



USAID
FROM THE AMERICAN PEOPLE



SANREM CRSP
Sustainable Agriculture and Natural Resource Management
Collaborative Research Support Program



VirginiaTech
Invent the Future

SUCCESS STORY

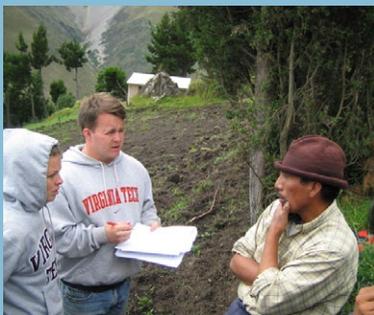
Potatoes and undergraduates at 9000 feet

by Miriam Rich

A researcher for the IPM and SANREM CRSPs is building collaborations between the two programs while helping undergraduates pursue research in the Andes.



Growing potatoes along the slopes of the Andes presents new challenges for Ecuadorian farmers.



Two students interview a farmer.

UNDERGRADUATE STUDENTS ARE HELPING JEFF ALWANG, a professor of agriculture and applied economics in Virginia Tech’s College of Agriculture and Life Sciences, work with potato farmers in Ecuador and Bolivia to improve their production.

These farmers are dealing with new challenges as population pressures have pushed people higher and higher up slopes in the Andes. Growing potatoes, a major staple, on precipitous mountainsides is a different endeavor than the farming their ancestors did on flat land at sea level.

“I like to bring in undergrads because they are enthusiastic about research, especially in a developing country. They build important social and professional relationships with the project’s young host-country researchers, and they provide lots of hands and feet on the ground over a relatively short period — they help us get the research done,” Alwang said.

He and the students work with two large-scale projects in the Andes, one on integrated pest management and the other on sustainable agriculture and natural resource management.

“Andean farmers have grown potatoes for thousands of years, and they know how to do it,” Alwang said. Because of this rich knowledge, “It’s important that when we develop new practices and technologies, they fit in with the types of practices they normally do,” he said.

POTATOES AT 9000 FEET

In Ecuador, more than 90,000 farmers grow potatoes on 60,000 hectares (or about 148,000 acres). Growing the tuber crop in the high Andes poses significant challenges. In addition to erosion, farmers deal with poor soil, erratic rainfall, and pests such as late blight (the fungal disease associated with the Irish potato famine), the Andean potato weevil, and the Central American tuber moth.

Alwang and a team of researchers introduced techniques to deal with these problems. To fight erosion, for example, farmers now use contour plowing, plant bushes and trees as barriers, create diversion ditches, take advantage of natural terracing, and intercrop annual and perennial plants in strips.



(From left to right): Jeff Alwang (left) discusses the project with an undergraduate intern and a local partner scientist. | In the Andes, the birthplace of the potato, a wide variety of the tuber is grown. | An indigenous farmer in the Illangama watershed in Ecuador studies a decision matrix that shows who makes which farm-related decision.

SAVING MONEY THROUGH IPM

Farmers once sprayed pesticides on potato crops 14 times in a growing cycle. Today, with integrated pest management methods, they spray four times and use less toxic chemicals.

Instead of growing potatoes continuously, which leads to pest buildup, farmers are now rotating crops. Integrated pest management methods save money, too. In field trials, input costs such as pesticides and fertilizer were \$600 to \$800 per hectare on the plots managed by natural methods.

COOPERATION IN NATURAL RESOURCE MANAGEMENT

Producer groups and local government are participating in the project involving natural resource management. That has led to widespread acceptance of the recommendations. Vulnerable areas are no longer being continuously cropped. Local governments are assisting landowners in planting trees and perennials.

Alwang's experience in the region, including 13 years on the integrated

pest management project and seven years on the sustainable agriculture and natural resource management project, has helped him earn the trust of the locals.

"Farmers say that in the past, a lot of researchers come, ask questions, leave, and the farmers never see anything," he said. "We have a team that works regularly out in the site. They know each one of the farmers."

That trust nets accurate information for researchers and a greater likelihood that the farmers will try a new technique, he said.

STUDENTS LEARNING SOIL CONSERVATION TECHNIQUES

Alwang has set up a program that engages undergraduates in the research. Every other year since 2007, Alwang has taken a group of six or seven undergraduates to Ecuador for six weeks of study and research. The students must know Spanish, take a preparatory course, write an essay outlining their objectives in participating and be physically fit enough to deal with

extensive walking along steep slopes at 9,000 feet.

Upon arrival in Quito, the students spend two weeks in intensive Spanish courses. They wake up at 6 a.m. to either run or play basketball to acclimate themselves to the high altitudes they will be working at in the field.

Students learn to implement soil-conservation techniques in the high Andes and to earn the trust of their study subjects.

"We've had some farmers think that we were collecting taxes; they run from us sometimes," said Lauren Moore, who earned a bachelor's degree in international studies in spring 2011. But the benefits of the program are significant, she said. The mountain scenery is spectacular, and students gain confidence from their work.

"Most students have said the experience was life-changing. It is a significant physical and mental challenge — not your typical study-abroad tour. It builds skills that provide professional benefits, but the personal benefits are transforming," Alwang said.

Integrated Pest Management | Sustainable Agriculture + Natural Resource Management

Collaborative Research Support Programs

Virginia Tech | International Affairs Offices | 526 Prices Fork Road (0378) | Blacksburg, VA 24061

Administrative Principal Investigator

Michael Bertelsen
Interim Executive Director, OIRED
(540) 231-6338
bertel@vt.edu

Principal Investigator

Jeff Alwang | Professor of agriculture and applied economics | Virginia Tech
alwangj@vt.edu

Project Director: IPM CRSP

Muni Muniappan
(540) 231-3516
rmuni@vt.edu

www.oired.vt.edu/ipmcrsp
@IPMCRSP
ipmcrsp@vt.edu

Project Director: SANREM CRSP

Adrian Ares
(540) 231-3227
aresa@vt.edu

www.oired.vt.edu/sanremcrsp
@SANRECRSP
sanremcrsp@vt.edu

The Integrated Pest Management Collaborative Research Support Program (IPM CRSP) and the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) are supported by a grant from USAID and managed by Virginia Tech's Office of International Research, Education, and Development (OIRED).