COMPOSTING WORKSHOP
Florida-Friendly Landscaping™ Principles

- Right Plant, Right Place
- Water Efficiently
- Fertilize Appropriately
- Mulch
- Attract Wildlife
- Manage Yard Pests Responsibly
- Recycle Yard Waste
- Reduce Stormwater Runoff
- Protect the Waterfront
What is:

- **Compost?**
  - The partially decomposed remains of plants and other organic materials.

- **Composting?**
  - The controlled decomposition of organic materials by microorganisms.

- **Humus?**
  - The final state of decomposition of compost.
Composting

Turning organic materials we throw away everyday into a useful soil enhancer

(Rich, black, sweet-smelling, crumbly, soil-like substance comprised of decomposed organic matter)
Why Compost?

- Recycle yard and kitchen waste
- Improve soil:
  - water holding capacity
  - condition and structure or porosity
  - resistance to wind and water erosion
- Support living soil organisms
- Reduce rate of nutrient release and buffer soil from chemical imbalance
- Improve plant and root growth
- Suppress plant disease
Why Compost?

Figure 5. Total MSW Generation (by material), 2012
251 Million Tons (before recycling)

- Paper & paperboard: 27.4%
- Glass: 4.6%
- Metals: 8.9%
- Plastics: 12.7%
- Rubber, leather, & textiles: 8.7%
- Yard trimmings: 13.5%
- Wood: 6.3%
- Food waste: 14.5%
- Other: 3.4%
Composting at Home

Overview:

1) Selecting a Location
2) Choosing a Container
3) Assembling the Pile
4) Maintaining the Pile
5) Harvesting Finished Compost
6) Using Compost
Selecting A Location

- Level ground
- Well-drained surface
- Near a source of water
- At least 2 feet from any structure
- Close to source of materials
Choosing A Container

- Bin
- Pile method (no bin)

http://sarasota.ifas.ufl.edu/compost-info
Compost Bins

Purchase a compost bin or build your own. Consider:

- Appearance
- Size: at least 1 cubic yard
- Accessibility: to add materials and remove finished compost
- Ability to mix materials inside
- Creature access
A bin is not necessary, but is useful for deterring pests and keeping the pile neat.
Composters

Cage Compost Units
Three Bin Unit
Composting Methods

Cold or "Slow" Composting

- Sheet Composting
- Trench Composting
- Cold Bin Composting
- Heap Composting
Pile (Heap) Method

- No container is used; organic materials are simply mounded in a pile

A layer of soil, leaves, or finished compost on top of fresh kitchen wastes will help deter pests
Hot or “Fast” Composting

- Minimum of 1 cubic yard of material – 3’x3’x3’
- Blend of greens and browns (C:N Ratio)
- Proper moisture content
- Frequent turning to provide aeration
- Particle size of less than 2"-3"
Assembling the Pile

For faster decomposition, follow these steps:

- Put twigs or small branches on the bottom of the pile to allow air to circulate
- Layer materials, alternating nitrogen and carbon layers
- End with a carbon layer
- Add water to moisten, not soak
Assembling the Pile
Sandwich Method

- Thin Layers help prevent anaerobic pockets
- Even distribution of moisture
- Filters odors
Assembling the Pile
Mix-It Method

- Mix green and brown materials
- Add 4 inch batches
- Water to add moisture
- Add new material when you turn pile
What Can be Composted?

- Leaves and yard waste
- Grass and lawn clippings
- Wood chips and sawdust
- Kitchen wastes
- Manure
Carbon to Nitrogen Ratio

- Food for the microbes
  - **Carbon** is an energy source
  - **Nitrogen** provides raw element of protein

- Browns and Greens
  - Brown = Carbon
  - Green = Nitrogen

- Optimum C/N Ratio: 30/1 or Less
C:N Ratios

- The carbon to nitrogen ratio determines the decomposition rate of organic materials
  - Grass clippings ~ 20:1
  - Fruit waste ~ 35:1
  - Leaves ~ 60:1
  - Straw ~ 100:1
  - Wood ~ 600:1

- 30:1 is ideal, obtained by adding one part browns to one part greens
C:N Ratios

- Coffee grounds
  20:1
- Cow Manure
  20:1
- Table Scraps
  15:1
- Pine needles
  60:1
- Newspaper
  100:1
- Corn Stalks
  60:1
- Veggie Trimmings
  12:1
“Browns”

- Decompose slowly unless mixed with greens
- Provide carbon, the energy source for microbes
- Bulky materials help aerate
- May cause nitrogen deficiency in plants if not completely decomposed
- Typically low in moisture
- Examples:
  - Straw, leaves
  - Chipped branches, tree trimmings
  - Paper
  - Sawdust
“Greens”

- Decompose quickly
- Nitrogen Rich - Provide food source for microbes
- High in moisture
- Degrade Rapidly
- Compact easily
- Can be a source of foul odors

Examples
- grass, green leaves, kitchen scraps, and manure
- Inorganic fertilizers
- Coffee grounds
What Not to Compost

- Human or pet wastes
- Chemically treated wood products
- Meat, bones, or fatty food wastes
- Dairy products
- Diseased plants or weeds with seeds
- Plants treated with pesticides
- Oils or mayonnaise
Maintaining the Pile

- Moisture
- Aeration
- Pile temperature
- Particle size
- Carbon to Nitrogen (C/N) ratio
Maintaining the Pile

Moisture

- Microbes need moisture to thrive
- Ideal moisture level is 40-60%
- Compost should feel moist, but not soggy
  * "Squeeze test" - Squeeze compost in your hand: moisture should coat your hand, but not drip
- Add moisture as you are building your pile
- Check your moisture level regularly
Maintaining the Pile

Aeration

Helps:
- Microbes work efficiently
- Reduce unpleasant odors

Aerate by:
- Adding bulky items
- Turning the pile periodically
Maintaining the Pile
Pile Temperature

- Depends on:
  - Pile size
  - Available oxygen
  - Moisture content

- Ranges:
  - 122° - 131°F – most effective
  - 133° - 140°F – destroys diseases and weed seeds
Maintaining the Pile

Particle Size

- Smaller particles = faster compost
  - Break small limbs and twigs
  - Shred leaves, newspaper and palm fronds
  - Grind stumps
  - Coarsely chop larger pieces of vegetable matter (reduces overall size of pile)

- Particles can be too small
  - Saw dust
Helpful Tips

- Run over leaves with a mower before adding them to the pile
- Keep pitchfork on site
- Cover pile with leaves or paper to avoid ants
- Water and turn at the same time with help of a friend
Adding More

- Bury new material deep into the pile
- Start a new pile or new section in the pile to allow the first to stabilize and finish
- New materials are a microbe food base
Managing the Pile

Monitor:

- smell: turn if you have odors
- moisture: add as you turn or build
- temperature: turn if the pile is
  - <100 degrees
  - >150 degrees
Managing the Pile

Turn to:

- Re-heat
- Add oxygen
- Destroy undesirables
- Break up clumps and layers
- Keep the smell down
Who are the Players?

- Microbes/Bacteria
- Fungi
- Insects
- Worms
Microbes/Bacteria

- **Psychrophiles**
  - Early Colonizers
  - Optimal Temperature - 55°F
  - Produce some heat

- **Mesophiles**
  - Real workers of the pile
  - Thrive at temperatures from 70 - 90°F
  - Barely survive 40 - 70°F or 90 - 110°F

- **Thermophiles**
  - Work fast from 104 - 200°F
  - In 3 - 5 days can turn green, gold, and tan organic matter a uniform brown.
Actinomycetes

- Filament forming bacteria
  - Grayish cobweb like growth in compost
- Help break down lignin and cellulose
- Gives compost the pleasing earthy smell
As the Pile Cools

Non-Microbial Players move in

- Fungi
- Nematodes
- Fermentation mites
- Springtails
- Centipedes
- Sow bugs
- Ground beetles
Earthworms

- Move into the pile when it cools
- Process and incorporate organic matter
- Increase aeration by creating channels in compost.
Vermicomposting
Composting With Worms

- Get a container
- Tear newspapers and add water
- Add worms
- Bury food scraps
Which Worms?

- Red wigglers – *Eisenia fetida*

- 2 pounds of worms will eat 1 pound kitchen scraps/day
Curing or Finishing

- Allow pile to cool
- Do not add more material
- Earthworms really assist at this time
- One month to a year
Harvest Compost

- Collect mature compost when it is dark, soil-like, and earthy smelling
- Screen compost
- Remove larger pieces and return those to the compost pile
Use Compost

- Apply to plant beds as a soil amendment:
  - gives sandy soils body to hold moisture
  - increases organic matter
  - breaks up clay soil for better drainage
- Use as mulch*
- Blend with sand, peat, and perlite for a potting media
- Compost Tea

*Layer 1” of compost underneath decorative mulch to save money and improve soil fertility
Questions?
Resources:

http://sarasota.ifas.ufl.edu/compost-info

http://edis.ifas.ufl.edu

http://sarasota.extension.ufl.edu

http://sarasota.ifas.ufl.edu/compost-info/cn/
Thank you and Happy Composting!

- Sarasota County Extension: sarasota.ifas.ufl.edu
- Master Gardener Plant Clinics
  - plantclinic@scgov.net
  - 941-861-9807
- Wilma Holley, Florida-Friendly Landscaping™ Specialist
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