

# Learn to Build Healthy Desert Soils for Productive Landscapes

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**Water + Carbon (*Organic Material*) → LIFE!**

# Soil transformations



# The Soil Food Web

a.k.a. Your Soil Neighborhood



First trophic level:  
Photosynthesizers

Second trophic level:  
Decomposers  
Mutualists  
Pathogens, Parasites  
Root-feeders

Third trophic level:  
Shredders  
Predators  
Grazers

Fourth trophic level:  
Higher level  
predators

Fifth and higher  
trophic levels:  
Higher level  
predators

# Soil food web degrading practices



Harvestingrainwater.com

## Plant the Water

- > Rainwater - mineral free
- > Greywater - regular moisture source
- > Stormwater - abundant
- > Condensate - bonus!

## Protect & Stabilize Soil

- > Minimize disturbances
- > Address water & wind erosion
- > Apply surface organic mulch
- > Eliminate fertilizers, pesticides, & herbicides

### Site Context

Site, design, & goals

## Add Plants

- > Shallow, deep, & far reaching root structures
- > Select plants serving a variety of ecological roles

## Integrate Organic Material

- > Apply surface mulch
- > Amend with compost
- > Utilize compost tea (actively aerated)

# Plant the Rainwater

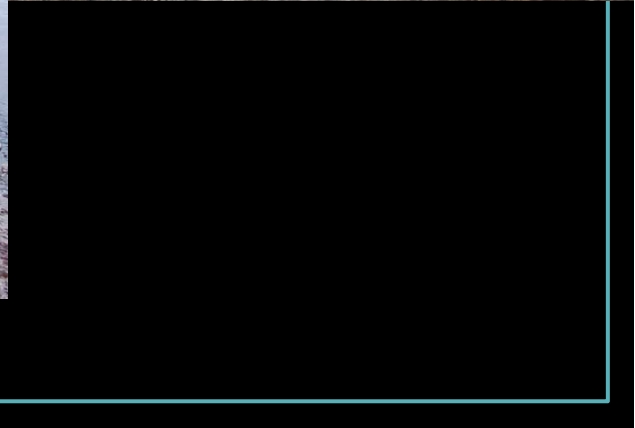
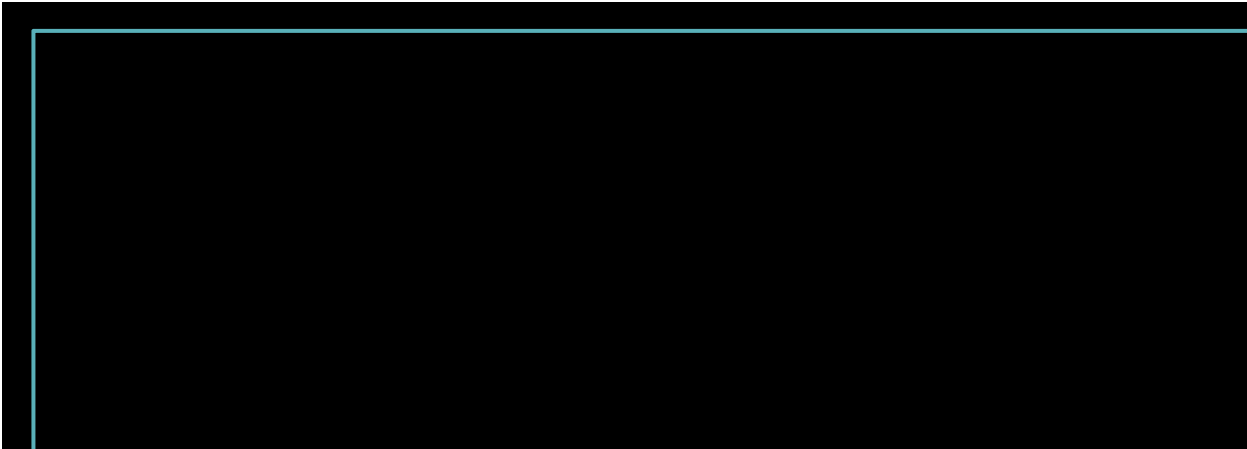






# Soil critters and native plants LOVE stormwater





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Always Integrate Organic Material –  
Prune, Mulch, and Harvest

Fresh Tree Trimmings



# Promote fungi for perennial plants



# Fruiting bodies!



# Integration of mulch into topsoil!



**Promote bacteria for vegetables and annuals.**





# The shredders!



## Food scraps and smaller plant trimmings:

- Can provide residential needs for soil compost amendments
- Average person generates ~1.35 pounds of organic waste per day. That equals ~500 pounds per person every year!



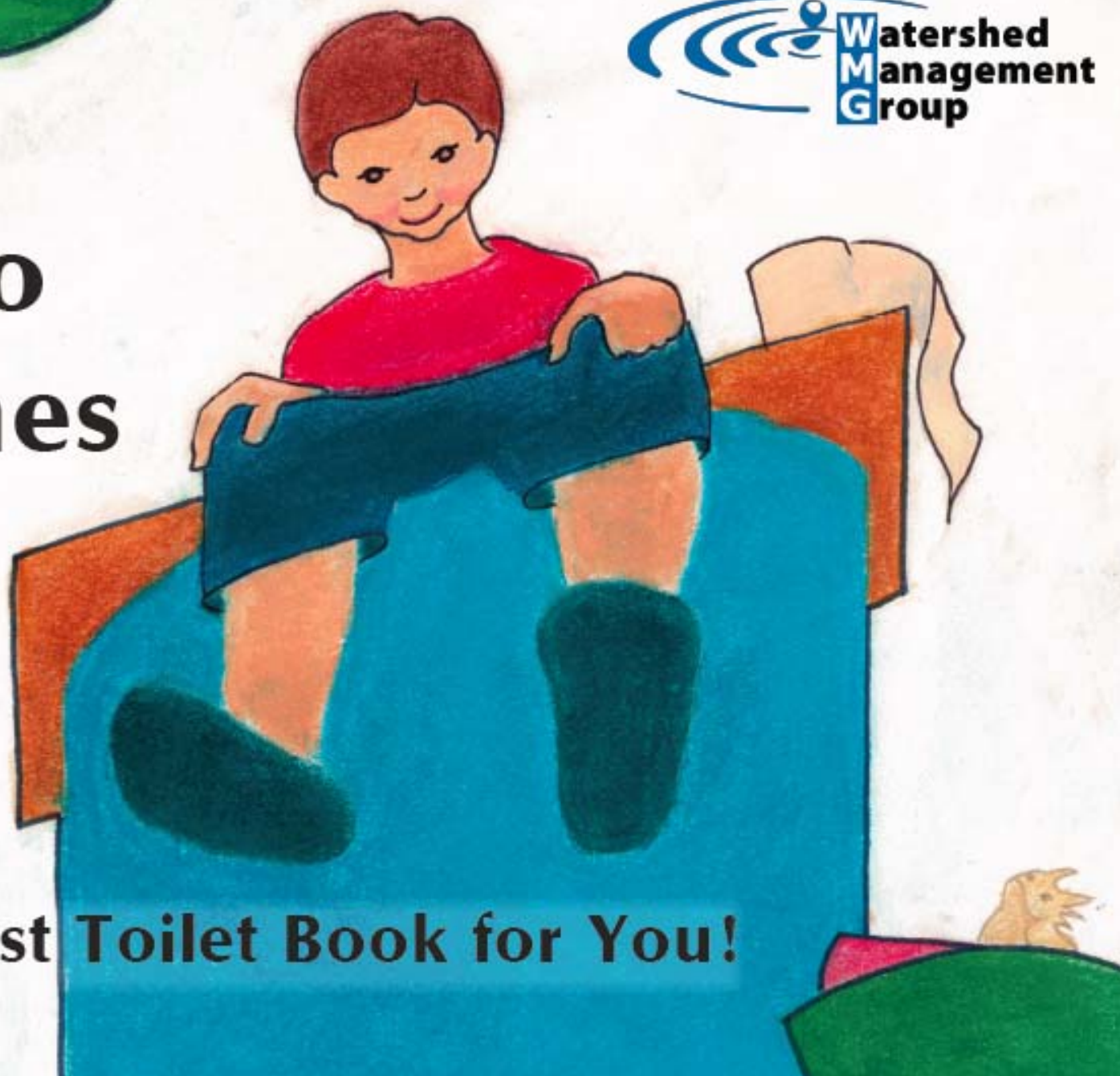
## Now, Let's talk about manure!

- Earthworm castings
- Farm animal manures: horses, cows, goats, etc
- Chicken manure
- And...Humanure!



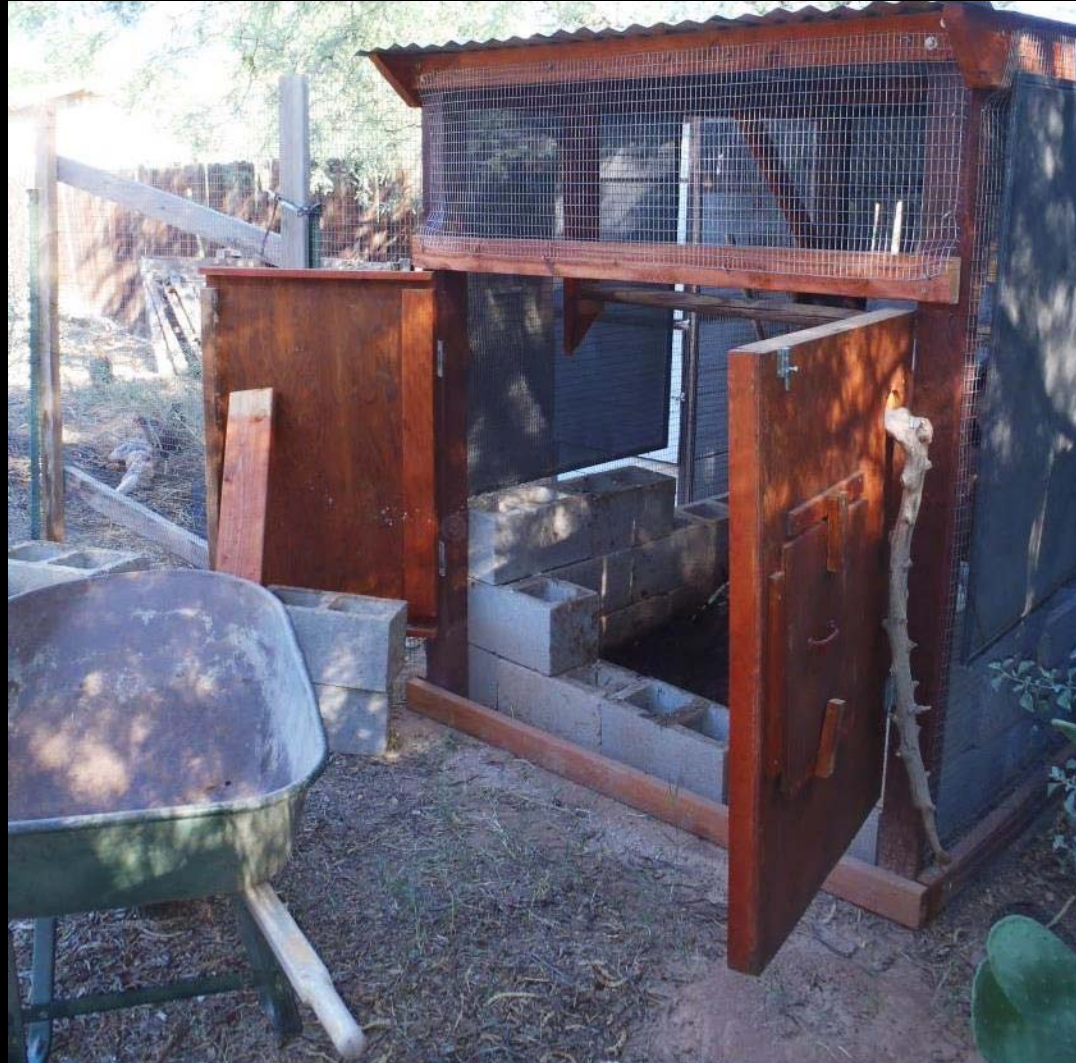


# Poo to Peaches



**A Compost Toilet Book for You!**

# Backyard compost pile integrated into chicken coop



# Hens hard at work





# Amazing compost for vegetables!







# Research soil characteristics

<http://websoilsurvey.sc.egov.usda.gov>

v/GN\_00001/20131112\_09471009849\_10\_Soil\_Report.pdf - Google Chrome

s1h4qq0q3as5a4m/GN\_00001/20131112\_09471009849\_10\_Soil\_Report.pdf

Survey Status | Glossary | Preferences | Link | Logout | Help

Soil Data Explorer | Download Soils Data | Shopping Cart (Free)

## Area of Interest Interactive Map

Legend

View Extent Contiguous U.S.



### 47—Mohave soils and urban land, 1 to 8 percent slopes

#### Map Unit Setting

*Elevation:* 2,200 to 3,300 feet

*Mean annual precipitation:* 10 to 12 inches

*Mean annual air temperature:* 64 to 70 degrees F

*Frost-free period:* 220 to 280 days

#### Map Unit Composition

*Mohave and similar soils:* 0 percent

*Urban land:* 0 percent

#### Description of Urban Land

##### Interpretive groups

*Farmland classification:* Not prime farmland

*Land capability (nonirrigated):* 8

#### Description of Mohave

##### Setting

*Landform:* Fan terraces

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Mixed alluvium

##### Properties and qualities

*Slope:* 1 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 40 percent

# Sample the soil texture?

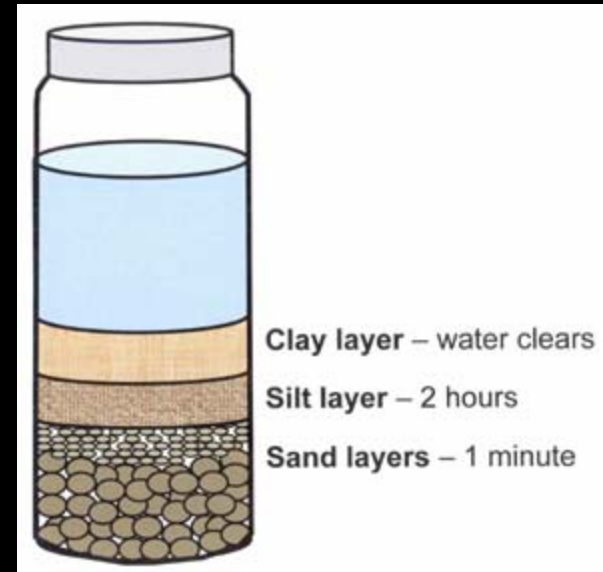


Image source: [diy.org](http://diy.org) and [ext.colostate.edu](http://ext.colostate.edu)

percolation test measures  
drainage through soil



What resources do you produce to build your soil fertility?



- List your resources:

Can you add any more resources to your list to build your soil fertility?



- ✓ Rainwater
- ✓ Greywater
- ✓ Stormwater
- ✓ Tree trimmings
- ✓ Food scraps
- ✓ Chicken manure
- ✓ Humanure
- ✓ Earthworm manure
- ✓ Urine

**...And your creative capacity!**

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