An Organic Approach to Soil:
Who's down there, what are they doing, and what can we do to help them!
James Cassidy, OSU Soils Instructor

What is soil?
Soil is "rotted" rock and decomposed organic matter
Soil is a living thing! (not a chemical sponge)
Soil is a water and nutrient storage medium
Soil is habitat – the most diverse habitat on the planet earth!!!

Humus - the Holy Grail of garden soil
What is it? - Humus is way-decomposed dead stuff
Different dead stuff breaks down at different rates
  Simple VS complex substances
  Brown stuff vs green stuff
Humus – hard to break-down organic matter that has amazing properties

What has humus done for me lately? - Creates a Complex, Diverse Habitat
  • Holds water (up to 80% of its own weight)
  • Makes sandy soils hold more water – builds structure
  • Makes clay soils better drained – builds structure
  • Buffers against pH extremes
  • Retains nutrients for plant use
  • Adds energy and carbon - "feeds the herd!"

Soil organisms – the cycle of life makes humus!
Producers – energy from the sun, carbon from the air (CO₂)
Consumers – get carbon and energy from consumers either directly or indirectly
Decomposers – consume dead materials – recycle nutrients for producers

The rhizosphere – where most of the action is in soil
~3mm thick zone surrounding plant roots - Plant/microbe symbiosis – plants feed the bugs, the bugs make nutrients available

Remember, feed the herd!!!
  • Bacteria & Fungi
  • Protozoa/nematodes
  • Mites and other invertebrates
  • Worms
  • Voles/moles/gophers

...all require food and energy in the form of organic matter
Insights into Composting!

Compost: Why is it so Good for Your Garden Soil(?)
& How to make it.

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What is composting?
High temperature, rapid, aerobic decomposition of organic matter that forms a stable humus-like substance with concentrated nutrients, carbon and energy that energizes soil organisms helping cycle nutrients for your garden!

What has compost done for me lately? - Creates a Complex, Diverse Habitat
- "Soil Glue" – creates aggregate structure (helps soil store water & air)
- Holds water (up to 80% of its own weight)
- Makes sandy soils hold more water – builds structure
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Compost basics – the big 4
1) Pile size – minimum size to start a pile ~ 1 cubic yard
2) What to put in the pile – dead stuff!
   Different dead stuff breaks down at different rates
   Simple VS complex substances
   C:N ratios – ideal carbon to nitrogen ratio is 25:1 – 40:1
   “Brown stuff” - high C:N – high carbon
   “Green stuff” – low C:N – high nitrogen
   Rule of thumb – Add about twice as much brown stuff as green stuff
3) Amount of moisture – “glistening” wet – squeeze a drop
4) Aeration – bugs need air! – turn pile, build pile with airflow in mind

Compost is organic matter. Organic matter is carbon & energy. Soil organisms need carbon & energy to help process and release nutrients. Nutrients are what garden plants need to thrive!!!

Feed the soil! The plants come along for the ride!!!
Different food – different C:N ratio
Balanced diet!

Materials that can be put in compost pile:
- Bread
- Coffee Grounds
- Egg shells
- Evergreen needles
- Fruit, peels, rinds
- Garden wastes
- Grass clippings
- Leaves
- Paper (shredded)
- Sawdust
- Sod
- Straw
- Tea leaves
- Vegetables
- Wood ash
- Wood chips

Materials that should not be put in compost pile:
- Bones
- Cheese/Milk
- Meat
- Fat
- Fish scraps
- Noxious weeds
- Oils
- Cat/Dog Manure

Rule of thumb – Add about twice as much brown stuff as green stuff

Ideal C:N ratio
25:1 – 40:1