

MEET DR. YAMINA PRESSLER, A SOIL ECOLOGIST

Dr. Yamina Pressler is a soil scientist, writer, educator, speaker, and artist on a mission to make soil a household name. It wasn't until she took a soil science class that she learned that soils are full of life, wonder, and complexity - not just the brown stuff outside that makes plants grow.

Her research lies at the intersection of **soil biology** (the study of microbial and faunal activity and ecology in soil), **disturbance ecology** (a temporary change in environmental conditions that causes a pronounced change in an ecosystem), and **biogeochemistry** (study of biological, geological and chemical processes in the natural environment) where she explores the role of soil fauna in ecosystem scale processes in response to global change. Her current research focuses on how fire, drought, and management affect soil food webs, organic matter, and carbon cycling. She also studies the mechanisms by which soil fauna and trophic interactions influence soil organic matter formation.

Dr. Pressler shares her enthusiasm for soil science and ecology with her undergraduate students at Cal Poly, San Luis Obispo. She holds a B.S. in Environmental Management and Protection from Cal Poly, and a Ph.D. in Ecology from Colorado State University.



Everything I do celebrates soils in an effort to increase our connection to them. If we want to stop treating soils like dirt, we first need to develop the eyes to see them.

- Dr. Yamina Pressler



A DAY IN THE LIFE OF DR. YAMINA PRESSLER

Yamina is a soil ecologist that is passionate about sharing the value of soil. Can you find terms she uses every day in her practice?

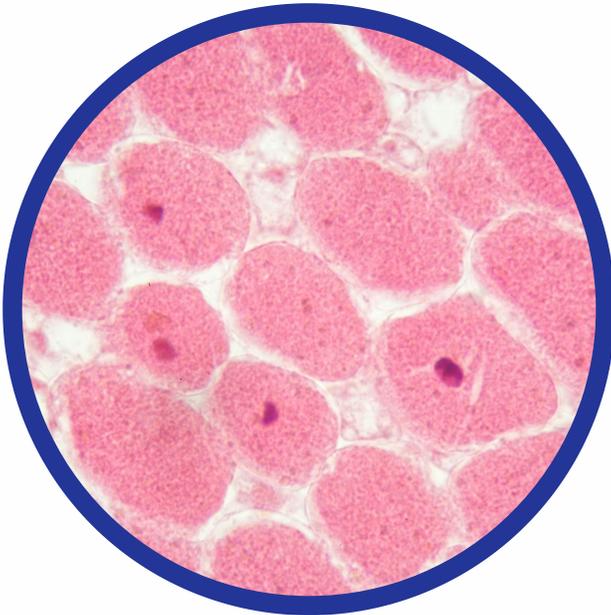
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- agriculture
- biodiversity
- clay
- climate
- decomposition
- ecology
- field test
- groundwater
- lab work
- microorganisms
- microscopic
- minerals
- moss piglet
- nematode
- plants
- sand
- silt
- soil sample
- soil chemistry
- soil layer

Please note: some words are found when spelled backwards!

LIVING SOIL

An ecosystem containing billions of organisms can be found in just a teaspoon of healthy soil! Microscopic organisms work together to support the plants we see above the surface. Take a look at some of the organisms found in the soil ecosystem:



Rhizobacteria

Bacteria that break down organic matter, supply nutrients directly to plant roots, and can even defend roots from disease and drought.



Dave Genney

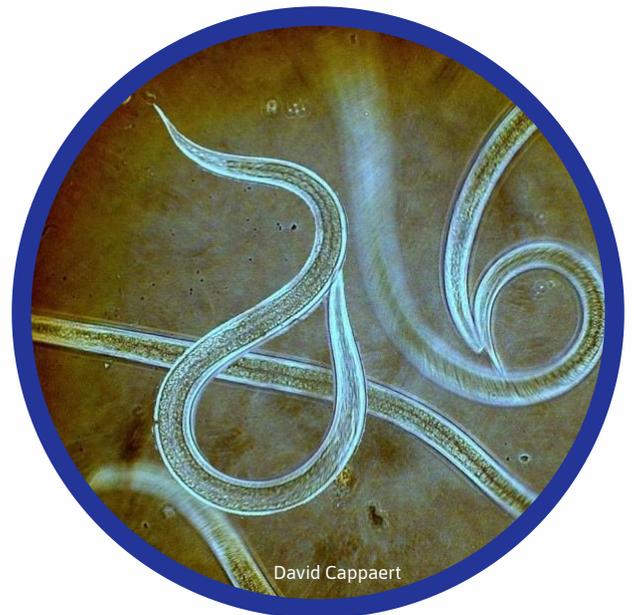
Mycorrhizal Fungi

In return for energy from the plant, these fungi create an absorption and transport system that carries nutrients to the plant's roots.



Protozoa

These microbes consume bacteria, controlling bacterial populations. They provide nutrients and create air pockets & water channels in the soil.



David Cappaert

Nematodes

Microscopic predatory worms that live around or inside the plant. They provide nutrients and help control the balance of the soil ecosystem.

COMPOSTING 101

Composting speeds up the natural decay of organic material by providing the ideal conditions for microscopic organisms to thrive. It creates nutrient rich soil that helps plants grow. Try starting your own compost bin or pile with these helpful tips!

While there are plenty of useful options for composting containers, you can also choose to build your own compost pile right on the ground. Start with a base layer of sticks for air flow and water drainage. Then add alternating layers of “brown stuff” and “green stuff” to introduce the right ratio of carbon and nitrogen. The best ratio of carbon to nitrogen is around 25 to 30 parts carbon to 1 part nitrogen, or 25-30:1. Try to use two thirds “brown stuff” and one third “green stuff”. Adding garden soil to your compost introduces helpful microscopic organisms. It’s important to create an ideal environment for these organisms to thrive: warm temperatures, nutrients, moisture, and plenty of oxygen.



"BROWN STUFF"

Brown stuff is high in the element carbon. Here are some examples of brown stuff along with their carbon-nitrogen ratio. Some things, like sawdust, are very high in carbon compared to their nitrogen content, while others, like leaves, are not as high.

- Dried leaves: 60:1
- Pine needles: 90:1
- Newspaper: 125:1
- Sawdust: 625:1

"GREEN STUFF"

Green stuff contains more of the element nitrogen than brown stuff. Examples are fresh, living parts like grass clippings, kitchen vegetable scraps, weeds and other plants. Here are some sources of nitrogen along with their carbon-nitrogen ratio.

- Food Scraps: 15:1
- Grass clippings: 18:1
- Coffee grounds: 20:1
- Horse manure: 25:1

MAINTENANCE

Never add meat, dairy, pet waste, or diseased or pesticide treated plants to your compost. Every few weeks, aerate your compost by turning it with a shovel or garden fork. To prevent odors and pests, cover food scraps with a layer of brown stuff right away. Keep the compost moist but not too wet. Over time, dark, healthy soil will form - which you can feed to your plants!

