



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

SANREM CRSP
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Trip Report: Ecuador 12 February - 11 March 2011

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Purpose of Trip: To visit SANREM soil sites in Bolívar Province and consult with SANREM collaborators in Ecuador and personnel on the Agronomy Faculty of the Universidad de Bolívar.

Sites Visited: Bola de Oro, 3 sites ('Repeticiones 1-3')
Culebrillas, 3 soil cover plots, 1 regeneration plot.
Carbon Chiripamba, 1 private farm, traditional agriculture.

Description of Activities

Summary The purpose of this trip was to gauge interest on the part of the Ecuador participants for adding a soil biomonitoring component to the soil health research in the Culebrillas and Bola de Oro watersheds. Reaction was very positive to both adding soil biomonitoring and to continuing with the water quality biomonitoring we started in the last SANREM cycle. Solid contacts were made with both INIAP and the Universidad Estatal de Bolívar, and we plan to set up fieldwork for the biomonitoring as student thesis projects starting in the Fall. Field sites were visited at both plot locations and observations were made of soil and root mass structures, to design an efficient sampling protocol for the students. Since technically all research involving biological organisms requires a regional permit from the Ministerio del Medio Ambiente, contact was made with the officials in the Guaranda office and in the Universidad Católica in Quito to find out how the application process works. During field visits, I learned from the INIAP team and local farmers that pest problems from the gusano blanco (*Premnotrepes* spp., Curculionidae) are on the increase, and there may be a new pest of quinoa in the region.

After a stopover at Pichilingue to pick up some equipment I drove up to Guaranda and on Feb. 21 and met with Carlos Monar and the students and faculty of the Escuela de Ingeniería Agronómica, Facultad de Ciencias Agropecuarias, Recursos Naturales y del Ambiente, Universidad Estatal de Bolívar. I explained the overall SANREM project and the aquatic and soil biomonitoring components we hope to include. Both students and faculty expressed a lot of interest in the topic of biomonitoring. Carlos, Victor and I discussed logistics of student projects over the next three days. We've decided to try to get at least two projects going in the next fiscal

year, since right now eligible students are heavily involved with classes until the end of August. Carlos invited me to come down at the end of June and give a lecture on biomonitoring during the national potato conference that will be held at the Universidad de Bolívar this year.

For the following three days I went out with the INIAP team (Victor, Franklin, Moazir, David) to visit the soil research plots in Bola de Oro and Culibrillas. At the different plots I examined the ground cover–soil interface and worked out how to get suitable samples for the Winkler funnels (a device for extracting soil macroinvertebrates that does not require electricity). The INIAP team monitors the plots on a weekly basis, so transportation of students to the plots for biomonitoring will not be a problem.

The INIAP team told me that the people in Culebrillas are having increasing problems with the potato weevil ('gusano blanco', *Premnotropes vorax*). They have simple traps in the soil research plots. I collected all the weevils we found in the traps. It appeared that monocropped potato plots had heavier infestations than plots where potatoes were rotated with other crops. These potato weevil specimens have been sent to a specialist who will check to see if any of the difficult to identify *Premnotrepes* species found in Peru have arrived in Ecuador yet.

On the 24th we visited Carbon Chiripamba, a community between Culebrillas and Guaranda, at a lower elevation than Culebrillas. We checked a potato field for 'gusano blanco' but found none. We did find numerous small scarab beetles hiding among potato tubers or in root masses. When we asked a woman on the property if she recognized the beetles, she said they didn't bother potatoes but they were a serious defoliator of quinoa. I brought back a number of specimens and will try to get them identified here.

I also visited the Guaranda office of the Ministerio del Ambiente to see what is needed by way of permits for the biomonitoring work. Permits will be necessary for the biomonitoring studies (students will be included as assistants) but no permits are needed for soil samples *per se*. I returned to Pichilingue on the 25th.

Feb. 28–Mar. 3 I went to Quito to meet with the invertebrate scientists in Católica, who offered to assist with the paperwork for the Bolívar collecting permit. I also met with Dr. Encalada (USFQ) and Juan Calles who formerly worked on the SANREM project. They will not be directly involved in this cycle of SANREM but both have good contacts in the province and the university. I was not able to meet the Virginia Tech team because before I knew their schedule I had committed to giving a seminar on Mar. 4 at Pichilingue for the new administrators and other personnel.

Suggestions and Recommendations:

After seeing the INIAP sites and talking with Victor, Carlos and other people in Bolívar I think a soil invertebrate component will be an important part of the SANREM project. At minimum it can demonstrate the biodiversity of soils to farmers and university students and can form the basis for comparative studies of the soils of the two major study areas. The physical characteristics of the soil and ground cover is actually very suitable for the Winkler funnels we already have available, so we can start the project without purchasing or constructing any new equipment.

Training Activities Conducted:

Program type (workshop, seminar, field day, short course, etc.)	Date	Audience	Number of Participants		Training Provider (US university, host country institution, etc.)	Training Objective
			Men	Women		
Seminar	9 Mar. 2011	INIAP personnel of EE Pichilingue	11	13	R.W. Flowers, Florida A&M Unvi.	Raise awareness of the channelled apple snail and the Afreican land snail, two very invasive species in western Ecuador.
Seminar	21 Feb. 2011	5th yr. students in the Universidad de Bolívar	20	10	R.W. Flowers, Florida A&M Univ.	Discussed SANREM project and objectives and biomonitoring for water and soils.

List of Contacts Made:

Name	Title/Organization	Contact Info (address, phone, email)
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