What is Composting

- **Controlled decay of organic material**

- **All techniques are based on natural processes**

- **Produces a humus rich material from yard and food waste which would otherwise become part of the waste stream**
Composting is one step in an ongoing backyard process

- Plant growth and production
- Pruning and harvesting
- Composting of waste
- Incorporate into soil as soil amendment resulting in healthier plants

Natural Cycle
Why Compost?

• Reduces landfill pressures
  – Source reduction, Move to Zero Waste

• Makes environmental sense even if your city has a yard waste composting program

• Produces a wonderful soil amendment
  – improves soil structure
  – reduces watering needs

• It’s fun and rewarding
  – wholesome exercise
Types of Composting

- **Grasscycling**
  - leave lawn clippings on the lawn

- **Mulching**
  - spread yard waste under plants

- **Backyard Pile**

- **Vermicomposting (worms)**

- **more....**
Grasscycling

- Leave grass clippings on lawn
- Mulching mower best
- Mow dry, no more than 1/3 of total grass blade height
- Does not cause thatch
- Reduce waste
- Provides needed nitrogen to lawn
- Supplies organic material to soil

- Clippings are 75% water by weight
- The rest is a nitrogen rich (green) material
- Such a shame to throw it away
Backyard Compost Pile
Ingredients of a Compost Pile

• **GREENS** - Nitrogen rich materials
• **BROWNS** - Carbon rich materials
• **AIR** (fluffed like a salad)
  - aerobic composting
• **WATER** (wrung out sponge)
• Nature provides the organisms
• Time – patience
**Greens and Browns**

**GREENS (C:N < 30:1)**

*Immature plant material*

- kitchen scraps
  - (vegetable 12:1, fruit 30:1)
- grass clippings (20:1)
- coffee grounds (20:1)
- cow, poultry, rabbit, horse manure
  - none from meat eating animals
- vegetable garden wastes
- live plant pruning

**BROWNS (C:N > 30:1)**

*Mature, woody plant material*

- Leaves (40-60:1), naturally fallen
- Corn and sunflower stalks
- Dead plants/pruning
- Straw (100:1)
- Pine Needles (70:1)
- Shredded Paper (170:1)
- Wood chips, Sawdust (400:1)
  - no plywood or pressure treated
Material to avoid

• Cat or dog feces

• Meat or dairy food wastes
  - egg shells are welcome in the pile

• Hard to control material
  - Bermuda grass, Bind weed (wild morning glory)
  - Ivy, unless it is finely chopped

• Wood ashes

• Plants treated with herbicides

• Use Oleander only in a hot pile

• Thorny plants unless shredded
Organisms

- Psychrophilic: 0°F to 55°F - low temp
- Mesophilic: 70°F to 90°F - middle temp
- Thermophilic: 104°F to 170°F - high temp

Aerobic Bacteria

- Fungus
- Actinomycete
- Worm
- Nematode
- Springtail
- Ant
- Mite
- Sow Bug

Nature has you covered
Building a Compost Pile

• Use **50%** GREENS and **50%** BROWNS by volume

• Chop the material if you want it to break down faster.
  • Wound for a cold pile
  • Chop to ½” to 1 ½” for a hot pile

• Build the pile in layers or mix together
  • Mix GREENS and BROWNS
  OR
  • 3” of GREENS
  • 3” of BROWNS
  • Water
  • Repeat

• Add water as required (as moist as a wrung out sponge)
Hot Composting

• “Build all at once” compost pile.
• Ideal hot compost pile needs:
  – > 1 cu. yd. of material. (3’ x 3’ x 3’)
  – Material chopped ½” – 1 ½”.
  – 50-50 greens/browns mix.

• > 140F potentially – It’s the bacteria!
  – Thermophilic bacteria.
  – Kills most weed seeds and plant disease pathogens.
  – Compost fast (2-3 months or faster)

• More labor to keep ideal air & water conditions
  – Turn every 1-2 weeks
Cold Composting

• “Add as you go” compost pile
  – Add material as it becomes available (no minimum)
  – 50-50 greens/browns as much as possible
    • Food scraps mix with browns into center of the pile
  – Chop material as much as desired. Chopping will:
    • Reduce volume of material
    • Help speed decomposition => reduces volume

• Temperature is cool to warm
  – Weeds seeds and plant disease pathogens survive.
  – Compost slower (6-18 months)

• As much labor as you want.
  – Turn 1-2 months or pile too dry or too wet.

Nothing wrong with either method...Compost Happens!

Demo
Compost Piles

• Open pile (no bin)
  - can be used for hot composting

• Compost Bin
  - A bin can keep a pile neater
  - If food scraps are to be added to a cold pile, then use rodent proof bin
  - A bin with minimum volume of 3’x3’x3’ is required for hot composting
Examples of Compost Piles

For sale from Santa Clara County

For sale from Sunnyvale
Tools

• Chop the materials
  - chipper shredder
  - lawn mower
  - weed eater
  - hand cutters
  - Meat cleaver on old stump

• Maintain the pile
  - thermometer (fun)
  - turning fork (hot)
  - aerator (cold)

• Bins
Harvesting the Compost

- A Hot pile is done with little or no heat being produced
- Material has turned dark brown and original materials are no longer identifiable (sight and smell)
- Screening can be used to remove large not decomposed items mainly in cold piles
  - Build your own screen
Using Compost

- Improves soil structure by adding **humus** and **micro organisms**
  - A soil conditioner
  - Top soil restoration
  - Soil inoculant

- Typical Applications
  - Incorporate in soil prior to planting
  - Amend potting mixes
  - Mulch or “top dress” planted areas
  - Liquid extract
  - Compost Tea
One teaspoon of good garden soil to which compost has been added contains

- 100 million bacteria
- 800 feet of fungal threads
Compost as a Mulch

- Saves water
- Nutrient reservoir
- pH Buffer
- Results in healthier plants
Incorporating Compost

Bare Soil

Compost Added

Partial Incorporation
Healthy Soil Yields a Healthy Garden