



**Natural Resources Conservation
Service – Caribbean Area**

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Success Story

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PROMOTING SOIL HEALTH IN THE CARIBBEAN AREA

Soil Health is the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals and humans. The Soil Health Initiative focuses on how important it is to manage soils so they are sustainable for future generations, and promotes the four pillars of soil health:

- Manage more by disturbing the soil less,
- Diversify soil biota with plant diversity,
- Keep a living root growing throughout the year, and
- Keep the soil covered as much as possible.

Improving soil health on our limited and threatened agricultural land provides many benefits to farmers. It improves water quality, increases soil water availability, enhances nutrient cycling, and increases soil carbon sequestration. All while meeting farm production needs with better quality, less energy use and reduced chemical and pesticide inputs.

Caribbean Area NRCS supports and promotes the National Soil Health Initiative. We provide vital information and expertise to agency staff, partners and the public through a variety of methods.



Soil Health Outreach Highlights



On Saturday evening, February 5, 2015, 35 farmers from the **Las Marias Agro-Ecology Club** learned how to *Unlock the Secrets of the Soil* from Mayagüez Field Office and MLRA Soil Survey staff “soil evangelists.” MLRA Soil Survey Leader, Manuel Matos, with help from Mayagüez District Conservationist, Zulma García, initiated the group into the *Secrets of the Soil*. He explained what exactly soil is and described our regional soil characteristics. Then he introduced the *NRCS Soil Health Initiative*, detailing characteristics of a healthy soil, the importance of soil health for agriculture, and how to improve soil health by implementing soil health management systems.

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To emphasize his point, Agro. Matos demonstrated how soil disturbed by tillage harms soil function. He had two volunteers help him with a *Soil Stability (or Slake) Test* to demonstrate the difference between a soil disturbed by conventional tillage and one that had not been tilled for a number of years. Each volunteer put their soil clod on a piece of wire mesh suspended in a large glass tube of water. The farmers were amazed to watch how the undisturbed (or no-till) soil clod stayed clumped together, while the disturbed soil clod quickly began to fall apart. The test showed how rain and storm water can damage or destroy disturbed soils, allowing the soil to erode and wash off (runoff) into nearby streams, rivers and coastal waters. Meanwhile, undisturbed soils will hold together and absorb the water, benefiting production and the environment.

This year's ***Para La Naturaleza Educational Fair***, held April 18, 2015 at Luis Muñoz Rivera Park, commemorated the *International Year of Soils* and promoted the importance of soil conservation. Para La Naturaleza is a division of the Puerto Rico Conservation Land Trust, and for the last 26 years they have held fairs to educate and teach the community about the importance of maintaining, conserving and enhancing our natural resources and Puerto Rico's land trusts.



NRCS Caribbean Area staff shared publications with students, youths and adults about the island's soil diversity at our exhibit featuring the Puerto Rico Soils Order map and a soil profile monolith depicting 10 of the 12 soil orders recognized by the USDA's Soil Taxonomic Classification. NRCS soil scientists were a big hit with the public with their two soil health demonstrations: a *Rainfall Simulator* and *Soil Stability Test*. Fair attendees learned first-hand about the four pillars of soil health and the importance of proper land use management and how our management decisions affect soil health and fertility.



The USDA StrikeForce Team and PR dignitaries celebrated ***Earth Day 2015*** with Puerto Rico's First Lady, Wilma Pastrana Jiménez, at the La Fortaleza People's Garden. State Soil Scientist, Carmen L. Santiago, described the four pillars of Soil Health to the group. Then she used a *Rainfall Simulator Kit* and *Slake Test* to demonstrate the benefits of minimizing soil disturbance and keeping the soil covered, with assistance from PR Agriculture Secretary, Dr. Myrna Comas, StrikeForce representative, Elvis Cordova and First Lady Pastrana.

The Metropolitan University (Bayamón) Environmental Association's first ***Green Fair***, held May 5, 2015, showcased exhibits, presentations and demonstrations from state and federal agencies and NGOs to educate the public about environmental issues in Puerto Rico, including pollution prevention and resource conservation.

Agro. Santiago presented International Year of Soils and NRCS Soil Health Initiative information and materials at the fair. She explained



the importance of properly managing soil resources to both conserve soil and improve soil health for future generations to participants through *Slake Test* demonstrations. She and two student helpers showed everyone how soil structure, aggregate stability, organic matter and soil microbiota are lost and destroyed by continuous tillage. The test clearly showed students and teachers how unprotected, unhealthy top soil is washed away by rain, becoming sediment that pollutes our rivers, lakes and coastal areas.

Soil Health Training

On December 2, 2014, Agro. Santiago spoke at the USDA Caribbean Climate Sub Hub roundtable meeting, describing the importance of Soil Health as one method to mitigate climate change impacts.



Soils Division staff provided training on the National Soil Health Initiative and demonstrated the *Slake Test* to over 35 district conservationists, soil conservationists, soil conservation technicians, UPR/AEE agronomists, and UPR professors during the ***Soil Health, Cover Crops and Weed Management in the Caribbean Area Workshop***. The workshop was coordinated by NRCS Ecological Science Division staff and held at the Juana Díaz Agricultural Experimental Station on August 25-26, 2015.

Soils Division staff led an interactive ***Web Soil Survey training*** workshop for over 50 University of Puerto Rico Agricultural Extension Service agronomists on October 14-15, 2015. They provided detailed instruction to participants on:

- Soil Survey – Its Uses and Interpretations,
- How to use the Web Soil Survey, and
- The National Soil Health Initiative & the four pillars of Soil Health.



Social Media Reach



NRCS is also promoting the Soil Health campaign through its social media sites on [Twitter](#), [YouTube](#) and [FaceBook](#), through e-blasts via [GovDelivery](#) and on our [Soils webpages](#). Soil Health information was circulated to over 7,920 members of the public through 132 social media posts. NRCS Caribbean Area just released a [new Soil Health video](#) en Español, created by Earth Team volunteer, Nelson O. Vázquez Santiago, and featuring NRCS-CB Soils staff, left to right – MLRA Soil Survey Leader, Manuel Matos; State Soil Scientist, Carmen L. Santiago; and Soil Scientist, Samuel Rios – explaining the Secrets of the Soil.

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