

Resources

U P D A T E

Celebrate the Year of Soils



2015

International
Year of Soils

How important is soil?

Soil makes our lives possible. It provides the medium that supports plant growth for our food, fiber, and some biofuels. The entire earth—every ecosystem, every living organism—is dependent upon soils.

Soil supports the web of life and performs critical functions in farms, forests, deserts, marshes, and suburban areas. Soils that are sustainably managed provide ecosystem services that:

- modify the atmosphere by emitting and absorbing gases, including greenhouse gasses
- filter and clean water
- recycle nutrients (including carbon), so living things can use them over and over again, and
- provide habitat for soil-organisms, insects, and important larger animals, including burrowing owls, endangered Stephen's kangaroo rats, and desert tortoises.

Soil provides the microbes that make antibiotic medicines and that sequester (store) carbon from the atmosphere, building resilience to climate change.

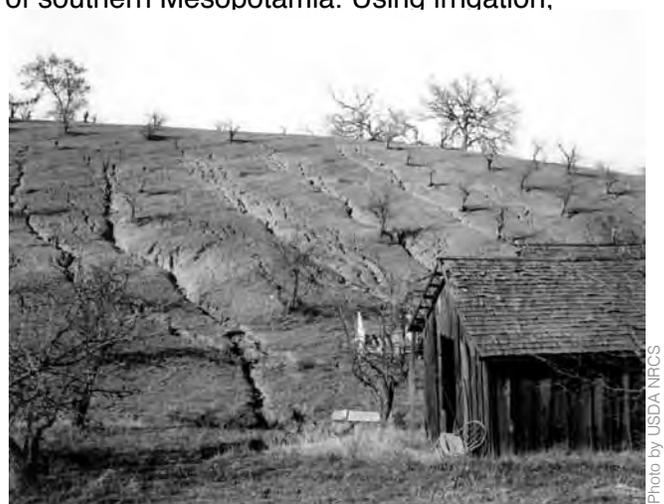
Did you know that soil has been a defining part of cultures since the beginning of civilization? Some of the first written words were recorded on clay tablets. Water was carried in clay pitchers and flowed through clay pipes. Clay and sand were used to construct walls and adobe bricks. Soil holds the clues to past civilizations, to be revealed through erosion and archeology.

Why is it important to take care of soil?

When soil is poorly managed, it impairs the capacity of soil to sustain life. History tells us that around 3000 BC, the Sumerians built large cities in the deserts of southern Mesopotamia. Using irrigation, they farmed and created large food surpluses. But around 2200 BC, the civilization collapsed. Scientists debate why, but one reason is believed to have been due to the buildup of salts in the soil. Most crops can't grow in salty soils, and the region remains too salty for crop production today.

Our Nation learned the importance of sustainable soil management during the Dust Bowl of the 1930s, the name given to the Great Plains region for severe dust storms. Also called the "Dirty Thirties", Congress enacted Public Law 74-46 which created the Soil Conservation Service (now the USDA Natural Resources Conservation Service).

A Nation that destroys its soils, destroys itself.
President Franklin D. Roosevelt 1937



The walls of this deserted farm bunk house are lined with papers dated September 1922. Apparently the destruction of this hillside orchard had taken place within a few short years.

Photo by USDA NRCS



Riverside-Corona Resource Conservation District

RCRCD provides resource management assistance to private and public landusers and conducts land treatment, education, and volunteer programs to steward natural resources. RCRCD fosters the sustainable use of natural resources for each land-use, including native habitats, urban/suburban areas, and agriculture.

Web Soil Survey

by Peter Fahnstock, Resource Soil Scientist,
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One Stop Shopping for Soil Data

Web Soil Survey (WSS) is your one online source for all current soil information in the United States. This website is constantly updated with new soils information from around the country as field projects are completed. The site can be accessed by entering websoilsurvey.nrcs.usda.gov into an address bar on your web browser or simply by searching for “web soil survey”.

The Web Soil Survey application is designed to provide electronic access to all relevant soil and related information in order to make wise land use and management decisions. Most users want to produce soil maps for their area of interest. The WSS allows users to print soil maps using color imagery or topographic maps as a backdrop. A soil map is not much use without associated tables of soil properties and interpretations, so WSS rates soils by their suitability or limitation for several categories including:

- Building Site Development
- Construction Materials
- Land Classifications
- Land Management
- Sanitary Facilities
- Vegetative Productivity
- Waste Management
- Water Management.

WSS also provides data and ratings on specific soil properties and factors for:

- Soil Chemical Properties
- Soil Erosion Factors
- Soil Physical Properties
- Water Features
- Soil Qualities and Features
- Water Features.

One of the nicest features of WSS is its ability to put all of the data you are interested in into a high quality, professional PDF report. You can download and print this report in full color if you wish, or email the report to someone else. This feature essentially creates a personalized soil survey report, and of course, there is no charge for this.

There are also many more features available within the WSS application for advanced users. The ability to import shape files to define an area of interest is one such feature, and the downloading of all available data for an individual map unit or entire survey area is another.

Web Soil Survey is now a downloadable app for some smart phones, as well. Try it out, and you may find that WSS really does become your first stop when you are making land use and management decisions.

Also see California’s site at: <http://casoilresource.lawr.ucdavis.edu/soilweb-apps>.



Granular soil structure displayed in specimens from the surface layers of two soils. This structure is common in soils that have high levels of humus and significant amounts of biological activity.

Photo by John Kelley/ USDA NRCS.



Soil Scientist field mapping soils in Washington County, Virginia.

Photo by Jeff Vanuga/ USDA NRCS.

Native Plants and their Soils

by Arlee Montalvo

The Riverside-Corona Resource Conservation District conserves important habitat lands through restoration and preservation. During the restoration process, invasive species are removed and native plants are re-established. Soils are evaluated to help determine the appropriate plants for the location.

You may be familiar with soil qualities such as pH, compaction, or fertility for growing food, but did you know that soil is an important consideration for determining what plants will thrive at a particular wild land location? Other factors, including steepness of slope and slope direction, also influence where different types of native plants will grow.

When planning the restoration of a plant community, the soil is considered so that the appropriate combination of plant species will be specified for the area. A field evaluation of the soil for texture (proportions of sand, silt and clay), color, gravel content, and depth provides important clues. Staff may also collect soil samples to test for salts, alkaline or acidic conditions (pH), the amount of organic matter, and nutrient content.



Photo by USDA NRCS

A soil profile that has a large content of rounded rock fragments (gravel, cobbles, and stones).



Photo by Erica Presley

Plant restoration ecologist Arlee Montalvo used a probe to collect soil samples at RCRCD's Open Space Reserve on the east side of the Temescal Valley.

Once the soil is analyzed, other sites with similar soils are examined to see what type of native vegetation is supported. Remnants of existing and adjacent vegetation also provide clues as to what plants are likely to thrive at the restoration site. The presence of non-native weeds may indicate altered soil conditions that might interfere with native plant establishment. In such cases, special techniques may be needed to repair the soil.

Within one of RCRCD's upland reserves, RCRCD ecologists are mapping the soil and vegetation and analyzing patterns to identify areas most suitable for restoration of shrubland habitat for the rare California gnatcatcher.



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California gnatcatcher



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All RCRCD programs and services are offered on a nondiscriminatory basis, without regard to race, national origin, religion, age, gender, or orientation.

Soil Educational Materials

The Riverside-Corona Resource Conservation District (RCRCD) provides educational materials and school mini-grants to raise awareness about sustaining natural resources. The soils materials listed below are among those that are provided free for teachers, homeschoolers, and individuals who work or reside within RCRCD's boundaries. (For boundaries, see http://rcrcd.org/uploads/files/district_boundary_2013.pdf). Order forms for elementary, middle and high school levels can be requested from Erin Snyder at snyder@RCRCD.org or (951) 683-7691, ext.207. They can also be found online at www.RCRCD.org under the Education tab.

STUDENT BOOKLETS

Dig Deeper-Mysteries in the Soil
Soil to Spoon
DIG IT! The Secrets of Soil

Soil Saver Club: Hands-on activities to learn about soil and its conservation. A student is entered into the "Club" upon completing the hands-on activities and doing a project or further reading. Certificates are awarded to Club members. Spanish version available.

POSTERS

Soil Is an Amazing Substance
A Soil Profile
Landforms and Soil
We Need Soil (animal life)
An Inch of Soil
DIG IT! Soils in your Everyday Life



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Additional resources can be found online at the following links:

- USDA-NRCS Soil Health: [http://www.nrcs.usda.gov/wps/portal/nrcs/main/pr/soils/health/Surviving the Dust Bowl. American Experience: www.pbs.org](http://www.nrcs.usda.gov/wps/portal/nrcs/main/pr/soils/health/Surviving%20the%20Dust%20Bowl.American%20Experience)
- Soil Scholar Quiz: <http://www.proprofs.com/quiz-school/story.php?title=mte1mduwoaih7n>
- Food and Agriculture Organization of the United Nations: 2015 International Year of Soils <http://www.fao.org/soils-2015/about/en/>
- Soil Science Society of America: www.soils.org, www.soils.org/discover-soils; for teachers: www.soils4teachers.org; for students: www.soils4kids.org .
- Monthly videos can be viewed at www.soils.org/iys/monthly-videos.
- International Union of Soil Sciences: 2015 International Year of Soils official video: http://www.iuss.org/index.php?article_id=22
- The Soil Story by Kiss the Ground (explains carbon cycle in soil): <https://www.youtube.com/watch?t=7&v=nvAoZ14cP7Q>

Learn about current events and educational opportunities by "liking" our Facebook page at www.facebook.com/RCRCD .