Cs137 analysis. These results are anomalous because Chillanes is at the lowest elevation with the warmest climate, so a higher level of organic matter breakdown is expected. Our partners suggested making a map of soil C content as a better visual way to express these results to the community.

We visited the thesis student Edwin Chela, who is conducting an erosion experiment in "La Vaqueria" designed collaboratively by PSU and INIAP researchers. We visited the experimental site, and made suggestions about sampling and data analysis. The runoff plots are very well

constructed and the experiment well maintained. The importance of using this experiment as an erosion demonstration to local farmers was reiterated.

We sampled soil and excavated one soil pit from the Panecillo area near Chillanes and observed a distinct ash layer in the soil pit, and proposed a new hypothesis to explain the high C levels in Chillanes, which is that wind patterns may favor a higher ash deposition rate from volcanic eruptions, creating new formation of the strongly C-adsorbing mineral allophane. Franklin Valverde (INIAP) suggested another explanation for the high C levels in Chillanes, that the land has only recently been converted from forest to cultivation during the last 40-50 years. We discussed the possibility of conducting a C14 analysis with depth, which would describe soil age and could resolve our questions about soil mixing and ash deposition.