



Natural Resources Conservation Service
United States Department of Agriculture

International Programs Division

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This is an overview of NRCS staff's participation in international development activities during the first half of 2014. Partnering institutions include the USDA's Foreign Agricultural Service (FAS), Environmental Protection Agency, South African National Biodiversity Institute, and the Nelson Mandela Metropolitan University.

 Real Time Water Quality and Quantity Monitoring Project

 Global Soil Partnership

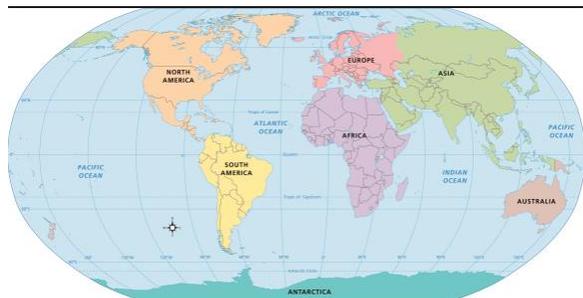
 Identifying Non-native Blackberry in South Africa

 Long-Term Soil-Climate Monitoring Study in Antarctica

 Soil and Water Conservation Training for Tajikistan

 Haiti Soil Survey Project

 Related Internet Resources



For additional information on these and other NRCS international activities, please contact IPD:

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Real Time Water Quality and Quantity Monitoring Project

At the request of the USDA Foreign Agricultural Service (FAS), Shaun McKinney, Acting Director, and Harbans Lal, Environmental Engineer, West Technology Support Center, Portland, Oregon, provided technical support to the USDA/FAS Real Time Water Quality and Quantity Monitoring and Weather Monitoring Project in the Middle East. This program is designed to foster adoption of common, standardized data collection and storage techniques to improve the quality of water resources in the region, and to improve communication among the scientific community in the region. The primary objective of their trip was to assess the four currently installed monitoring stations, suggest additional parameters to further enhance data collection, and to make recommendations for follow-on trainings based on the results of the pilot project and on the interest of the project's water experts from Jordan, Israel and the Palestinian Territories. Shaun and Harbans served as moderators and led technical discussions at the Project's Mid-term Evaluation Workshop and participated in site visits to the stations in Israel, the West Bank, and Jordan along with other USG team members from FAS, the U.S. Geological Survey (USGS), and the U.S. Environmental Protection Agency (USEPA).

Based upon the site visits and workshop deliberations Shaun and Harbans identified and suggested a number of key technical and policy related issues and made recommendations for

improving the data collection and processing techniques for effective decision making beyond the pilot phase. Currently water quality data is being collected and stored in a coordinated way but not necessarily being applied in a coordinated way. There is great value in gaining experience in the mechanics of coordinated data collection and data management. This value will be multiplied as the data are utilized in models to address coordinated objectives and questions set forth by the stakeholders.



Soil moisture monitoring station.

Specific questions and issues are innumerable. The regional participants shared concerns about a range of topics, including: protecting groundwater from sewage, industrial, and agriculture pollution, and the need for capabilities, such as early flood-warning systems. The key concept is that these issues span watersheds, political boundaries and climate zones. In order to fully address them, data from large geographic areas will be needed. This data could come from a set of coordinated water monitoring wells operated in a linked way with one another. The four wells set the stage for this cooperation and begin to illustrate the power of coordinated information to address large scale natural resource issues.

Global Soil Partnership

Jon Hempel, Director, National Soil Survey Center, Lincoln, Nebraska, represents the USDA-NRCS and National Soil Survey Center (NSSC) for the Global Soil Partnership (GSP) as the US representative for the Intergovernmental Technical Panel on Soils (ITPS). The ITPS is charged with processing all information relating to the GSP for presentation to the General Assembly of the United Nations Food and Agriculture Organization (FAO). In April, Jon traveled to Rome, Italy, for the latest meeting. By the end of the week, the ITPS had made significant progress relating to information that will be considered by the General Assembly which included the approval of the work plans for Pillars 1, 2 and 5, the World Soil Charter and the World Soil Resources Report. There was also some discussion, but no specific resolution to Soil as a Critical Component of Sustainable Development.

Jon's involvement as the US representative to the ITPS was to provide input into the agenda and discussion mainly for the approval of the four remaining GSP Pillars of Action, the World Soil Resources Report and the World Soil Charter and continuing as a working member for Pillar 5. His input has had a strong impact on the development of all four Pillar documents. Key information was provided from

USDA publications including the Field Office Technical Guide, Soil Survey Manual, and Keys to Soil Taxonomy, Soil Survey Laboratory Manual and the Field Guide for Describing and Sampling Soils. The input from this information strengthens the technical dimensions of these documents and raises the awareness of the resources that USDA has to offer to the international community. In addition, Jon was able to provide key information from his role as the Chair of the International Union of Soil Science Working Group on Universal Soil Classification as to the direction for potential of a harmonized Universal Soil Classification System.

Information exchange with the international community strengthens the global soil science and soil conservation communities and provides an avenue for technical exchange not only from the US to other countries, but also from other countries to the U.S. The NRCS conservation programs and the US soil survey program have abundant resources that can improve these programs throughout the world. Building these international relationships in soil science and soil conservation and related areas, with a variety of partners facilitates technical exchange and strengthens professional relationships and capacity to build stronger programs in the U.S. and other countries.

Identifying Non-native Blackberry in South Africa

The director of the South African National Biodiversity Institute (SANBI), and a research associate at the Nelson Mandela Metropolitan University, invited Gerry Moore, National Plant Data Team Leader, East National Technology Support Center, Greensboro, North Carolina, to travel to South Africa to assist botanists there in the identification of non-native blackberry (*Rubus*) species. Some of these species have become invasive and are presumably of North American origin.



Native *Rubus* material observed in Cape Town, South Africa.

Areas visited were in southern South Africa in Cape Town, Hermannus, and Swellendam. Collections were made for further study and use in DNA analysis. It was determined that some of the non-native material was of North American origin, whereas other material represented European species. These non-native blackberry species co-occurred with *Rubus* species native to South Africa. A blackberry and youngberry (a hybrid between raspberry and blackberry) farm in Swellendam was visited, and it was determined that the cultivated material was also of North American origin.



Gerry Moore and Estrela Figueiredo examining cultivated *Rubus* material in Swellendam, South Africa.

From this trip it was concluded that the North American *Rubus* material in South Africa was both beneficial (a profitable crop for some South African farmers) and detrimental (an invasive in pasture and farmlands). The challenge is thus to control the material in areas where it is unwanted without interfering with the use of the material as a crop plant. Gerry will be in consultation with other blackberry researchers in USDA (Ft. Detrick, Maryland and Corvallis, Oregon) regarding the situation in South Africa.

Long-Term Soil-Climate Monitoring Study in Antarctica

Cathy Seybold, Soil Scientist, National Soil Survey Center, Lincoln, Nebraska, traveled to New Zealand, during the period from December 27 to January 6, 2014, and worked with Antarctica New Zealand staff in the McMurdo Sound region of Antarctica. In Antarctica, data was collected from nine active long-term soil-climate stations. Four of the stations border the Antarctic coast. The Scott Base station borders both the Ross Ice Shelf and the Ross Sea. Four of the stations are in the McMurdo Dry Valleys. Each climate station measures both atmospheric and soil parameters that extend from the active layer into the permafrost. Recorded measurements are made on an hourly basis. The climate stations contain data loggers with sensors to record air temperature, relative humidity, solar radiation, and wind speed and direction. Thermistor temperature probes are installed to a maximum depth of 1.2 m. Steven's soil moisture probes are installed at various depths in the active layer and upper permafrost. At each locality, the instruments are replicated to provide information on variability. For the past several years, NRCS personnel have been part of a collaborative effort to better understand the fundamental properties and mechanics of cold and frozen desert soils. This project will use data from the nine long-term climate stations to help increase overall understanding of the coastal ecosystems and active layer dynamics that exist along the Victoria Land coastline in the McMurdo Sound region, and determine the impacts of climate change on the active layer and upper permafrost.



Soil climate station installed in the Wright Valley (one of the McMurdo Dry Valleys) at Bull Pass (450 m elevation) in Antarctica.

In addition, data was collected from two 30 m boreholes equipped with data loggers and soil temperature sensors to study changes in the permafrost. These two boreholes are located in close proximity to the two soil climate stations located at Bull Pass and Marble Point.

The thermal state of the active layer and permafrost are key indicators of climate change within the cryosphere. The research being conducted by this project will ultimately provide needed baseline data that will help us understand the behavior of cold and dry soils. Also, long-term data would be useful for defining normal conditions, departures from normal, trends, and cyclic events. It would also provide information on the magnitude of year-to-year variability.

Lessons learned from this project will have applications in preparing for possible climatic change in the northern U.S. Also, by studying these cold soils, we can learn about the behavior of similar soils in Alaska and other cold regions when anthropogenic changes are induced. Information resulting from this trip will aid NRCS in understanding cold soils and can have implications for coping with global climate change here in the U.S., particularly for agriculture in the northern U.S. and Alaska.

Installation methods that were found to be successful in Antarctica will be extremely beneficial when applied to the same types of extremely harsh environments found in the mountainous regions of the western U.S. and Alaska.

For Antarctic New Zealand, results from this research will enhance the knowledge base underpinning the protection of ice-free areas and development of a robust spatial environmental classification of the Ross Sea region, and findings from this study can be used to guide future policy.

Soil and Water Conservation Training for Tajikistan

The U. S. Department of Agriculture (USDA) established the Cochran Fellowship Program (CFP) in the Foreign Agriculture Service to train agricultural government officials and private individuals from middle-income countries, emerging markets, and emerging democracies to enhance agricultural development. Cochran fellows come to the U.S. for approximately 2-3 weeks to enhance their knowledge and skills in areas related to agricultural trade, agribusiness development, management, policy and marketing. Since 1984, the program has provided training for thousands of participants from many countries.

In April of this year, NRCS specialists were asked to provide soil and water conservation training to a delegation from Tajikistan. The specialists were Jon Fripp, Civil Engineer (Stream Mechanics) and Phuc Vu, Civil Engineer (Design), NRCS-NDCSMC, Fort Worth, Texas, Cheryl Simmons, Natural Resources Specialist and Rich Weber, Wetland Hydraulic Engineer, NRCS-CNTSC, Fort Worth, Texas, Ken Mayben, Zone Engineer, Civil Engineer, NRCS-TX, Weatherford, Texas, and Greg Norris, State Design Engineer, NRCS-CA, Davis, California.



Community garden discussions.

The study tour purpose was to provide the member participants with an opportunity to view several watershed treatments (conservation systems and practices) and irrigation technologies that are in use in the U.S.. The tour focused on areas in the U.S. with similar topographical and climatic conditions to the identified areas in Tajikistan. The conservation planning process, survey, design, construction, and operation and maintenance of several soil and water conservation systems and practices were observed and discussed during the



Grazing assessment

study tour. The delivery of conservation technical assistance by trained conservationists to farmers was also addressed. Hands-on experiences were stressed. An essential aspect of this study tour was the dialogue among the working group members, technical specialists, planners, and farmers/ranchers to discuss the potential applicability or adaptability of what they are seeing to their home country situations.

Haiti Soil Survey Pilot Project

In March 2014, the Haiti soil survey pilot project was finally launched. The project is a joint effort of NRCS, FAS, USAID, Haitian Ministry of Agricultural, University of Haiti Faculty of Agriculture and Veterinary Medicine (FAMV) and the Watershed Initiative for National Natural Environmental Resources (WINNER).



Haiti Minister of Agriculture, Thomas JACQUES, at soil survey pilot project opening ceremony acknowledging the trainees, NRCS, USAID and other partners as TV news crew films.

There were five soil scientists who participated in the Haiti soil survey project. NRCS's goal in coordination with the agency's Haitian counterparts is to build capacity for the Haitian Ministry of Agriculture to design and conduct a soil survey that meets their country's needs. The Haitian Ministry of Agriculture plans to conduct a country-wide soil survey to improve food productivity and food security. The NRCS soil scientist team's main objective is to share their expertise and provide training on NRCS soil survey technology to a selected group of Haitian agronomy engineers. After completing comprehensive training, the Haitian Agronomists will then have the capability and a potential opportunity to complete soil surveys in Haiti.

Related Internet Resources

USDA Foreign Agricultural Service (FAS) – <http://www.fas.usda.gov>

Environmental Protection Agency (EPA) – <http://www.epa.gov>

U.S. Geological Survey (USGS) – <http://www.usgs.gov>

South African National Biodiversity Institute – <http://www.sanbi.org>

Nelson Mandela Metropolitan University - <http://www.nmmu.ac.za>

USDA Natural Resources Conservation Service (NRCS) –
<http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home>

USDA NRCS National Design, Construction, and Soil Mechanics Center –
<http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/ndcsmc/>

USDA NRCS East National Technology Support Center –
<http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/entsc/>

USDA NRCS West National Technology Support Center –
<http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/wntsc/>

USDA NRCS National Soil Survey Center – <http://soils.usda.gov/contact/nssc/>

USDA NRCS National Soil Information System - NASIS –
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053552

Food and Agriculture Organization of the United Nations (FAO) – <http://fao.org/home/en/>

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