



Natural Resources Conservation Service  
INTERNATIONAL PROGRAMS DIVISION



**IPD Newsletter**  
*January-June 2016*

**CHINA.....PAGE 2**

NRCS National Water And Climate Center Hosts Chinese Cochran Fellows

**VOLUNTEERING.....PAGE 3**

Drip Irrigation Improves Yields In Liberia; Helps Fund HIV/AIDS Programs

**CENTRAL AMERICA.....PAGE 4**

Digital Soil Mapping Workshop Addresses Dry Corridor

**PAKISTAN.....PAGE 5**

Ongoing Efforts To Improve Water Conservation And Nutrient Management

**SOUTH AFRICA.....PAGE 6**

Soil Health Workshops Improve Farming And Ranching Systems

**OTHER ACTIVITIES.....PAGE 7**

Austria, Canada, Denmark, Indonesia, Iran, Israel, Italy, Mexico, Pacific Islands, Philippines, United Kingdom

*COVER PHOTO: NRCS Civil Engineer Phuc Vu (center) helps students assemble drip kit components on a farm near Monrovia, Liberia. As part of a Farmer-to-Farmer activity in March 2016, training was provided to improve irrigation and increase yields for vegetable crops. SEE ARTICLE ON PAGE 3.*

*Photo courtesy of Phuc Vu.*

The IPD Newsletter is a biannual publication, produced by the International Programs Division of the Natural Resources Conservation Service (NRCS).

The document provides a six-month overview of NRCS participation in international activities, which includes providing technical assistance and exchanging scientific and technical information.

Submit articles, photos, and comments to the newsletter point of contact: Sascha Dixon [sascha.dixon@wdc.usda.gov](mailto:sascha.dixon@wdc.usda.gov)

#### IPD Newsletter

International Programs Division  
U.S. Department of Agriculture  
Natural Resources  
Conservation Service  
5601 Sunnyside Avenue  
Room 1-2114C,  
Stop Code: 5477  
Beltsville, MD 20705

#### IPD Staff

Lillian Woods Shawver  
Linda Ridsen  
Herby Bloodworth  
Marita McCree  
Sascha Dixon

USDA is an equal opportunity provider, employer, and lender. To file a discrimination complaint, write to  
USDA, Office of the Assistant Secretary for Civil Rights, Office of Adjudication  
1400 Independence Ave., SW, Washington, DC 20250-9410, or call Toll-Free at (866) 632-9992 (English), (800) 877-8339 (TDD), or (866) 377-8642 (English Federal Relay).

## CHINA

### *NRCS National Water And Climate Center Hosts Chinese Cochran Fellows*

On June 3, 2016, the Natural Resources Conservation Service (NRCS) hosted a group of visiting scientists from China at the National Water and Climate Center (NWCC) in Portland, OR.

The visiting scientists were brought to Portland by the University of California, Davis (UC Davis) International Programs, who were hosting a Foreign Agricultural Service (FAS) Cochran Program with Chinese Fellows on the topic of "Climate Smart Agriculture."

China is currently commencing their pilot climate hubs and this fellowship also aimed at establishing relationships with USDA Climate Hubs and offices working in climate science.

NRCS NWCC Director **Mike Strobel** opened the session by presenting an overview of the center, the Snow Survey and Water Supply Forecasting Program, and the Soil Climate Analysis Network.

Forest Service employee **Beatrice Van Horne**, Director of the Northwest Regional Climate Hub and Westbrook Associates LLC Principal **Patrick Binns** also provided presentations. Van Horne shared information about the Hub and explained how multiple agencies collaborate to address a multitude of challenges. Binns briefly introduced the REACCH project, "Regional Approaches to Climate Change for Pacific Northwest Agriculture."

Further, Director **Shaun McKinney** from the NRCS West National Technology Support Center

(WNTSC) provided an overview of the history and mission of NRCS and the various technical programs that WNTSC supports.

In addition to the ten representatives from China, two members from UC Davis participated in the 3.5 hour long event.

The meeting was very successful and much information was shared between the representatives of the two countries. "The presentations took a bit longer because we needed to stop every few sentences to have the interpreters translate for our visitors," said Strobel. "Plus, there were many questions addressed during the presentations," he added.

Following the successful engagement, Strobel and his colleagues remain hopeful that the contacts established will lead to further interactions between the different scientists in the future.

**Article written by Mike Strobel.**

# VOLUNTEERING

## *Drip Irrigation Improves Yields In Liberia; Helps Fund HIV/AIDS Programs*

**O**n leap year day, February 29, 2016, Natural Resources Conservation Service (NRCS) Civil Engineer Phuc Vu, traveled to Liberia to begin a two week volunteer assignment. Vu was asked to improve agricultural yields during the dry season, by integrating an irrigation system and providing applicable training.

The Farmer-to-Farmer activity was coordinated by Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance (ACDI/VOCA) and sponsored by the U.S. Agency for International Development (USAID).

Approximately 36 miles northeast from the capital, Monrovia, are seven acres of farmland managed by the organization Serving Humanity with Affection, Love, and Open Mind (SHALOM). The primary focus of their humanitarian assistance is providing care to girls and women who were orphaned by HIV/AIDS or became infected themselves. The farming activities do not only provide job related skill training, but also generates income to supplement donations for their programs.

During the dry season, which typically spans December – April, the SHALOM farmers are not able to efficiently support the available land, due to a labor intensive watering schedule for their crops, such as melons, eggplants, maize, tomatoes, and lettuce.



*A Liberian student performs a soil nutrient test, during a workshop training session. Photo courtesy of Phuc Vu.*

Vu provided training for the installation and operation of a small-scale gravity drip irrigation system. One of six bucket drip irrigation kits was installed by workshop participants, who also received training in soil health principles.

Additionally, the 19 students also received guidance on other aspects of the value chain, such as post-harvest handling, cooling, and storage. Vu recommended investing in a water bath canning operation to further preserve food.

“This is a simple method that will be specific to high acid produce, such as tomato. The canning can take place during the rainy season when fruit production is at its highest,” said Vu.

Vu’s work in Liberia was delayed for a year due to the Ebola crisis. Fortunately, the World Health

Organization declared the country free of the disease in January 2016, with the last infection reported in November 2015. When Vu learned his travel was finally approved he was excited to go. “I trusted the organizations and their judgment. Once in-country, we did exercise extra caution with personal hygiene, though.”

Vu, who is very passionate about international development, is no stranger to the African continent. He had previously done government work and volunteer assignments in Kenya and Ethiopia. Currently, he is assisting an organization construct an agricultural training center in Zimbabwe and hopes to conduct a site assessment trip next year.

**Phuc Vu contributed to this report.**



*Students connect water supply lines to a bucket as part of an irrigation system that will help improve crop yields during the dry season. NRCS Civil Engineer Phuc Vu provided training during a volunteer assignment in Liberia.*

*Photo courtesy of Phuc Vu.*

# CENTRAL AMERICA

## Digital Soil Mapping Workshop Addresses Dry Corridor



*NRCS Research Soil Scientist **Zamir Libohova** (left) explains, with his fellow instructors, soil-landscape concepts during field work in El Salvador.*

*Photo courtesy of Zamir Libohova.*

As part of the Global Water Initiative (GWI), sponsored by the Howard G. Buffett Foundation to improve food security in Central America, Natural Resources Conservation Service (NRCS) Research Soil Scientist **Zamir Libohova** from Survey Research and Kellogg Soil Survey Laboratory staff at the National Soil Survey Center, provided training at an Advanced Digital Soil Mapping (DSM) workshop in El Salvador, March 7-11; Honduras, April 11-15; and Nicaragua, April 18-22. The workshop was organized by Purdue University in cooperation with Catholic Relief Services, as part of the ProSuelos project.

The GWI aims at improving food security in Central America, influencing changes in policies, programs and practices especially in rainfed agriculture. According to the GWI, rainfed agriculture produces 65% of food grown in Central America and it constitutes 71% of the land used for agriculture.

The particular focus of the ProSuelos project is on the so called Dry Corridor, which extends throughout parts of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and parts of Panama. These countries are experiencing

a persistent drought and El Nino weather events are further intensifying the effect of drought.

As such, the project's main goal is to develop a platform for combining legacy data, local tacit knowledge, and new digital soil mapping (DSM) techniques to map major soil properties related to physical and chemical characteristics and soil fertility. A detailed soil map and information are vital for implementing soil conservation practices and sustaining food production, as well as other soil functions.

In addition to detailed soil maps the capacity building project will generate interpretative maps based on soil properties and functions, including water holding capacity; erosion potential; crop suitability; yield potential; nutrient availability; infrastructure development; land use planning, among others. The soil information will be provided at a fine resolution suitable for planning across different management scales from national to regional and farm field levels.

The workshop was modified to accommodate each country's context by incorporating specific data and cases. For example, during the session held in San

Salvador, El Salvador in March, approximately 12 soil scientists and experts from the Ministry of Agriculture and Environment, as well as graduate students, benefited from a tailored curriculum, which also included two days of field work.

Intensive training on DSM techniques focused on a pilot area located in the Dry Region of El Salvador that is impacted by climate fluctuations. Purdue University Associate Professor **Dr. Phillip Owens** and his team also provided a series of presentations to further increase knowledge on the subject. One of the unique features of this project was that all lectures and training materials were delivered in Spanish, with Purdue University PhD student and soil scientist **Minerva Dorantes** making major contributions.

As required by the ProSuelos project, Dr. Libohova and his co-instructors also provided specialized training in Honduras and Nicaragua. The team will continue to assist with the production of digital soil maps for major soil fertility related properties, such as soil depth, organic matter, and texture, to name a few.

The project is entering a critical stage by expanding the efforts from pilot based areas to national levels. Dr. Libohova will lead this effort by working closely with the soil scientists from the Central America countries.

**Article written by Zamir Libohova.**

# PAKISTAN

## Ongoing Efforts To Improve Water Conservation And Nutrient Management

Specialists from the Natural Resources Conservation Service (NRCS) supported various agricultural capacity building activities in Pakistan. A series of multi-year projects, coordinated and led by the Foreign Agricultural Service (FAS) and the International Center for Agricultural Research in the Dry Areas (ICARDA), addressed soil fertility, irrigation, and women equality, to name a few. Most of these activities concluded in 2015, but efforts are underway to continue improving the countries vital agricultural sector.

Consequently, from March 7-11, 2016, NRCS Civil Engineer **Jon Fripp**, along with FAS representatives, returned to Pakistan to participate in several important meetings with the Pakistani government and international partners.

Fripp served as a consultant during the inaugural sessions in support of the new Water Dialogue project. Envisioned to improve the countries water conservation techniques throughout 2018, the project's full title is "U.S. – Pakistan Water Dialogue: Diffusion and adoption through partnerships and action of best watershed rehabilitation and irrigation practices and technologies to help rural farmers."

During strategic planning meetings, Fripp helped address water management challenges across six geographic regions and recommended appropriate mitigation measures. The participants collaborated and developed a work plan, which focusses on both rain fed and irrigated areas. Later in the week, stakeholders joined breakout

sessions to further discuss details for each focus area.

Success stories from previous capacity building activities were also reviewed for adoption practicality, such as bed planting, solar pumping systems, and drip irrigation. In the case of irrigation, NRCS employees had previously facilitated the planning and design of low tech bucket drip irrigation systems, developed training documents, manuals, and provided guidance during example installations.

The new Water Dialogue project is working to extend the demonstrations and targeted installations of this technology and others to a wider dissemination. "Simple, but powerful water saving technologies, such as bucket drip irrigation, can help improve agriculture in water scarce regions," explained Fripp.

The following month, NRCS National Leader for World Soil Resources **Thomas Reinsch**, also returned to Pakistan for soil health education activities. On April 4-5, 2016, Reinsch spoke at the 4R Nutrient Stewardship for Food, Economic and Environmental Security Workshop, which was organized by the Food and Agriculture Organization (FAO) of the United Nations.

Reinsch, who had previously increased awareness about the 4Rs of nutrient management stewardship, also met with Pakistani scientists, policy makers, and partner institutions to further discuss implementation. The 4Rs refer to applying the Right fertilizer, at the Right rate, at the Right time, and in the Right

place. During additional meetings it was agreed to further expand on the 4R concept by including the Right soil biology.

Pakistan is currently using a fertilizer policy from 2001 and is collaborating closely with the U.S. Department of Agriculture and other partners, to include the fertilizer industry, to develop science-based regulations and feasible implementation strategies to assist rural farmers.



*NRCS employees repeatedly traveled to Pakistan to cooperatively support capacity building activities; improving irrigation, raising awareness about soil fertility, and promoting women equality. According to NRCS Civil Engineer **Jon Fripp**, "Simple, but powerful water saving technologies, such as bucket drip irrigation, can help improve agriculture in water scarce regions." Photo by Jon Fripp.*

NRCS will most likely support additional activities in Pakistan as project details are further defined and timelines identified.

**Jon Fripp contributed to this report.**



## SOUTH AFRICA

### *Soil Health Workshops Improve Farming And Ranching Systems*

In 2013, Natural Resources Conservation Service (NRCS) Soil Health Specialist **Jay Fuhrer**, went on record stating, “the principles of building healthy soils are the same everywhere...but the path to soil health is different on each farm.” At the time, Fuhrer was informing North Dakota farmers and ranchers about soils and the concept of developing complete systems. However, his theories also caught the interest of South African conservationists.

The Elandslaagte Holistic Study Group invited Fuhrer to conduct a series of trainings at the 2016 Annual South Africa Workshop. From April 7-24, Fuhrer presented soil health principles at five field workshops held at different locations and spoke at the closing conference. Approximately 50 workshop participants explored topics, such as minimizing soil disturbance, the advantages of plant diversity and integration of livestock, and providing soil armor (i.e., cover), to name a few.

Over a two week period, Fuhrer traveled throughout the KwaZulu-Natal province, which is situated on the country's southeastern coast. There he visited dairy farms, ranches, and cash grain farms and had the opportunity to

review the conservation practices. A lot of emphasis was placed on livestock and soil health. Fuhrer explained the intricacies of grazing cover crops, as well as the importance of countermeasures to minimize soil compaction caused by cattle. Aside from rotational grazing systems, plant diversity allows the photosynthesis process to continue longer and capture more carbon in the soils. In turn, by building organic matter the soils will have improved nutrient cycling, structure, and water holding capacities.

These expectations were confirmed when Fuhrer examined soil profiles of irrigated grazing pivots, where farmers incorporated cover crops two years earlier. “It was very rewarding to see that the fields with cover crops had darker colored soil, better soil aggregates, and infiltrated water at a faster pace,” said Fuhrer.

These were also some of the benefits that the Elandslaagte Holistic Study Group observed in 2014, when they visited the Burleigh County Soil Conservation District's Menoken Farm in North Dakota. This is also where the group first encountered Fuhrer and learned about his soil health

*TOP: Dairy cattle grazing on a South African ranch. Rotational grazing systems were some of the concepts explored during the workshops.*

*BELOW: NRCS Soil Health Specialist Jay Fuhrer (left) performs an infiltration demonstration to monitor soil health at a ranch near Ladysmith, South Africa.*

*All photos courtesy of Jay Fuhrer.*



education efforts, which they were later able to secure.

Fuhrer remains in contact with the group and will share his South African field experiences with

North Dakota farmers and ranchers, especially as they once more confirm the importance of soil health. A case study written by Fuhrer is available for review.

Additionally, Fuhrer acknowledged that this trip was truly a remarkable experience, both professionally and personally. The visit and two day stay at the Coatsee Ranch was especially harmonious and provided many great conversations. For Fuhrer, it was clear: "We had so much in common. We will be friends forever."

**Jay Fuhrer and Tanya Koch contributed to this report.**



*Farmers and ranchers learn details of soil health principles during the closing conference of the 2016 South African Workshop, April 24. NRCS Soil Health Specialist **Jay Fuhrer** also provided training at five field workshops.*

*Photo courtesy of Jay Fuhrer.*

## OTHER ACTIVITIES

### *Austria*

NRCS Soil Science Division Director **David Lindbo** attended the European Geosciences Union 2016 General Assembly in Vienna, Austria, April 17-22. More than 13,000 scientists from 109 countries attended the conference, which included 619 scientific sessions. Lindbo co-convened a scientific session titled "Soil mapping and process modelling for sustainability."

### *Canada*

From February 17-18, NRCS Vermont State Conservationist **Vicky Drew** participated in the Lake Champlain Basin Program Steering Committee Meeting. The meeting took place in Auberge West Brome, Quebec and allowed the participants to review the program work plan and budget.

NRCS Soil Health Specialist **Jay Fuhrer** gave a presentation about the carbon cycle and soil health principles at the Prairie Organics Conference, February 18-19, in Winnipeg, Manitoba.

Fuhrer also participated in the Moose Mountain Ag Day, held March 1 in Arcola, Saskatchewan. He was invited to speak about cover crops and livestock integration. The annual event is popular among farmers and ranchers located in the Upper Souris Watershed.

As part of ongoing collaboration between Canada and the U.S., NRCS Chief **Jason Weller** hosted senior officials from Agriculture and Agri-Food Canada on June 28. The bilateral meeting allowed the countries to review current cooperative initiatives and explore new projects, such as related to conservation on private lands and mitigating climate change. Other NRCS participants included Associate Chief for Conservation **Leonard Jordan**, Assistant Chief **Kirk Hanlin**, Chief of Staff **Patty Lawrence**, Acting Deputy Chief for Science and Technology **Ron Alvarado**, World Soil Resources National Leader **Thomas Reinsch**, and International Programs Director **Lillian Woods Shawver**.

### *Denmark*

NRCS Research Soil Scientist **Zamir Libohova** participated in the 7<sup>th</sup> Global Digital Soil Mapping Workshop, held June 27-July 1, in Aarhus, Denmark. See the [National Cooperative Soil Survey Newsletter](#), Issue 76, for a full article on this activity.

### *Indonesia*

On February 9, NRCS National Agronomist **Norm Widman** met with three representatives from Indonesia in Washington, D.C., to discuss soil and water conservation efforts and their importance in addressing food security challenges.

### *Iran*

NRCS National Water Quality Specialist and National Aquatic Ecologist **Craig Goodwin** met with Iranian academics on March 18 in Washington, D.C. The 13-person delegation learned about best management practices for wetlands and marshes.

*NRCS World Soil Resources National Leader **Thomas Reinsch** addresses the Plenary Assembly of the Global Soil Partnership in Rome, Italy, on May 24. The Food and Agriculture Organization of the United Nations launched the Global Soil Partnership in 2012 to improve global governance and provide guidelines for sustainable soil management. © FAO photo.*

## *Israel*

NRCS California State Conservationist **Carlos Suarez** joined a delegation led by the California Department of Food and Agriculture during a trip to Israel, June 17-24. The delegation learned about climate-smart agriculture policies and toured different sites to observe water conservation practices, such as the integration of recycled water.

## *Italy*

From May 23-25, one hundred and ninety scientists and officials gathered in Rome to participate in the Global Soil Partnership's fourth meeting of the Plenary Assembly. The partnership is an initiative of the Food and Agriculture Organization of the United Nations and the annual meeting provides opportunities for stakeholders to review progress and assist with regional approaches to promote sustainable management of soils. Topics covered included activities of the Intergovernmental Technical Panel of Soils, the Global Soil Partnership Pillars, reports on the International Year of Soils and World Soil Day, and Regional Soil Partnerships. During the regional reviews, NRCS World Soil Resources National Leader **Thomas Reinsch**, who also served as the assembly's Rapporteur, presented the latest developments and implementation plans from the North America



Regional Soil Partnership perspective. Additionally, NRCS Soil Science Division Director **David Lindbo**, as a U.S. representative, was nominated to serve as the Vice-Chairperson until the next plenary session, tentatively scheduled for June 20-22, 2017.

## *Mexico*

NRCS Massachusetts State Conservationist **Christine Clarke**, along with representatives from The Nature Conservancy, American Rivers, and the U.S.

Fish and Wildlife Service, traveled to Chiapas, Mexico to participate in a Fulbright Exchange Program, January 10-22. Clarke explored first-hand the environmental sustainability challenges Mexican officials face and provided valuable information, such as the role and responsibilities of conservation districts in the United States. Further, the four Americans were able to reinforce the benefits of collaboration by outlining their ongoing efforts in the Connecticut River Watershed.



**LEFT:** NRCS Agriculture Conservation Specialist **Gibson Santos** (left) prepares a pace course for a training exercise, in Madolenihmw, Pohnpei, January 19.

**BELOW:** Officials from the Federated States of Micronesia calibrate their pace count by walking an accurately measured course.



All photos courtesy of U.S. Embassy Kolonia.

Two NRCS representatives participated in a U.S.-Mexican Workshop to address Monarch Butterfly conservation efforts along migratory routes, May 11-13, in Monterrey, Mexico. NRCS Texas State Conservationist **Salvador Salinas** provided information about the “Texas Monarch Conservation Strategy and Plan” and NRCS Central National Technology Support Center Director **Rafael Guerrero** spoke about the “National Monarch Conservation Strategy.”

### **Pacific Islands**

During a January 19 training event, NRCS Agriculture Conservation Specialist **Gibson Santos** taught the pacing technique to officials from the Federated States of Micronesia at a training site in Madolenihmw, Pohnpei. Pacing will assist the officials with developing a statistical profile for the Federated States of Micronesia 2016 Agriculture Census project. Twenty-six enumerators from the four island states of Yap, Chuuk, Kosrae, and Pohnpei, calibrated their pace count during the training session.

In the spring of 2016, NRCS Resource Conservationists **Sharon Sawdey** and **Paul Lake**

began their initial three-year residential assignments to provide long-term technical assistance to Pacific Island nations. Sawdey will be working out of Kolonia in the Federated States of Micronesia. Lake will be in Koror in the Republic of Palau. In addition to serving on U.S. Embassy Country Teams, both NRCS employees will assist host government officials address water scarcity, improve agricultural yields, and mitigate climate change impacts. The U.S. government provides assistance to Micronesia, Palau, and the Marshall Islands (Republic of) as part of the Compact of Free Association (COFA) agreement.

NRCS International Programs Director **Lillian Woods Shawver** briefed two career members of the Senior Foreign Service on conservation initiatives with Pacific Island nations. During the February 12 meeting in Washington, D.C., Shawver provided the nominated U.S. Ambassadors to the Republic of Marshall Islands and the Federated States of Micronesia with firsthand information about agricultural development and the agencies ongoing technical assistance in support of the COFA agreement. Shawver has regional expertise as she previously served

in Guam as the NRCS Pacific Island Basin Area Director (now referred to as Pacific Islands West Area).

### **Philippines**

On March 30, NRCS National Conservation Innovation Grants (CIG) Program Manager **Michael Bennett** met with four officials from the Philippines. The visitors were in Washington D.C. as part of a three-week program to learn about climate change response strategies. Bennett introduced the CIG program and explained how it encourages development and adoption of innovative approaches and technologies for conservation on agricultural lands.

### **United Kingdom**

Four NRCS employees met with two visitors from the United Kingdom in Washington, D.C., on February 24. Special Assistant to the Chief for Strategic Initiatives **Diane Gelburd**, Watershed Planner **Michael Merrill**, Southeast Regional Soil Health Team Leader **Dennis Chessman**, and World Soil Resources National Leader **Thomas Reinsch** provided information on resource stewardship, soil health, and soil survey.