



Organic Gardening I



Master Gardeners

El Dorado County

UCCE Cooperative Extension

Introduction

- What is “Organic Gardening” ?
- Why did so many inorganic procedures come into use?



Ammonium
nitrate



- How to resolve Gardening Contradictions

Start with the Soil

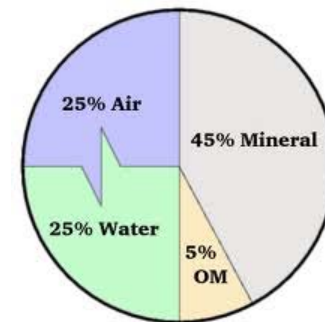
- What is soil
 - Origins
 - Good, Bad, ugly...
- Retains and supplies water
- Allows air to be available



Soil Characteristics

■ Composition

- Minerals are about 45-50%, derived from weathered, eroded rock, new minerals formed in soil
- Water is about 25%
- Air is about 25%
- Organic material is about 5%, derived from decayed plant and animal matter





Soil Characteristics

- Texture = size of particles
 - Sand: largest particle, good pore space, poor nutrient holding
 - Silt: mid size particle
 - Clay: smallest particles, good nutrient holding, water retention, hardest to work
 - DON'T add sand: Clay + Sand = Concrete
 - Good Soil Tilth = Good Soil Health!

SOIL TEXTURES

Soil is important for life. Without it, many plants that we depend on for our oxygen and food could not grow.

There's more to soil than it just being a lump of dirt. Here are some different soil types:



Loamy soil



Silty soil



Clay soil



Peaty soil

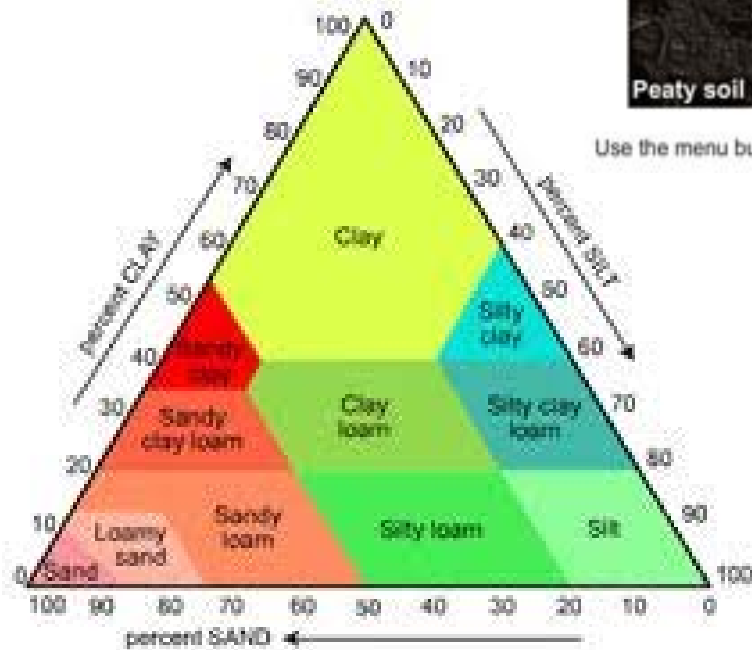


Chalky soil



Sandy soil

Use the menu button to find out more.

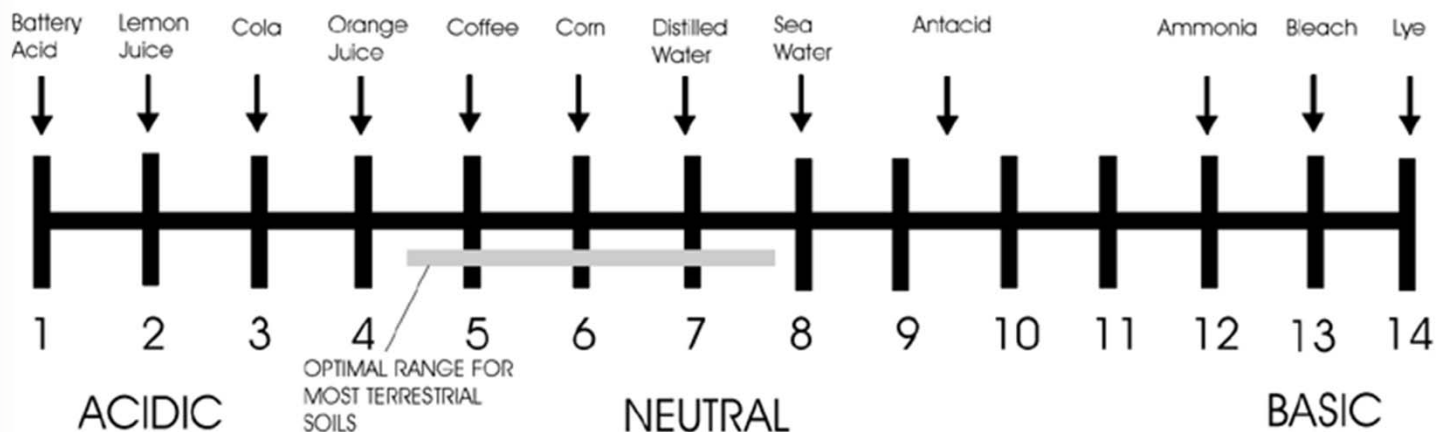




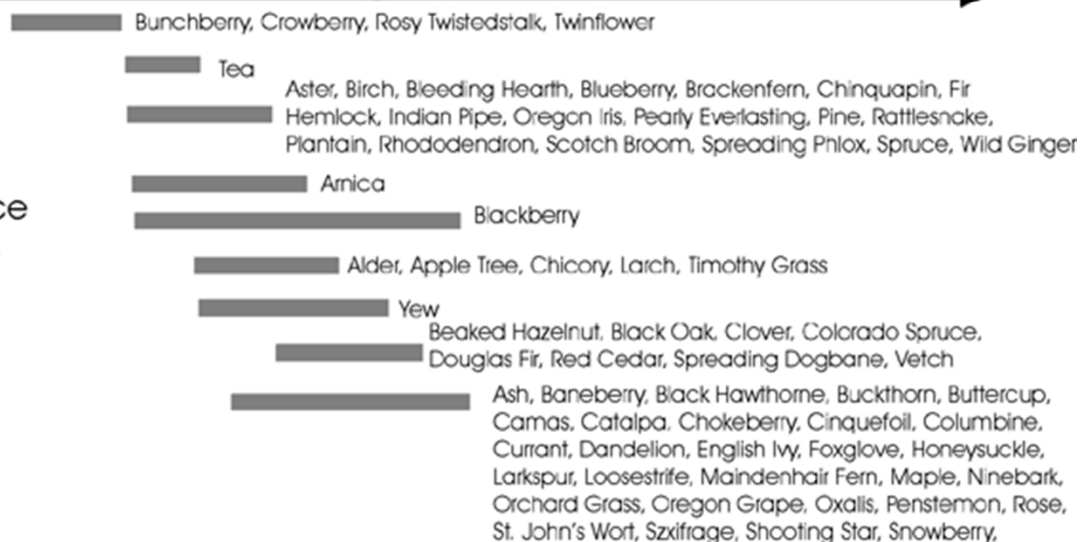
Soil Characteristics

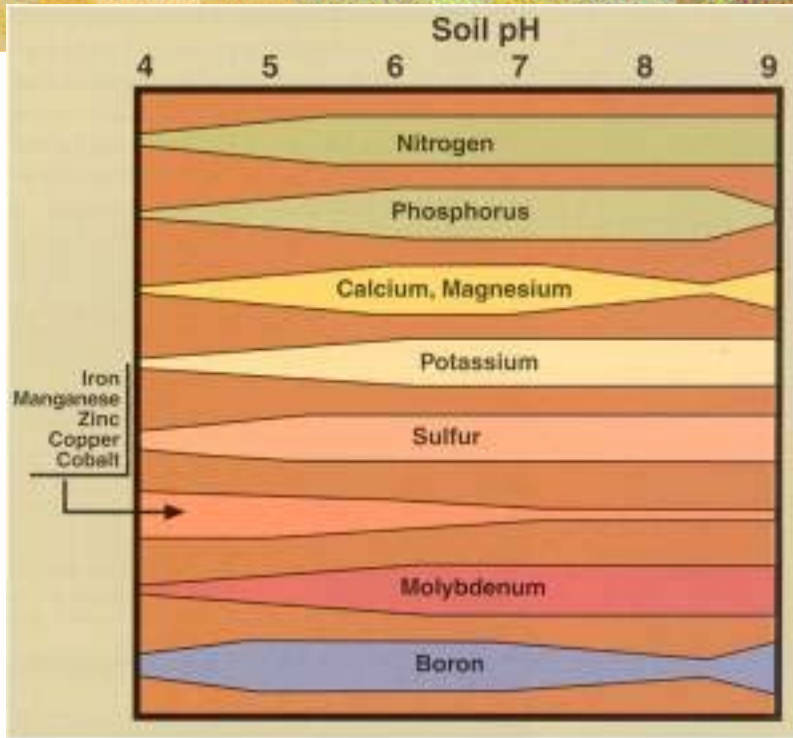
- Soil pH
 - What is it
 - Why is it important
 - How can you correct it

pH Scale for Soils



The pH Tolerance Levels for Plants







Soil Structure

- How particles are arranged
 - Avoid Compaction – need pore space
 - Don't Cultivate when wet, esp. clay
 - Don't Over-cultivate, walk on fresh beds or overuse heavy equipment.
 - Good Soil Tilth: Nutrient, water and air holding ability and workability is achieved by incorporating organic matter yearly.

Soil Structure

1 inch

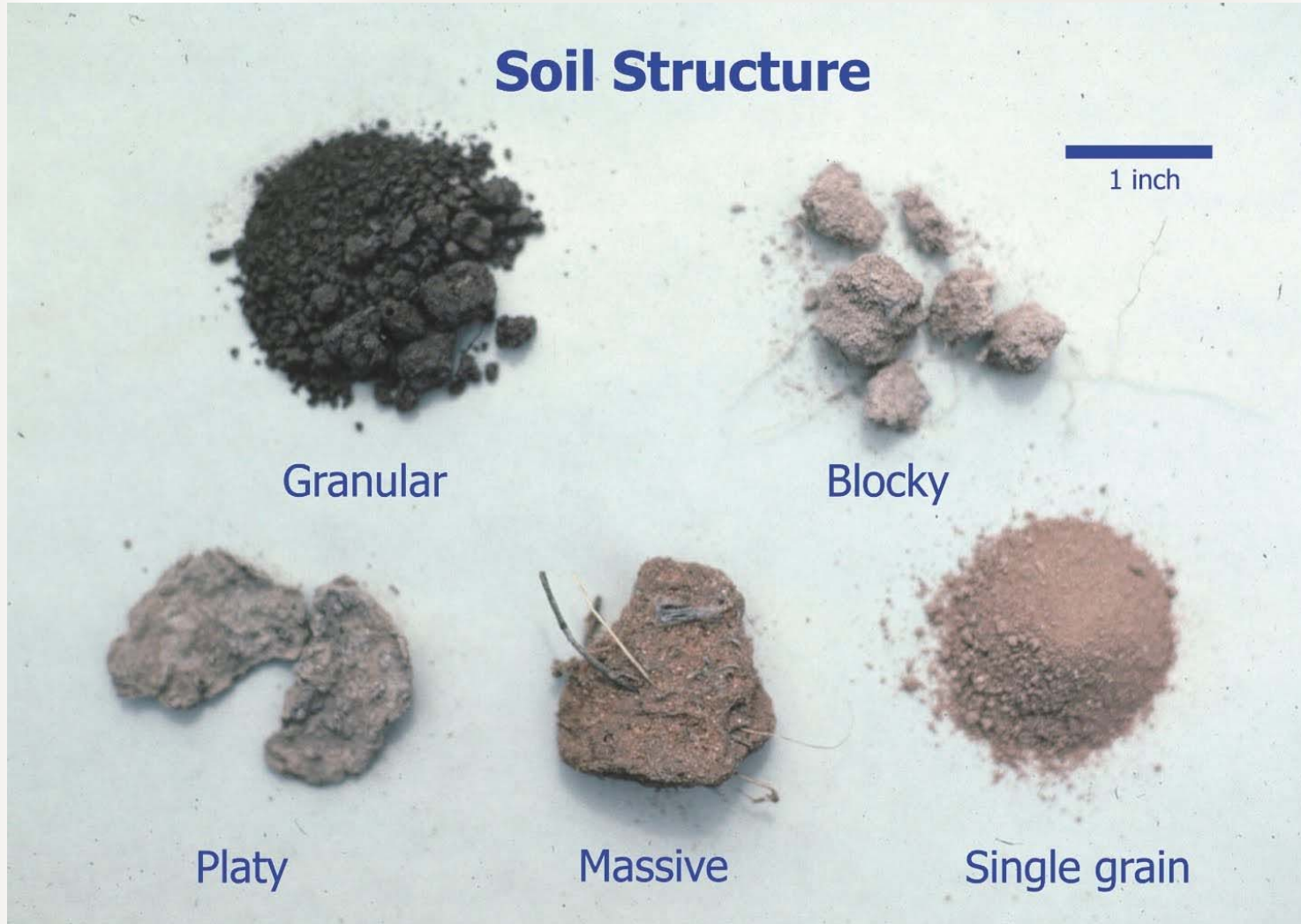
Granular

Blocky

Platy

Massive

Single grain



Tillage

- How easy soil is to work – why?





Tillage

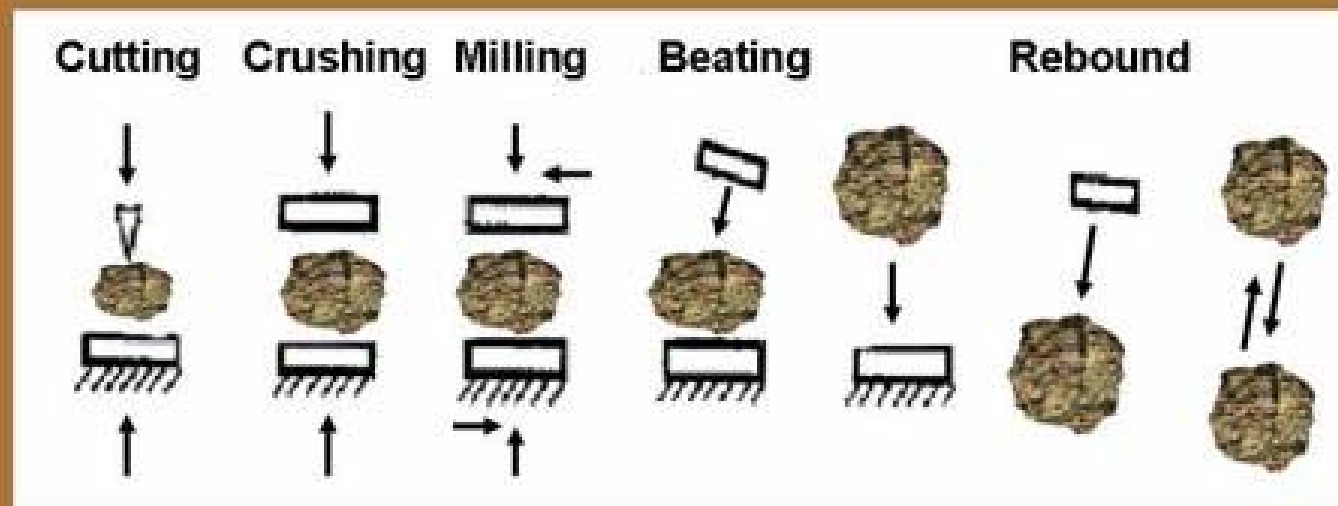
- Make seedbed, provide good soil contact with seed
- Mix in soil amendments
- Bury residues that carry plant disease organisms
- Control weeds
- Discourage vertebrate pests



Tillage

- Why...
 - Deep to break compacted layer, encourage deeper rootining
 - Level soil for furrow/basin irrigation
 - Release nutrients from organic matter
 - Improve water infiltration

What is tillage ?



Mechanical modification of soil structure

Tillage

- What's bad about it?



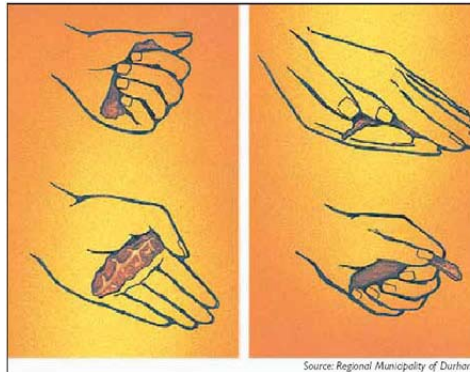


Tillage

- Oxygenates soil (burn up organic matter)
- Destabilize aggregates, reduces organic matter
- Reduces earthworms
- Can create compaction
- A lot of work!!(and/or use of fuels)

Soil texture tests

- Field test – use your hand



- Jar test – soil, water, detergent in jar



Soil texture tests

- Drainage – puddling
- Soil color
 - Black/dk brown – organic matter
 - Brown/red/orange – well drained
 - Blue gray/olive green – poor drainage
 - White/gray/variegated – poor drainage, leached salts, volcanic ash



Fertilizer

- Basic plant needs
 - Sunlight
 - Air
 - Water
 - 17 essential nutrients



Nutrients

- Major nutrients – N-P-K
 - Nitrogen – growth, esp. food crops

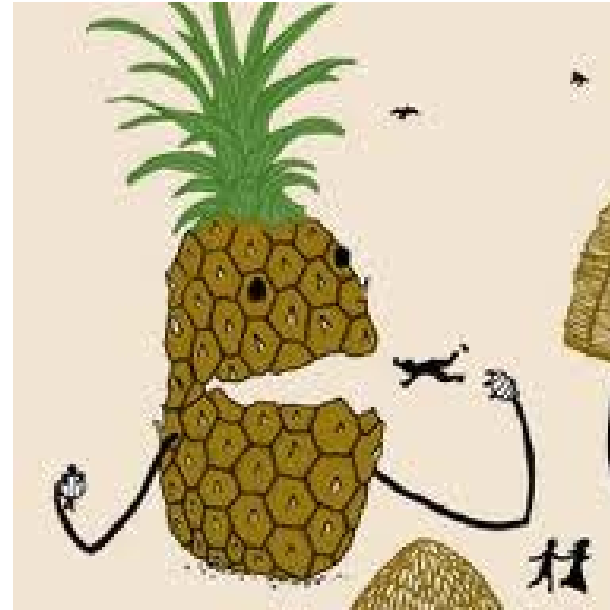


Nutrients

- Phosphorus – photosynthesis, seed set, root growth



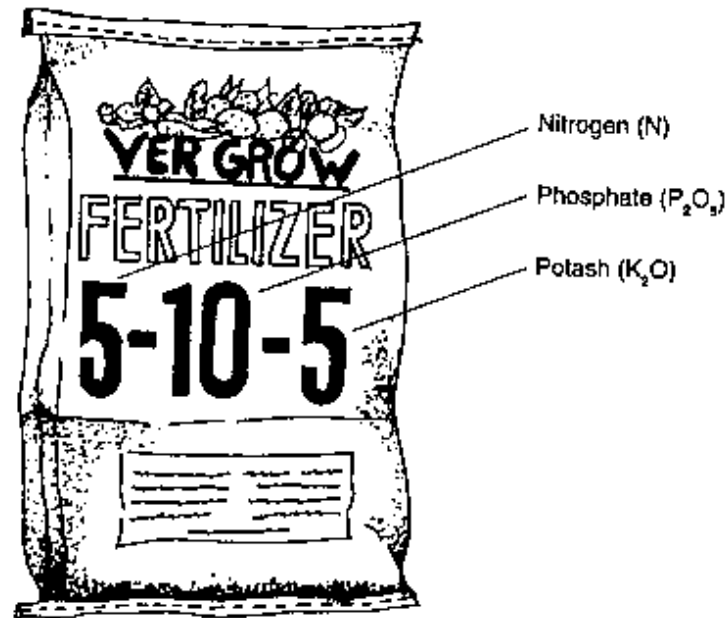
Nutrients



- Potassium(Kalium) –for starch and protein synthesis , size and quality of fruit, disease resistance

Nutrients

- What do the numbers on the bag mean?
 - N – given as a weight, % of pure element
 - P- % weight of phosphate (P_2O_5)
 - K - % weight of potash (K_2O)





Nutrients

- Plants absorb ammonium form of N, or nitrate form
- Phosphorus absorbed as phosphate – not water soluble
- Potassium absorbed as potash



Secondary Nutrients

- Calcium (Ca) – component of cell wall and membranes, regulates soil acidity
- Magnesium (Mg) – chlorophyll, enzymes
- Sulfur (S) – used to lower soil pH, but can be toxic in large quantity
- Trace elements – needed in very small amounts, in organic matter

Soil Fertility

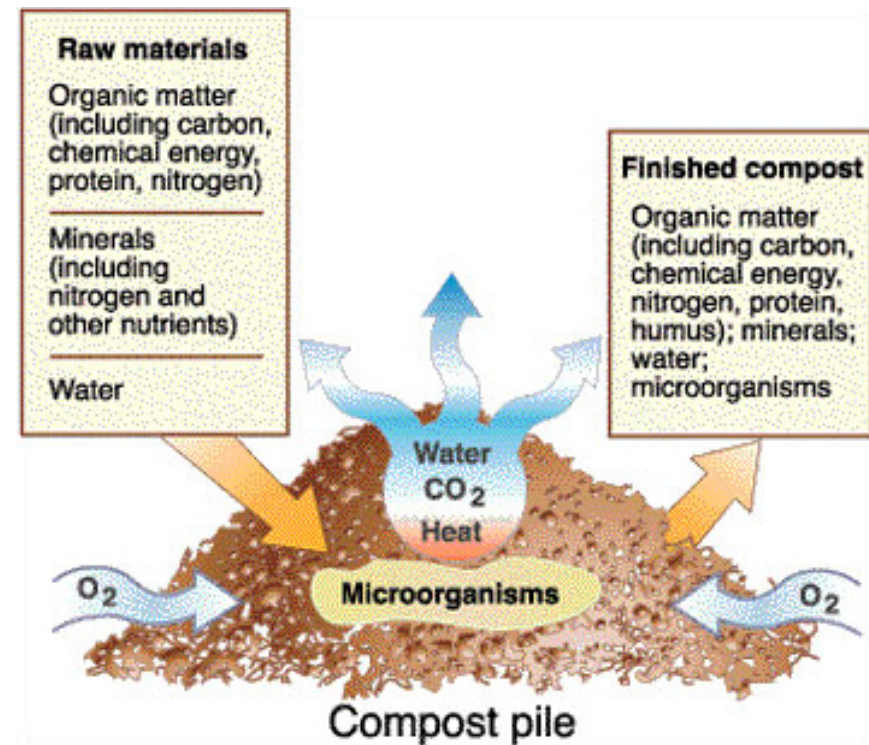
- Additional practices to improve soil fertility
 - Foliar feeding
 - Cover Crop Planting
 - Cool weather
 - Summer crops
 - Mulching
 - Correcting soil pH



buckwheat

Compost

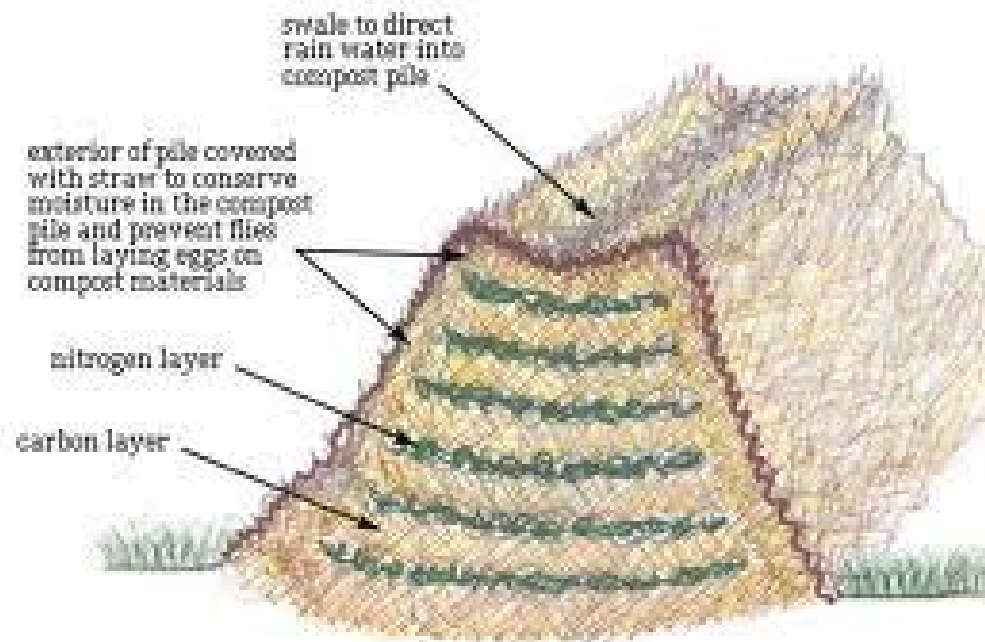
- How do we start?
 - What goes in
 - Green
 - Brown
 - Other



Compost

■ Methodology

- Size
- Layering
- Covering
- Moisture



Compost

- Process
 - Temperature
 - Moisture
 - Appearance





Compost

- Problem solving

- Odor
- Driness
- No progress



Compost

- How to use
 - Crops
 - New beds
 - Lawns
 - Containers
 - Mulch



Compost tea

- What is compost tea?
 - Made by aerating compost in water
 - Microbial food source
 - Aerobic process



Compost tea

- How do we use it
 - Foliar
 - Soil Drench



Questions

