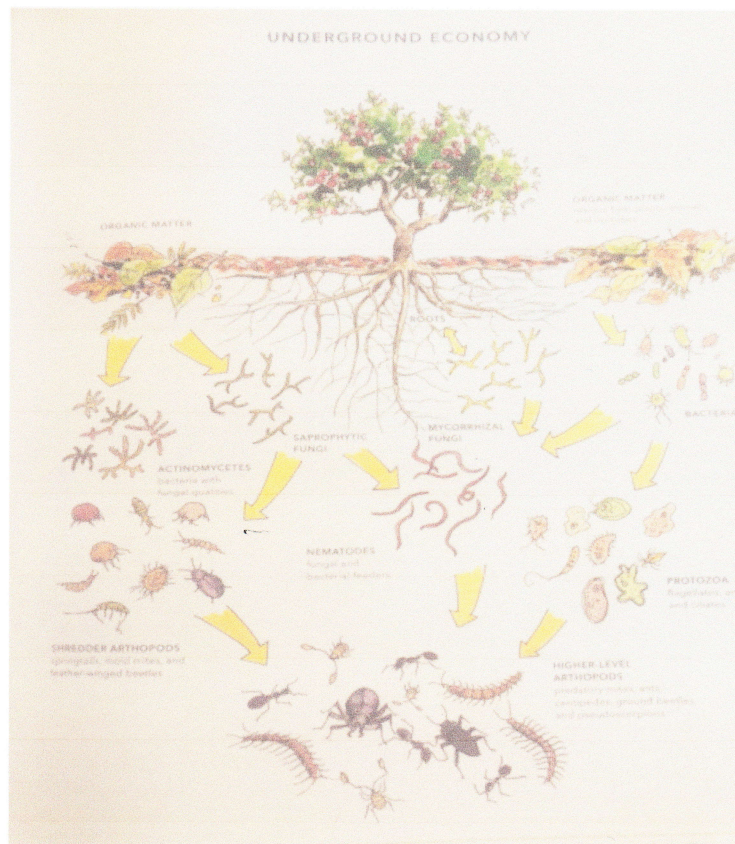


# Soils- The Living Organisms Beneath Our Feet

## Soil Communities



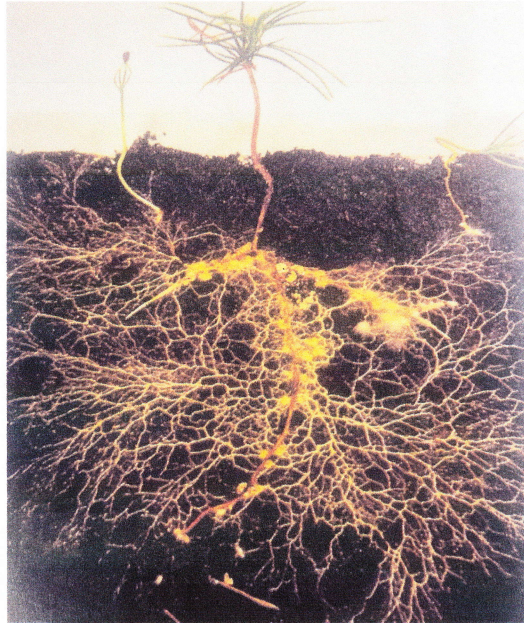
# Soil Quality

- Know your soils
- Soil Texture- Sand, Loam, Clay
- Soil Compaction- screw driver test
- Soil Test- Nutrients and their availability
  - depends basically on soil ph, vegetation (organic materials) and microbial activity
- Improving your soils-microbial populations: fungi and bacteria
- Mycorrhizae are fungi which forms a symbiotic relations with plant roots.
- Beneficial Rhizobacteria are soil bacteria have been reported to promote plant growth and development, more studies are needed to learn more....

## Improving Your Soils

- Living Plants
- Soil Cover Crops
- Feeding Soils from the top down

# Living Plants



Mycorrhizae and Rhizobacteria

# Living Plants

- Captures Sunlight- Photosynthesis
- Captures Carbon- ideal Carbon Nitrogen Ration C:N, 24:1, 24 parts C to 1 part N
- Captures Nitrogen- legumes nitrogen-fixing plants
- Photosynthesis by plants produces sugars which feeds the microbial population and the soil- plant exudates
- Symbiotic Benefits: microbial population- improve water and nutrient uptake, help with abiotic and biotic stress tolerance
- Mycelium- root like structures extending roots to help absorb nutrients and redirects them back to the host plant

# Soil Cover Crops

- Biodiversity
- Cover Crops
  - Accumulators:
    - Comfrey (Russian Bock-19), Lavender, Rhubarb, Sainfoin, Trees, Yarrow- deep rooted plants
  - Nitrogen Fixers:
    - Legumes- Prairie Coneflower, deep rooted. Hairy Vetch, Lupines, Field Peas, Red Medium Clover, New Mexico Locust Trees- deep rooted
  - Pollinators:
    - Agastache Plant, Bee Plant,, Bee Balm, Black-eyed Susan, Phlox, Mint, Stonecrop (Sedum)
  - Protectors- Repellants
    - Catmint,, Garlic, Chrysanthemums, Marigolds, Walking Onions

## Feeding Soils from the Top Down

- Mulch: Wood Chips, Old Manure, Straw
- Compost- Local Balanced Compost- Julie Shedko 970-376-7783
- Bio-dynamic Soils, Soil Mender, Stimulates, Humates and Dry Molasses- Earth Goods 575-758-9131
- Green and Brown Mulch
- Brown Mulch- Fungi dominated
- Green Mulch- Bacteria dominated



# References

- Books:
  - “A Soil Owner’s Manual” by Jon Stika
  - “Teaming with Microbes” by Jeff Lowenfels & Wayne Lewis
  - “Mycorrhizal Planet” by Michael Phillips
- Other Related Book:
  - “Finding the Mother Tree” by Suzanne Simard
- YouTube- Dr. Elaine Ingham, 4 Part “How to Build Great Soils”

[New Mexico's Enchanted Xeriscape Guide-pdf](#)