Compost Use for Landscape and Environmental Enhancement

‘Team Compost Manual’

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In addition, authors are appreciative of the US EPA for original authorship of portions of the section describing specific uses of compost filter socks.

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index

Intended End-Users

- Caltrans *personnel* (as an aid for specifying compost use for landscape and environmental applications, particularly regarding stormwater management and erosion control).

- Caltrans *landscape and erosion control contractors* (as a personnel training resource and office and field guide regarding the successful use of compost).

- Compost *producers, marketers and users* (as an office and field guide to assist in both personnel training and the appropriate application of compost).

Background

North Americans generate more than 240 million tons of trash (solid waste) each year, (4.5 pounds per person daily). Of this amount, 72 million tons (31 percent) is recycled, a number that is rising steadily.

The number of licensed composting facilities in the U.S. has tripled since 1990, to over 3,000. Commercial composting processes 17 million tons of yard and food wastes equaling 25% of the recycling

Source: EPA (2005)

Crane Mountain (Canada)

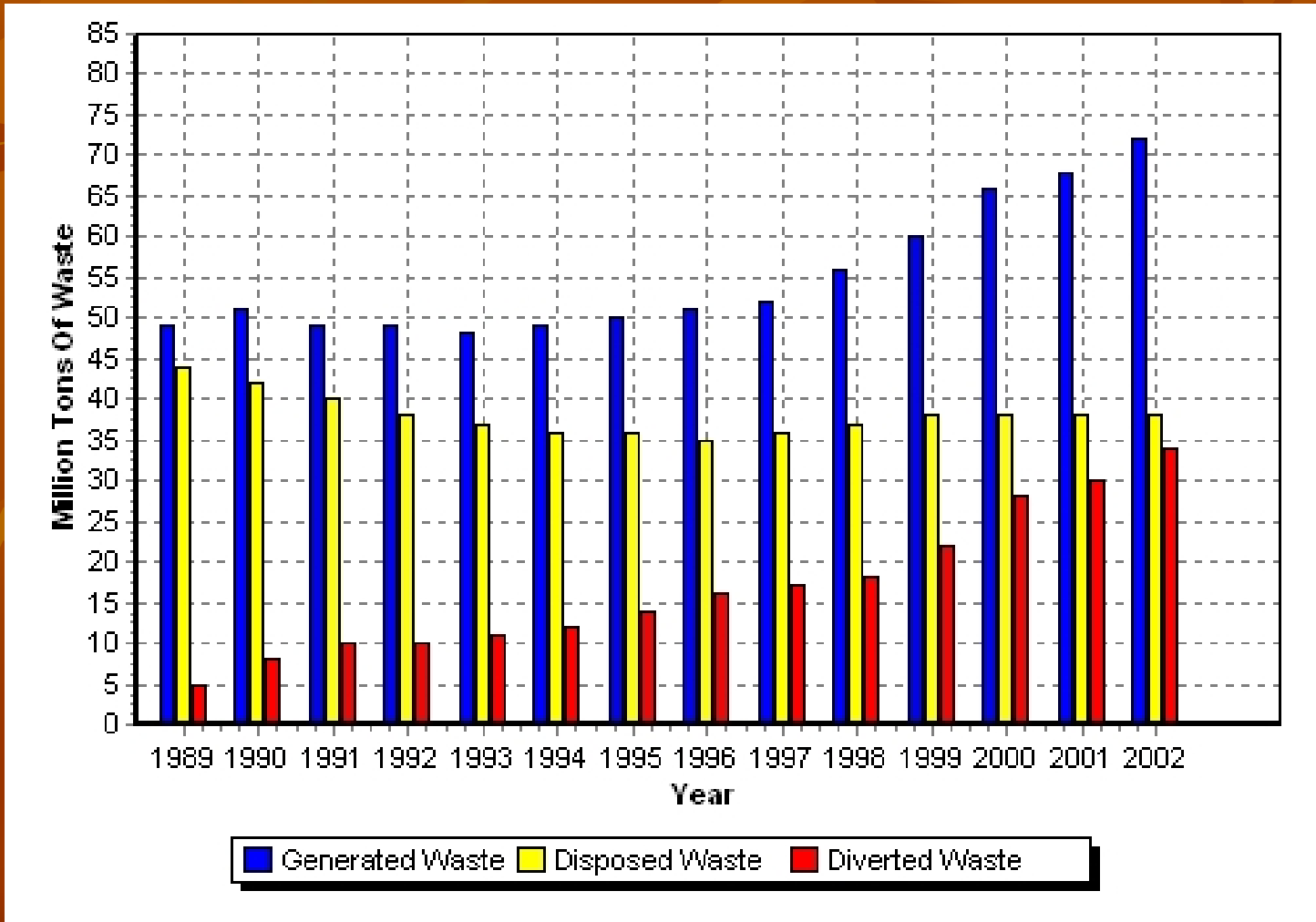
Riker’s Island (NY)

Washington State University

Brunswick, Maine

The *California Integrated Waste Management Act* requires cities and counties to divert 50% of wastes from landfills based on 1990 levels. When passed, diversion rates were about 11%. In 2006, CA achieved a 52% rate, with composting playing a major role.

Annual California Waste Disposal, Diversion and Generation



1. Important Definitions

- *Compost* is an organic soil conditioner created by decomposing organic matter under controlled conditions until it is stable enough to improve soils without harming plants or transmitting disease.

- *Composting* is the process of rapidly decomposing organic matter using aerobic (oxygen-using) microorganisms at high temperatures (the active phase) followed by a more gradual decomposition of any remaining by-products at more moderate temperatures (the curing phase).

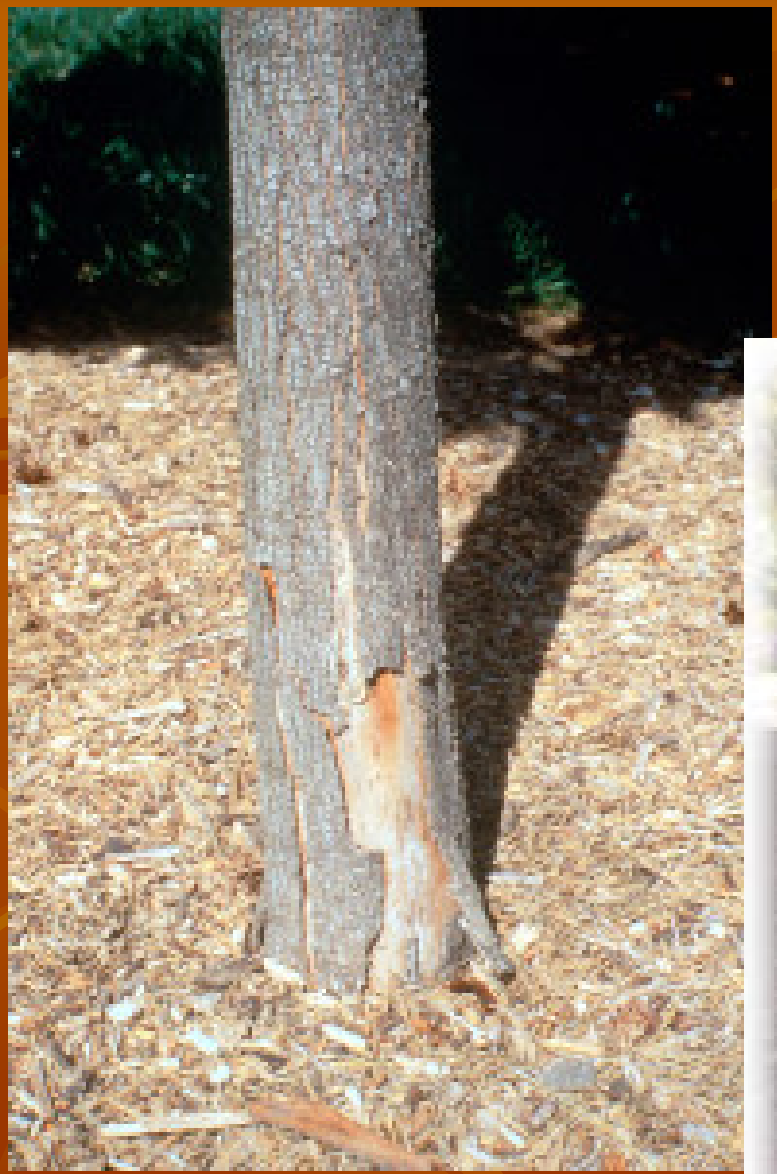
Compost

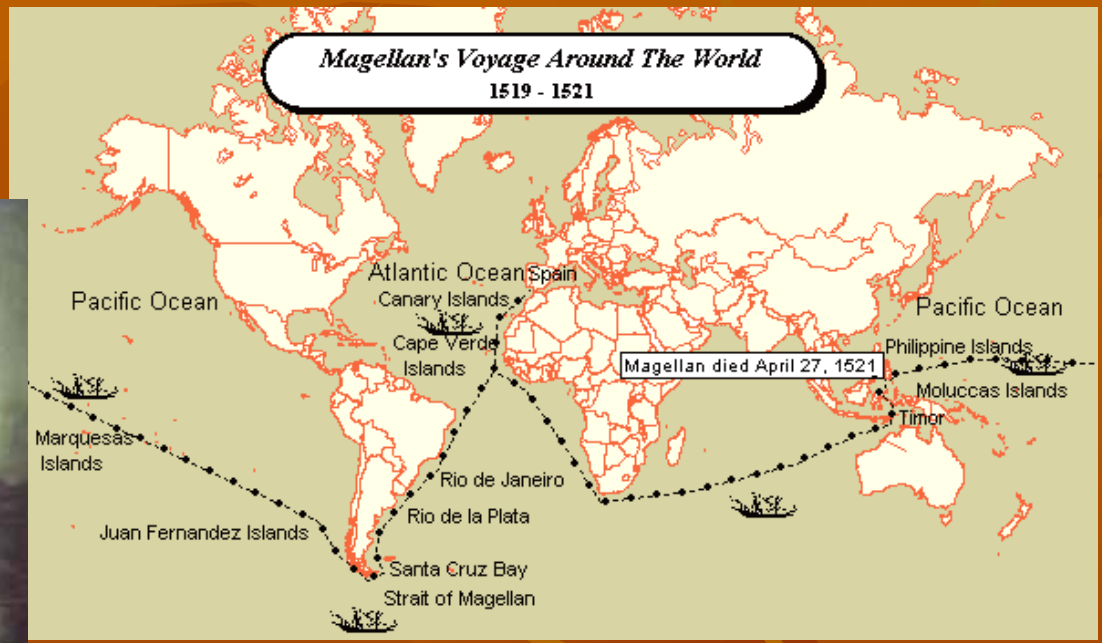
Soil amendments **are incorporated into the soil to improve soil physical and chemical properties. Soil amendments can improve aeration, water penetration, and drainage in heavy soils. In sandy soils they enhance the soil water and nutrient holding capacity. Biological diversity in the soil is also encouraged by soil amendments.**

3 levels of compaction

Low: 0.7 (g/cm3)
Medium: 1.1
High: 1.6

Mulches form a protective covering on top of the soil surface to reduce evaporation losses, soil erosion, and weed growth; buffer soil temperatures; and, to protect tree trunks from mechanical injury from lawn mowers and weed whips. Mulches may be organic (leaves, plant trimmings and prunings, peat, wood chips, etc.) or inorganic (plastic sheeting, tire chips, gravel, etc.)





Today's Soils Started Then

- *Healthy Biota:* High quality soils have many types of beneficial microorganisms. Soil microbes are largely responsible for the decomposition of soil organic matter and nutrient cycling.

Compost

- Improves soil tilth and structure
- Improves the water holding capacity of sandy soils
- Improves drainage in heavy soils
- Improves soil nutrient holding capacity
- Prevents or decrease erosion
- Improves soil aeration
- Decreases the need for chemical fertilizers
- Remediates chemically damaged soils
- Replenishes trace and macronutrient stores
- Increases the activity and diversity of soil microorganisms
- Reduces the incidence or severity of certain soil-borne diseases

3.2 Compost Quality, Testing, and Use Standards

- Suggested end uses for composts vary based on their specific physical, biological, and chemical qualities.

- Since compost feedstock and preparation methods differ, selecting the right product for a particular application is crucial to the long-range success of the planting.

3.2 Compost Quality, Testing, and Use Standards (con'd)

- Fortunately, standards are becoming available to designate acceptable uses for various composts.
- In 2000, the U.S. Composting Council coordinated the development of industry standards for compost testing and information disclosure called the Seal of Testing Assurance (STA).
- Since 2006, a compost classification system referred to as the Compost Use Index has been under development by the Association of Compost Producers and the University of California Cooperative Extension.

Suggested Ranges for Compost Properties

- *Carbon-to-nitrogen (C:N) ratio*
- *Contaminants*
- *Maturity and stability*
- *Moisture content*
- *Nutrient content*

Suggested Ranges for Compost Properties (con'd)

- *Organic matter content*
- *Particle size distribution*
- *pH*
- *Phytotoxicity*
- *Soluble Salts*
- *Trace Elements*
- *Weeds and Disease Organisms*

U.S. Composting Council Quality Assurance

- During the 1990's, it was common for results of tests conducted to determine the physical, chemical and biological characteristics and properties of a compost to vary among laboratories testing the same product.

- This discrepancy was often due to a lack of standardized testing procedures used by the various labs, making comparisons frustrating and confusing to end-users.

To remedy this problem, the U.S. Composting Council (USCC) developed, published, and continues to update and maintain a complete nationwide compost testing system for the industry.

Composts that have been tested using the approved methods outlined in the Test Methods for the Evaluation of Composting and Compost (TMECC) carry the Seal of Testing Assurance (STA) and can be used with confidence.

The nationwide testing system is comprised of 3 components:

- TMECC: Test Methods for the Evaluation of Composting and Compost
- STA: Seal of Testing Assurance Program
- CAP: Compost Analysis Proficiency Program

- *TMECC*: The TMECC manual contains laboratory techniques for measuring the parameters particularly significant for composts.

- *Compost Analysis Proficiency (CAP)*: CAP is a program for laboratories. All laboratories enrolled in the CAP program analyze compost samples on a routine basis and engage in a carefully monitored laboratory certification process

- *Seal of Testing Assurance (STA)*: STA is a program to help composters build credibility and a steady clientele.

4. Compost Uses And Specifications

- The information in this section is intended to provide an overview of best use practices for compost in a wide range of landscape horticultural applications.

In the landscape, composts are used primarily as soil amendments to:

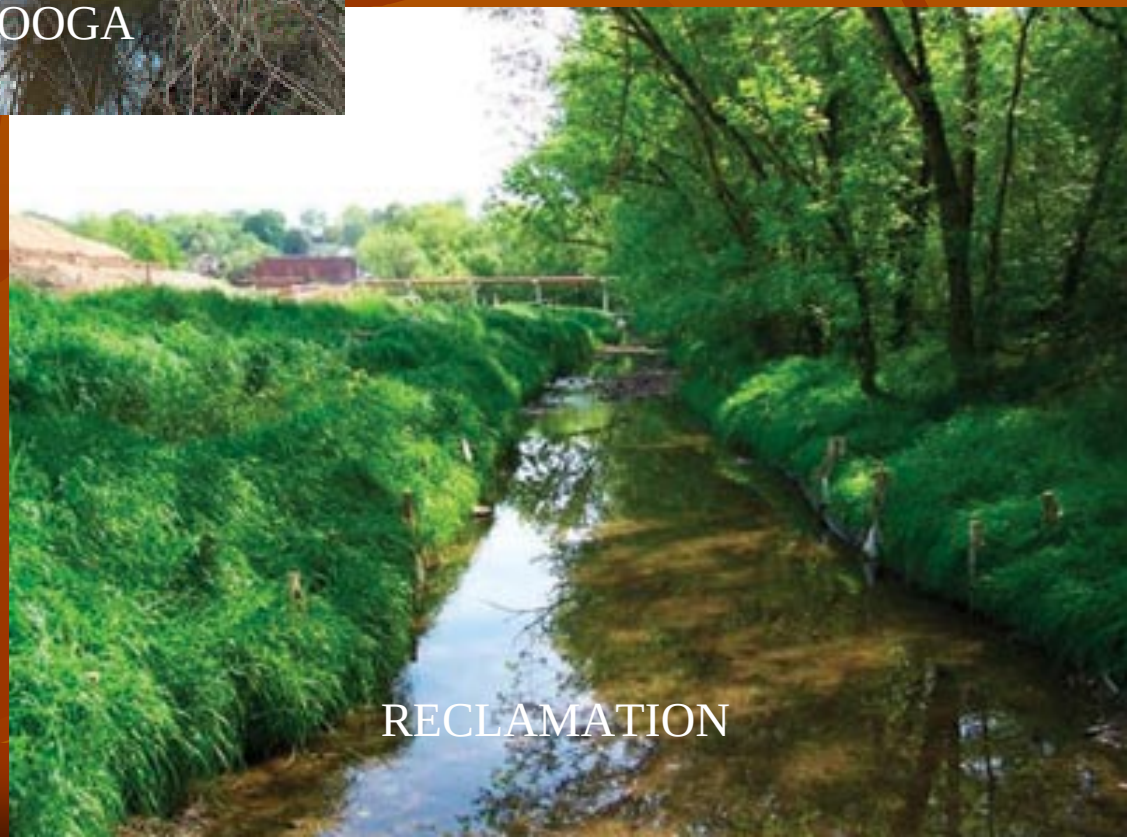
- improve soil tilth and structure
- enhance water and nutrient holding capacities
- to promote water and nutrient infiltration in heavy or compacted soils.

Large-particle size compost can also be used successfully as landscape mulches to conserve water, suppress weeds, reduce runoff, and for beautification.

Examples of environmental uses for composts include:

- erosion control along roads and highways
- slope stabilization
- stormwater remediation to protect surface water from runoff

ERODED STREAM CHATTANOOGA



RECLAMATION


SEP 26 2001

Appendices

- A: Tolerances of Plants to Soil Salinity
- B: CalTrans Specifications
- C: CalTrans Maintenance Landscape Specialists
- D: CalTrans Erosion Control and Landscape Contractors

Thank You