

# Introduction to Building Fertile Soil

**“SOIL FERTILITY ENHANCEMENT”**



**Remember**

**“Feed The Soil And The  
Soil Will Feed The Plants”**



# Dirty Topics:

## Factors in building fertile soil

- The Soil Food Web
- Identify soil type, Soil testing
- Compost, Compost tea
- Earth worms, Cover crops, Fungi population
- Natural soil formation, Soil horizons
- Re-mineralization, History of your site
- Organic fertilizer (COF), Soil cultivation methods
- Crop rotation, Reading weeds



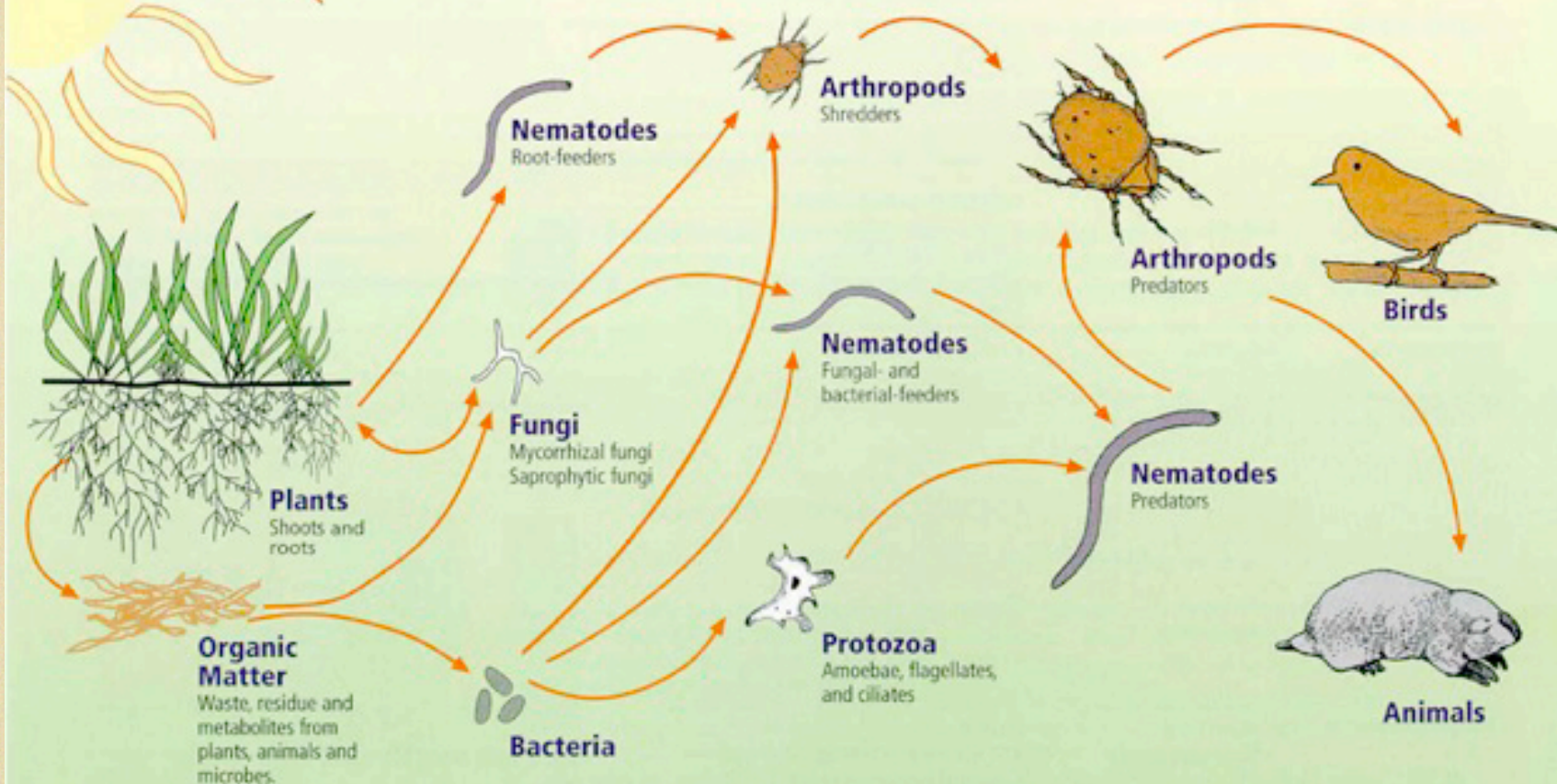
# Nutrient Cycling:

## Major Players in the Soil Food Web

- Plants (roots and shoots) Organic matter (green waste, crop residue, dead animals)
- Arthropods (shredders)
- Bacteria (decomposers, pathogens)
- Fungi (mycorrhizal, saprophytic and pathogens)
- Nematodes (fungal and bacterial feeders, predator)
- Organic matter (green waste, crop residue, dead animals, manures, food scraps and microbes)



# The Soil Food Web



**First trophic level:**  
Photosynthesizers

**Second trophic level:**  
Decomposers  
Mutualists  
Pathogens, parasites  
Root-feeders

**Third trophic level:**  
Shredders  
Predators  
Grazers

**Fourth trophic level:**  
Higher level predators

**Fifth and higher trophic levels:**  
Higher level predators

Relationships between soil food web, plants, organic matter, and birds and mammals

Image courtesy of USDA Natural Resources Conservation Service

[http://soils.usda.gov/sqi/soil\\_quality/soil\\_biology/soil\\_food\\_web.html](http://soils.usda.gov/sqi/soil_quality/soil_biology/soil_food_web.html)



# MYCORRHIZAL MUSHROOMS

- Beneficial symbiotic, extends feeder roots up to 1000 times = mineral mining
- Over 90% of all plants on earth rely on fungi to exist
- Nutrient exchange at root zone
- Mycelial network support system for the entire ecosystem
- Hyphae 100 times smaller than hair roots



# SAPROPHYTIC MUSHROOMS

- Nature's recyclers (enzymes)
- Lignin decomposition (very specialized)
- Nutrient recyclers (carbon)
- Predigest organic matter (crude oil)
- Toxic waste (heavy metals, radiation)



# Cover Crops - Green Manures

- Plants actually build soil... All plants (even weeds)
- Nitrogen fixing - Legumes + Rhizobium bacteria
- Biomass - Grains + Carbon sequestration
- Sub-soil fracturing - Mustards + Deep breathing
- Mineral Miners - comfrey, borage, nettles
- Over all soil conditioning (Plant Positive!)



Thank you