Master Composter

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Basics of Composting

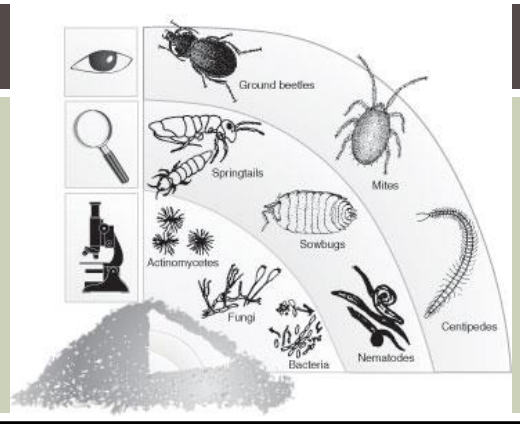
- Why Compost
  - Waste Management
    - Yard waste banned from landfills
    - Responsibility for your waste
    - Reduces need for municipal collection
  - Finished Compost
    - Valuable soil amendment
    - Save $
    - Healthy soil leads to healthy plants

How is Compost Made

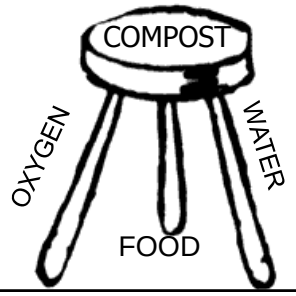
- Biological Decomposition of Organic matter in the presence of Oxygen
- Natural Process
- Process can be influenced
  We can Speed up or Slow Down

Who Does the Work

- Bacteria, Fungi, and Actinomycetes
  Chemical decomposers - enzymes
- Macro-organisms – mites, worms, sow bugs, centipedes, etc.
  Physical decomposers – chew the food
- Goal of Organisms is to EAT and make BABIES
- Compost Starters?



Needs for the Composting Process



Acceptable Materials

- Leaves, grass clippings, yard debris
- Kitchen Scraps – vegetable & fruit peels, coffee grounds, egg shells …
- Used potting soil
- Sawdust, Hay & Straw, manure from herbivores
- Most weeds and garden debris
- Paper and cardboard
- Hair, fur and other natural fibers

Compost Pile "Food to Avoid"

- Meat, Dairy, and Oils
- Persistent Weeds
  - Crabgrass, weeds gone to seed, Invasives
- Cat or Dog Waste
- Diseased Plants
- Chemically treated plants

MATERIALS W/SPECIAL NEEDS

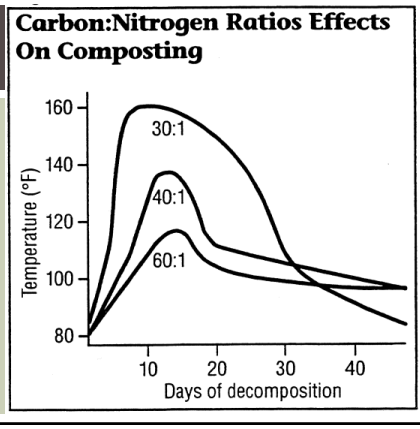
- **Pine Needles**
- **Walnut leaves**
- **Sod**
- **Ashes**
- **Others?**

Organisms Need a "Balanced" Diet

- Commonly called "Browns" and "Greens"
- Rule of thumb is 2 or 3 Browns for every Green – by volume
  - *"Equal WEIGHTS of green and brown…."*
- When diet is out of balance organisms are not happy and healthy

Carbon & Nitrogen aka Browns & Greens

- Main focus is to balance Carbon and Nitrogen Sources (C:N ratio)
- Target range 25:1 to 40:1 (by weight)
- For example
  - Food waste is 38% Carbon & 2% Nitrogen
  - Thus C:N is 19:1



BROWNS

- Leaves (30-80:1)
- Straw (40-100:1)
- Paper (150-200:1)
- Sawdust (100-500:1)
- Animal bedding mixed with manure (30-80:1)

GREENS

- Grass clippings (12-25:1)
- Vegetable scraps (12-20:1)
- Coffee grounds (20:1)
- Manure
  - Cow (20:1)
  - Horse (25:1)
  - Poultry (10:1)
  - Hog (5-7:1)

C:N Continued

- Materials high in Carbon break down slowly
  - High C:N – 30:1 and greater
- Material that are too rich in Nitrogen can lead to anaerobic conditions in the compost pile
  - Low C:N – less than 25:1

A final thought on C:N Ratio

Mix two to three volumes Brown to one of Green

Oxygen

- A pile starved for Air will become anoxic or even anaerobic
  - Organic acids and amines (stinky compounds)
  - Aerobic activity stops
- Compost pile is out of balance
  - Food or water (low C:N ratio or pile is too wet)

Water

- Vital to support compost pile organisms
- 40% to 60% moisture
- "Damp as a well wrung-out sponge"

Temperature

- 90° -140° F is optimal
  - Psychrophilic 55°– 70° F
  - Mesophilic 70°– 100° F
  - Thermophilic 100°-160° F
- Temperatures above 131° can kill pathogens and seeds
- Excessive temps (>160°)can kill our composting organisms

Other Factors

- Particle size
  - Smaller particles have a greater surface area
  - Some larger particles are needed to maintain air flow
- Volume
  - Pile should be about 1 cubic yard to maintain temperature
  - Larger piles may prove difficult to turn

To Bin or Not to Bin?

Composting does not require a Bin, but be sure to select a method that will be used

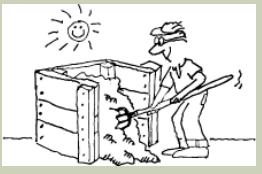
- Compost heap, pile, trench, and sheet
  - May have aesthetic concerns
- Bins
  - Home built
  - Manufactured
- Bin or pile location

Compost Recipes

- Hot and Fast Piles
  - Pile built all at one time
  - Pile tended to often
  - 6 to 12 weeks
- Cool and Easy Piles
  - Pile built as materials accumulate
  - Less intensive management
  - 6 months to 2 years

Troubleshooting

- Nothing is Happening!
  - Pile is too dry
  - Not enough "Green"
- My Pile Stinks!
  - Too Wet
  - Excess "Green"
  - Pile compacted
- Pests



Using Compost

- Gardens, flower beds, lawns, houseplants
- Benefits of Compost
  - Clay Soils – improves drainage and tilth
  - Sandy Soils – increases moisture holding
  - All Soils – improves soil structure
  - All Soils – Nutrients – N,P,K and Micronutirents

Composting process should be at end

- Finished Compost is dark, loose and crumbly
- Organic materials are unrecognizable
- Ambient temperature
- Smells "earthy"

Compost use continued

- Unfinished compost can pull nutrients from the soil where it is placed
- Compost can be screened
  - Removes larger particles
  - A must if used for top-dressing

Compost Application Rates

- 2 inches mixed into top 6 to 8 inches of soil
- Side dress or mulch – 1 to 3 inches
- Top dress lawns – screened compost up to ½ inch

Composting Key Points

- Balanced diet
- Keep pile damp
- Turn pile when you need to