

Other Soil & Water Amendments: Honorable Mention List

Ed Hanlon

Clean-up Presenter



Soil Amendments: Moisture Retention



- Terra-Sorb types:
 - Starch or polymers that capture and retain water
 - Reduces irrigation needs
 - Used to establish tree seedlings in CA mountains
 - Costly
 - Slowly deteriorates in the soil environment
 - May retard dissolved nutrient movement
 - Volume of water proportional to added compound

Soil Amendments: Zeolites

- A **hole** other type of clay:
 - Ring structure may occlude selected ions or pollutants
 - Has edge charge, pH dependent
 - Dr. F. Rhoads, 1990s
 - Dr. A. Csizinsky, 1980s
 - Two out of three experiments showed higher yields of vegetables
 - Natural product
 - Transportation costs



Soil & Water Amendments: Bacteria/Algae

- Nitrogen removal from water column can be >300 lb N/acre/yr
 - Sunlight must be reduced to allow bacteria in water (algal bloom with sunlight)
 - Water Hyacinth is colonized naturally
 - Invasive plant
- Microbial populations in the soil can be manipulated
- Algae bloom in water and on wet soil
 - Cyanobacteria: photosynthetic bacteria
 - Hydrometia algal turf scrubber (500 to 8,000 lb/acre/yr)



Soil Amendments: Soil Mixing

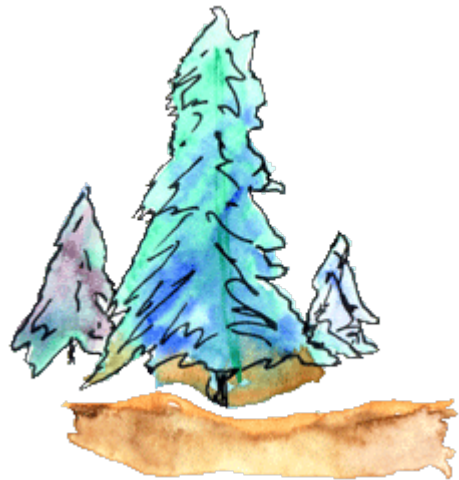
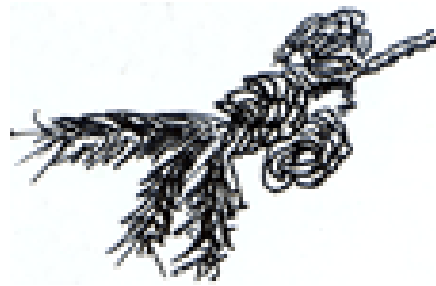
- Deep plowing to mix fine-textured subsoil with sandy surface soil
 - Destroys soil profile and may affect drainage
 - Changes soil texture, usually for the better...
 - Permanent change
- Phosphatic clay additions
 - By-product of phosphate mining
 - 90% clay, flocculated,
Montmorillonite/palygorskite scaffolding with P
 - Excellent slow release source of P (citrus)

Soil Amendments: Intelligent liming

- Ag lime is used to reduce Al toxicity and create nutrient availability **Ho Hum...**
- Nucleation sites (finely ground calcium carbonate) can capture P by co-precipitation (Hanlon et al., 2007)
 - P, Ca, CO₃ form several types of crystals depending upon other ions in solution
 - An open site can also be used by OM
 - Multiple nucleation sites will clarify water column

Soil Amendments: Potting mix

- ???



Soil as a Filter

Impoundment with Soil Filtering Using Horizontal Re-use Pumps

