Pacific Northwest Coalition of Organic Land Care Professionals

Composting and Organic Matter:
What are Organic Land Care Professionals Up To?

Soil School 2016
PCC Rock Creek

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Project Coordinator
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The Principles of Organic Land Care

The Organic Land Care Practitioner:

- Works with natural systems and processes to encourage and enhance biological diversity and native habitats;
- Optimizes and maintains the life supporting properties of soil, air and water;
- Utilizes renewable, biodegradable and recycled materials from local sources and minimizes waste;
- Considers the wider social and ecological impacts of landscapes and the practices and products used to create and maintain them.

What is the answer?

What is the question?

Add organic matter

US COMPOSTING COUNCIL

Seal of Testing Assurance

Date Sampled/Received: 29 Feb. 16 / 01 Mar. 16

City of Portland, Sunderland Yard Recycling Facility
Aaron B. Wieting
9325 NE Sunderland Ave.
Portland
OR 97211

Product Identification	Compost
LC8	

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	Not reported	Not reported
Moisture Content	%, wet weight basis	57.4	
Organic Matter Content	%, dry weight basis	40.3	
pH	units	7.33	
Soluble Salts *(electrical conductivity EC_5)*	dS/m (mmhos/cm)	1.1	
Particle Size or Sieve Size	maxium aggregate size, inches	0.64	
Stability Indicator *(respirometry)*			*Stability Rating:*
CO_2 Evolution	mg CO_2-C/g OM/day	0.28	Very Stable
	mg CO_2-C/g TS/day	0.11	
Maturity Indicator (bioassay)			
Percent Emergence	average % of control	100.0	
Relative Seedling Vigor	average % of control	107.4	
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:	Mar.16 A	Laboratory Number:	6030029-1/1
Analyst: Assaf Sadeh		www.compostlab.com	

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Compost Parameters	*Reported as (units of measure)*	*Test Results*	*Test Results*
Plant Nutrients:	%, weight basis	%, wet weight basis	%, dry weight basis
Nitrogen	Total N	0.53	1.2
Phosphorus	P_2O_5	0.20	0.45
Potassium	K_2O	0.14	0.35
Calcium	Ca	1.2	2.7
Magnesium	Mg	0.16	0.38
Moisture Content	%, wet weight basis	57.4	
Organic Matter Content	%, dry weight basis	40.3	
pH	units	7.33	
Soluble Salts *(electrical conductivity EC_5)*	dS/m (mmhos/cm)	1.1	
Particle Size or Sieve Size	% under 9.5 mm, dw basis	98.5	
Stability Indicator *(respirometry)*			*Stability Rating:*
CO_2 Evolution	mg CO_2-C/g OM/day	0.28	Very Stable
	mg CO_2-C/g TS/day	0.11	
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Percent Emergence	average % of control	100.0	
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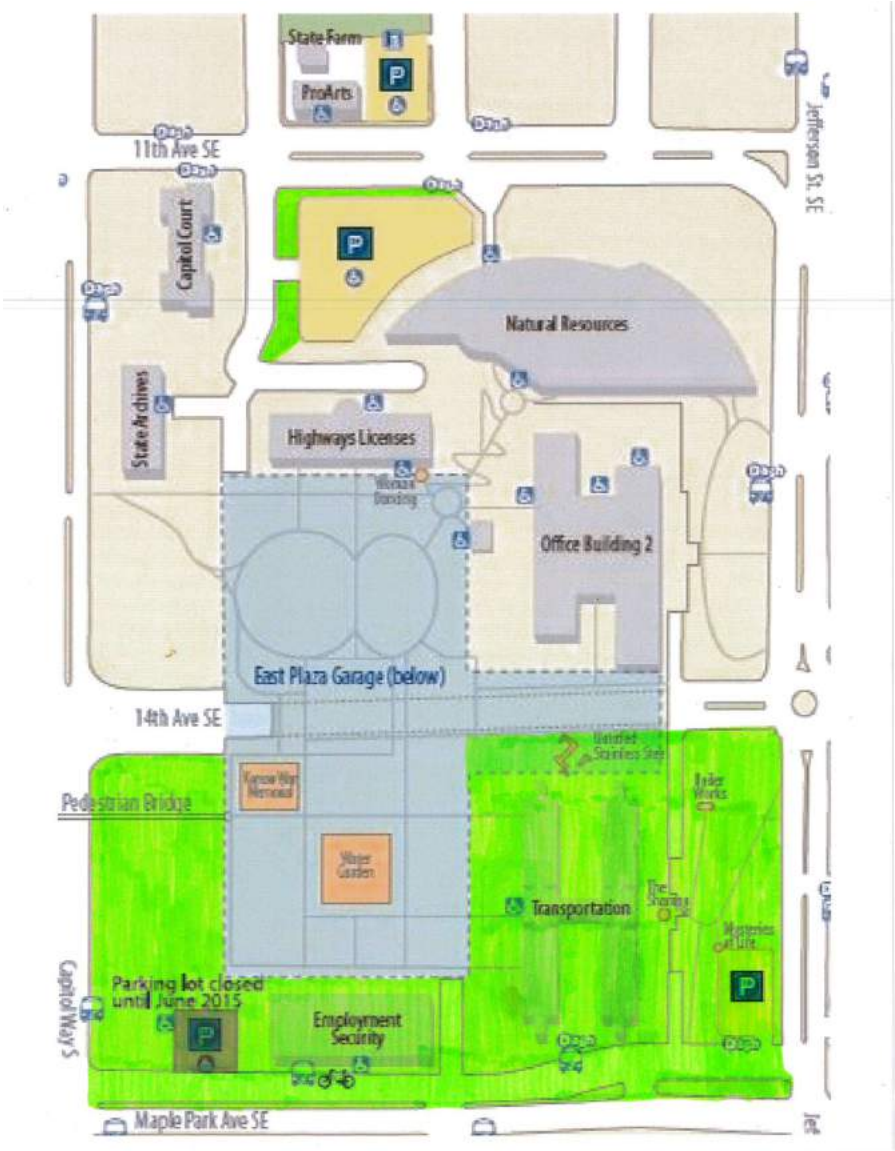
Apogee
landscapes

OLC at the Washington State Capitol,

East Campus




Natural Resource Building
Department of Agriculture
Department of Fish and Wildlife
Department of Natural Resources
Department and Conservation Office

Cornell University

The Scoop & Dump Method of Soil Remediation

By

Miles S. Sax

Public Garden Leadership MPS
Dept. of Horticulture

Urban Soils


E35

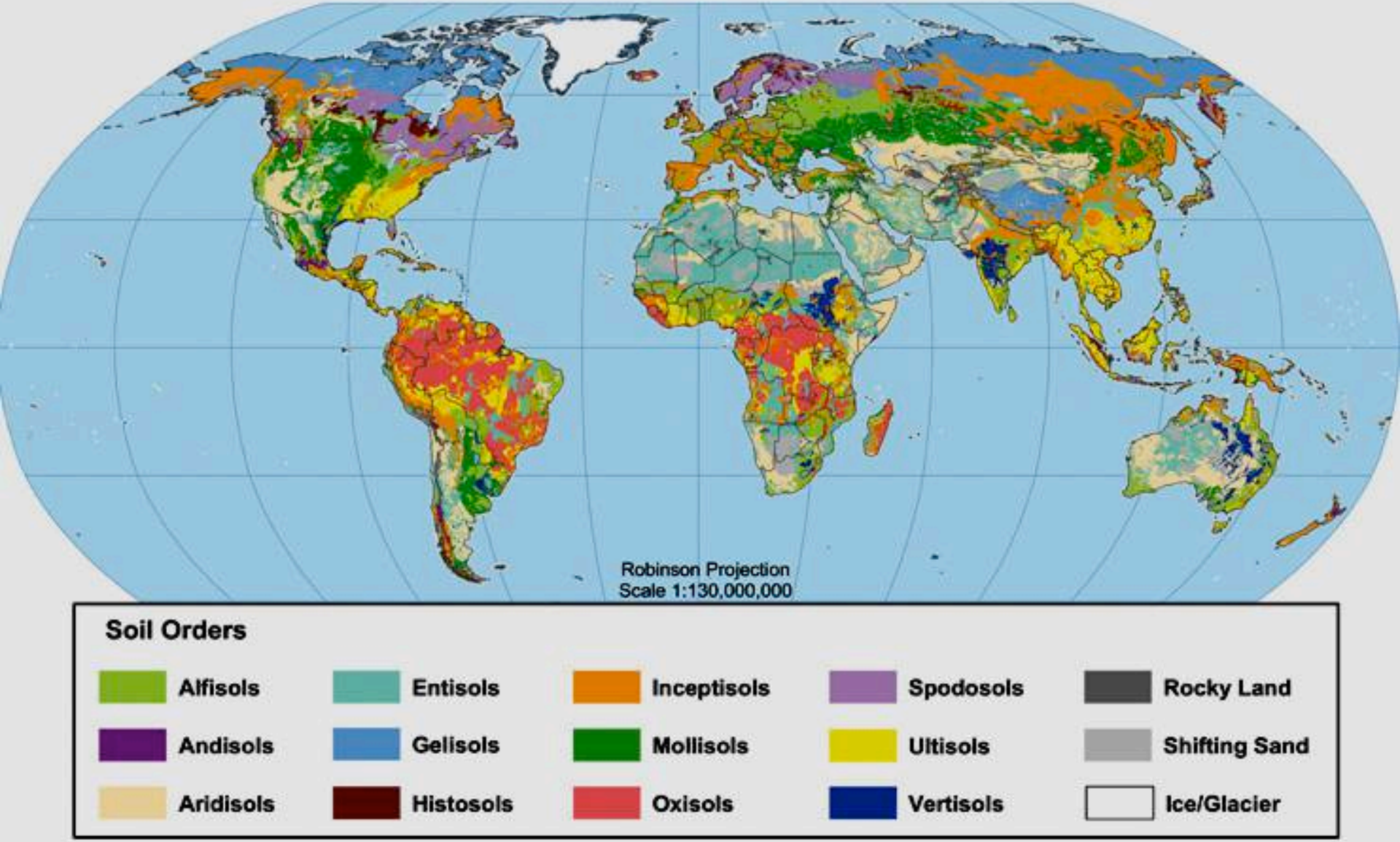

Bobcat
5699
Bobcat
E35
RENT IT


3


55


3

Global Soil Regions



USDA NRCS US Department of Agriculture
Natural Resources
Conservation Service

Soil Survey Division
World Soil Resources
soils.usda.gov/use/worldsoils

November 2005

Soil Descriptions

Inceptisols

Soils that are beginning to form and have weakly developed soil profiles. Inceptisols are most common in the Coast Range, where they have dark surface horizons (or layers, as when viewed in cross-section) enriched with organic matter and subsoils in which only brighter colors and better structures differentiate the soil from the parent material. Inceptisols in the Klamath Mountains are similar, but have thinner surface horizons that are lower in organic matter.

Ultisols

Red soils with strongly developed subsoil horizons of clay accumulation. Oregon Ultisols are mostly paleosols (old soils) that formed long ago when the climate was warmer and wetter. Ultisols are prominent in the foothills on both sides of the Willamette Valley and also occur on foothills in Douglas, Josephine and Jackson Counties. They are widely used to produce grapes, Christmas trees, grass seed and timber.

Alfisols

Soils that have thin surface horizons enriched with organic matter and subsoil horizons of clay accumulation. Alfisols occur mainly in Western and southern Oregon. Typical examples include the reddish brown Willakenzie soils in the foothills of the Willamette Valley and the reddish brown Abegg and Ruch soils on old terraces in Jackson County.

Andisols

Soils developed in materials of volcanic origin. Coast Range Andisols are black, light-weight soils developed from basalt under cool, humid conditions. Cascade Range Andisols develop from mixed ash and weathered andesite. Andisols from Crater Lake northeastward to Newberry Crater are developed mainly from pumice. Andisols in northeastern Oregon are formed in a blanket of white ash mainly from the eruption of Mount Mazama.

Spodosols

Soils with white near-surface horizons over iron-rich subsoils formed in sandy materials under pine or spruce in cool, humid areas. Spodosols are the dominant soil at high elevations along the crest of the Cascades, but they are also prominent components of the landscape along the Coast from Newport to Brookings. Many coastal Spodosols in Coos and Curry Counties are intensively used for cranberry production.

Histosols

Highly organic soils, composed almost entirely of the decayed remains of plants that grew in marshy environments. Histosols are dominant only in the vicinity of Upper Klamath Lake, but they are perhaps better known in the small, finger-like areas of Lake Labish just north of Salem, where the Semiahmoo series is used intensively to produce Spanish onions.

Aridisols

Soils found in the driest parts of southeastern Oregon, mainly in old playas and lake basins and on surrounding uplands in Lake, Harney and Malheur Counties. Surface horizons for these soils are light in color and low in organic matter. Many Aridisols have subsoil horizons enriched with clay. Some have accumulations of free lime in the subsoil. A few, where the seasonal water table is close to the surface, are salty. Many Aridisols are underlain at shallow depth by either volcanic bedrock or by a soil-formed hardpan.

Mollisols

Soils formed mainly in association with grassland vegetation. Mollisols have relatively thick, dark surface horizons rich in organic matter under which are subsoils that are either weakly developed or enriched in clay or carbonates. More than 650 Oregon soil series are Mollisols—this order occupies the largest area of any soil order in the state. On the main floor of the Willamette Valley they are deep, dark, fertile soils. In Eastern Oregon they have lower amounts of organic matter and are more likely to be associated with carbonate accumulations, hardpans, or shallow bedrock.

Vertisols

Clay soils that shrink and swell appreciably upon wetting and drying. Vertisols are dominant soils only in small areas of south-central Oregon, but they form important components of the soil landscape on low foothills and in tributary valleys of the Willamette Valley (Bashaw series), Douglas County (Curtin series) and Jackson County (Carney and Coker series).

Entisols

Soils found mainly in recently deposited parent materials that are too young to have developed soil horizons. The largest area dominated by Entisols is the Columbia Basin in Morrow and Umatilla Counties. Irrigation with Columbia River water has made these sandy soils agriculturally productive. Other Entisols occur in small areas on floodplains of rivers and streams, where frequent flooding continually adds new sediments to the land surface.

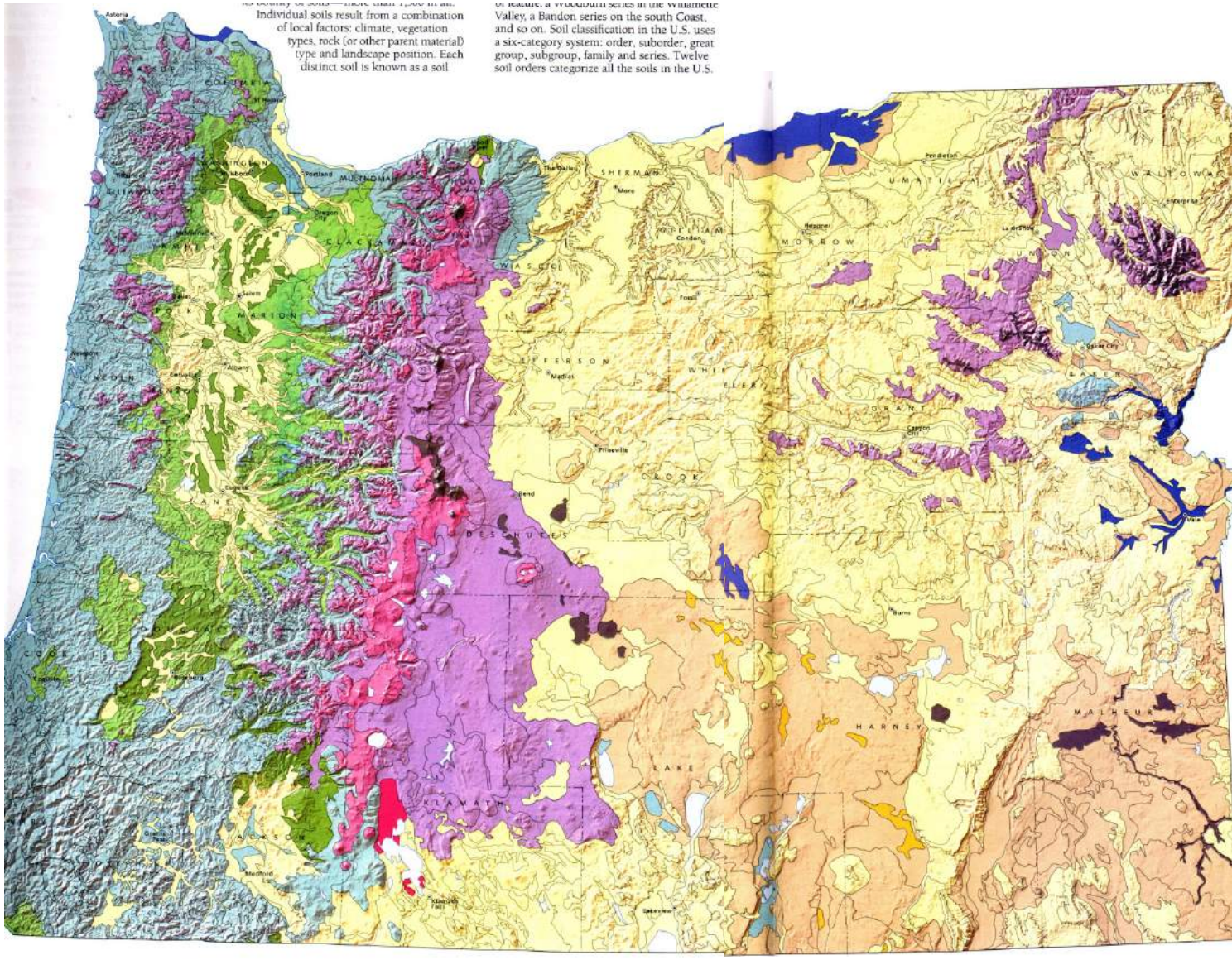
Rock

Water

Note: Gray lines within soil orders are boundaries of suborders shown on the following two pages.

Individual soils result from a combination of local factors: climate, vegetation types, rock (or other parent material) type and landscape position. Each distinct soil is known as a soil

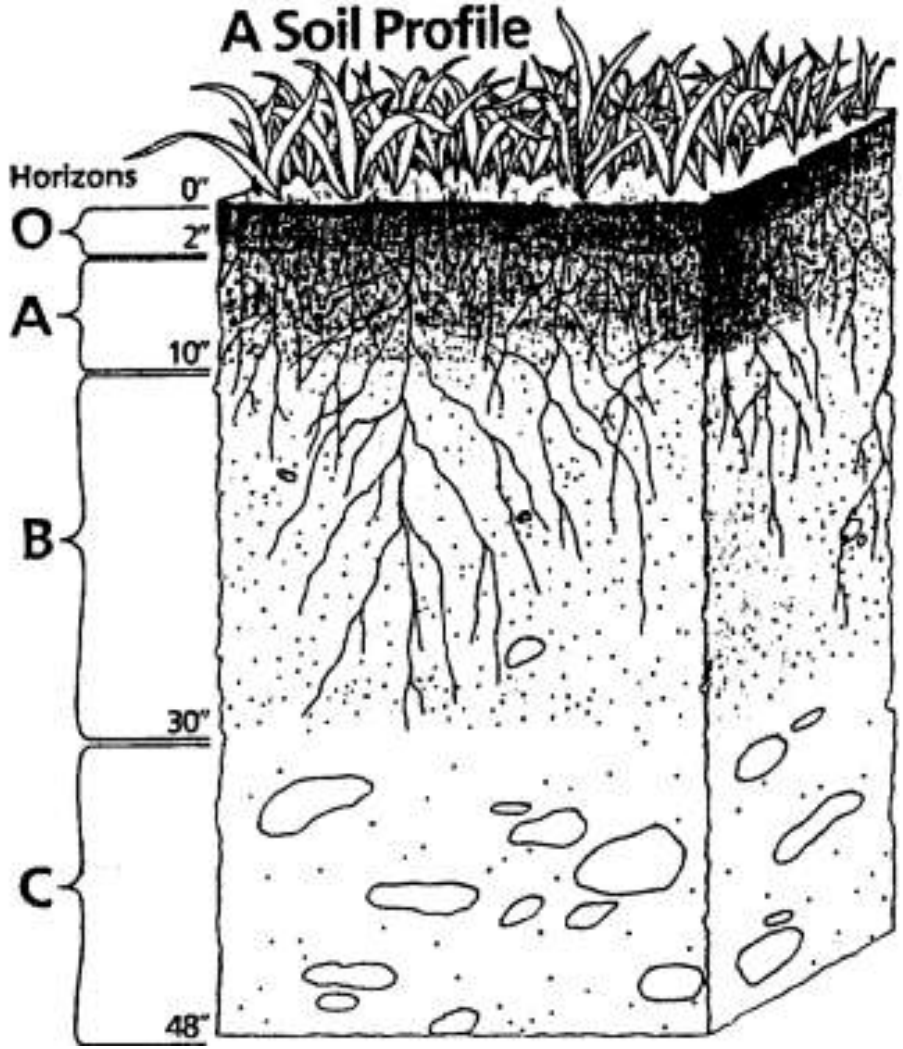
Valley, a Bandon series on the south Coast, and so on. Soil classification in the U.S. uses a six-category system: order, suborder, great group, subgroup, family and series. Twelve soil orders categorize all the soils in the U.S.

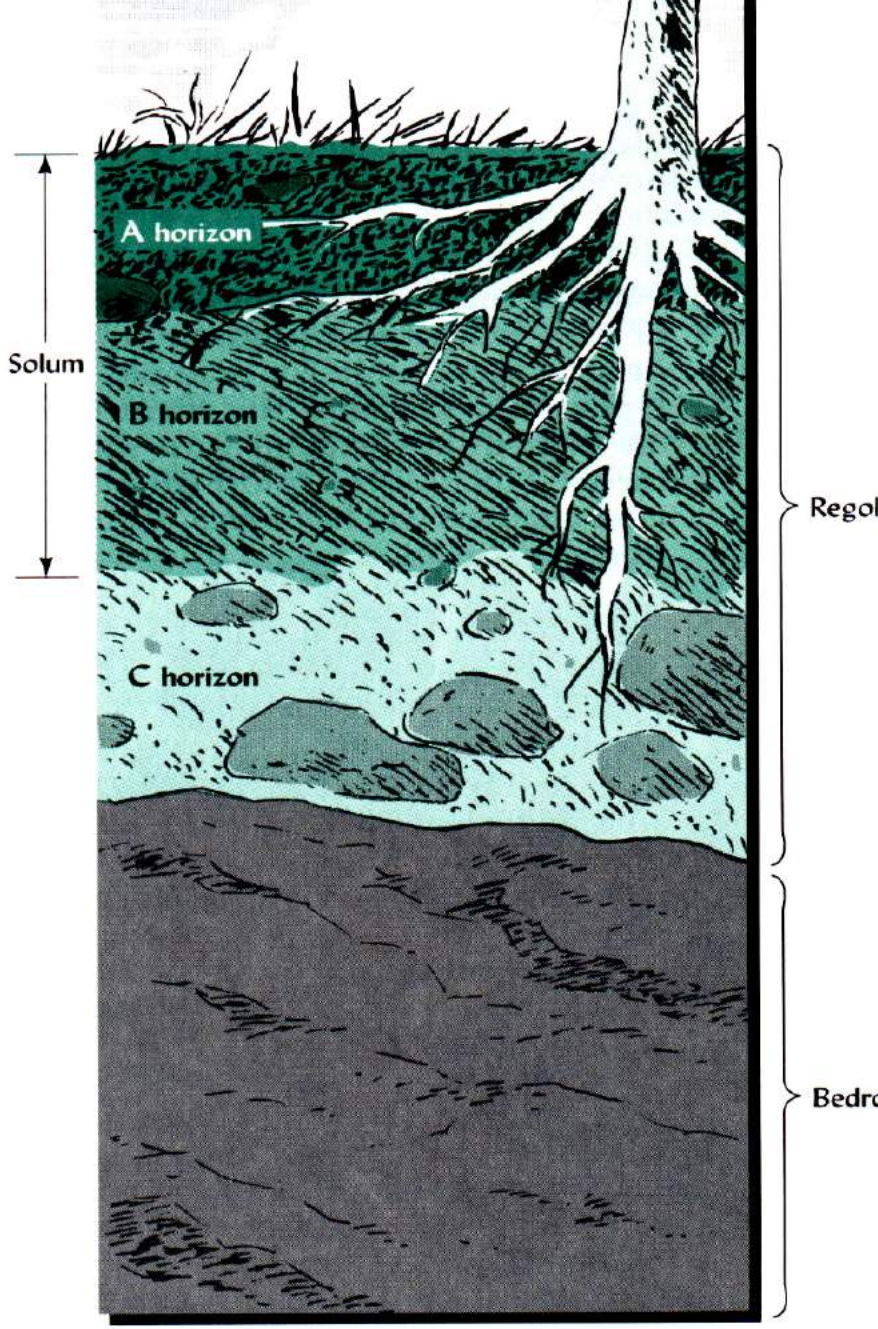


California Soil Resource Lab
http://casoilresource.lawr.ucdavis.edu/soilweb/

California Soil Resource Lab – iPhone or Android app
http://casoilresource.lawr.ucdavis.edu/soilweb/

NRCS Web Soil Survey
http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm


A Soil Profile
Horizons
0"
O
2"
A
10"
B
30"
C
48"


A horizon
Solum
B horizon
C horizon
Regol
Bedro

Building and Maintaining Healthy Soil

45% mineral components

5% soil organic matter

50% pore space, which includes an even composition of air and water

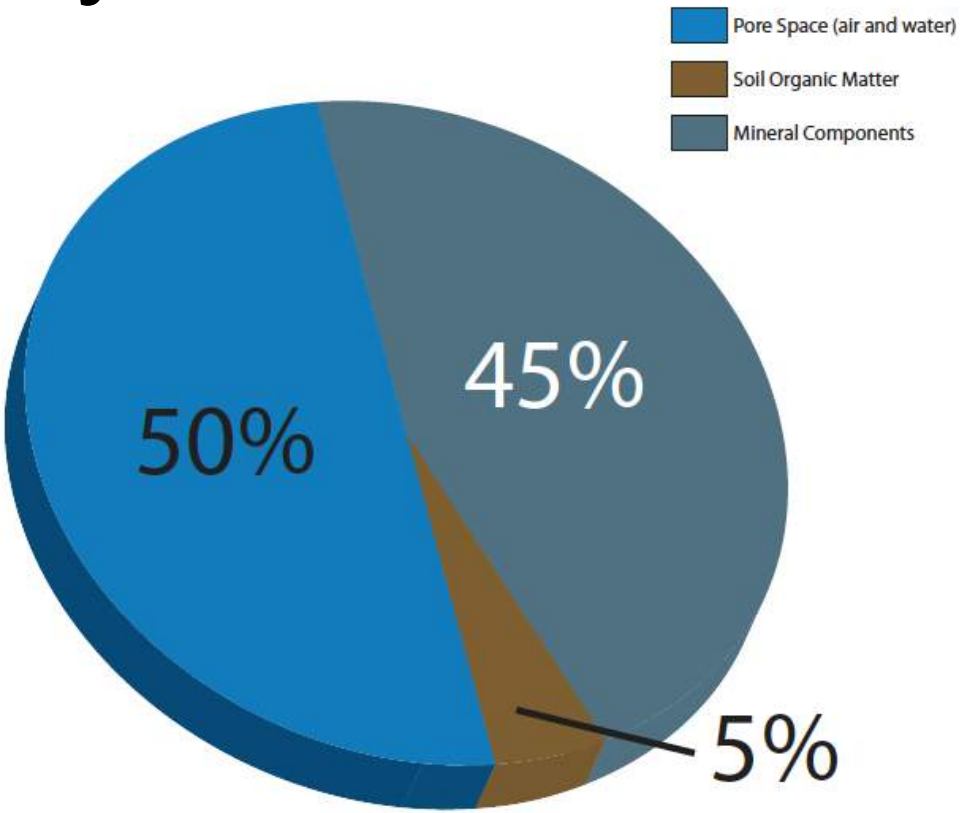
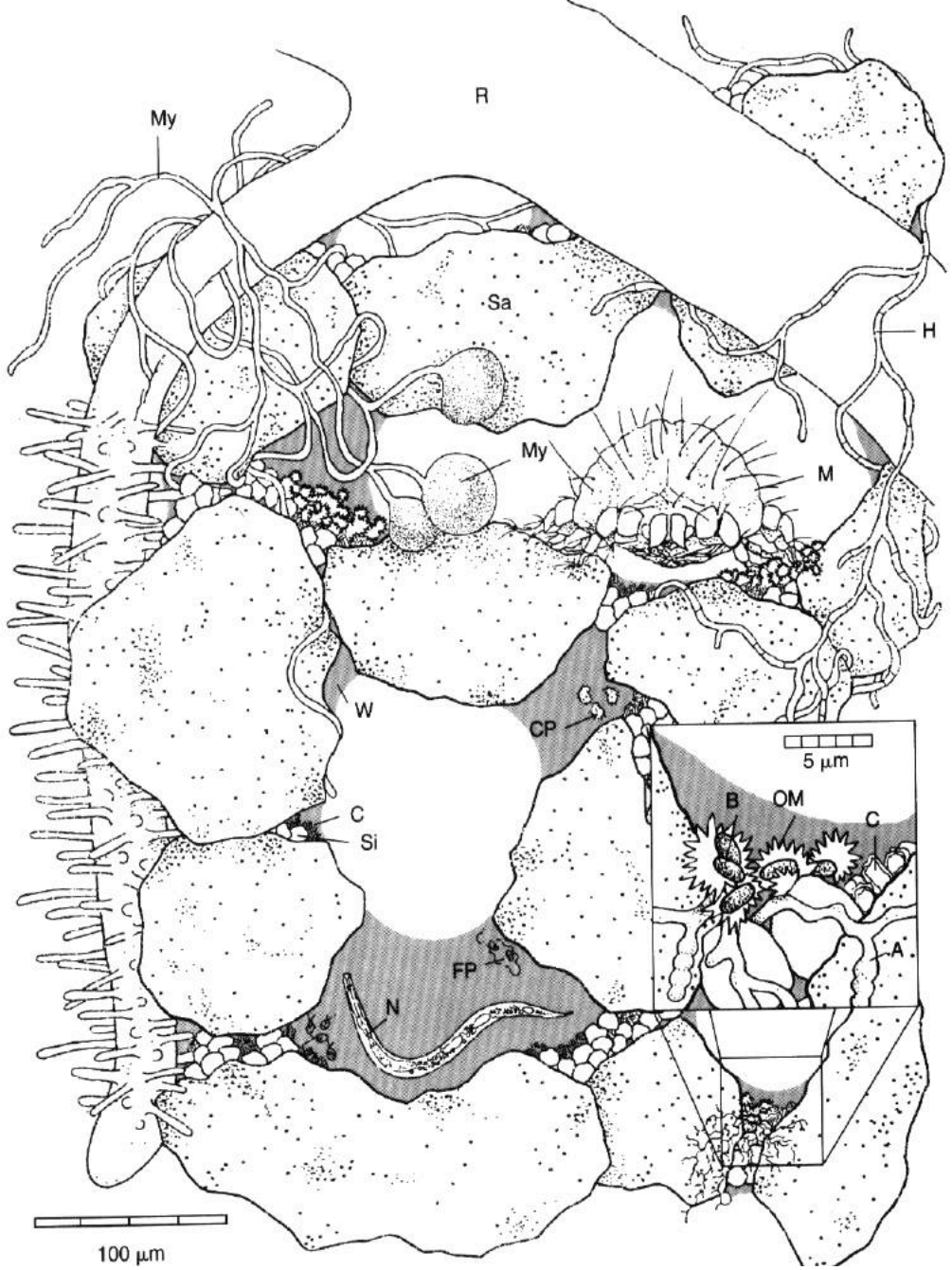
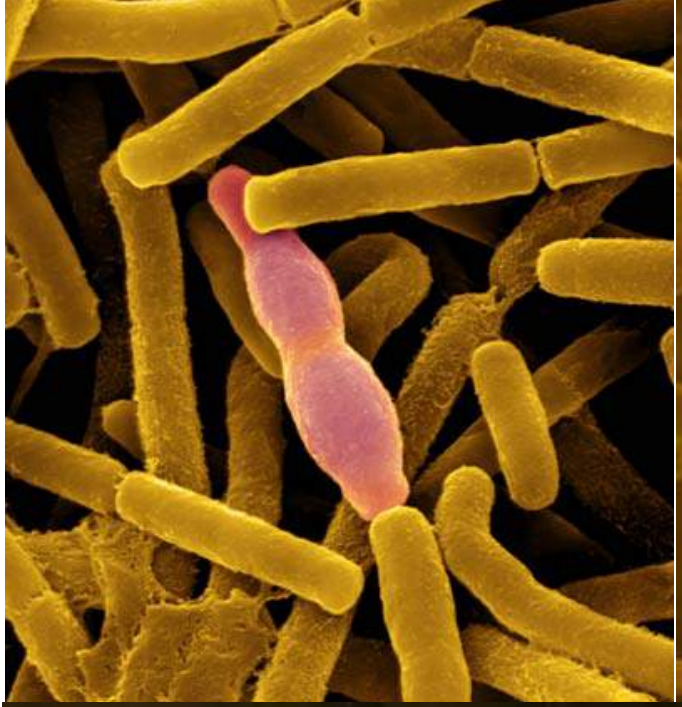


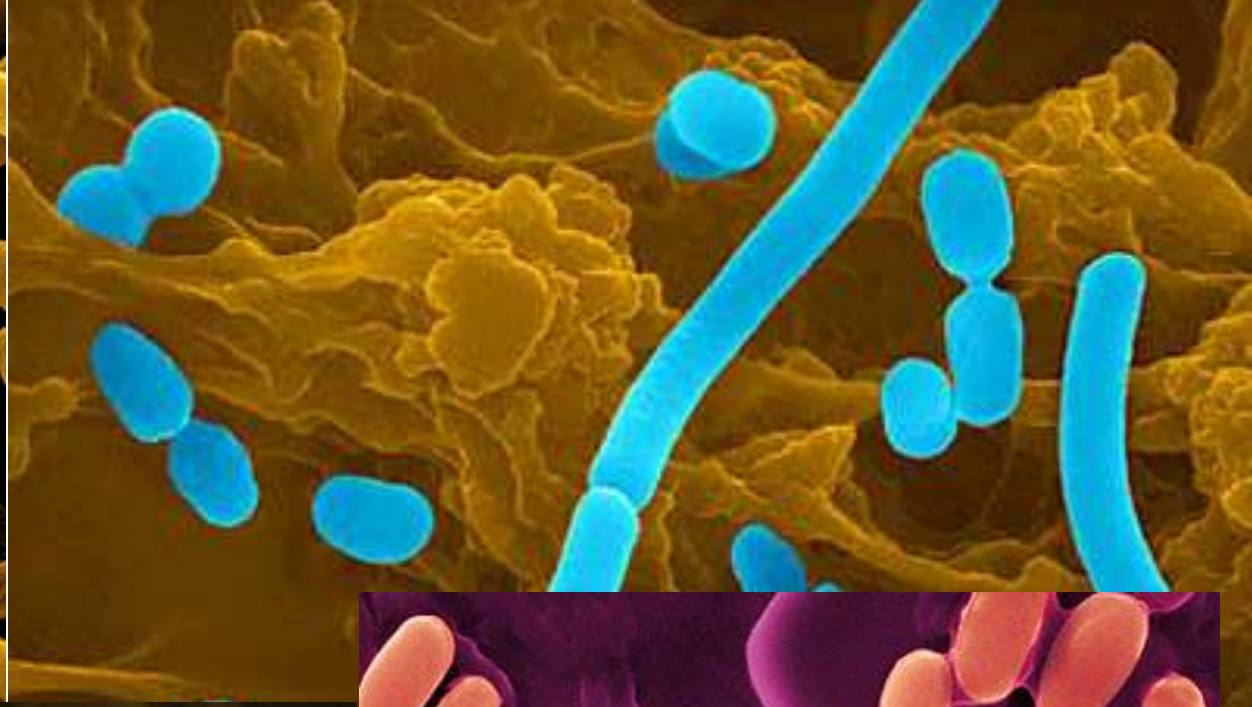
Figure 4. Ideal soil composition includes 45% mineral components, 5% soil organic matter, and 50% pore space, which includes an even composition of air and water. Illustration by Creative Resource Strategies, LLC.

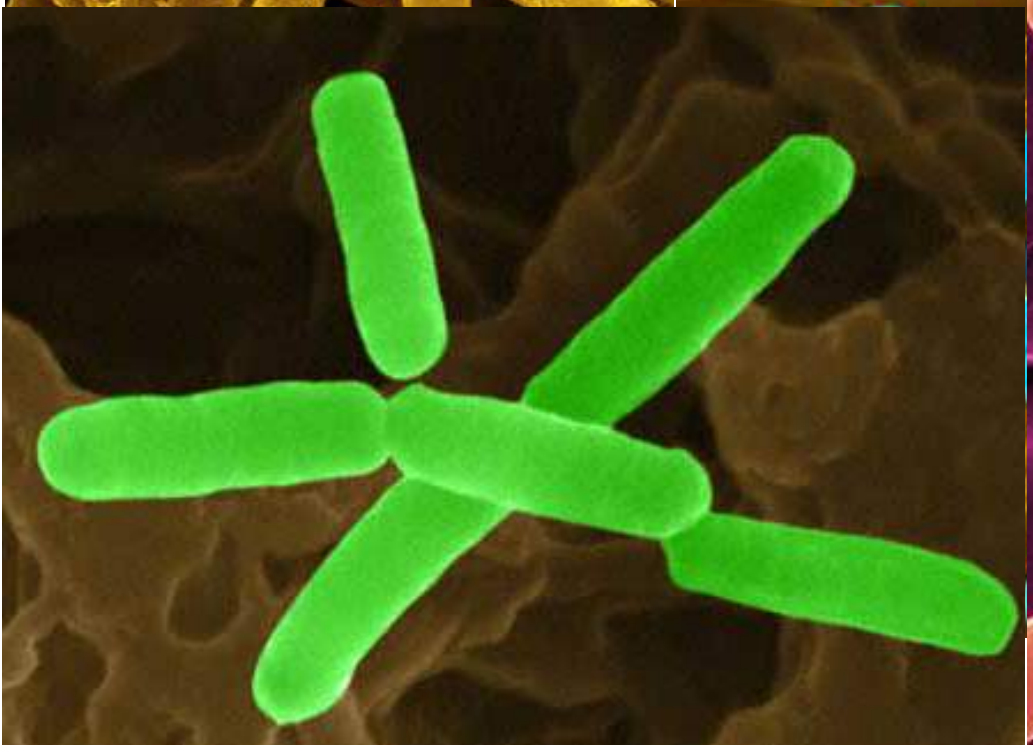
B – Bacteria
A – Actinomycetes
My – Mycorrhizae
H – Saprophitic fungus
N – Nematode
CP – Ciliate protozoa
FP – Flagellate protozoa
M – Mite

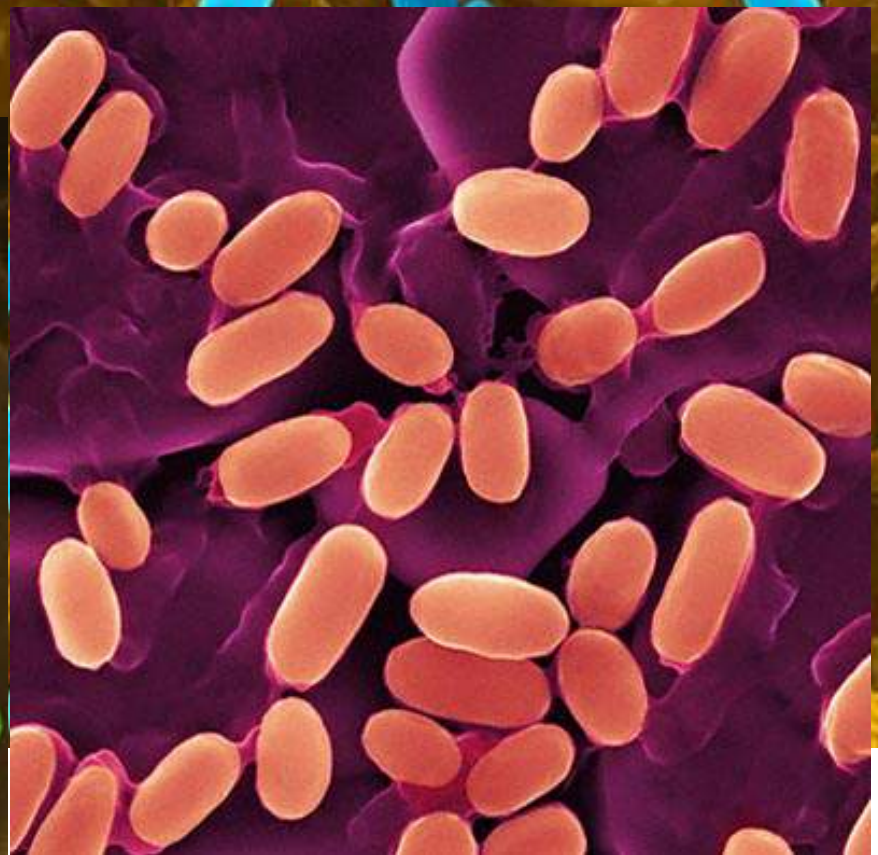
< 1mm











Abundance of soil organisms

Organism	Number per gram soil (~1 tsp)	Biomass[1] (lbs per acre 6")
Earthworms	–	100 – 1,500
Mites	1-10	5 – 150
Nematodes	10 – 100	10 – 150
Protozoa	up to 100 thousand	20 – 200
Algae	up to 100 thousand	10 – 500
Fungi	up to 1 million	1,000 – 15,000
Actinomycetes	up to 100 million	400 – 5,000
Bacteria	up to 1 billion	400 – 5,000

[1] Biomass is the weight of living organisms

Slide Credit: Cara Molina

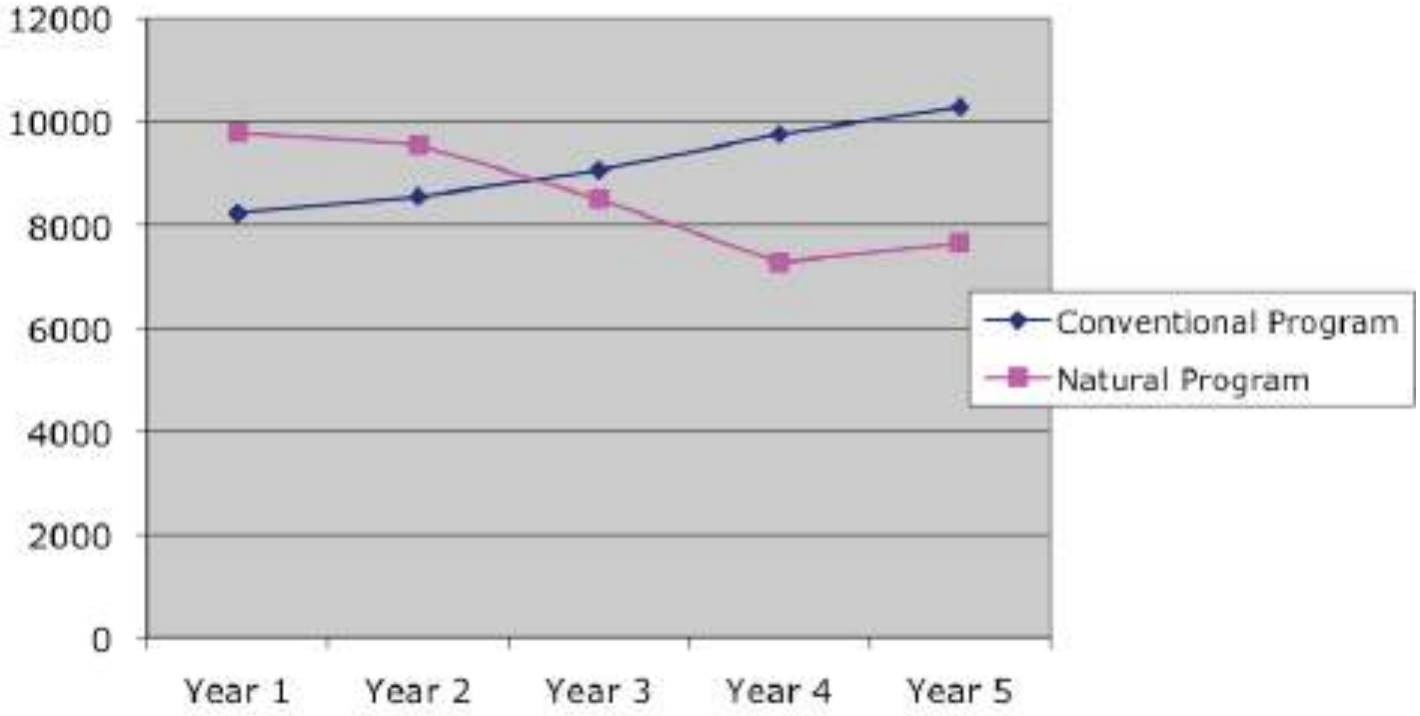


Figure 1: A Comparison of Costs for Conventional and Natural Turf Programs Over A Five-Year Period

A Cost Comparison of Conventional (Chemical) Turf Management and Natural (Organic) Turf Management for School Athletic Fields
Charles Osborne and Doug Wood, March 2010

“Once established, a natural turf management program can result in savings of greater than 25% compared to a conventional turf management program.”

“Irrigation costs for turf maintenance are considerable, but are generally less for naturally maintained fields due to deep root growth and moisture retention by organic matter. Estimates of irrigation reduction for natural turf programs range from 33% to more than 50%.”


SOIL
SAMPLE
NAT
'79


Dirt Simple
COMPOST
TEA
AZTE
RENT or BUY


CASCADIA
COMMUNITY COLLEGE
W
UNIVERSITY of WASHINGTON | BOTHELL


UNIVERSITY of WASHINGTON | BOTHELL
HUSKY VILLAGE
STUDENT HOUSING
A message to our customers affected by the recent floods
No escape from reality
crash out in despair
disaster
Just
TIMES

Edible Landscaping

AnnieBam
Landscape Solutions


PACIFIC
LANDSCAPE MANAGEMENT

Sheet Mulching

PACIFIC
LANDSCAPE MANAGEMENT

Sheet Mulching

PACIFIC
LANDSCAPE MANAGEMENT


Organic Land Care
Management Zone

Chemicals that Willamette University used prior to 2004:

Acclaim (H) – Post emergent control of grasses

Attain TR (I) Kills insects in greenouses

Barricade (H) Kills crabgrass

Bayleton (F) Controlled fungus

Basagran T/O (H) Broadleaf Herbicide

Balan DF (H) Broadleaf Herbicide

Certainly (H) Broadleaf Herbicide

Confront (H) Broadleaf Herbicide

Crossbow (H) Nonselective Herbicide

Casoron 46 (H) pre-emergent Herbicide

Cygon 2E (I)

Pennant Magnum (H) Herbicide

Duraplex TR (I) for greenhouses

Daconil Utrex (F) fungicide

Surflan (H) pre-emergent

Duraplex TR (I) for greenhouses

Daconil Utrex (F) fungicide

Amine 4 2,4D (H) Herbicide

Team 2G (H) Pre-emergent grass K.I.

Talstar (I) for ant control

Dursban (I) insecticide

Drive (H) controls grasses

Eagle (F) Fungicide

Glyfos extra (H) non-selective Herbicide

Funginex (F) Roses

Final (H) Broadleaf herbicide

Fusilade 2000 (H) Controls annual grasses

Gallery (H) Broadleaf herbicide

Gallitrol (F) controls galls

Garlon 4 (H) Herbicide for woody plants

Heritage (F) Fungicide for turf

Invigorate – Soil conditioner

Immunox (F) Roses

Merit (I) Insect control

Manage (H) controls nutsedge

m-pede (I)

Orthene (I)

Oust (H) Broadleaf H

Prograss (H)

Pendulum (H) Broadleaf

Pennant Magnum (H)

Reward (H) Aquatic weed Control

Round-Up (H)

Rubigan EC (F)

Surge (H) Broadleaf

Syl – Tac Surfactant

Speedzone (H) Broadleaf

Scythe (H) Weed burner

Velocity (H) post-emergent for broadleaf

Vapan HL soil fumigant

Endeavor (I) Insecticide


05 12 2009


05.15.2009

Pacific Northwest Coalition of Organic Land Care Professionals

Managing Weeds, Disease and Pests Organically
Case-Study: Willamette University

Wednesday, May 11th, 2016
8:30 – 11:30am
Willamette University, Salem, OR

David Alba
Project Coordinator
anaknialba@gmail.com