Dena Marshall

United States Department of Agriculture (USDA)– Natural Resource Conservation Service (NRCS) Soil Scientist, IN

Why is it important to learn about soils?

Soil is the foundation for EVERYTHING that we are and do. From the clothes we wear, the food we eat, to the houses we live in, it ALL has its start from the soil in some way! This is why we are so concerned with protecting and improving our soils because it can take thousands of years to create an inch of good topsoil, but if we are careless it can be washed or eroded away in minutes.

Are there many girls who go into the soil science field?

Within the USDA-Natural Resources Conservation Service (NRCS) there are roughly 120 women soil scientists working in various roles of soils. From field mappers and soil classifiers to laboratory scientists and resource soil scientists helping the public utilize soil information to management positions in the cooperative soil survey.

What are some of the most important things you do in your job?

Helping people make wise use decisions about their soils! Educating the public as to why our soil is important and how to find out more information about it. I help protect the environment by identifying wetlands and other environmentally sensitive areas. I think being an example for other girls thinking about a career in soils has been my greatest accomplishment. I truly love my job and my motto is "It's been a GOOD day when you come back dirty!"

Dr. Patrick Megonigal

Dr. Patrick Megonigal, Senior Scientist, Deputy Director Smithsonian Environmental Research Center (SERC), MD

Why are soils important to each citizen?

Clean water, fresh air, forests, grasslands, wetlands, wildlife, food, clothing and energy all emerge from soils. If we care for soils, then soils will care for us and the natural world we cherish.

What kinds of subjects should kids study to become a scientist?

All subjects and all skills prepare a young mind to be a scientist. Science, math, art, history and wood shop are all important topics because science is full of creativity and tinkering.

What do you love about your job the most?

I love being my own boss and doing different things every day. I especially like working outside and being around people who are excited by nature.

Ask Maxine

Question:

Why do scientists study soil? Is it really that important?

Answer:

Maxine worked for NACD for 47 years. That's why we always ask Maxine.

YES! Almost all of the minerals and nutrients we need to live, to grow, to give us energy and to keep us healthy come from fields, gardens, trees and pastures. Almost all of the foods we eat get their nutrients from the soil. Only a small fraction of Earth's soil can be used for growing food, and we are already farming most of it. To help prevent world-wide hunger in the future, we must keep our soil healthy.

ANSWER KEY

Pg 2 Life is Busy in the Soil: decomposers, infiltration, release, control, aerate, burrowing.

Pg 4 Hello Horizons: ACROSS: 5 horizons, 7 mineral; DOWN: 1 topsoil, 2 silt, 3 roots, 4 organic, 6 unweathered.

Pg 6 Soil Matters: "The nation that destroys its soil destroys itself" Roosevelt 1937

Thinking about a career in Soil?

Visit http://www.soils4teachers.org/files/about-soils/soil-career-poster.pdf

National Association of Conservation Districts

National Association of Conservation Districts (NACD)
www.nacdnet.org

Soil Science Society of America
www.soils.org

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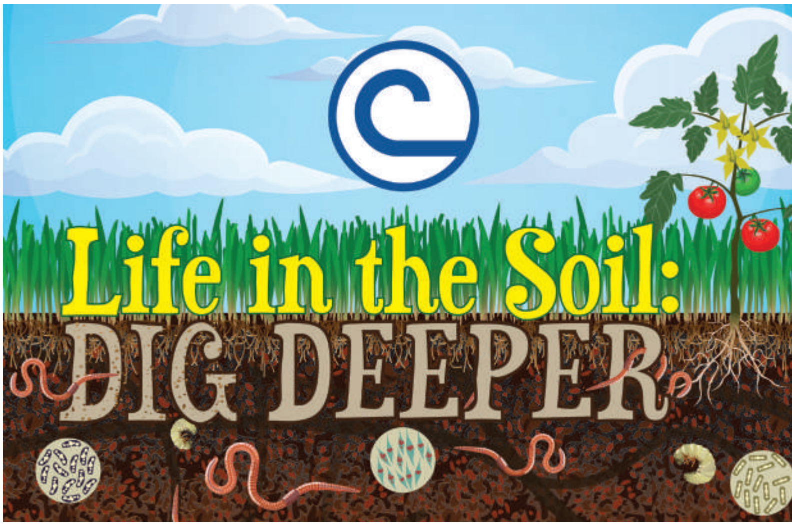
Visit http://www.nacdnet.org/general-resources/stewardship-and-education-materials/2019-life-in-the-soil-dig-deeper/ and www.soils4teachers.org for additional education materials

Booklet designed for use with Grades 4-5



Level 3 Grades 4 -5

There's Something Living

Life is Busy in the Soil

Draw lines to connect the syllables on the left to the syllables on the right to discover just a few of the jobs that soil organisms do every day. Use the words you create to fill in the blanks.

INFIL	LEASE
RE	TROL
CON	POSERS
DECOM	ROWING
AER	TRATION
BUR	ATE

Most **bacteria** are _____ that convert the energy stored in the organic matter found in soil into forms useful to the rest of the organisms living in the soil. Some bacteria can even break down pesticides and pollutants in soil, making it healthier.

Fungi are microscopic cells that usually look like long threads as they grow. These threads are called hyphae. The length of a single hypha can range from a few cells to many yards. Hyphae join soil particles together which helps increase water _____ into the soil.

Under My Feet!

Did you know that you are walking on living organisms every time you walk to the school bus, to the garage to get your bicycle or through the yard to get to the mailbox? **ONE TEASPOON of soil can hold between 100 million and 1 billion bacteria and other organisms.** A few of the organisms you might find living in the soil under **YOUR** feet are shown here:

EARTHWORMS

ARTHROPODS

What is living in the soil you walk on every day?

Remember, sidewalks are poured onto soil, homes are constructed in and on soil, and vehicles travel on roads built on soil. **We all live on soil**…and millions of organisms **live in soil!**

Protozoa are single-celled organisms that like to eat bacteria. They are much bigger than bacteria ranging from 1/5000 to 1/50 of an inch in diameter (try to measure that with your ruler)! As they munch on bacteria, protozoa _____ excess nitrogen into the soil that can then be used by plants and other organisms.

A few species of **nematodes** that cause plant disease get a great deal of attention, but most nematodes work hard at keeping soil and the organisms that depend upon it healthy. These beneficial nematodes help _____ disease and make nutrients available to other organisms.

Many **arthropods** enjoy life in the soil. Arthropods are invertebrates – they have no backbone, but they do have an exoskeleton. As they eat, arthropods _____ and mix the soil, as well as shred organic matter found in the soil.

Earthworms are hermaphrodites, meaning that they exhibit both male and female characteristics. They do much of the recycling in the soil like the recycling of nutrients. Another important job carried out by earthworms is _____ which leads to tunnels lined with recycled nutrients. This makes it easier for roots to grow deep into the soil, keeping plants healthy.