



Composting: the foundation to regenerative growing

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Focus on Water Conservation



- 4 inch layer of mulch can save 130,000 gallons of water/acre in vineyards
- Water holding capacity increased by 40%
- 49% greater water holding capacity in a soil with sod amended with 25% compost
- Marin Carbon Project 1/2 inch compost one time 2600 gallons/acre

Compost

- In the Soil/On Top
- Supplies Nutrients
- Directly Improves Soil Structure
- Conserves Water
- Improves CEC
- Some Erosion Control

Mulch

- On Top of the Soil
- Zero Nutrient Input
- Slow Soil Structure Improvement
- Conserves Water
- No CEC Change
- Reduced Erosion

The Role of Organic Matter in Soil: Promote Soil Health

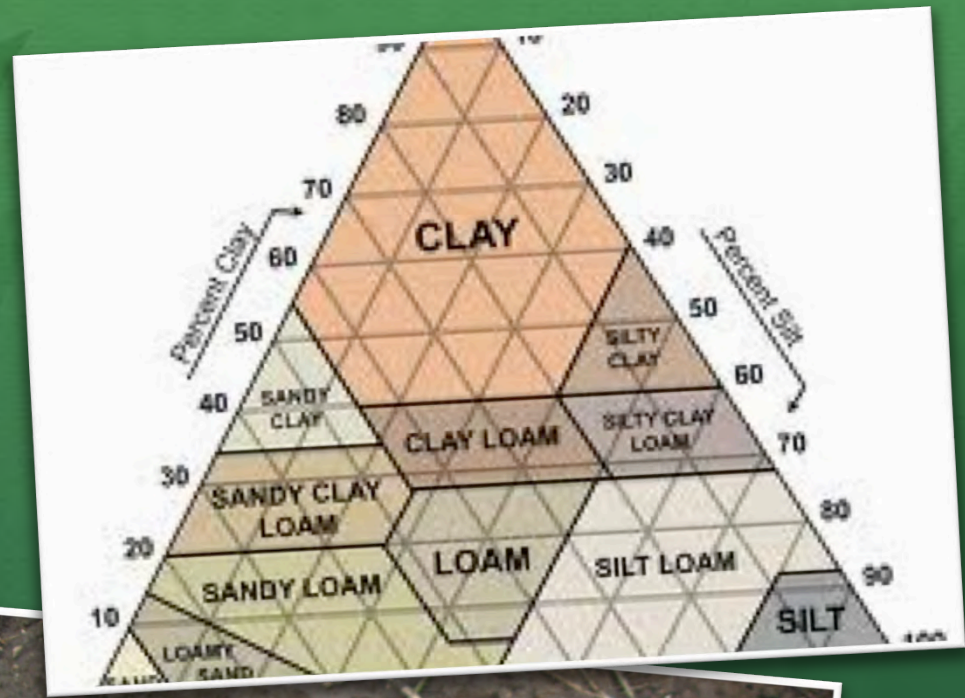
- Soil Structure
- Nutrient management
- Conservation of soil
- Soil moisture management
- Diversity of Microorganisms



Soil Structure

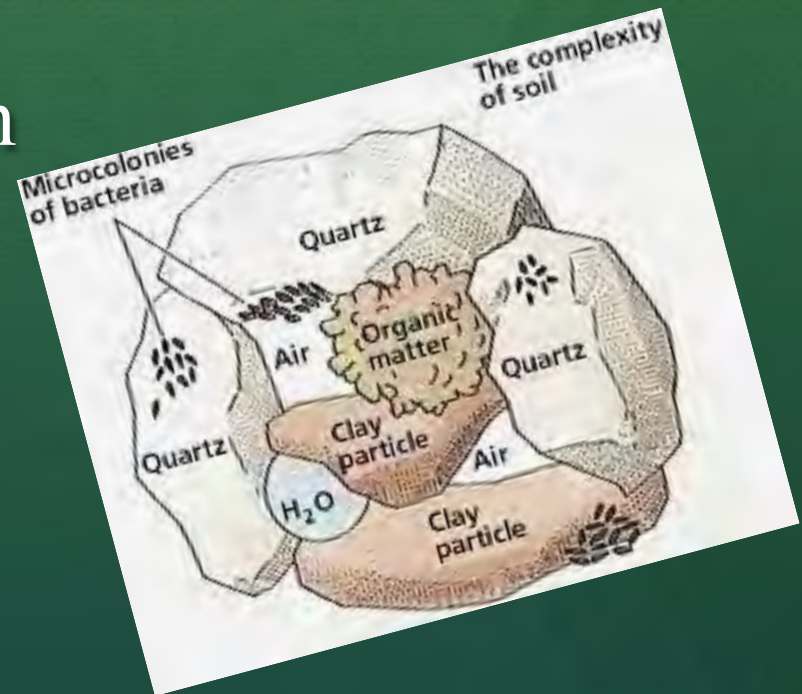
Can't change texture. What does soil structure do?

Affects water infiltration rate and water holding capacity, enhances root penetration, optimizes soil aeration, stimulates microbial diversity



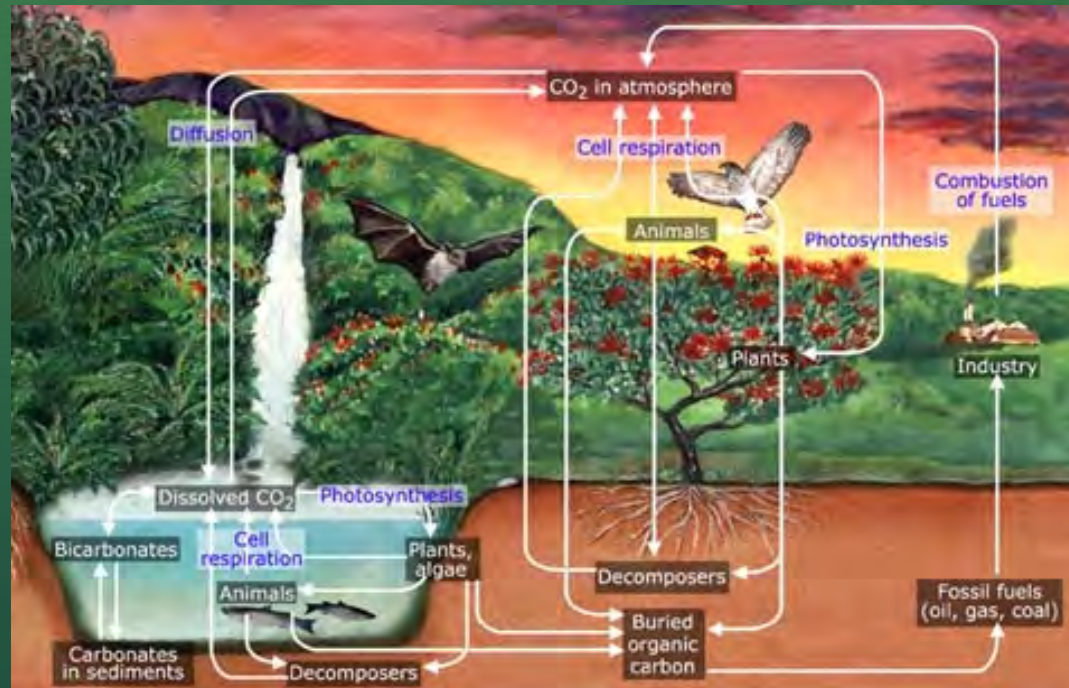
Soil Aggregation

- Tilth, Friability, Soil Structure
- Aggregation Formation
- Aggregation Destruction
- Soil Aeration
- Root Penetration



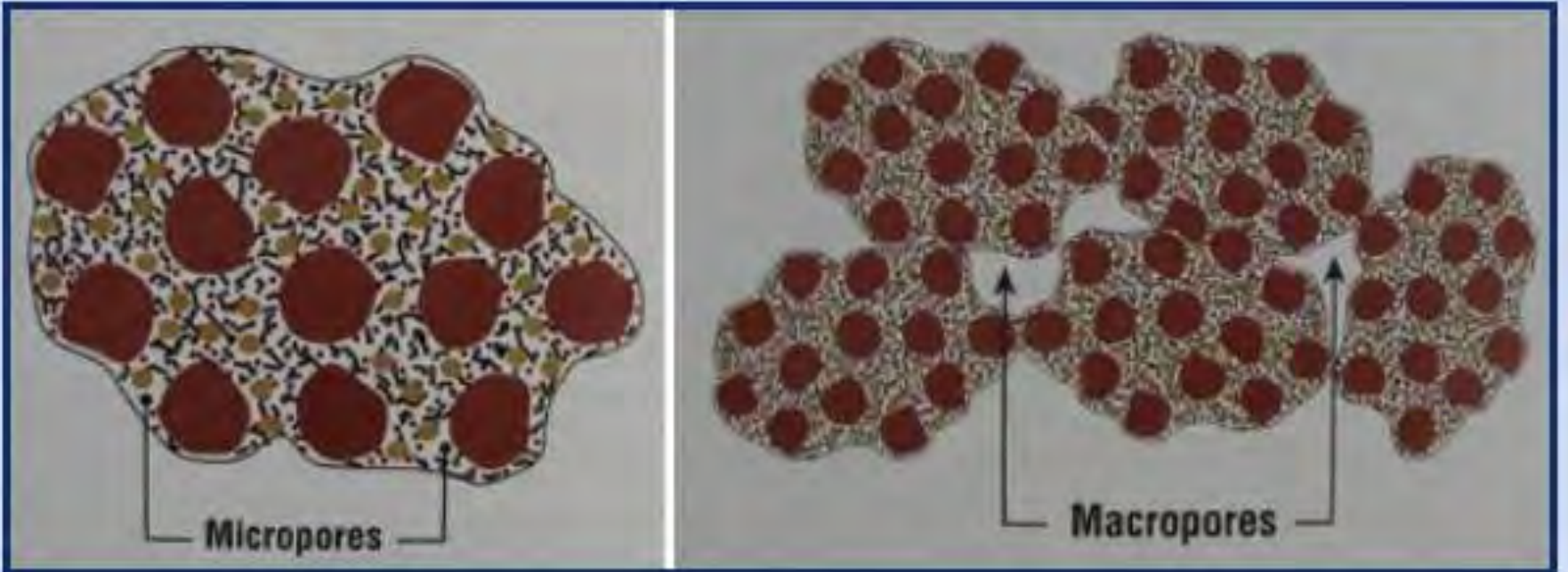
Nutrient Management

- Increase CEC
- Immobilize Water Soluble Nutrients
- Long Term Nutrient Release
- Nitrogen Fixing Micoorganisms

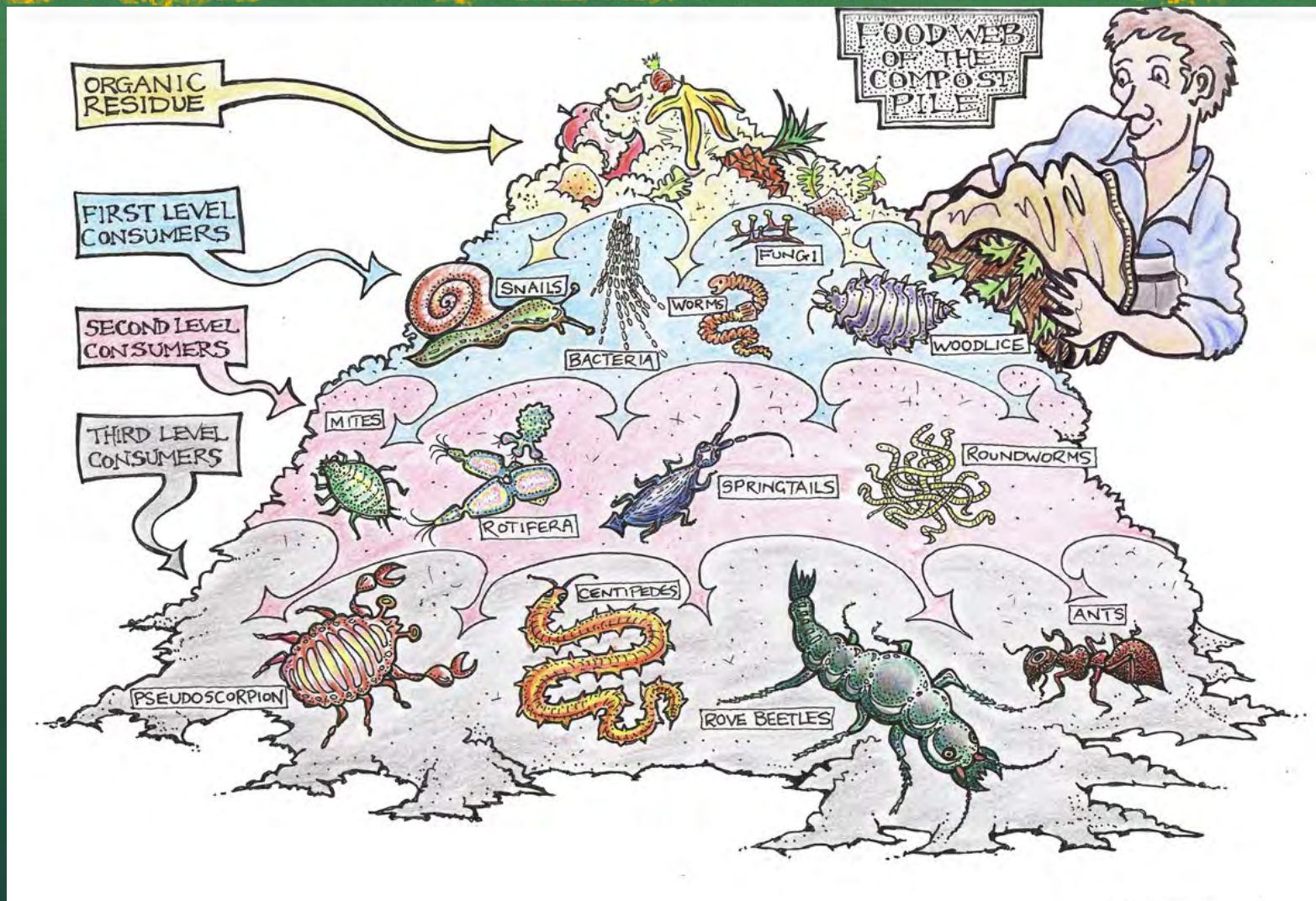


Soil Moisture Management

- Increased Water Holding Capacity (Sandy)
- Increased Water Permeability (Clay)



Diversity of Soil Microorganisms



Diversity of Soil Microorganisms

- A Tool in IPM
 - Increased Competition/Predation
 - Site Occupation
 - Nutrient Management
 - Fungal Presence for Aggregation

Feed the Soil Not the Dump

- 50-70K tons of food scraps landfilled per year
- Almost 100,000 TPY (300 TPD) of yard debris and wood turned into compost and mulches
- Over 1,600,000 tons converted into compost and mulch



Environmental Impacts

<http://www.nrdc.org/food/files/wasted-food-IP.pdf>

Wasted: How America Is Losing Up To 40%
Of Its Food From Farm To Fork To Landfill



25% of our agricultural water is used for food that is
never consumed

Hierarchy of Organics Management

- Reduce: Lawn conversion, plant right, buy right
- Reuse: recycled lumber, reuse nursery
- Recycle: Compost/Mulch
 - On-site
 - Centralized



The Composting Process

- A biological process
- Water 40-60 %
- Oxygen/Porosity (Aerobic)
- Food
- Time

Don't use

Human Feces

Cat/dog Feces

Large Pieces of Wood

Diseased Plant
Material

Large Quantity of
Grease or Oil

Persistent Pesticides
Toxins

Compostable plastics



Compostable Plastics

- Many Do Not Decompose
- Identification
- NOP: synthetic
- GMO, Oil Derived
- Recycle
- Increase Food Diversion

Link [to document](#)

Compostable Plastic Products

Most of us will agree that the use of alternatives to conventional plastic products is preferred. However, in the shift to compostable plastics we cannot ignore how the compostable plastics affect the composting (and recycling) industry.

The following is a list of concerns that need to be addressed:

- Most of the compostable plastics in the US meet ASTM 6400 standards and may be certified by BPI.
“Biodegradability is determined by measuring the amount of CO₂ produced over a certain time period by the biodegrading plastic. ASTM, ISO and DIN standards require 60% biodegradation within 180 days.”
From Worldcentric.org
For most compost facilities 60% in 180 days is not complete nor fast enough. Whereas there is no standard time for compost to mature, Sonoma Compost creates finished compost in 10-14 weeks depending on the feedstock. **Sonoma Compost urges that the compostable plastic needs to meet the rate of decomposition met at efficient compost facilities in order to be called compostable.**
- Compostable plastics look very similar to conventional plastic. Unless the industry adopts a marker that is clearly identifiable in the feedstock sorting process, compostable plastics are seen as plastic and therefore landfilled.
Compostable plastic: Identify yourself!
- Many of the composters market their compost as allowed for organic agriculture. The National Organic Program (NOP) does not allow synthetics as a feedstock. As a result OMRI, TSA, PCO, WSDA Organic Program and others are not allowed to list compostable plastics as allowed.
A request must be made to the NOP to allow compostable plastics to be used as feedstock in compost for organic agriculture. Until then, compost facilities that have their products listed as allowed for organic agriculture cannot process compostable plastics.
- Environmental concerns have been raised, but not clearly addressed.
Compostable plastics often are made with GMOs. Questions about the potential bioaccumulation of compostable plastics residues in plants has not been



- Particle size
- Water

Water, water, water



Moisture By Feel

Squeeze a handful of compost

- $> 60\%$ Water drips out
- $55-60\%$ Sheen on surface
- $50-55\%$ Ball stays when tapped
- $45-50\%$ Ball falls apart when tapped
- $40-45\%$ No ball forms
- $< 40\%$ Hand feels dusty dry

Sonoma Compost Site: water loss





Temperature Monitoring

- Evaluate the Health of the Pile
 - Evaluating the Temperature
 - Size of Pile
 - Food Composition
 - Moisture by Feel



LOS ANGELES

Indoor compost pile ignites house

A 1,700-plant marijuana grow house in the San Gabriel area erupted in flames when a living room compost pile ignited Monday.

Detective David Mertens said a man was seen running from the home but there are no arrests. Mertens says gangs rent out homes to raise pot and investigators find a couple of similar marijuana grow houses each month.

Temperature/Turning Log

Sonoma Compost Temp/Turning Log

| | | | | | | | | | | | | | | | | | | |
|----------|-------------|-------|--------------|-------|------------------|-------|------------------|------|-----------------------|------|------------|------|-------|-------|-------|-------|-------|---------|
| Cell: | Windrow: 43 | | Length: 270' | | # of Readings: 2 | | 1st Reading: 67' | | Subsequent Temps. 135 | | Depth: 24" | | | | | | | |
| DATES | 10/23 | 10/24 | 10/27 | 10/28 | 10/29 | 10/30 | 10/31 | 11/3 | 11/4 | 11/5 | 11/6 | 11/7 | 11/10 | 11/11 | 11/12 | 11/13 | 11/14 | Higher |
| 170 | | | | | | | | | | | | | | | | | | 170 dep |
| 168 | | | | | | | | | | | | | | | | | | 168 |
| 166 | | | | | | | | | | | | | | | | | | 166 |
| 164 | | | | | | | | | | | | | | | | | | 164 |
| 162 | | | | | | | | | | | | | | | | | | 162 |
| 160 | | | | | | | | | | 2,1 | | | 2 | | | | | 160 |
| 158 | | | | | | | | | | | | | | | | | | 158 |
| 156 | | | | | | | | | | | | 1 | | | | 1 | | 156 |
| 154 | | | | | | | 2 | | | | | | | | | 2 | | 154 |
| 152 | | | | | | | 1 | | | | | | | | | | | 152 |
| 150 | | | | 2 | | 2 | | | | | | | 2 | | | | | 150 |
| 148 | | | | 1 | | | | | | | | | | | | | | 148 |
| 146 | | | | | | 1 | | | 2 | | | | | | | | | 146 |
| 144 | | | 1,2 | | | | | 1,2 | | | | | | 2 | | | 2 | 144 |
| 142 | | | | | | | | | | | | | | | | 1 | | 142 |
| 140 | | | | | 1 | | | | | | | | | 1 | | | | 140 |
| 138 | | 1 | | | | | | | | | 1 | | | | | | 2 | 138 |
| 136 | | 2 | | | 2 | | | | | | | | | | | | | 136 |
| 134 | | | | | | | | | | | 2 | | | | | | | 134 |
| 132 | | | | | | | | | | | | | | | | | 1 | 132 |
| 130 | | | | | | | | | | | | | | | | | | 130 |
| 128 | | | | | | | | | | | | | | | | | | 128 |
| 126 | | | | | | | | | | | | | | | | | | 126 |
| 124 | 1 | | | | | | | | | | | | | | | | | 124 |
| 122 | | | | | | | | | | | | | | | | | | 122 |
| 120 | 2 | | | | | | | | | | | | | | | | | 120 |
| 118 | | | | | | | | | | | | | | | | | | 118 |
| 116 | | | | | | | | | | | | | | | | | | 116 |
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| 100 | | | | | | | | | | | | | | | | | | 100 |
| 98 | | | | | | | | | | | | | | | | | | 98 |
| 96 | | | | | | | | | | | | | | | | | | 96 |
| 94 | | | | | | | | | | | | | | | | | | 94 |
| 92 | | | | | | | | | | | | | | | | | | 92 |
| 90 | | | | | | | | | | | | | | | | | | 90 |
| Lower | | | | | | | | | | | | | | | | | | Lower |
| Turnings | | | | x | | | x | | | x | | | x | | | x | | |

Start 10-23-03

PRM



Or, use the pitch fork







Meeting Quality Standards

- Compost (and mulch) will be meeting these standards:
 - Will be kept at a temperature of at least 131 degrees Fahrenheit for at least 15 days during which time the piles will be turned at least 5 times.
 - Fecal coliform tested state certified shall be less than 1000 (3) MPN/dgr, and salmonella sp. shall be less than 4 dgr.
 - Metal Concentrations (stricter Demeter)
 - Pesticides

| | LOW NITROGEN REQUIRING PLANTS | HIGH NITROGEN REQUIRING PLANTS |
|----------------|----------------------------------|-----------------------------------|
| WELL DRAINED | SONOMA COMPOST | ORGANIC HI-TEST COMPOST |
| POORLY DRAINED | TERRA LITE | MALLARD PLUS |

OMRI/CDFA Listed



Sonoma Compost

0.9-0.4-0.7

Guaranteed Analysis:

| | |
|--|-------|
| Total Nitrogen (N) | 0.9 % |
| 0.05 % Water Soluble Nitrogen | |
| 0.85 % Water Insoluble Nitrogen | |
| Available Phosphate (P ₂ O ₅) | 0.4 % |
| Soluble Potash (K ₂ O) | 0.7 % |

Derived from: Compost (Yard Debris with Vegetative Food Scraps)

Directions for use: Incorporate into the soil

Company: Sonoma Compost Co.
550 Meacham Rd.
Petaluma, CA 94952

Net Weight: _____



Organic Hi-Test Compost

1.2-0.3-0.6

Directions for use: Incorporate into the soil. Use as soil amendment to for vegetable production, lawns or other nitrogen loving plants.

Guaranteed Analysis:

| | |
|--|-------|
| Total Nitrogen (N) | 1.2 % |
| 0.1 % Water Soluble Nitrogen | |
| 1.1 % Water Insoluble Nitrogen | |
| Available Phosphate (P ₂ O ₅) | 0.3 % |
| Soluble Potash (K ₂ O) | 0.6 % |

Derived from: Compost (Yard Debris with Vegetative Food Scraps, Chicken Feathers)

Company: Sonoma Compost Co.
550 Meacham Rd.
Petaluma, CA 94952

Net Weight: _____



Parameters for finished compost

- Parent material not recognizable
- Humus formation (dark stain)
- C/N ratio <20
- Mature and stable: Seed Germination & CO₂
- pH <8

Mulches

- Aesthetics
- pH
- Coarse to last, resist blowing away
- High C for weed suppression, aggregation
- Water conservation
- Temperature moderation
- Slowly build soil
- Lazy soil preparation (fall)

Thank you Questions?



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