



the local
carbon
network

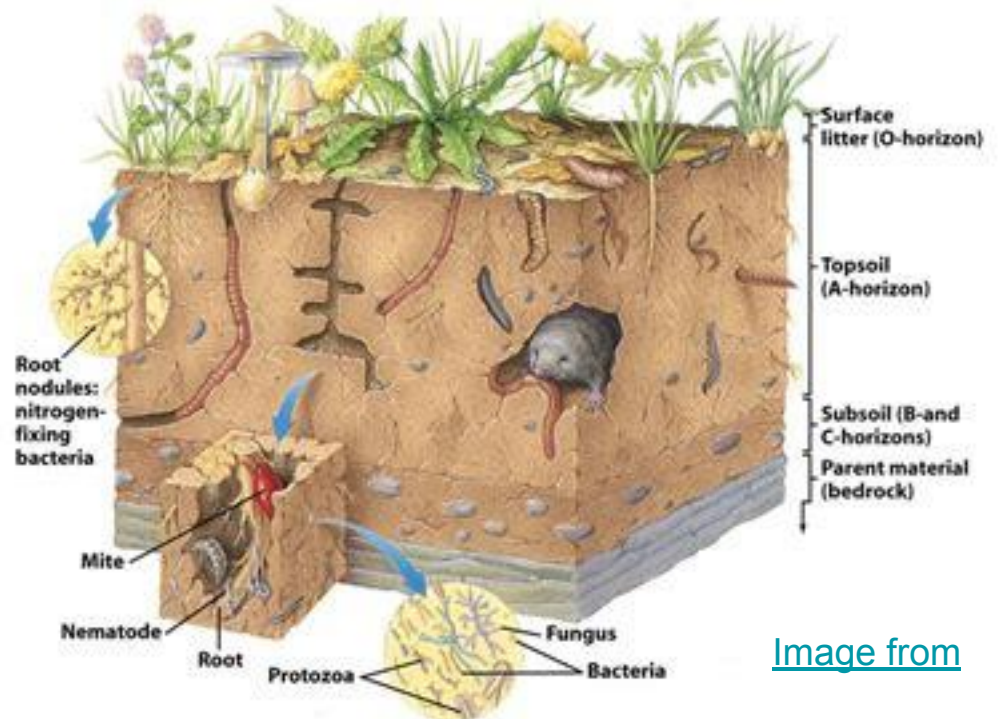


Urban Farming - Lesson 5 Life in the Soil

Localcarbon.net in collaboration with Symsoil.com

There are 7 types of life in Soil

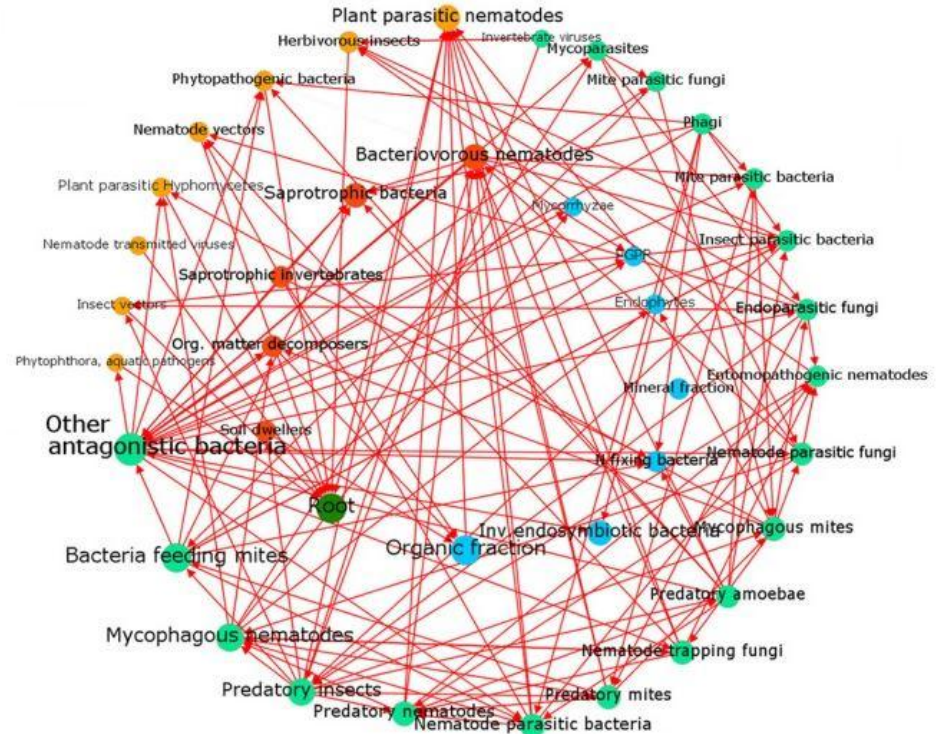
Bacteria
Archaea
Fungi
Protozoa
Nematodes
Microarthropods
Earthworms



[Image from](#)

Simple? No way!

Let us not be fooled into believing that soil biology is simple, it is very complex because of all the different species and their interactions. Similarly we can say that “big biology” on earth is comprised of mammals, birds, reptiles, fish, plants and insects but we can see for ourselves how we are oversimplifying.

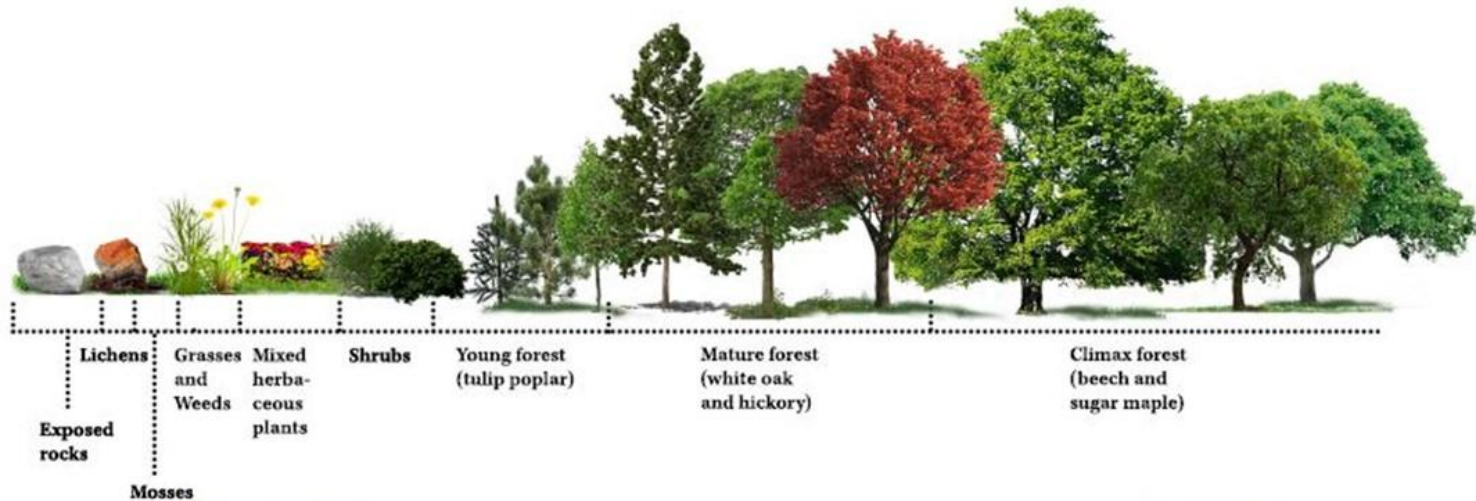


Below mirrors above A good rule to know however is that the more complex the life is above ground, the more complex it will be below ground too.

Bacterial Dominant



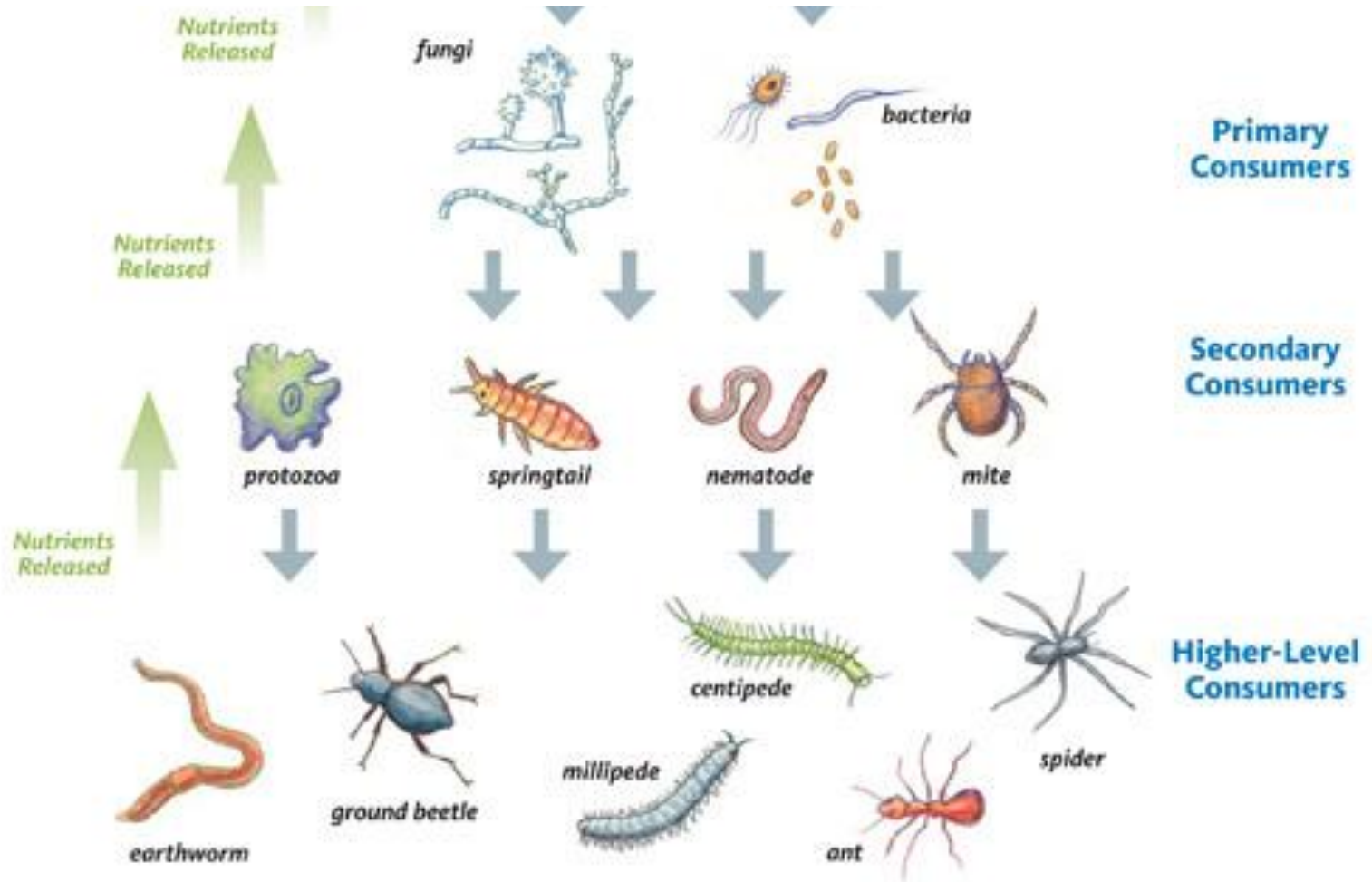
Fungal Dominant



PLANTS FARM THE MICROBES

- ▶ Plants release sugars, proteins & carbohydrates into the rhizosphere to select for microbes who will metabolize a desired nutrient for them
- ▶ A diverse soil food web provides plants with 24 hour all you can eat buffet!
- ▶ Nutrients remain in the soil, bound in the bodies of the microbes unable to leach out in run off unlike synthetic fertilizers
- ▶ In addition to nutrient availability, specific microbes contribute to stress reduction boosting the plants natural immunity by outcompeting pest, pathogen, and breaking down volatile organic compounds such as salts and heavy metals

The sun, CO₂ and soil nutrients produce organic matter that the soil biology eats at various stages. At each step of the food chain new nutrients are released. Each life form has tasks...



Bacteria

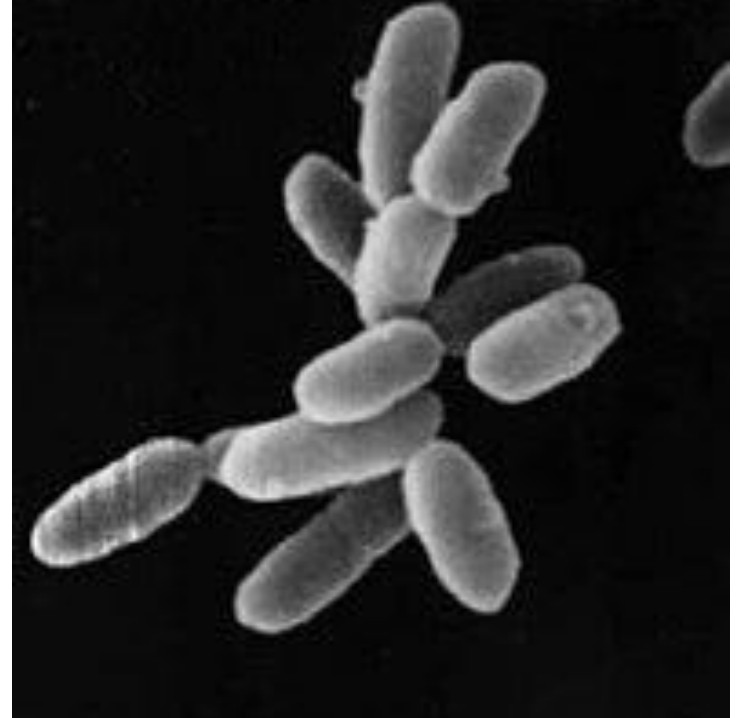
The foot soldier of the soil. Single celled organisms. Set the stage for the more complex organisms. Feed on simple carbohydrates. Provide nutrients by being consumed by protozoa & nematodes. Breakdown salts and aromatic compounds. Aid in growth hormone production.

Important species: Bacillus,
Pseudomonas, Azospirillum, Rhizobia



Archaea

They are single celled organisms without a nucleus. They have a possible plant growth promotion function, constitute a nutrient supply, provide protection against oxidative stress and could indeed be “communicators” between plants and fungi. They also play an important role in the carbon and nitrogen cycle. Still being studied.



[credit](#)

Fungi

Fungi are, like bacteria, important as decomposers in the soil. They convert hard-to-digest organic material into substances that other organisms can use. They can be single celled or long and stringy. Fungal hyphae bind soil particles together, creating “clumps” that help increase water infiltration and soil water holding capacity.



[Image credit](#)

Protozoa (Amoeba & Flagellates)

- ▶ Feed on bacteria and in turn produce plant available nitrogen, phosphorous and potassium
- ▶ Found on the leaves of grasses and river dwelling plants
- ▶ Consumed by nematodes to provide additional plant available nutrients
- ▶ Outcompete less desirable protozoa



Nematodes

- ▶ Visible at 100x magnification
- ▶ Vital for soil-born pest control
- ▶ Increase nutrient cycling by consuming bacteria, fungi, and protozoa
- ▶ Consumed by microarthropods
- ▶ Most sensitive to tillage



Microarthropods

- ▶ Visible with naked eye
- ▶ When populations are maintained will completely eradicate above ground pests
- ▶ Break down organic matter
- ▶ *Amblyseius Swirski*, *Amblyseius andersoni*, Orbitid Mites



Earthworms

Earthworms produce binding agents responsible for the formation of “clumps”. They improve soil porosity by burrowing and mixing soil. As they feed, earthworms participate in plant residue decomposition, nutrient cycling, and redistribution of nutrients in the soil profile. Their casts, as well as dead or decaying earthworms, are a source of nutrients.

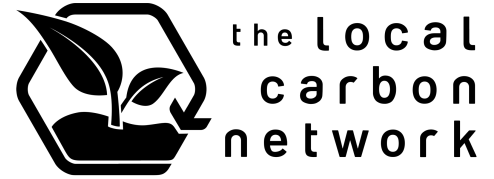


Why we sell starter and finisher

In our Community Supported Drawdown Boxes you will find compost starter and finisher packets that allow you to reseed the biology which may not occur spontaneously in depleted soils. You will also find single packs of SkyCompost that contains all 7 types of biology

Visit <https://localcarbon.net/shop/> for details





The next lesson explains carbon farming and the how the soil effects the sky...

If you have any questions please write to us in the Facebook Group

<https://www.facebook.com/groups/LocalCarbonNetwork>

or keep an eye out for our newsletter as we often arrange free online Q&A sessions on
ZOOM

or see our FAQ, Articles and videos on the website <https://localcarbon.net/>

Thanks!