Using Compost on California Roadsides

Jack Broadbent

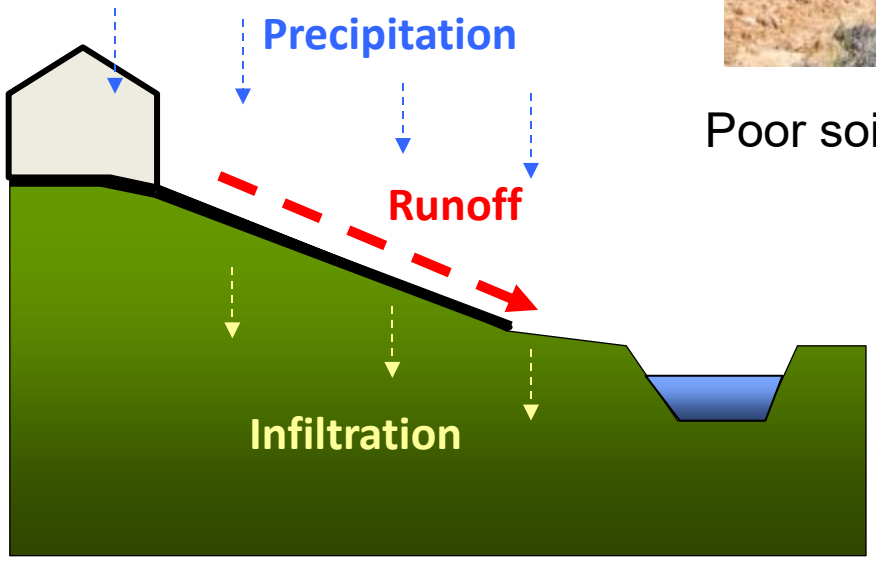
Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Introduction of Caltrans

Reason to use compost

- Build Healthy Soil
- Infiltration
- Erosion Control
- Revegetation

Poor soils lack organic material and have a low water holding capacity.



Biological Mitigation and Enhancement

Re-vegetation and Restoration

Before – Compacted roadside pullout

Biological Mitigation and Enhancement

Re-vegetation and Restoration

Two years later – vegetated coastal prairie

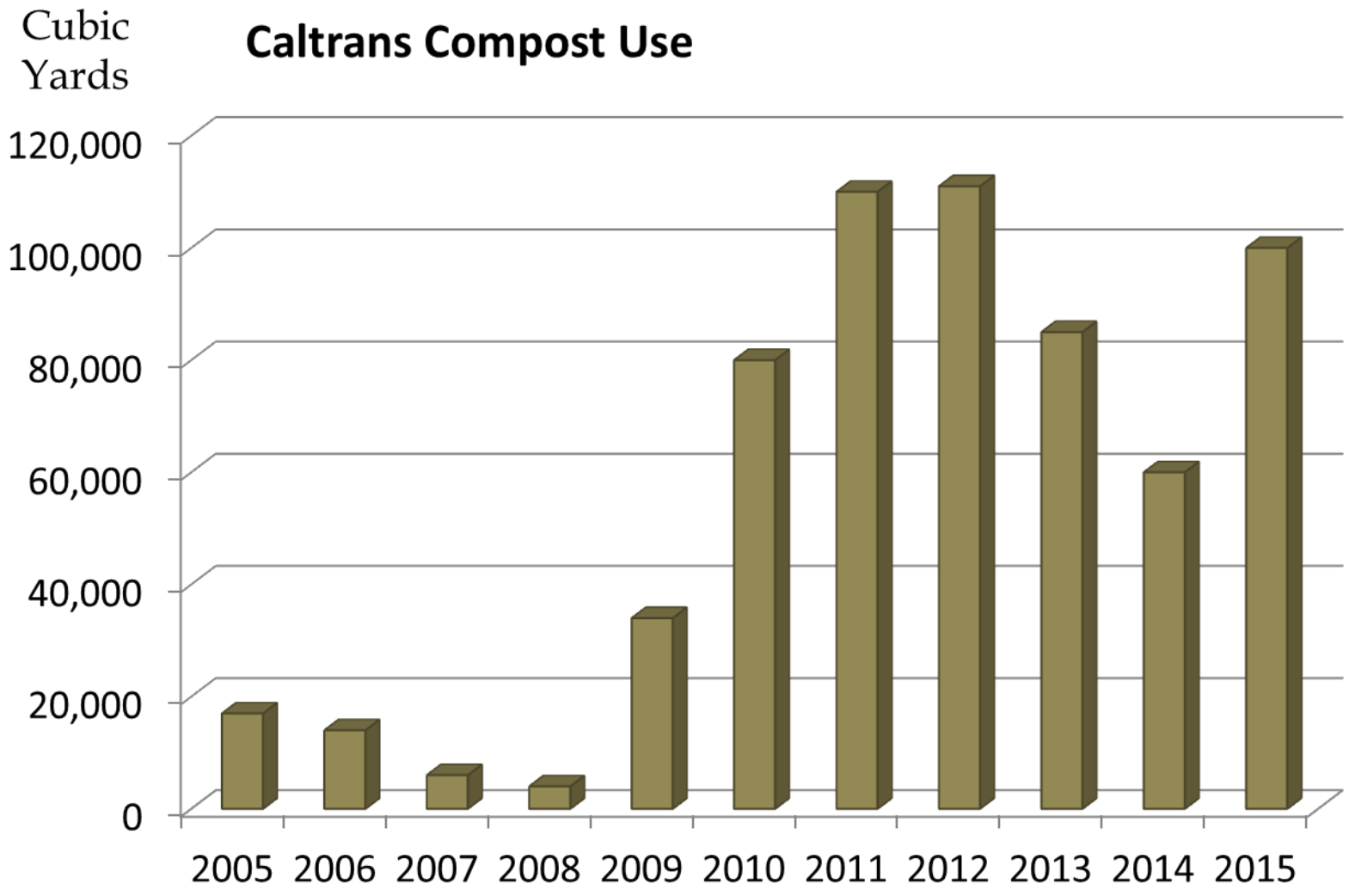
Invasive Weed Suppression

Roadside Management

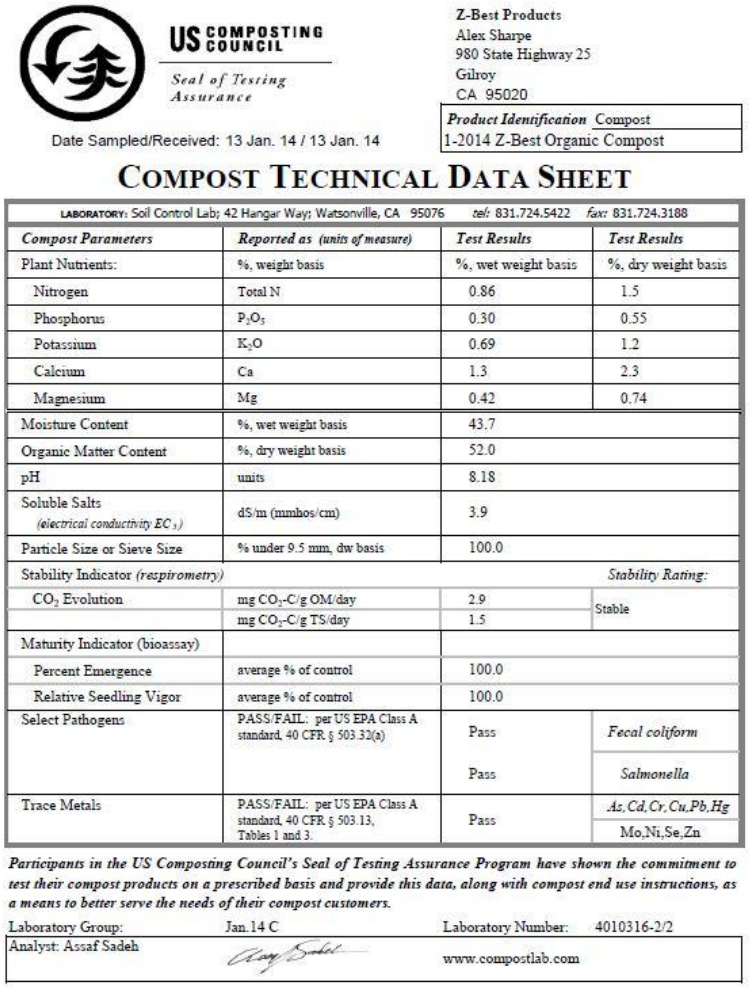
Compost

Herbicide

Industry Success



STA Certification



US COMPOSTING COUNCIL
Seal of Testing Assurance

Z-Best Products
Alex Sharpe
980 State Highway 25
Gilroy
CA 95020

Date Sampled/Received: 13 Jan. 14 / 13 Jan. 14

Product Identification Compost
1-2014 Z-Best Organic Compost

COMPOST TECHNICAL DATA SHEET

LABORATORY: Soil Control Lab; 42 Hangar Way; Watsonville, CA 95076 *tel:* 831.724.5422 *fax:* 831.724.3188

Compost Parameters	*Reported as (units of measure)*	*Test Results*	*Test Results*
Plant Nutrients:	%, weight basis	%, wet weight basis	%, dry weight basis
Nitrogen	Total N	0.86	1.5
Phosphorus	P_2O_5	0.30	0.55
Potassium	K_2O	0.69	1.2
Calcium	Ca	1.3	2.3
Magnesium	Mg	0.42	0.74
Moisture Content	%, wet weight basis	43.7	
Organic Matter Content	%, dry weight basis	52.0	
pH	units	8.18	
Soluble Salts *(electrical conductivity EC_1)*	dS/m (mmhos/cm)	3.9	
Particle Size or Sieve Size	% under 9.5 mm, dw basis	100.0	
Stability Indicator *(respirometry)*			*Stability Rating:*
CO_2 Evolution	mg CO_2-C/g OM/day	2.9	Stable
	mg CO_2-C/g TS/day	1.5	
Maturity Indicator (bioassay)			
Percent Emergence	average % of control	100.0	
Relative Seedling Vigor	average % of control	100.0	
Select Pathogens	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.32(a)	Pass	*Fecal coliform*
		Pass	*Salmonella*
Trace Metals	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3.	Pass	*As, Cd, Cr, Cu, Pb, Hg*
			Mo, Ni, Se, Zn

Participants in the US Composting Council's Seal of Testing Assurance Program have shown the commitment to test their compost products on a prescribed basis and provide this data, along with compost end use instructions, as a means to better serve the needs of their compost customers.

Laboratory Group: Jan.14 C Laboratory Number: 4010316-2/2

Analyst: Assaf Sadeh www.compostlab.com

The US Composting Council's Seal of Testing Assurance Program ('STA') is a compost testing, labeling and information disclosure program.

Industry Challenges

- Quality and consistency
- Trash content
- Particle size

Physical Contaminants

Particle Size Specification

Property	Test method [a]	Requirement	
Particle size: **Fine Compost** For soil amendment and incorporation.	TMECC 02.02-B Sample sieving for aggregate Size classification % dry weight basis	Min	Max
	Pass 2”-inch sieve	98%	--
	Pass 3/8-inch sieve	95%	--
	Maximum particle length: 3 inches		
Particle size: **Medium Compost** For soil protection and native plant establishment.	TMECC 02.02-B sample sieving for aggregate Size classification % dry weight basis	Min	Max
	Pass 2-inch sieve	90%	--
	Pass 3/8-inch sieve (minimum 50% retained)	50%	75%
	Maximum particle length: 6 inches		
Particle size: **Coarse Compost** For filter sock and berm applications.	TMECC 02.02-B sample sieving for aggregate Size classification % dry weight basis	Min	Max
	Pass 2-inch sieve	90%	--
	Pass 3/8-inch sieve (minimum 70% retained)	--	30%
	Maximum particle length: 6 inches		

Examples of Compost Use

Protect Infrastructure

Erosion Control

Hwy 101 Prunedale Improvement Project
45,000 cubic yards of compost used covering over 108 acres.

Results of Using Compost

Erosion Control

Protect Water Quality

Erosion Control

Establish Native Vegetation

Erosion Control

Thank you

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Extra Info if needed

Material Specification

21-1.02M Compost
Compost must be derived from one or a combination of the following types of materials:

1. Green material consisting of chipped, shredded, or ground vegetation or clean, processed, recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost must not be derived from mixed municipal solid waste and must not contain paint, petroleum products, pesticides, or other chemical residues harmful to plant or animal life. Metal concentrations in compost must not exceed the maximum listed under 14 CA Code of Regs § 17868.2.
Process compost materials under 14 CA Code of Regs § 17868.3.
The quality characteristics of compost must have the values shown in the following table:

Compost

Quality Characteristic	Test method[a]	Value
pH	TMECC 04.11-A	6–8.5
Soluble salts (dS/m)	TMECC 04.10-A	0–10
Moisture content (% wet weight)	TMECC 03.09-A	30–60
Organic matter content (% dry weight)	TMECC 05.07-A	30–70
Maturity (seed emergence) (% relative to positive control)	TMECC 05.05-A	80 or above
Maturity (seedling vigor) (% relative to positive control)	TMECC 05.05-A	80 or above
Stability (mg CO_2-C/g OM per day)	TMECC 05.08-B	8 or below
Particle size for fine compost[b] dry weight	TMECC 02.02-B	
Pass 2-inch sieve (% min)		98
Pass 3/8-inch sieve (% min)		95
Particle size for medium compost[b] dry weight	TMECC 02.02-B	
Pass 2-inch sieve (% min)		90
Pass 3/8-inch sieve (% min)		50
Particle size for coarse compost[b] dry weight	TMECC 02.02-B	
Pass 2-inch sieve (% min)		90
Pass 3/8-inch sieve (% max)		30
Pathogen Salmonella (most probable number per 4 grams dry weight basis)	TMECC 07.01-B	< 3
Pathogen Fecal coliform (most probable number per gram dry weight basis)	TMECC 07.01-B	< 1,000
Physical contaminants (% dry weight) Plastic, glass, and metal	TMECC 02.02-C	combined total: < 0.5
Physical contaminants (% dry weight) Sharps	TMECC 02.02-C	None detected

[a] TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).
[b] Maximum particle length must be 6 inches.

Scientific Characteristics of Compost

- Reduces storm water runoff volume and velocity by:
  - Increasing infiltration rates.
  - Improving soil water holding capacity. Up to 4 inches per hour.
  - Enhancing soil structural properties - soil structure, porosity and texture.

- Promotes long term vegetation establishment by:
  - Improving plant rooting depth. Improving soil chemical properties - providing proper pH, carbon, nitrogen, potassium and phosphorus levels.
  - Enhancing soil biology - activity by bacteria, mycorrhizal fungi, nematodes, protozoa, microarthropod and earthworms.
  - Increasing soil nutrient levels and nutrient cycling.