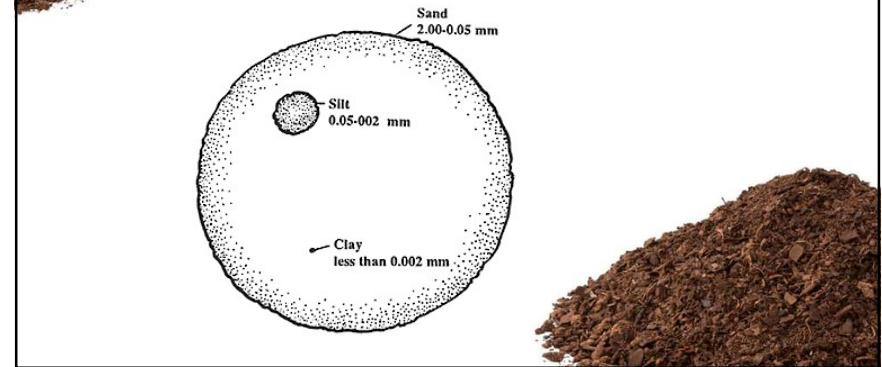


Soils and Composting



1

Soil Texture vs. Soil Structure



2

Soil Texture vs. Soil Structure

Sand, Silt, and Clay

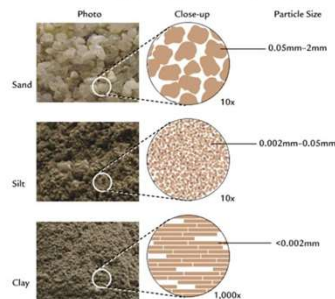


Fig 1: Sand Silt and Clay.

3

Soil Test

- www.usual.usu.edu
- or google "Soil Test USU"

Soil Test Report and Fertilizer Recommendations

USU Analytical Labs
Utah State University
Logan, Utah 84322-8300
(435) 792-2211
(435) 792-2117 (fax)
www.usual.usu.edu

Date Received: 4/20/2005
Date Completed: 4/27/2005

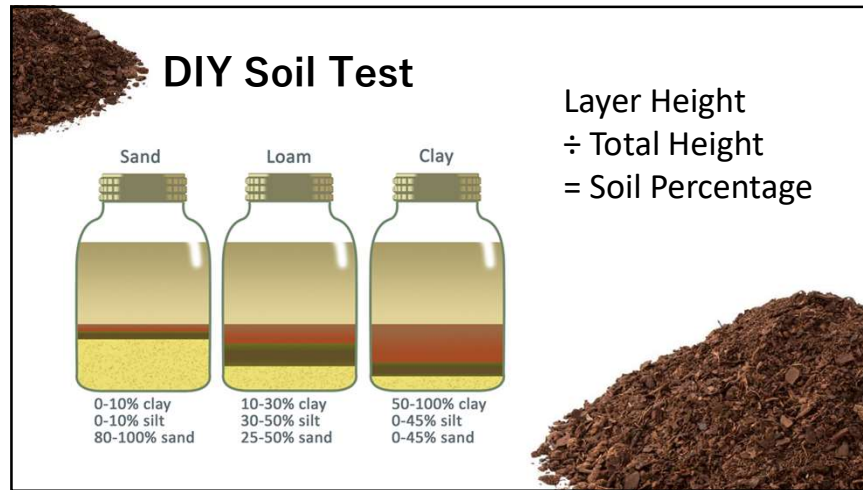
Name: _____ Phone: _____
Address: _____ County: _____

Lab Number: 561 Grower's Comments: Acres in Field: _____
Identification: GRASSLAND GARDEN
Crop to be Grown: Shrubs/Trees

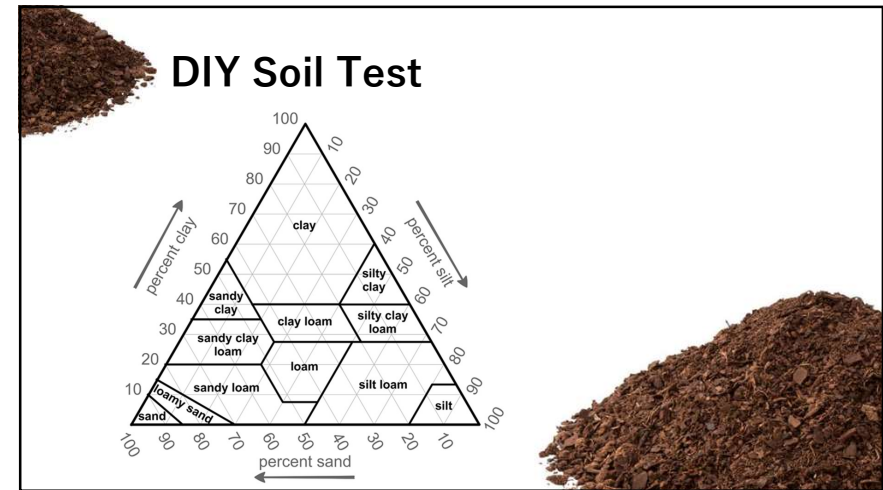
Soil Test Results		Interpretations	Recommendations
Texture	Clay Loam		
pH	7.5	Normal	
Salinity - ECe	1.0	Normal	
Phosphorus - P	9 mg/kg	Very Low	2 lbs P2O5/1000 sq ft
Potassium - K	358 mg/kg	Adequate	0 lbs K2O/1000 sq ft
Nitrate-Nitrogen - N	7 mg/kg		2-4 lbs N/1000sq ft
Zinc - Zn	1.8 mg/kg	Adequate	0 oz Zinc/1000 sq ft
Iron - Fe	1 mg/kg	Low	
Copper - Cu	1.4 mg/kg	Adequate	
Manganese - Mn	5.0 mg/kg	Adequate	
Sulfate-Sulfur - S	21.5 mg/kg	Adequate	0 lbs Sulfur/1000 sq ft
Organic Matter	%	2.1	
SAR			

Notes: SEE GARDEN GUIDE.

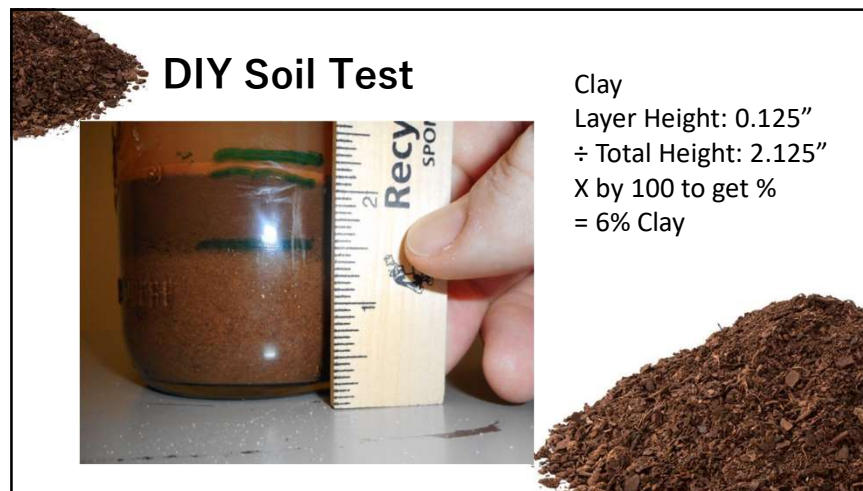
4



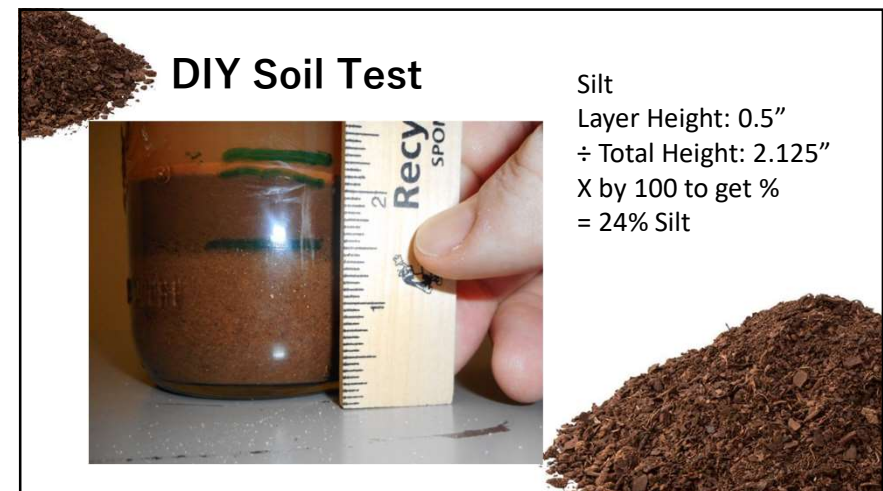
5



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8

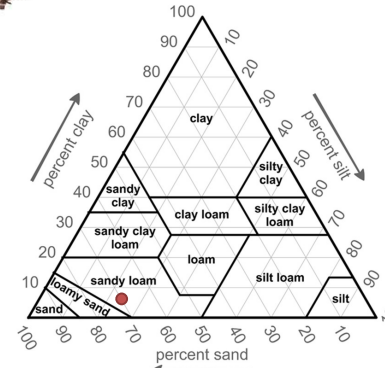
DIY Soil Test



Sand
 Layer Height: 1.5"
 $\div$ Total Height: 2.125"
 $\times$ by 100 to get %
 = 70% Sand

9

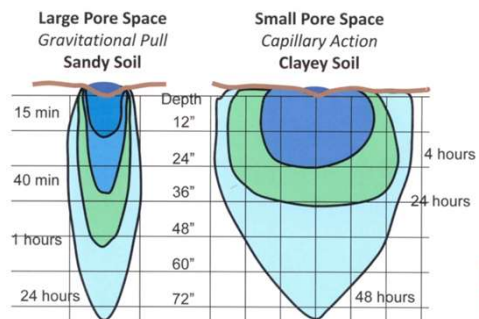
DIY Soil Test



- Clay: 6%
- Silt: 24%
- Sand: 70%

10

Watering Soils



11

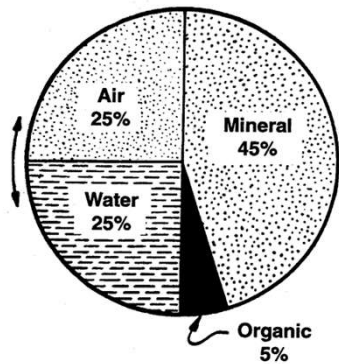
Watering Soils

		PRECIPITATION RATE													
SOIL	CYCLE	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	1.7	2.0	2.5
CLAY	3	50	33	25	20	17	14	13	11	10	8	7	6	5	4
LOAM	2	75	50	38	30	25	22	19	17	15	13	10	9	8	6
SANDY	1	150	100	75	60	50	43	38	33	30	25	20	18	15	12

DAYS BETWEEN WATERING						
SOIL	May	Jun	Jul	Aug	Sep	Oct
CLAY	6	4	3	4	8	15
LOAM	5	3	2	3	6	12
SANDY	4	2	2	2	5	10

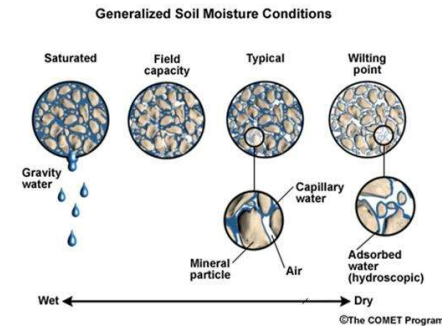
12

Ideal Soil



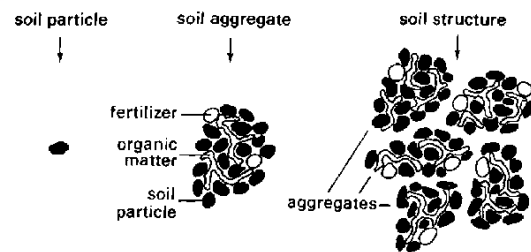
13

Soil Moisture



14

Soil Texture vs. Soil Structure



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Benefits of adding compost

- Increases
 - Soil tilth
 - Fertility
 - Water holding capacity
 - Aeration
 - Drainage

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What happens during composting?

- Begins as soon as the raw materials are mixed together
 - Microorganisms use oxygen to consume and break down materials
 - Their metabolisms generate heat. They also put out CO₂.
 - Half of the weight of the pile will be lost from CO₂ or water vapor.
- 

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Steps for a Successful Compost Pile



18



1. Selecting the site

- Composting can get really stinky
 - It should get six hours of sunlight
 - It should have access to a water source
 - It should be in an area with good drainage
- 

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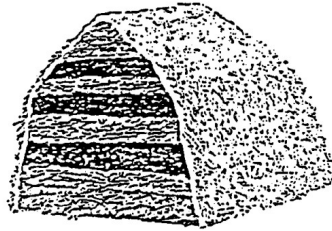
2. Select a Compost Container

- Consider price, size, and convenience.
 - They should allow air flow and resist decay.
- 

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Heap

- Cheap
- Requires more space
- Great for “no turn” composting (which takes longer)



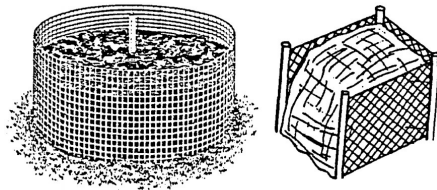
21

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Hoop

- Low cost
- Tidier than the heap
- Made of woven wire or fencing



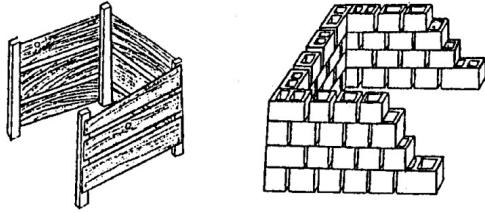
23

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Box

- Looks good
- Low to moderate cost
- Make sure to leave space between pile and sides of box for air flow



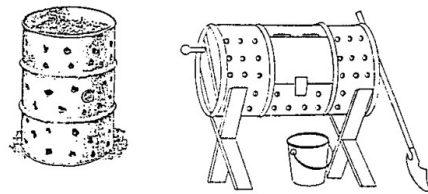
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Barrel

- Moderate to high cost
- Tidy
- Great for limited space
- Quick composting



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3. Select Raw Materials

- “Almost all natural, organic material will compost, but not everything belongs in a compost pile.”

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3. Select Raw Materials

YES or NO

31

3. Select Raw Materials



Weeds
YES

32

3. Select Raw Materials



Paper
YES & NO

33

3. Select Raw Materials



Grass Clippings
YES

34

3. Select Raw Materials



Cow Manure
YES

35

3. Select Raw Materials



Dog & Cat Poo
NO

36



37



38



39



40

3. Select Raw Materials



Coffee Grounds
YES

41

3. Select Raw Materials



Tea Bags
YES & NO

42

3. Select Raw Materials



Wood
YES

43

3. Select Raw Materials



Citrus Fruit
Technically

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3. Select Raw Materials

- Carbon Rich vs Nitrogen Rich Materials
 - Getting the right balance
 - 2 parts carbon to 1 part nitrogen

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3. Select Raw Materials

- Carbon Rich Materials



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3. Select Raw Materials

- Nitrogen Rich Materials



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3. Select Raw Materials

- How do I know if I've hit the balance?
 - Too much nitrogen
 - Carbon is used up before nitrogen is stabilized, causing foul odors and excess ammonia
 - Too much carbon
 - Not enough nitrogen to break down materials, composting slows dramatically

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4. Aerating the Pile

- Composting consumes large amounts of oxygen
- If not enough oxygen is available, the process will slow down and become odorous.
- Turning a pile weekly can produce finished compost in one to two months
 - Monthly turning = 4-6 months
 - No turning = 6-12 months

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5. Keeping the pile moist

- Moisture is important for the metabolic processes of microorganisms
- Keep pile within 40-65% moisture range
 - If you can squeeze water out it's too wet
 - If it feels dry it's, well, too dry
 - Add water as needed

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6. Keeping the proper temperature

- 110-150°F is ideal
 - Kills most pathogens, weed seeds, and fly larvae
 - If too low, try turning the pile
 - If still doesn't heat up and the pile has the proper amount of water, air, and C:N, then the composting process is complete

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7. Curing the pile

- Finished compost is dark, crumbly, and has an earthy smell
- Most piles benefit from an additional curing phase to allow any final chemical or decomposition reactions to occur
- Allow pile to sit up to a month

52



Questions?

Happy composting!



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Resources

- Farrell-Poe, Kitt and Koenig, Rich, "Backyard Composting in Utah" (1997). *All Archived Publications*. Paper 707.
http://digitalcommons.usu.edu/extension_histall/707
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