Module 02.04: Benefits of Compost - Plant Nutrients, Soil Biota

LSU AgCenter Home Composting Certificate Course

Dr. Joe Willis, Anna Timmerman & Chris Dunaway

Plant Nutrients

General nutrient content of composts (dry weight basis)

Type	N	P	K
Poultry Manure	2-4	1-3	1-3
Feedlot Manure	2-3	1-1.5	1-2
Dairy Manure	1-2	0.5-1.5	1-2
Urban Yard Waste	1-1.5	0.2-0.5	0.5-1.5
Crop Residue	1.5-2.5	0.2-0.5	1-2

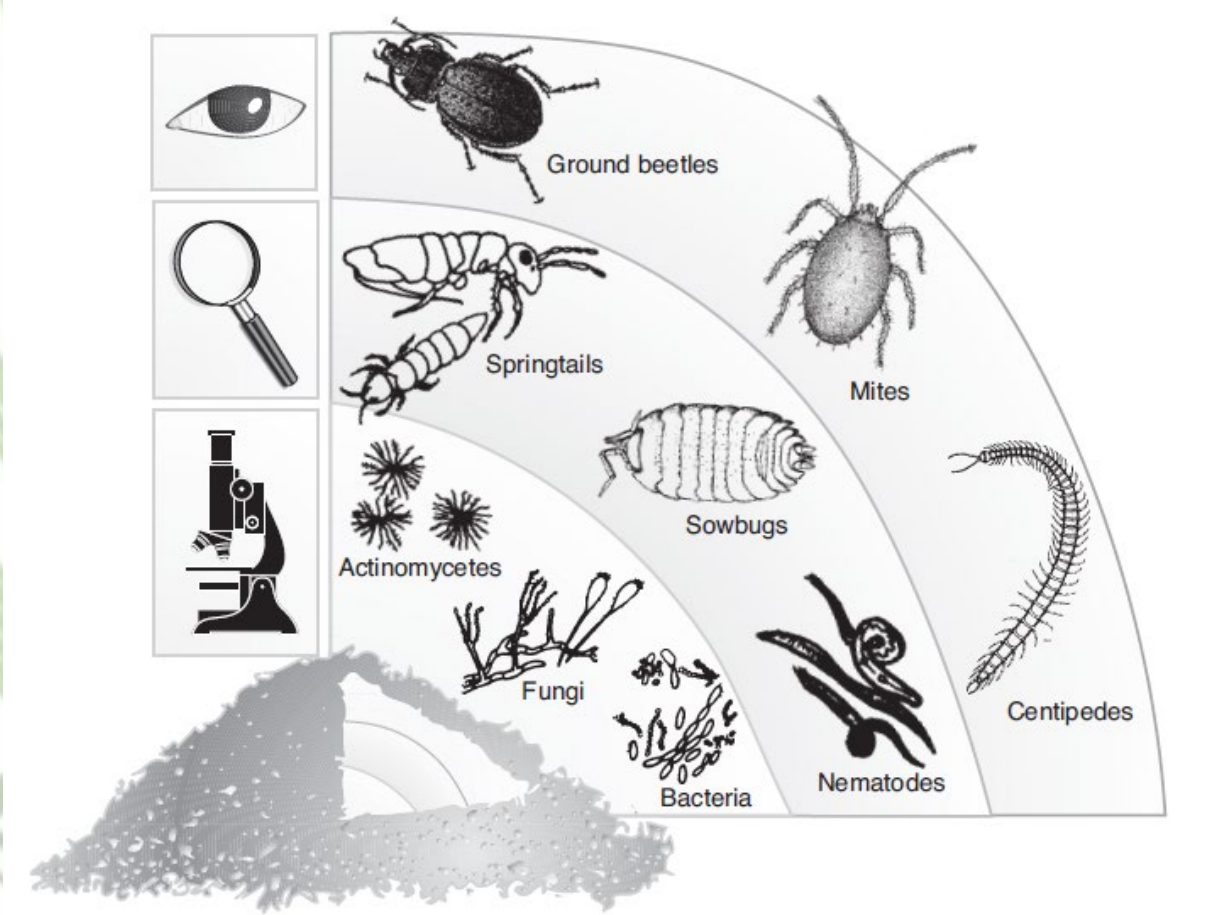
Mostly bound organic N (> 90%)

Mineral N (NH4-N, NO3-N) < 10%% nutrient content

- Compost can usually provide all the micronutrients plants need
- Macronutrient supplementation is usually necessary
- Because the nutrients exist in a complex bound state that are released by microbial degradation, it is a slow release source of nutrients.
- Provides nutrients for a long period of time.
- Increases soil CEC (cation exchange capacity) which increases the soils ability to retain nutrients and prevent nutrient leaching.

Soil Biota

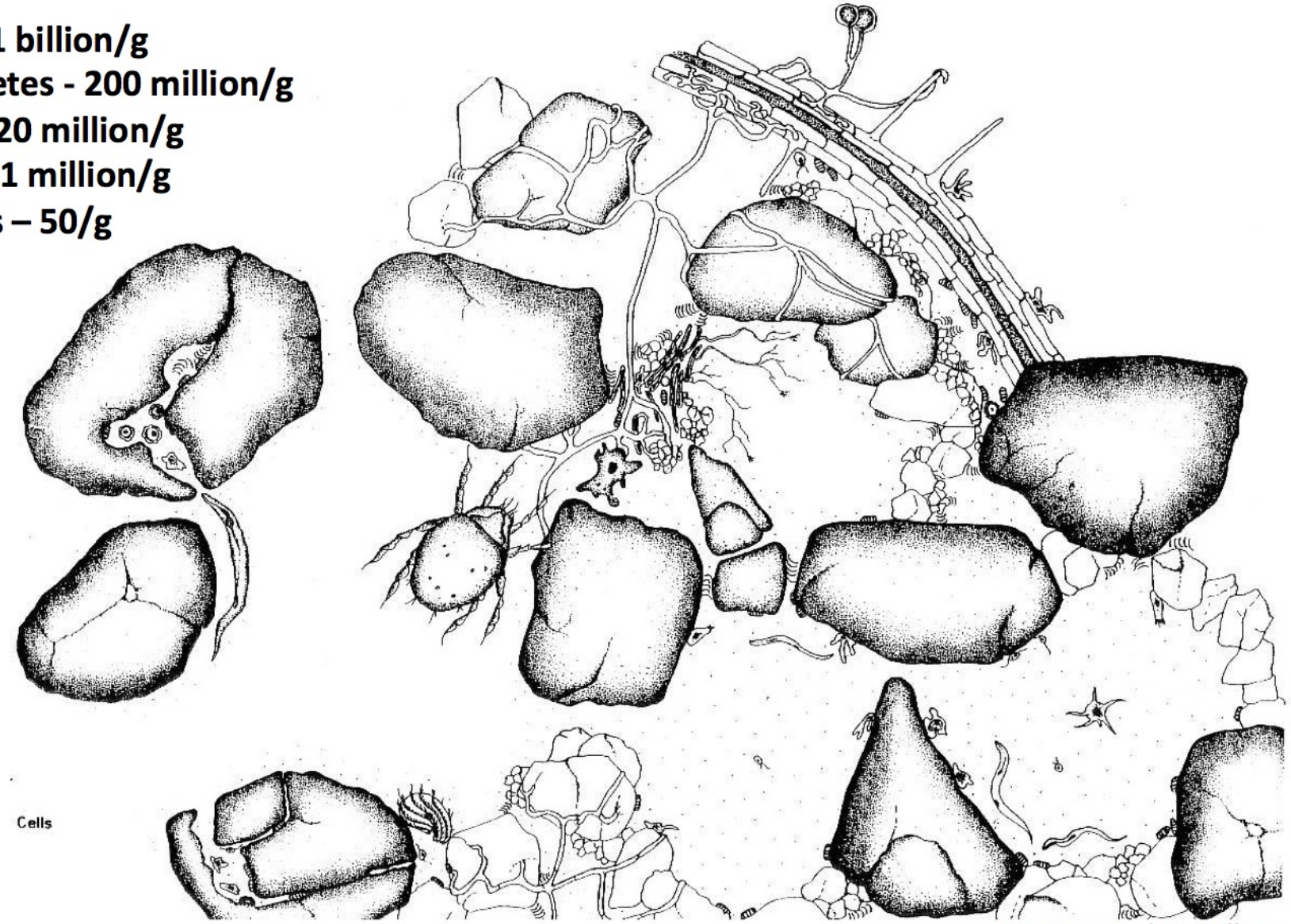
Soil biota: Consists of the micro-organisms (bacteria, fungi, algae, etc.), soil animals (protozoa, nematodes, mites, springtails, spiders, insects, earthworms, etc.) and plants living all or part of their lives in or on the soil.



The fact that compost contains a host of living creatures and nurtures others sets it apart from most other soil amendments.

How many soil organisms per gram of soil?

Bacteria – 1 billion/g
Actinomycetes - 200 million/g
Fungi – 10-20 million/g
Protozoa – 1 million/g
Nematodes – 50/g



C.S. Rose and E.T. Elliot

- Compost microorganisms break down organics into plant available nutrients. Some bacteria convert nitrogen from the air into a plant available nutrient.
- Compost enriched soils have lots of beneficial insects, worms and other organisms that burrow through soil keeping it well aerated.
- Soil bacteria and fungi nourished by compost can also help reduce incidence of a wide range of plant diseases.
- This is also important because it can reduce the need for various pesticides and other chemicals.

Please post all your questions and results to the message board .