Home Composting

Improving Life with Organic Matter

This educational program is brought to you by an Extension Master Gardener Volunteer.

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MASTER GARDENER VOLUNTEER PROGRAM

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Class Goals

- Learn about soil
- Understand the benefits of compost
- Identify composting methods
- Know what to compost
- Find a use for compost in the yard & garden

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What is Compost

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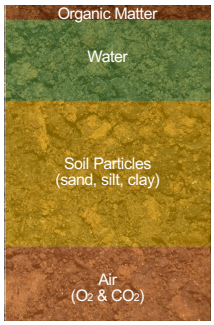
Soil Composition

- Soil made of solids, liquids & gasses
  - Soil particles = 45% (sand, silt, clay)
  - Water = 25%
  - Oxygen = 20%
  - Carbon Dioxide = 5%
  - **Organic Matter = 5%**



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Organic Matter

- The Living (15%)
  - Living plant roots & soil organisms
- The Dead (15%)
  - "*Active Organic Matter*"
  - Dead & decomposing plant roots & soil organisms
- The Very Dead (70%)
  - "*Stable Organic Matter*"
  - Fully decomposed plant roots & soil organisms

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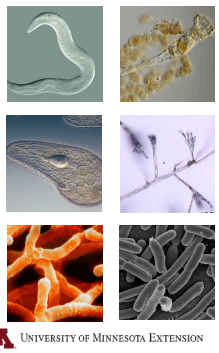
Soil (micro) Organisms

- Break down organic matter into smaller and smaller pieces
- Includes
  - Invertebrates (insects)
  - Rotifers
  - Protozoa
  - Microorganisms
    - Bacteria
    - Actinomycetes
    - Fungi



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Stages of Decomposition

1. Mesophilic (first stage, cool)
   - Done by insects & bacteria
   - Breaks down easily-available materials
2. Thermophilic (second stage, hot)
   - Done by heat-tolerant bacteria, actinomycetes & fungi
   - Breaks down proteins, fats & complex compounds (including plant diseases and weed seeds)
3. Curing (final stage, cool)
   - Done by actinomycetes & fungi
   - Breaks down tough materials

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Compost

- Decomposed organic matter
  - Broken-down completely
  - Dark & crumbly texture
  - Earthy-smell
- Fuels microbial activity
- Improves soil quality

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Benefits of Compost

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Improves Soil

- Improves soil structure
- Reduces soil compaction
- Enhances water retention
- Adds nutrients

- Improving soil conditions means
  - Plants have stronger roots
  - Plants survive through very wet AND very dry weather

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Builds Soil Ecosystem

- Organic matter is the start of a food web
  - Microbial life
  - Invertebrates & insects
  - Larger animals
- Adding diversity means
  - Healthier ecosystem
  - More resilient environment

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Reduces Household Waste

- Almost **1/3** of household waste can be composted
  - 15% are food scraps
  - 13% yard trimmings
- Composting means
  - Remaining waste doesn't smell bad; doesn't need to be taken out as quickly
  - Fewer total garbage bags needed

Note: MN State law prohibits leaves, grass clippings, brush and other plant material from being mixed with your trash.

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Shrinks Carbon Footprint

- Fewer bags of garbage means
  - Fewer garbage trucks
  - Decreases vehicle emissions
- Less organic waste in landfills means
  - Less methane released
  - Reduced impact on climate change

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How to Compost

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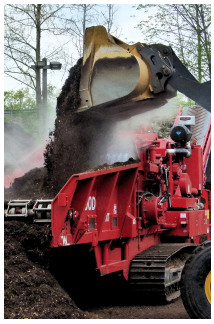
Off-Site Composting (Industrial Composting)

- Pros
  - Accepts kitchen waste & yard waste
  - Doesn't require indoor OR outdoor space
  - Large capacity
- Cons
  - Moderate effort
  - Regular drive & drop-off time
- Industrial Composting Options (Ramsey County)
  - Food Scraps program
  - Yard Waste program



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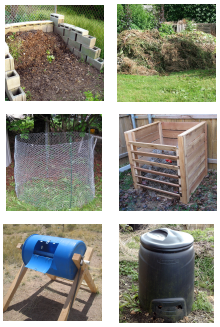
Outdoor Home Composting

- Pros
  - Large capacity
  - Exposure to outdoors controls smell
  - Low-effort
- Cons
  - Requires outdoor space
  - Often requires container
- Outdoor Composting Methods
  - Piles & Bins
  - Containers (mesh cages, barrels & drums)



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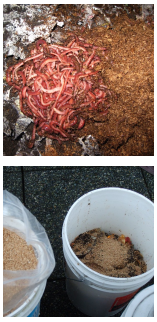
Indoor Home Composting

- Pros
  - Doesn't require outdoor space
  - Small foot-print
  - Sealed containers reduce smell
- Cons
  - Limited capacity
  - Moderate effort
- Indoor Composting Methods
  - Vermicomposting (worm bin)
  - Bokashi composting



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Ideal Locations for Composting

- Indoors
  - Easy Access
  - 55-80º temperature
  - Good air circulation
  - Out of direct sunlight
- Outdoors
  - Easy Access
  - Part-sun
  - Check location regulations

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Composting Steps

- Layer materials (Browns & Greens)
- Add water as needed
  - Damp but not wet (like a wrung-out sponge)
- Turn to aerate
  - As often as every 2-4 weeks, or as little as once yearly
- Time to completion
  - 3-months to 18-months

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What to Compost

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Never Compostable

- Inorganic materials
  - Glass
  - Metal
  - Plastic & rubber
  - Styrofoam
- Organic materials
  - Plastic- & silicon-coated paper products
  - People & animal waste
  - Dead animals

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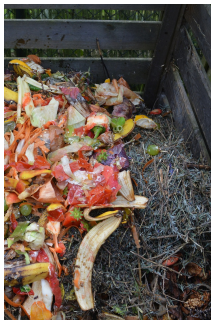
Greens & Browns

- 3:1 Browns: Greens **by weight**
- Greens (1 part)
  - High in nitrogen
  - High water content; wet
  - Examples: yard trimmings & kitchen scraps (fruit/ vegetable)
- Browns (3 parts)
  - High in carbon
  - Low water content; dry
  - Examples: fall leaves, wood chips, sawdust & shredded paper



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Home Composting

- Yes
  - Yard trimmings & kitchen scraps
  - Paper products (untreated)
  - Hair & fur
- No
  - Animal products (meat, bones, skin, & dairy)
  - Fats (oil, lard, & grease)
  - Seeds (weeds, vegetables, birdseed)
  - Diseased plants
  - See NEVER list

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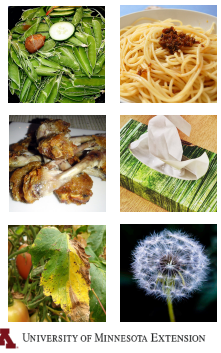
Industrial Composting

Everything you can compost at home PLUS

- Yes
  - Yard waste & kitchen scraps
  - Animal products & fats
  - Paper products
  - Compostable dishes/cutlery
  - Diseased plants
  - Seeds (weeds, vegetables, birdseed)
- No
  - See NEVER list



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Using Compost

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Before Using

- Make sure compost is finished
  - Feels cool
  - Looks dark & crumbly
  - Smells earthy
  - No identifiable pieces (Use screen to remove any large pieces)

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Garden Beds

- Benefits
  - Improves soil structure
  - Holds water
  - Adds nutrients
  - Improves soil ecosystem (including beneficial insects)
- Process
  - Add 3-4 inches in fall
  - Mix/till into top 6-8 inches of soil

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Mulch

- Benefits
  - Holds water
  - Prevents weed growth
  - Improves soil ecosystem
- Process
  - Add 2-4 inches on top of soil after planting
  - Repeat yearly or as needed

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Lawn Treatment

- Benefits
  - Improves soil structure
  - Holds water
  - Adds nutrients
  - Improves soil ecosystem
- Process
  - (New lawns)
    Add 3-4 inches & mix/till into top 4-6 inches of soil
  - (Established lawns)
    Mow grass to 1 inch tall & top-dress with ¼ inch in fall or spring

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Potting Soil

- Benefits
  - Holds water
  - Adds nutrients
  - Improves soil ecosystem
- Process
  - Create 1:1:1 mixture
    - Perlite or vermiculite
    - Sphagnum peat moss or coconut coir
    - Compost

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Home Composting Recap

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Presentation Recap

- Composting is organic matter broken down by microorganisms
- Composting is good for the soil, the planet & your bottom line
- Composting can happen inside or outdoors
  - Use appropriate materials
  - Keep moist
  - Turn occasionally
  - Use when dark, crumbly & earthy with no identifiable pieces

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Frequently Asked Questions

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Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, Too Cold, No Progress, Discouraging Pests

Do I need inoculants, activators, or additives?

- Additives
  - Inoculants: provide additional microbes
  - Activators: provide additional microbe food
  - Lime: raises pH
- Necessary
  - Outdoor Compost – No
  - Indoor Compost – Maybe

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Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, Too Cold, No Progress, Discouraging Pests

If I use compost, do I still need fertilizer?

- Compost has low levels of nutrients for plants
- Some plants have high nutrition needs
  - Test soil to see if extra nutrients are needed
  - Purchase additional fertilizer products as needed

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Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, Too Cold, No Progress, Discouraging Pests

Is it safe to use compost that may have come in contact with pesticides?

- Most pesticides are biodegradable
- Compost using treated materials should be safe for plants and soil life if
  - Pesticide was used according to label
  - Enough time has elapsed since pesticide application

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Additives, Fertilizer, Pesticides, **Compost Tea**, Bad Smells, Too Cold, No Progress, Discouraging Pests

Does compost tea work?

- Uses
  - Provide nutrition
  - Control foliar disease
- Effectiveness
  - Little to no evidence
  - Not recommended

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Additives, Fertilizer, Pesticides, Compost Tea, **Bad Smells**, Too Cold, No Progress, Discouraging Pests

Why does my compost smell bad?

- Rotten Eggs
  - Not enough air OR
  - Too much water
- Ammonia
  - Not enough dry/brown materials

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Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, **Too Cold**, No Progress, Discouraging Pests

Why isn't my compost heating-up?

- Too small
- Too dry
- Not enough air
- Not enough wet/Green materials
- Cold ambient weather conditions
- Compost near completion

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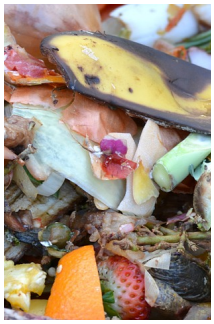
Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, Too Cold, **No Progress**, Discouraging Pests

Why isn't my compost breaking down?

- Too dry
- Not enough air
- Not enough wet/Green materials
- Cold ambient weather conditions



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Additives, Fertilizer, Pesticides, Compost Tea, Bad Smells, Too Cold, No Progress, **Discouraging Pests**

How can I discourage pests in my compost?

- Animals
  - Incorrect materials for home composting (e.g. Food Scraps)
  - Kitchen scraps easily available on top; mix pile
- Most Insects
  - Normal; not a problem
- Ants, bees or wasps, or gnats
  - Kitchen scraps easily available on top; mix pile

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