

**SANREM Innovation
Lab uses science to im-
prove the livelihoods
and food security of
small farmers in the
developing world.**



UPCOMING EVENTS

Join the SANREM co-sponsored conference, *“Transforming Rural Livelihoods in Africa: How can land and water management contribute to enhanced food security and address climate change adaption and mitigation?”* in Nakuru, Kenya from October 20-October 25, 2013.

This conference will critically analyze land and water management technologies, innovative products and services, and strategies benefiting small-scale agriculture in Africa. A particular focus of this joint conference will be the threats and opportunities associated with climate change, as well as technologies that have transformational impact on small-scale farmers in Africa.



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LETTER FROM THE DIRECTOR
A new name, the same commitment

Recent thematic changes at USAID brought a new name to our program: We are now the **Feed the Future Food Security Innovation Lab on Sustainable Agriculture and Natural Resource Management**, although for the sake of brevity, I will use our old acronym in this letter.

Seeing Change

As I write this letter, SANREM’s collaborating farmers, technicians, scientists, graduate students and other personnel are diligently working in fields, villages, laboratories and classrooms in the U.S. and abroad. Their busy days are filled with observation, decision-making, repetitive tasks, setbacks and successes. Every time I visit with partners, I feel humbled and privileged to be able to navigate the same course with them towards a better understanding of the possibilities and limitations of conservation agriculture in diverse biophysical and socio-economic environments. The rewards of SANREM’ work sometimes come unexpectedly and brighten my days. A few months ago, Boaz Omondi, a farmer in Kitale, Kenya, told me in regards to the benefits of conservation agriculture, “I don’t imagine them, I am seeing them.”

A Range of Issues

SANREM also focuses on promoting gender equality, conserving natural resources, raising agriculture-based incomes and improving the quality of life of people living in disadvantaged regions of the world. For this mission, SANREM’s partnerships in Africa, Asia, Latin America, and the Caribbean are vital to expanding knowledge and finding practical solutions. During the last fiscal year, SANREM proudly served more than 7,000 farmers, sponsored 56 graduate students, and generated 81 scientific articles and other products. This effort involves considerable administrative work, logistical planning, networking, and creativity.

Encouraging Resilience

At SANREM, we also need to be resilient in

dealing with uncertain events that often affect the course of international projects, such as the political upheaval that occurred in Mali last year or the recent decision from the government of Bolivia on banning USAID. These abrupt changes in the political climate obliged us to postpone on-farm and on-station trials that were providing valuable results on conservation agriculture, soil conservation and water-conserving technologies.

Easing Transitions

We are grateful for the financial support to SANREM from the U.S. Agency for International Development’s Economic Growth, Agriculture and Trade Bureau. We are pursuing additional resources and partnerships that would allow scaling up conservation agriculture production systems to thousands of farmers in areas where adoption is occurring. Indeed, farmers in several sites served by SANREM are becoming convinced of the benefits of no tillage, ground cover, intercropping and other resource-conserving practices to improve their livelihoods and conserve the land for future generations. The transition from plow-based agriculture to conservation practices, however, is neither easy nor quick. SANREM’s best argument to persuade stakeholders of the value of our efforts is the commitment to focused multidisciplinary efforts, inclusive partnerships, and science-based research. Thoughtful reporting, detailed financial management, and external accounting are also cornerstones of SANREM’s work.



I hope you enjoy reading this newsletter and are motivated to learn more about SANREM’s history, work and aspirations on our website, social media outlets, and via ongoing events.

Kind regards,

Adrian Ares

Director, Feed the Future Food Security Innovation Lab on Sustainable Agriculture and Natural Resource Management



GLOBAL UPDATES



Feed the Future SANREM Innovation Lab works in a wide variety of countries. Recent developments in these nations include everything from a breastfeeding promotion initiative to a surprising expulsion of American aid from a nation:

HAITI: In July 2013, USAID’s Office of Transition Initiatives rehabilitated several facilities in Port-au-Prince, including sports fields for children and an artist’s workshop.

BOLIVIA: At the beginning of May 2013, USAID was expelled from Bolivia by President Evo Morales. USAID expressed disappointment over the decision and mentioned that, “Those who will be hurt most... are the Bolivian citizens who have benefited from our collaborative work on education, agriculture, health, alternate development, and the environment.

GHANA: A project called Resiliency in Northern Ghana (RING) has been approved by USAID and is aimed at boosting food security, enhancing nutrition and hygiene in families, and improving health in northern families. With this \$60 million initiative, USAID hopes to reach over 326,000 people with the project.

LESOTHO: Rescue South Africa, a program supported by the USAID Office of Foreign Disaster Assistance, conducted training for emergency service responders in Lesotho. The trainees have been equipped to respond to fire, water, chemical, and other disasters.

KENYA: On August 1, USAID Kenya Deputy Mission Director Tina Doolley-Jones launched World Breastfeeding Week, a health initiative meant to increase breastfeeding, especially in countries such as Kenya, where breastfeeding alternatives may be dangerous to a newborn’s health.

NEPAL: In Western Nepal, USAID has launched two new food security initiatives. The Knowledge-based Integrated Sustainable Agriculture and Nutrition Project (KISAN) and the Agriculture and Food Security Project (AFSP). KISAN will work to diversify diets and increase income for rural Nepalis in disadvantaged homes. AFSP is a five-year project that seeks to increase agricultural production and improve the distribution of food.



EYE-OPENING UNDERGRAD RESEARCH

Summer is typically used as time off from studying, especially for undergraduate students. But rather than lounging by the pool, six Virginia Tech undergraduates were climbing volcanoes and conducting hands-on fieldwork with farmers and international development experts as part of a collaborative program linking students and agriculturalists.

This trip was funded by the Feed the Future Innovation Lab for Collaborative Research on Sustainable Agriculture and Natural Resource Management (SANREM), a program is managed at Virginia Tech and supported by the U.S. Agency for International Development. The purpose of research undertaken by this program is to use science to assist farmers in the developing world, which could bring more sustainable farming practices to Ecuador and other regions.

The cornerstone of the SANREM program is conservation agriculture, a way to conserve

resources while getting the most out of one’s farm using practices such as year-round soil cover, minimum tillage, and crop rotation systems.

The students spent two weeks in Quito fine-tuning their language skills before traveling to Guaranda in Bolivar province, where their task was to survey farmers in the Chimbo watershed. The survey, to be used by Ph.D. student Michael Barrowclough in his dissertation, obtained farmers’ views on various factors affecting the adoption of conservation agriculture such as yields, costs, labor use, erosion, soil organic matter, and risk. The survey measured the importance of each factor.

Students interviewed over 200 farmers with help from Barrowclough and professors from the Department of Agricultural and Applied Economics. At the end of the program, the students presented the results of their work to farmers in the upper part of the watershed.

NEW PROGRAMS EXPAND FEED THE FUTURE

On July 25th, U.S. Agency for International Development (USAID) Administrator Rajiv Shah announced two new Feed the Future Innovation Labs to improve climate resilience in some of Africa’s main cereal crops and increase private sector investment that can help smallholder farmers. The two new labs include the Feed the Future Innovation Lab for Collaborative Research on Sorghum & Millet and the Feed the Future Innovation Lab for Food Security Policy. These programs use science and technology to address our greatest challenges in agriculture and food security.



The new Feed the Future Innovation Lab for Collaborative Research on Sorghum & Millet will be led by Kansas State University and will produce innovations and technologies—such as climate-resilient varieties and new, more profitable market approaches for farmers—for use across sorghum and millet producing areas in Africa. The Feed the Future Innovation Lab for Food Security Policy, led by a consortium including Michigan State University, the International Food Policy Research Institute and the University of Pretoria, will help increase partner countries’ capacity to identify and implement improved food security policies that can help facilitate greater food security and nutrition.

|this is what **innovation** looks like|

Catherine Goggins, a junior in Agricultural and Applied Economics, said, "Getting to meet many individuals and families was a clear highlight. Even though the interviews were short, I feel privileged to have met and worked with so many nice people. And the whole experience put students in a great position to learn a lot firsthand, through the development of the survey, Spanish lessons, survey distribution, and discussions." The students would often survey the farmers individually, without the help of a translator.

Of course, these budding scientists balanced work with play. On weekends, the students visited other parts of the country, from the coast to the equator, even climbing the Chimborazo volcano. Agricultural Economics student Frances Dowd said: "I really liked how we were not babysat. I enjoyed being able to work collaboratively on different aspects of the project and to travel to other areas."

Students gained insight that allowed them to ponder their role in the global society of the future. Casey Gresham, a student from Urban and Regional Planning, said, "In school, I was studying international development but had never actually been to a developing country. It really allowed me to discover my strengths and weaknesses when working on a project abroad, and it assured me that I chose the right degree path and interest."

Stephanie Myrick, a senior in Agricultural and Applied Economics, said, "I really feel a great connection and understanding of farming in Ecuador and the troubles they face. I

enjoyed talking to the farmers every day. It gave me a great perspective on global issues and the similarity of farmers in Ecuador and America."

Students were drawn to the interdisciplinary nature of the program, which blended science with foreign language and culture study. Catherine O'Donnell, a junior majoring in Spanish and Agricultural and Applied Economics said: "I enjoyed being able to use both majors every day. I thought the Spanish lessons to prepare students for the survey aspect of the trip were key in understanding and getting adjusted to the culture, accents and new surroundings. Another positive aspect was working with the local scientists;

they were very helpful and fun to be around. It was a great experience to get a sense of the true non-tourist side of Ecuador."

Though the program was primarily funded by the Feed

the Future Innovation Lab for Collaborative Research on Sustainable Agriculture and Natural Resource Management (SANREM) program at Virginia Tech, additional funds were provided by USAID, the College of Agriculture and Life Sciences, the Department of Agricultural and Applied Economics, and the University Honors program.

Faculty members on the trip were Drs. Jeff Alwang, Darrell Bosch, and George Norton. The students who attended the trip were Michael Barrowclough, Frances Dowd, Catherine Goggins, Casey Gresham, Amy Hubbard, Stephanie Myrick, and Catherine O'Donnell. *For more photos from the trip, please see the side of this page >*

PHOTO GALLERY: UNDERGRADUATES STUDY ABROAD IN ECUADOR



Presenting the final results of their research to farmers in the Chimbo watershed



A Virginia Tech student surveys a farmer and her family



Several Virginia Tech students on the trip in an Ecuadorian field



Undergraduate Catherine Goggins speaking with Ecuadorian children



Undergraduate Catherine O'Donnell surveying a farmer about conservation agriculture

SANREM AROUND THE WORLD

The lead investigators from SANREM Innovation Lab projects, as well as management personnel, have taken several trips for research and development this summer. Some of them are highlighted here:

CAMBODIA

Maria Elisa Christie
Lead PI, Gendered Knowledge Cross-Cutting Research Activity
Daniel Sumner
Gender Graduate Assistant



Sumner and Christie met with members of the SANREM team in Siem Reap to begin to understand the project that SANREM and the Horticulture CRSP have developed to build the scientific and technical capacity of vegetable production for women in rural regions of Siem Reap province through drip irrigation and conservation agriculture techniques. The two also began a formal relationship between the Gender Cross-Cutting Research Activity and the University of Battambang’s students, several of whom worked with Sumner on research in the field.

UGANDA

George Norton
Lead PI, Economic and Impact Analysis Cross Cutting Research Activity



Norton went to Uganda to initiate a farm-household survey (of 400 farmers) to run a choice experiment in the Tororo and Kapchorwa districts to assess the relative value that farmers place on conservation agriculture traits that might affect adoption. These factors include yield, labor used in land preparation, input costs, and erosion mitigation. Additionally, Norton headed to Uganda to work out the survey logistics so that two graduate students, Barry Weixler-Landis and Kate Vaiknoras, can complete the survey with NGO partner Appropriate Technology-Uganda.



Different players in the scientific and cultural development fields need to work together to make sustainable intensification work, according to Jennifer Himmelstein, the newly appointed assistant director of Feed the Future SANREM Innovation Lab. Himmelstein believes that in order to bolster food supplies without destroying the environment, collaboration is the key.

Himmelstein came to SANREM because she liked the mix of what she considers to be, “A bit of agriculture, extension, and community service. It’s a great fit with that and international development.” Currently, Himmelstein is preparing a paper that focuses on the historical background and emerging themes of sustainable intensification, an approach to farming and natural resource management that seeks to increase agricultural products while decreasing the negative outputs on the environment and society.

The ultimate goal for Himmelstein is to use this paper as part of a proposal for a new Feed the Future Innovation Lab, this one focusing entirely on sustainable intensification as a theme to guide its research.

Himmelstein’s task is to create a comprehensive contextual document about sustainable intensification by looking at different approaches to the paradigm of food security. She pondered, “I’m looking at different themes and players. Who are the big

actors? What are their takes?”

That sounds like a tall order, and Himmelstein has certainly hit the books in order to cover the topic accurately. “I started out with piles of different papers to read before getting to a first draft,” Himmelstein noted. She estimates that she has already read about 1500 pages on the topic. She has found that sustainable intensification seems to work best within a systems approach, in which



multidisciplinary forces come together to build social capital and increase agricultural outputs. It seems that a participatory method is helpful, in which regional stakeholders are consulted and communication is strong between those local leaders and researchers. However, Himmelstein notes that this can sometimes lead to more problems: “You can’t cover everything, and when you open the door up with a lot of discussion, sometimes those issues grow,” she mentioned.

Another way into sustainable intensification uses a more hierarchical strategic approach. This involves top-down decision making that

implements new farming strategies and technologies without as much community dialogue. Himmelstein believes that incorporating both participatory and strategic approaches will be the path to success. She envisions a method in which stakeholders will be empowered to use new technology without it being pushed upon them.

While challenges abound in terms of implementing sustainable intensification, Himmelstein has found supportive research, too. “I really like how several papers say conservation agriculture and integrated pest management are pillars of sustainable intensification. I’m excited that the research being done here is paying off,” she said. SANREM Innovation Lab researches conservation agriculture extensively and has worked closely with the Feed the Future Integrated Pest Management Innovation Lab.

Looking at what’s next, Jennifer notes that there’s a need for more social scientists to study communication with stakeholders, and that a lot more “action research” -- that is, active fieldwork -- needs to be conducted in order to create new tactics that will tackle the issue of food security.

Right now, though, Himmelstein is still reading and learning, getting the facts straight before she sets to the keyboard. Though the Sustainable Intensification Innovation Lab is still far from reality, Himmelstein’s preparations have already begun.



NEW FACES MARK SANREM TEAM

Walk through the SANREM quad of Virginia Tech's Office for International Research, Education, and Development, and one might experience a moment of confusion amidst the sea of new faces. There are several new additions to the SANREM Innovation Lab management entity, each bringing a fresh perspective from their area of expertise and eager to assist in the goals of increasing sustainable agriculture and natural resource management abroad.

First is the new assistant director for the program, **Jennifer Himmelstein**. Himmelstein just moved to Blacksburg from Gaithersburg, Maryland, where she recently received her Ph.D. from the University of Maryland. Her graduate research was on the mechanisms of hairy vetch green manure disease suppression of Fusarium wilt of watermelon. Himmelstein has also worked in the Bureau of Food Security within USAID, focusing on human and institutional capacity development. Himmelstein loves the outdoors and baking goodies for others, so if you stop by her cubicle, you might come away with a parting gift! Her interest in international agriculture and sustainable ag management brought her to SANREM.

Next is **Julia Katz**, coming on as the new editor and communications coordinator. Julia recently graduated from Virginia Tech with a degree in Theatre Arts, minoring in

Sociology. Previous to working at SANREM, Julia copyedited financial and legal articles for Bizactions, a Thomson Reuters business, and worked at the DC Bar as a Member Services Clerk. She also consulted on The Livability Initiative with the New River Valley Planning District Commission. Her work has been seen in a variety of publications, including *The Washington Post*, *The Roanoke Times*, and educational publisher Gale. Outside of writing and editing, Julia has a passion for theatre, and directs and produces under her own production company, Critical Point Theatre. Julia was brought to SANREM through a passion for global social justice, and the desire to bring a creative touch to scientific writing.

Finally, **Corinna Clements** joins SANREM to maintain the SANREM Knowledgebase (SKB). Corinna is a rising junior at Virginia Tech majoring in Agricultural and Applied Economics. She would like to work in development and is excited about the opportunity to learn about SANREM's extensive reach abroad. Among her interests, Corinna is an avid swing dancer and serves as president of Virginia Tech's Coalition for Refugee Resettlement.

These additions round out the SANREM team. Desks have been filled, offices have been claimed, and the program continues to work on the same food security issues.

SANREM AROUND THE WORLD CONTINUED

NEPAL

Catherine Chan-Halbrendt
Lead PI, CAPS Among Tribal Societies in India and Nepal
Bikash Paudel, Jacqueline Halbrendt
Graduate students



Chan-Halbrendt and her students organized and attended the host country partner meeting with Local Initiatives for Biodiversity Research and Development (LI-BIRD) in Nepal, in order to review and plan the Sustainable Management of Agro-ecological Resources in Tribal Societies (SMART) project. They also identified potential cover crops and varieties of planting combinations from previous trials. They also met with the external review team, which was visiting the SANREM sites in Nepal.

ECUADOR

Jeffrey Alwang
Lead PI, Pathway to CAPS in the Andes
George Norton
Lead PI, Economic and Impact Analysis Cross-Cutting Research Activity
One Ph.D. and six undergrad students



Several undergraduates went to Ecuador to do research and training, and conducted surveys on attitudes and challenges associated with conservation agriculture. Students also presented the results of the surveys to the farmers that had been interviewed at the end of the trip. There were 230 successful surveys completed, and administrative and institutional challenges for SANREM's work in Ecuador were addressed. Other planning activities included reviewing ongoing research activities, designing publications, and assigning responsibilities.

E-CONSULTATION ON SUSTAINABLE AG

On June 18th, AgriLinks sponsored an E-Consultation to serve as a forum for discussion about sustainable intensification. Discussion by experts in the field was lively and Feed the Future SANREM Innovation Lab staff included these comments:

"It seems intuitive that SI should involve 'approaches' that are tailored to each agricultural 'system/location' (taking into account cultural norms, resource availability etc.) so, instead of testing various extension methodologies/strategies for strengthening SI in that specific location, it might be more effective to set these projects up in stages where the first phase could involve social and physical scientists gathering information through surveys and other research techniques in order to make recommendations for good practices." -Jennifer Himmelstein, *SANREM Assistant Director*

"I think the challenge to integrating scientific and local knowledge comes in how scaling out occurs. Sustainable intensification in one locality will develop new local knowledge. Knowledge about the most effective methods to manage the interaction between local and scientific knowledge that produces this new sustainable intensification local knowledge will be the critical component that we need to understand how to bring to scale. This will require a different science and scientific methods from the traditional quantitative experimental designs. Ethical issues become more apparent when we consider that part of what we are examining and testing are human behaviors." -Keith Moore, *SANREM Associate Director*

SOIL ATLAS PUTS NEW FACE ON SUSTAINABLE RESEARCH

Did you know that 98% of all calories consumed in Africa originate from soil resources? Recently debuted by the European Commission, the Soil Atlas of Africa creates a visual lens of the diverse soils found across the continent, along with informative details about soil quality and issues. Soil is a vital resource for survival, and this map aims to show how significant soil is for life in Africa.

The European Commissioner for Research, Innovation, and Science Maire Geoghegan-Quinn said, "By providing a comprehensive assessment of this limited natural resource, we hope to raise awareness of the need for improved protection and sustainable management of African soil." There are many threats to soil health and protection in Africa, including urbanization, mineral extraction, biodiversity conservation, and more.

Find the Soil Atlas by going to:
<http://eusoils.jrc.ec.europa.eu>

PRESIDENT OBAMA PRAISES FEED THE FUTURE INITIATIVES



During President Obama's recent three-country tour to Africa, agricultural development on the continent emerged as a clear priority. In Senegal, Obama visited with USAID administrator Rajiv Shah and emphasized the importance of the Feed the Future initiatives, as well as the role of technology in agriculture.

During his stay, Obama visited several booths set up by USAID that demonstrated the progress made by Feed the Future. A new progress report indicates that the program has helped more than seven million food producers adopt new agricultural technologies, with over \$100 million increase in sales of agricultural products by smallholder farmers. "It's not just a few who are benefiting from development," Obama said, noting that in fact, nine million households were reached by Feed the Future programs in 2012.



REVIEWERS CHECK OUT SANREM SITES ABROAD

Two panels of reviewers have been evaluating Feed the Future SANREM's process and programs, visiting both the Management Entity at Virginia Tech as well as SANREM research sites and programs abroad.

The panel commissioned by USAID includes Rattan Lal from Ohio State University, Anita Spring from the University of Florida, and Ross Welch from Cornell University. This group visited SANREM management in the Office of International Relations, Education, and Development (OIED) at Virginia Tech on April 4th and 5th, before travelling to Ghana and Cambodia to view several critical SANREM projects. Their report became available to the SANREM team on July 19th.

The panel commissioned by SANREM includes Bob Stewart from West Texas A&M; Susana Lastaria-Cornhiel from the University of Wisconsin; Ron Cantrell, former General Director of the International Rice Research Institute (IRRI); and Duncan Knowler from Simon Fraser University. This review panel

came to OIED headquarters at Virginia Tech in April, and then traveled to visit SANREM sites in Nepal, Cambodia, and the Philippines. Several of these reviewers also visited Ghana, Uganda, and Kenya, with a trip to Ecuador in the works in August before the whirlwind trip is complete.

SANREM is proud to show these scholars the sites and projects that make up the heart of SANREM's work and hope to incorporate suggestions from the reviewers into future work.



MALAYSIA NEWEST MEMBER OF SWAT-SEEA

When most people think of agriculture, they picture hands-on, outdoor work. Yet there are scores of scientists and researchers using high-tech tools to impact the future of farming. One of these tools is SWAT, the Soil Water Assessment Tool, which is a public domain tool developed by the U.S. Department of Agriculture and Texas A&M AgriLife Research in order to model the quality and quantity of surface and ground water in soils. The tool can help to assess the environmental impact of land use, land management practices, and climate change on soils.

As part of SANREM Innovation Lab's Phase III research, SWAT Southeast Asia was formed in 2007 through a SWAT workshop in the Philippines sponsored by SANREM. Since then, several training workshops have been conducted, and three conferences have been held, the most recent one having concluded in June of this year in Bogor, Indonesia.



The rapid growth of the program has led to the new name of SWAT-SEEA, to reflect both Southeast and East Asia, with countries as diverse as Thailand and Japan participating. Most recently, Malaysia joined the SWAT-SEEA network, with training activities planned for later this year and a Malaysian international SWAT conference to occur in 2017. With the impact of SANREM's programs swiftly adding up, SWAT researchers are becoming connected all over the world, sharing knowledge and contributing collaboratively to sustainable development.



MARY HARMAN, A FORCE IN GENDER DEVELOPMENT

What do soil samples have to do with gender equality? To find the answer, look into the research conducted by Mary Harman for the Feed the Future SANREM Innovation Lab, and one might find quite a few connections between gender roles and food security.

Mary Harman aptly represents several forms of the project's outreach, as both a part of long term graduate training, and also working with women and gender in development. A Spring 2013 graduate with an M.S. in Geography, Harman now works as a Gender Research Associate for Virginia Tech's Office of International Relations, Education, and Development (OIRE).

Harman was first drawn to SANREM's work because she was interested in international research. "At the time, I had never travelled abroad, and being a geographer, I was getting the travel itch," Harman notes. Part of Harman's undergraduate degree had been in sociology, which furthered her interest in gender-based issues and sustainable development. Through the SANREM Innovation Lab, Harman has been to the Philippines twice to conduct fieldwork on how gender relations can influence the adoption of conservation agriculture production systems.

For a West Virginia native who had never been out of the United States, seeing Filipino culture first-hand was

a whole new world. "The people are the cheeriest, most hospitable bunch I have ever encountered," she said. But in between eating the local cuisine and watching the Filipino version of karaoke, Harman noticed a significant difference in how agriculture was treated in the Philippines.

"Researchers can gain as much data from the process as from its conclusions."

"Most of the physical and social landscape is dominated by agriculture and aquaculture. Most Filipinos would find it hard to understand that most Americans don't know where their food comes from," she said.

In order to research gender roles among Filipino farmers, Harman conducted focus groups, household interviews, and field visits, as well as working with satellite imagery and GPS mapping. She lived in a small town called Claveria. There, she discovered gender-based differences such as that men earn additional income from tilling other farmers' land, and that women did not have access to agricultural training.

By using a mixed methods approach to gather data from the various farmers, Harman says she was able to

be successful. "It highlighted the importance of a specific location regarding men and women's soil knowledge and their resources, while engaging them with geospatial technology," she asserted. "This approach also contributed to the idea that researchers can gain as much data from the process of a methodology as from its conclusions."

After her experiences with the SANREM Innovation Lab in the field and with her master's degree complete, Harman is now committed to working in the field. "I hope to eventually get a position that allows me to travel, conduct more fieldwork, and use my GIS and gender background so I can contribute to international development," she says. As for right now, Harman has already made an impact.

On her second trip to the Philippines, Harman got to present the farmers she took soil samples from with an analysis of the data and recommendations for what to do next. "I gave them nothing in return when I left the first time, so I was worried they wouldn't want to attend another event. Luckily, most of the households came and were more than happy to be there! Even though the results, seeds, and food were probably incentive enough to come back, I liked being certain that the farmers had a good experience. That makes me one happy researcher!"



IN CAMBODIA, WOMEN FARMERS GAIN NEW SKILLS

The beautiful province of Siem Reap in Cambodia contains many national treasures, from the famed Buddhist temple Angkor Wat, to gorgeous mountain ranges and waterfalls. Now, because of work conducted by scholars involved with the Feed the Future SANREM Innovation Lab, the people of Siem Reap can add one more jewel to their collection: drip irrigation and conservation agriculture for female farmers living in the rural regions of the province.



Working with partners from the Horticulture Innovation Lab, researchers from universities as diverse as North Carolina A&T and the University of Battambang have collaborated on this project. In addition, because the project addresses women and gender studies, Virginia Tech's own Maria Elisa Christie has conducted several trips to Cambodia with graduate assistants, to ensure that gender concerns are addressed.



Vegetable production is an important source of income to households in the region, and women are key agents in the labor and sale of these crops. Installing drip irrigation, as seen in these photos, could help ease labor and improve productivity in the day-to-day agriculture work in Siem Reap.



photos taken by Don Edralin

about SANREM



The Feed the Future Innovation Lab for Collaborative Research on Sustainable Agriculture and Natural Resource Management (SANREM) is funded by the U.S. Agency for International Development's Bureau of Food Security. The program was formerly known as the SANREM CRSP.

The SANREM Innovation Lab vision is to support people in developing countries in making important decisions about sustainable agriculture and natural resource management (SA and NRM). We do this by providing access to data, knowledge, tools, and methods of analysis; and by enhancing local capacity to make better decisions to improve livelihoods and the sustainability of natural resources.

SANREM SPOTLIGHT

The SANREM Spotlight profiles a student researcher or a local expert associated with SANREM's work. This issue features Drew Gallagher:

DREW GALLAGHER, STUDENT RESEARCH ASSISTANT

Q: *What brought you to SANREM this summer?*

A: The opportunity to work on something I find exciting and meaningful. The 30 second downhill walk from my house was a big help, too!

Q: *When you're not working on metadata, what do you like to do on your free time?*

A: I'm also work at the Prices Fork Nature Center as a nature camp counselor at their "SEEDling's" camp Monday through Friday during the mornings. I really enjoy biking, hiking, reading, and playing volleyball.

Q: *What's your ideal career look like?*

A: I want to work with renewable energy in some capacity. Whether it's policy based, or more private sector I haven't yet decided. Preferably something where I get to move around a lot during the day!

Q: *What's your favorite book, and why?*

A: The Alchemist. It really gave me a new perspective on simple ways to look at the world and live my life in a way I wanted.

Q: *What's on your summer bucket list?*

A: Most of it has actually already been accomplished! I took a roadtrip out to the west coast in May and June, and last month I made it up to Delaware for Firefly Music Fest. All I want to do for the rest of summer is stay in Blacksburg for a while and hike and swim.



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SANREM INNOVATION LAB

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on Sustainable Agriculture and Natural Resource Management**

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**Feed the Future Innovation Lab for Collaborative Research on
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