

EarthWhile Australia

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Soil Foodwebs and Microbes

Microbes are key to soil and plant health.

* Build soil structure
* Retain moisture
* Cycle nutrients
* Enhance resistance to pests
* Process toxins

This means

* Healthy plants
* More dollars for you $$$
* Care for the environment

About a third of microbes found in the soil are also found in our guts.

Plant health pyramid - top two levels require vigorous biology and are evident in resistance to pests and diseases, and flavour, aroma and nutrient density. <https://www.advancingecoag.com/plant-health-pyramid>

A teaspoon of productive soil contains:

* More microbes than people on earth
* Billions of bacteria
* Metres of fungi
* Thousands of protozoa
* Hundreds of nematodes

Soil foodweb

A complex interrelationship of organisms - we are interested in the bacteria, fungi, protozoa and nematodes. These are all required to be present to have good soil health - they need to be present in quantity and diversity. They carry out activities that alter the chemical and physical properties of the soil.

To maintain a soil food web, we need to ensure they have the conditions they need

* Food – exudates from living plants, carbon from composts etc
* Air – aerate rather than digging over
* Moisture –green cover crops, clay, mulches
* Protection – UV, temperature, enemies, poisons

Soil Foodweb Gardening Rules (from Lowenfels and Lewis, Teaming with Microbes)

* Some plants prefer soils dominated by fungi, some prefer bacteria
* Most annuals prefer nitrogen as nitrates and do best in bacterially dominant soils
* Most perennials prefer nitrogen as ammonium and do best in fungally dominant soils.
* Compost can be used to inoculate soils.
* Aged brown materials support fungi; fresh green materials support bacteria.
* Mulch on surface supports fungi, mulch worked in supports bacteria
* Sugars help bacteria multiply; kelp, humic and fulvic acids, phosphate rock dust help fungi grow
* Follow any chemical application with compost/compost tea.

How do you know your soil food webs are working well?

* Healthy plants
* Cool leaves
* Roots form dreadlocks
* View using a microscope

EarthWhile Australia services

* Presentations
* Onsite consultations
* Workshops - microscopy, assessing soil biological health

Summary

1. We face health, environmental and economic challenges.
2. Soil food web microbes are essential to healthy soils – types, roles, diversity.
3. Think microbes for soil structure, nutrient availability, nutrient retention, water holding, resistance to pests and diseases, breakdown of toxins.
4. Microbes are freely available.
5. Right now, you can make a start on growing healthy food, caring for our environment, and saving money with the help of microbes.

Resources

<https://www.earthwhileaustralia.com>