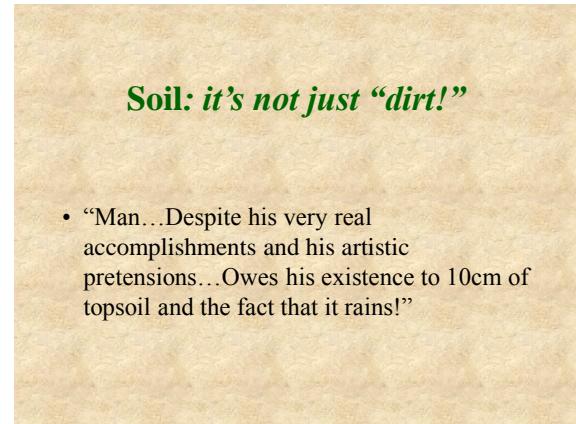
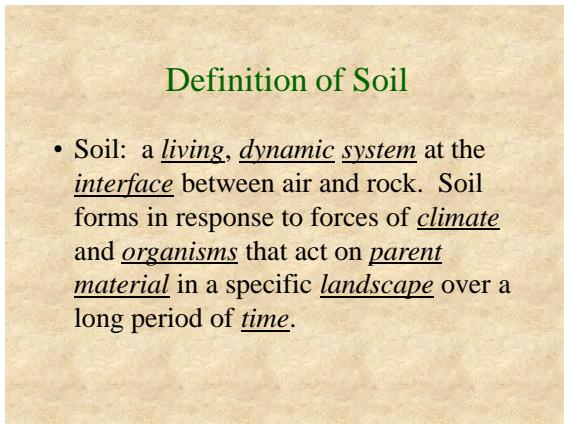


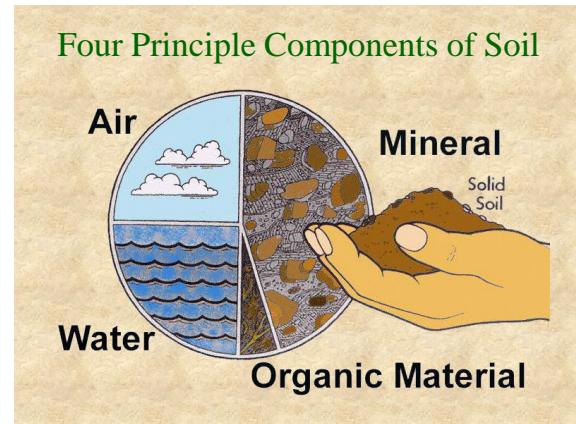
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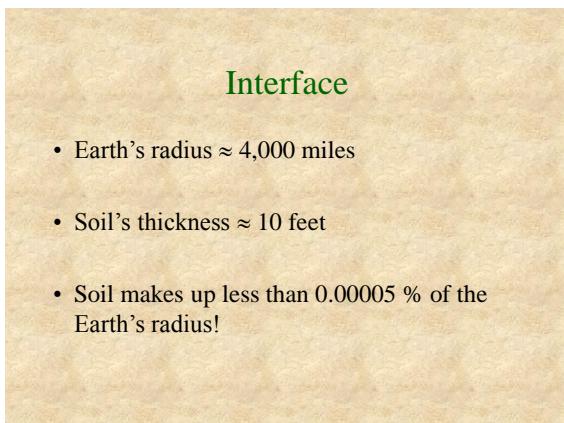
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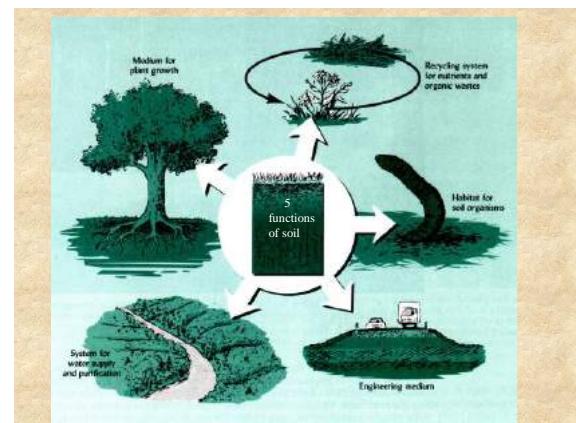
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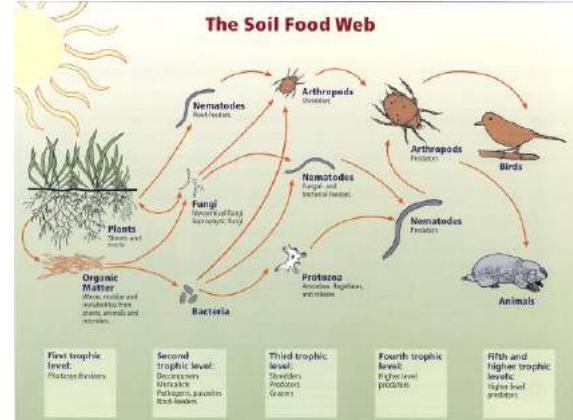


6

Factors That Combine to Create Soil

- Climate- weathering
- Organisms- nutrient cycling, good structure
- Parent material- sand, silt, clay (sediments)
- Landscape- slope, exposure
- Time- physical, chemical, biological, geographical

7



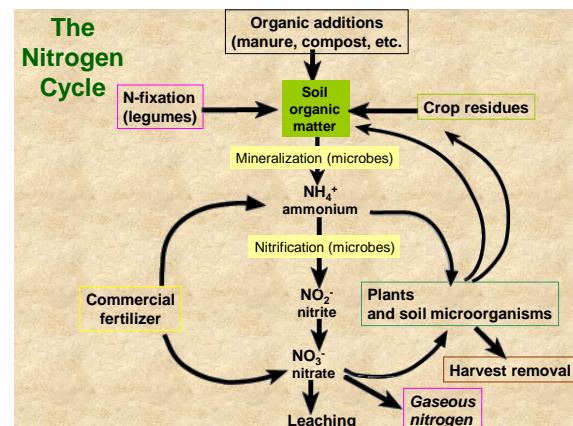
8

Earthworms – (have gizzards!)



- Probably the most important component of soil fauna (not in acid soils, not in very dry soils)
- Eat OM & Did you know that worm farming is a huge industry?! through their bodies (mixing horizons) each year
- Excreted casts higher in N, P, K, Ca, Mg, pH, and CEC est. wt. of worms in US = 10X wt. of entire human population
- Promote good soil structure and aeration

9

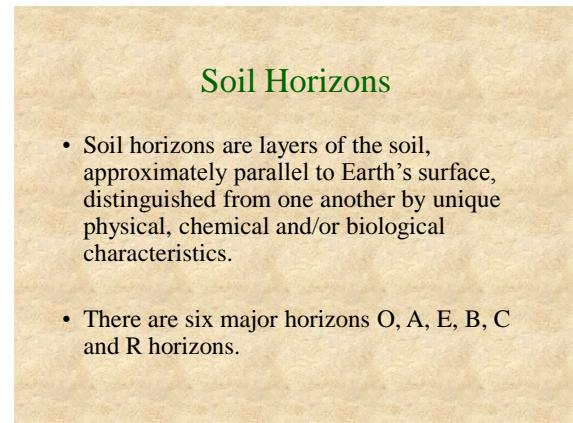


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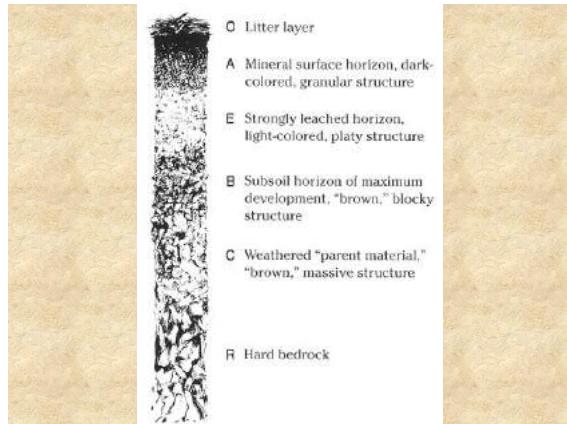


- Sedimentary Parent Material
- Alluvium?
- Loess?
- Till?
- Colluvium?

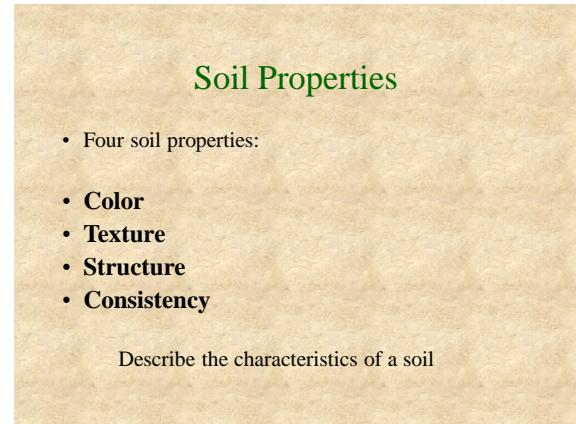
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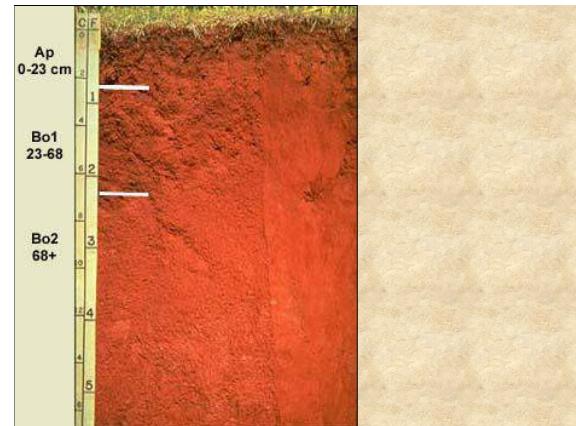


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- Black Soils**
- Usually A horizons
- Indicate high OM
- Often wet soils

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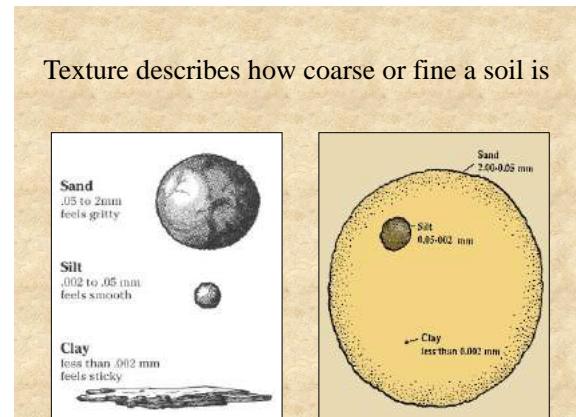
16

Texture

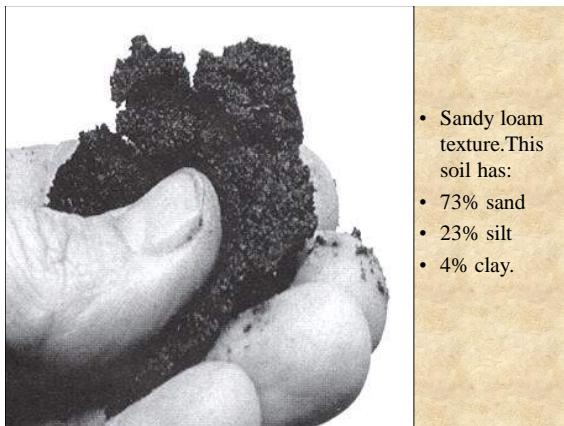
- Texture refers to the sizes and relative amounts of the constituent particles in a soil.
- For the most part, soil particles can be classified as either **sand**, **silt** or **clay**.



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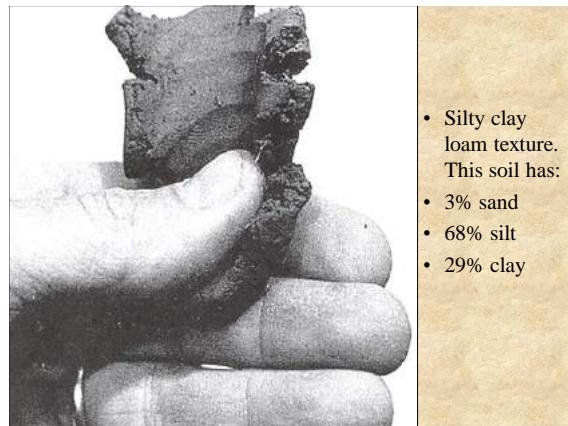


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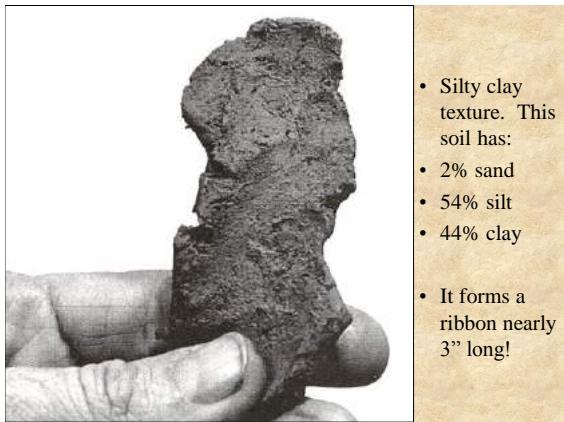
19

- Sandy loam texture. This soil has:
- 73% sand
- 23% silt
- 4% clay.



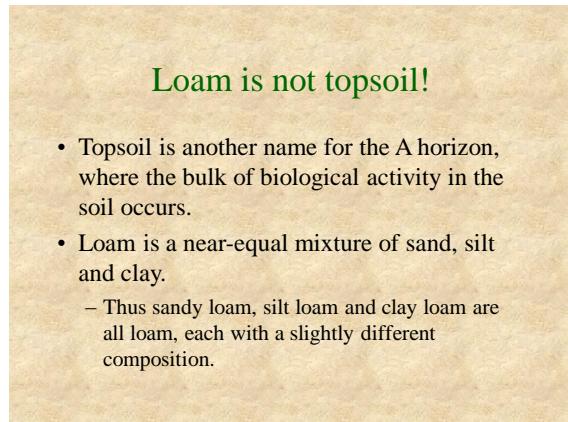
20

- Silty clay loam texture. This soil has:
- 3% sand
- 68% silt
- 29% clay

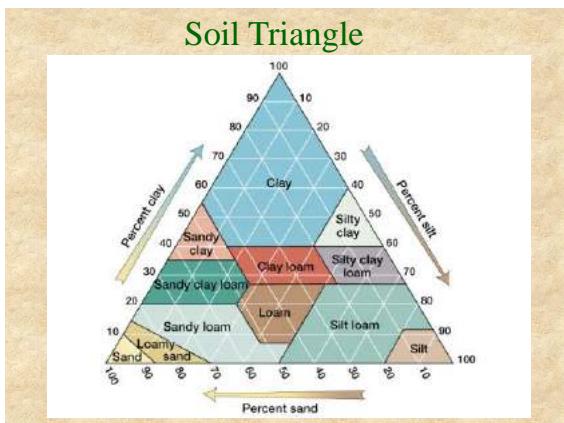


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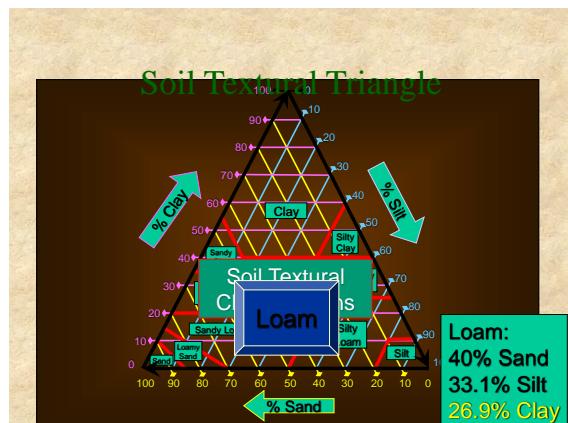
- Silty clay texture. This soil has:
- 2% sand
- 54% silt
- 44% clay
- It forms a ribbon nearly 3" long!



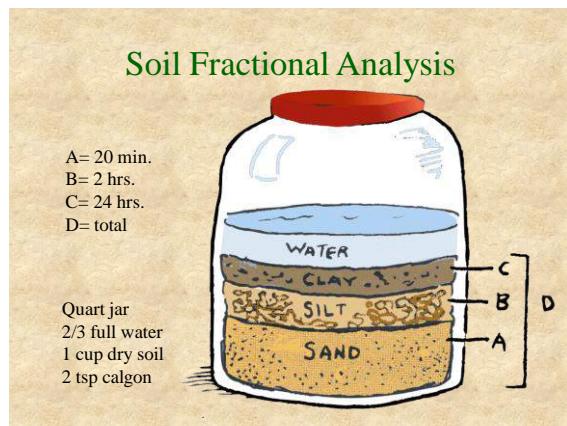
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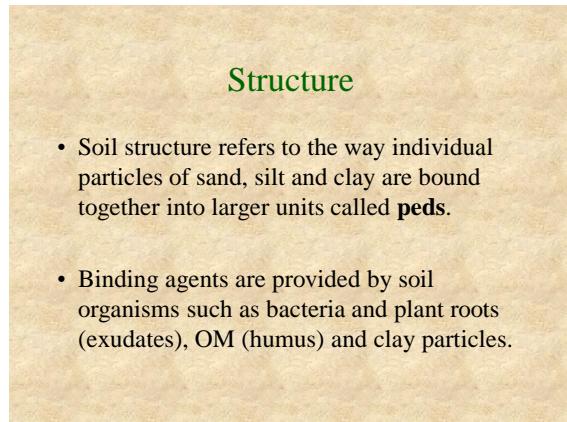


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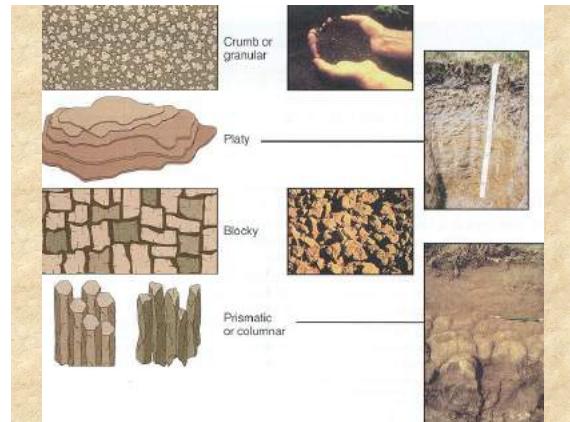
Altering soil textural properties

- Just accept it...this is virtually impossible!
- One acre of soil just 1 mm thick can weigh over five tons!
- Many clays, when combined with sand, form a low-grade concrete!
- OM is the closest thing to a cure-all you'll ever find!**

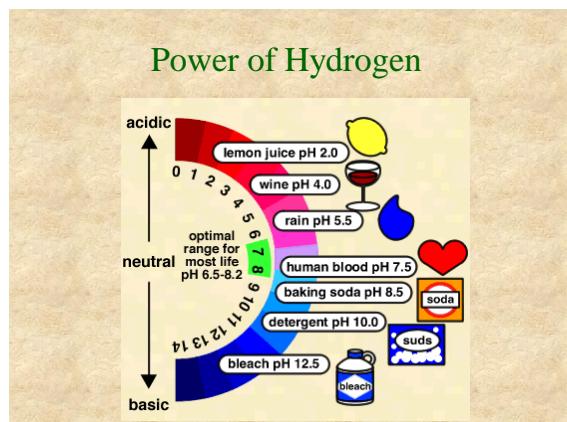
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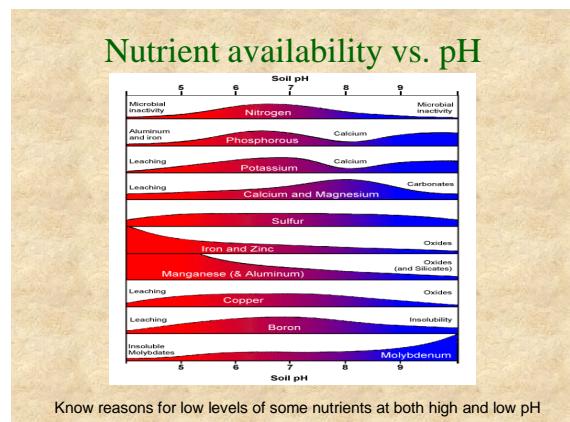
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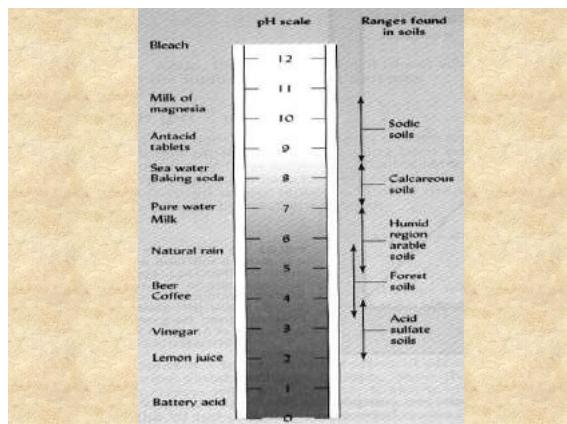
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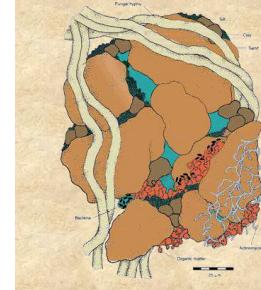
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Soil and Water

Soil structure



- Aggregation is a natural process caused largely by biological activity.
- Soil organic matter is an important binding agent for soil structure

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What Gardening Problems are Caused by Poor Soil Quality?

- Soil dried and cracked in summer
- Digging is difficult, summer or winter
- Rhodies, hydrangeas and other shrubs wilting in hot weather even after watering
- Leaves yellowing on plants
- Water tends to pool on soil surface, drain slowly or runoff

33

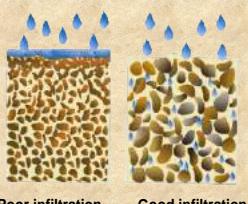
Good Porosity & Permeability Resolve Many Garden Problems

- **Porosity:** amount of space (pore space) between particles in a soil.
- **Permeability:** ability of water to move through that pore space.
- Good structure is associated with large pores (**macropores**).
- OM is essential to the formation and maintenance of good soil structure (tilth).

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Soil and Water

A productive soil is permeable to water and is able to supply water to plants.

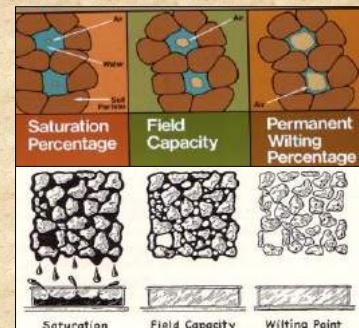


Poor infiltration

Good infiltration

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Available Water Capacity

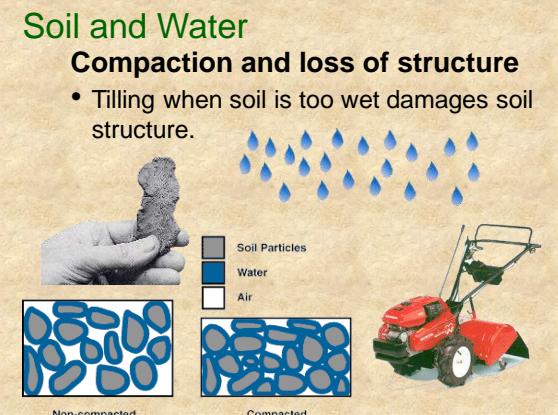


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Soil and Water

Compaction and loss of structure

- Tilling when soil is too wet damages soil structure.



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Minimize Tillage to Soil

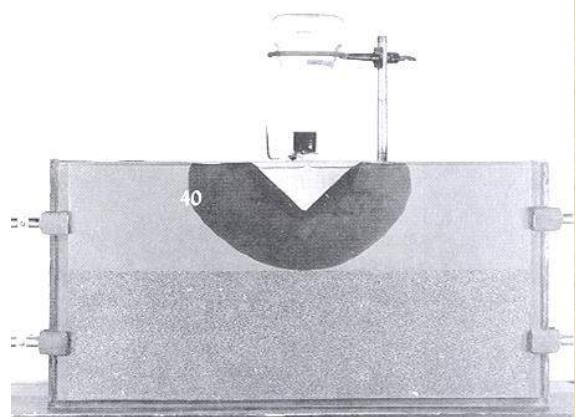


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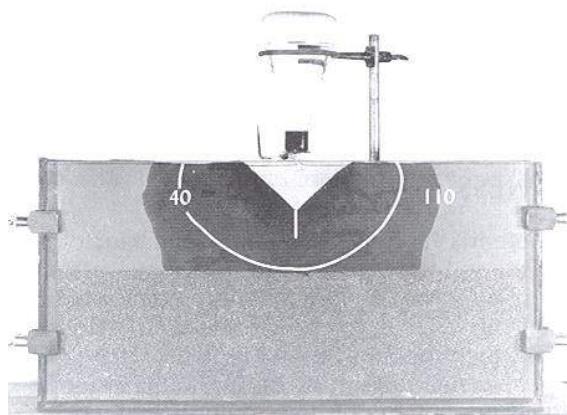
Soil Water

- Water will fill like soils before moving into new soil types, regardless of soil texture!
 - This is the principle of dissimilar soils.
 - Plant roots will often do the same thing!

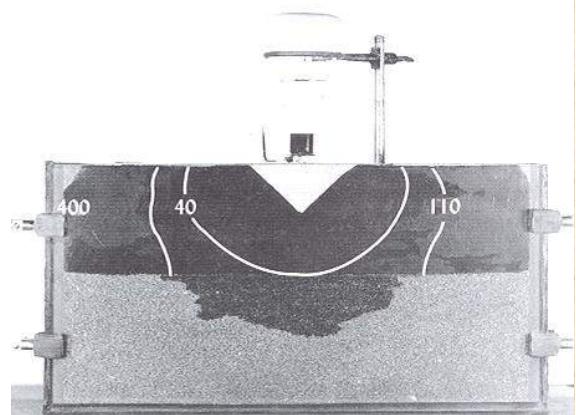
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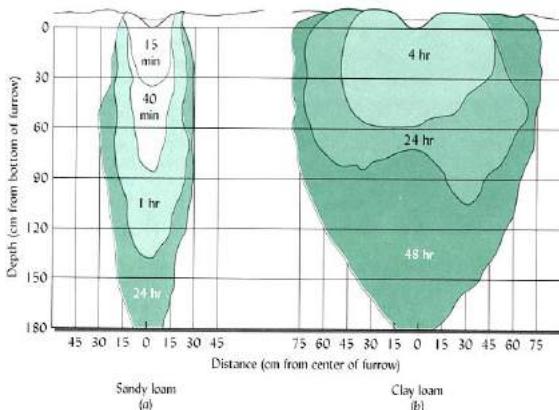
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www.or.nrcs.usda.gov/soil/oregon/or_reports_or.html

Oregon Soil Survey Reports - National Resource Conservation Service

Oregon Soil Survey Reports (interactive map) | USGS Hydro Soils | TANDEM Inventory Catalogs | News | Links

Oregon Soil Survey Reports

Please be patient. Depending on the speed of your connection to the Internet, it may take several minutes for the maps to appear. The text and tables don't have to be loaded approximately 300 and 1500 pages (single spaced), so they can take quite awhile to appear as well.

Soil Survey Counties: do not always coincide with county boundaries. A soil survey may be one county, multiple counties, or parts of various counties.

You might want to open both the Maps and the Text and Tables at the same time. This would allow you and your browser to load the Map window and the Text and Tables window. For example, you could click on a soil map in the Map window and then jump to the Text and Tables window to read information about that soil map.

County	Survey	Maps	Legend	HTML	PDF - slow to load	Best for Viewing	Best for Printing
Baker	CB604 Baker County Area	Maps	Legend	Text and Tables			
Benton Lincoln	CB601 Albany Area	Maps	Legend	Text and Tables			
Wasco	CB626 Marion County	Maps	Legend	Text and Tables			

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What Can Be Learned From Soil Surveys

- Location of soil types in the county
- Characteristics of a soil
- Depth of each soil type
- Water infiltration rate
- Water holding capacity
- pH
- Susceptibility to erosion

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