TreePeople

LOS ANGELES URBAN SOIL

A beginner's guide to improving and sustaining the health of LA's urban soil

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TreePeople's mission is to inspire, engage and support people to take personal responsibility for the urban environment, making it safe, healthy, fun and sustainable and to share the process as a model for the world.

Healthy Soils For Healthy Communities

To better explore and utilize the potential of soils in LA, TreePeople launched the "Healthy Soils for Healthy Communities" Initiative. The objectives of the initiative include:

- Elevating healthy soils as the "brown" in green infrastructure policy, planning, management, and investments in both the built and natural environments.
- Increasing public and policy-maker awareness of the importance and potential of healthy soils in building climate resilience, sustaining urban ecosystem functions, and enhancing public health.
- Conducting cutting-edge science and research that gets used to fill the information gaps.
- Facilitating policy changes to promote and support healthy urban soil projects.
- Empowering communities with science-based information, best management practices, and practical tools — including the creation of this LA Urban Soil Toolkit.

As the first phase of the initiative, we conducted a needs assessment aiming to:

- Determine the current status of LA's urban soil health.
- Identify the most pressing urban soil issues and community needs through community consultation and outreach.
- Provide a framework for future work regarding urban soil research, policy, public education and community engagement in the region.

For more information about Healthy Soils for Healthy Communities Initiative, please visit: **treepeople.org/healthy-soils-for-healthy-communities-initiative/.**

INTRODUCTION

LA Urban Soil Toolkit

Wherever you walk, down a trail or sidewalk, somewhere beneath you is soil. The soil — the surface of the earth—is fertile and a great example of recycling at its best. In a natural forest, organic matter that falls to the ground is decomposed by billions of insects and microorganisms. It holds rainwater and heat, which promotes decomposition. Beneath the layer of fallen leaves and organic matter is humus, the rich dark matter that has been broken down by worms and microorganisms. Soil life feeds on organic matter. The cycle is complete when the roots of plants are fed by the release of nutrients in the soil and the plants grow more leaves to create more organic matter and the cycle continues.

In an urban environment, most people tend to see this organic matter as trash, quickly raking, sweeping and mowing it, leaving it in a garbage container to be hauled away. Without organic matter, soil is a lifeless fragmented rock that has no way of feeding plants or retaining water. Rainfall pounds the soil into a hard surface, causing floods of water to run off and plant roots to barely survive. When healthy, soil is like a sponge that absorbs water with tremendous holding power. Plants and their roots are nurtured by living soil and in turn, supply organic matter and nutrients to the entire soil cycle system.

This toolkit is designed as a primer. It provides information, tools, and resources to guide you into a better understanding of soil and how it affects and influences our environment. This toolkit serves as a starting point for supporting the health of our urban soil in the Los Angeles (LA) region.

Table of Contents

WHAT IS SOIL?

Every one of us has memories of digging down into the soil to discover a wiggly, wet earthworm. That worm is one part of a complex mixture of minerals, water, air, organic matter, and millions of decomposers that include bacteria, fungi, protozoa, nematodes and more! These microorganisms feed the plants and in return, plants feed the microorganisms by nourishing the soil with dead leaves, branches and flowers. Healthy soil is rich with life. It is an amazing material that covers nearly all of the land surface of the earth.

Components of Soil

Soil is made up of living and non-living components that vary from one place to another. A little less than half consists of mineral particles, with one quarter air, one quarter water, and about 5-10% organic matter. Plants are adapted to different environments which means they have specific soil requirements — in texture, drainage and nutrient value.

Non-Living Components of Soil

The mineral component of soil comes from weathered rock and consists of three main particle sizes and shapes — sand, silt and clay. The proportions of these components determine the texture of the soil of your landscape.

Sand is the largest particle. These particles are round and range from 2 mm (the width of “lead” in a No. 2 pencil) to 0.05 mm. You can easily see the individual particles. Larger than this and the particles are considered pebbles. Sand makes the soil feel gritty. Water passes through it easily and therefore it has a low water holding capacity, and also a low nutrient holding capacity.

Silt is the next smallest particle. Silt particles are also round, but much smaller and range in size from 0.05 mm to 0.002 mm. You’ll need a microscope to see individual particles. Silty soils are slick or slippery when wet and floury when dry.

Clay is the smallest particle size, so small that you’d need an electron microscope to see individual particles. They are less than 0.002 mm and are flat or “platey” (like a plate) rather than round. Clay not only has an extremely high water holding capacity, but also has the slowest water infiltration rate of the three soil components.

The Role of Soil

Soil is an important natural system that directly or indirectly benefits humans in more ways than you may know.

Ecosystem benefits of soil:

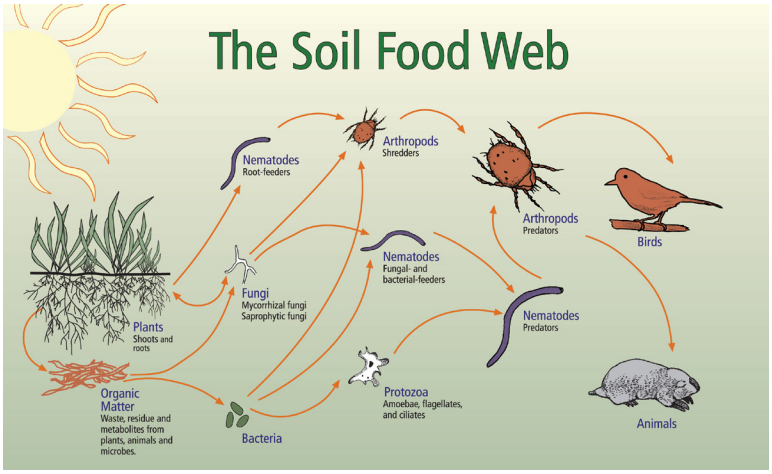
- Providing a growth medium for plants and food production.
- Providing habitat for soil organisms and animals.
- Providing nutrients, water and air to plants and animals.
- Storing carbon and preventing its loss into the atmosphere.
- Recycling nutrients.
- Filtering and purifying water and air that make their way through the soil.
- Helping trap and degrade pollutants, such as oil.
- Regulating the flow of water.
- Soaking up rainwater, reducing runoff and flooding.
- Contributing to groundwater recharge.

Living Component of Soil

The living soil contains organisms that range in size from microscopic cells that digest decaying organic matter to small mammals that eat other soil organisms. They play a part in the soil food web. Bacteria, protozoa, nematodes, arthropods and fungi — eat plant matter, break it down, and excrete it out. All this creates a rich biodiversity of living organisms in the soil.

In general:

- Plants attract microbes to their roots by feeding them carbon.
- Bacteria and fungi hold the soil together by forming networks and creating substances that bind soil particles into clumps and clods, also called aggregates.
- Worms, ants, and other arthropods, consume the microbes — cycling the carbon even more, and creating pathways for oxygen and water as they tunnel through the soil.
- Through this process, living soil stores about three times more carbon than the world's vegetation and twice the carbon that is present in the atmosphere.



Soil and Water Conservation Society (SWCS). 2000. Soil Biology Primer. Rev. ed. Ankeny, IA: Soil and Water Conservation Society.

These living organisms interact with one another and with plants and small animals forming a web of biological activity.

Soil hosts 25% of our planet's biodiversity (FAO, 2015). For example, 1 teaspoon of healthy soils (1 gram) can have up to 1 billion bacteria (Fortuna, 2012).

Earthworms are the most recognizable animal in the soil food web and are typically an indicator of good soil health.

Their role in the soil food web is key because they:

- Shred organic matter so other organisms can more easily digest it.
- Aerate the soil, increasing the water-holding capacity of the soil.
- Increase the fertility and organic matter of soils.
- Break up hard soils and create paths for roots.
- Cycle nutrients.

URBAN SOIL

Ensuring healthy soil can be difficult in an urban setting like Los Angeles. Soils in highly populated, largely built, environments are altered by humans in various ways including being covered by buildings, roads and other pavements, lacking in organic matter, or compacted by foot traffic — creating soil that is unable to provide beneficial ecosystem services.

When soil is allowed to degrade, it can become a "disservice" to urban communities, such as through erosion and contamination, and can lead to other issues. One example of this was when overworked farming soil created the dust bowl of the 1930s resulting in the loss of precious topsoil that is needed to grow food.

Depending on where you live, your community may be dealing with a variety of common urban soil issues.

A nation that destroys its soil, destroys itself. —President Franklin Roosevelt

Common Urban Soil Issues

Soil Contamination

Soil that contains substances that pose human health risks such as lead, pesticide residues, petroleum products, and asbestos is considered contaminated. In an urban setting, this is usually caused by improper disposal of industrial waste, such as lead, one of the most common soil contaminants. Soil can become contaminated with lead through industrial waste and from particles deposited into the soil from flaking lead paint, incinerators, and car emissions.

Soil Compaction

Compaction occurs when soil particles are compressed, changing the soils composition and reducing pore space. This typically happens from heavy human and/or vehicle traffic over the soil. Compaction eliminates the soil's ability to hold and drain water, leading to runoff and flooding. For plants, compacted soil is like a brick and makes it hard for roots to grow, making it harder for plants to get the water and nutrients they need to thrive.

Soil Sealing

Covering or "sealing" the soil with impervious surfaces such as concrete, asphalt, and other urban development including buildings and roads removes soil from important natural cycles. It disrupts the water cycle because it gives rainfall nowhere to go, preventing rainfall from contributing to groundwater infiltration. It disrupts the nutrient cycle when there is nowhere for fallen leaves and branches to decompose and provide nutrients needed for healthy plants and trees.

Soil Erosion

When there is compaction, lack of plant life, and water that is directed onto soil from sealed surfaces, runoff occurs. This creates erosion. Erosion disrupts and wears away the soil's ability to hold water and grow healthy plants. In some areas this includes fire-induced erosion when the soil is altered by wildfire. Wildfires burn away vegetation leaving soils exposed, hardened and unable to hold water.

Climate Change

Shifts in the climate that include longer periods of drought or intense heat affect urban soils. Exposed soil dries out, reducing its ability to retain moisture and infiltrate water. This reduces the amount of water available in the soil, leading to degradation and erosion, and affecting the soil's ability to support plants and trees that provide urban cooling benefits.

EXIDE AND SOIL CONTAMINATION IN SOUTHEAST LOS ANGELES

Lead-acid batteries used in cars, motorcycles and machinery must be disposed of properly in order to prevent contaminants from leaking into soil and water. The sulfuric acid used in these batteries is highly corrosive and lead negatively affects human health, especially the health of children.

For decades, this kind of industrial contamination occurred in the southeast Los Angeles community of Vernon, at the site of one of the largest producers, distributors and recyclers of lead-acid batteries, a company ultimately owned by Exide Technologies. In April 2013, officials warned over 110,000 residents in the area that arsenic emanating from the plant posed a heightened cancer risk. In March 2014, tests revealed that high levels of lead were found in the soils of the surrounding communities. By 2015, the facility closed during massive site clean-up and community soil remediation efforts. Exide has since gone into bankruptcy, leaving the massive clean-up of lead and other toxic pollutants to be dealt with by the State of California.

Environmental justice organizations including Communities for a Better Environment and East Yard Communities for Environmental Justice had long been concerned about the pollution created by the Exide facility. Through legal advocacy and on-the-ground organizing efforts, their members raised awareness in the community and worked with air quality regulators to adopt new rule amendments to reduce exposure and emissions of lead from large lead-acid battery recycling facilities, protecting public health and the environment.

For a case study: **Assessing Spatial Characteristics of Soil Lead Contamination in the Residential Neighborhoods Near the Exide Battery Smelter**.

Home Garden Soil Contamination FAQ

To help answer these questions, the following resources were used:

- LA County Public Health: Soil and Water Testing Guidelines for Home and Community Gardens
- University of California Agriculture and Natural Resources: Soils in Urban Agriculture: Testing, Remediation, and Best Management Practices

What can I do to reduce contaminated soil exposure?

Ingesting contaminated soil is the most risky and likely exposure, especially with children. Children may swallow soil by putting. fingers in their mouths or inhaling soil particles. There are several ways to reduce contaminated soil exposure.

- Use ground cover or mulch over bare soil. Mulch acts as a protective covering that helps reduce contact with contaminated soil or breathing in contaminated soil dust. Organic mulch also breaks down and acts as an amendment to the soil improving overall soil quality.
  - Different types of organic mulch can be used, such as wood chips, leaves, hay, and compost.
  - Cover the soil with at least 3 inches of mulch.
  - Maintain a thick layer by continuing to add mulch as needed.
- Wear gloves when gardening and working in the soil to avoid direct contact. Also, wash hands immediately after working in the soil. This is more important for children, who could put their hands in their mouth.
- Clean tools and gloves, and remove shoes and soiled clothes before going into the house to avoid bringing in any contaminated soil.

Is it safe to eat the food/ fruit produced in contaminated soil?

Plants grown in contaminated soil can absorb contaminants, though little is absorbed that can be harmful to humans. However, it does depend on soil and other environmental conditions. For food grown in potentially contaminated soil, do the following:

- Thoroughly wash produce before storing, cooking, and eating.
- Consider rinsing the produce in a vinegar solution (1-part vinegar to 100-parts water) to ensure particles of soil are washed off.
- Remove outer leaves of leafy greens and peel root vegetables.
- Wash your hands, tools and any other equipment used.

Can I grow food in raised planter beds or containers?

Growing food in raised planter beds or containers using bagged soil and/or imported soil is a great option.

- Use building materials that are chemical-free, such as untreated wood, brick, rocks, or recycled concrete.
- Avoid using old tires or repurposed wood with creosote, old paint, or varnish.
- Place a layer of landscape fabric on top of the ground soil before adding the clean soil to prevent plant roots from entering the ground soil.
- Make sure the replacement soil is “clean” and contaminant-free. For example, this can be done by purchasing topsoil or planting mix that is certified by the Organic Materials Review Institute (OMRI), an independent reviewer of certified organic products.
- Add compost to the soil to promote a living soil environment.

How do I know if my soil is contaminated?

Depending on your location and what’s around it, the soil at your site may contain unsafe levels of lead, arsenic, chromium, mercury, or other contaminants that could potentially be harmful. The best way to determine any contaminants or heavy metals in your soil is to use a lab.

For a list of soil testing labs, go to the LA County Public Health, Soil and Water Testing Guidelines For Home and Community Gardens.

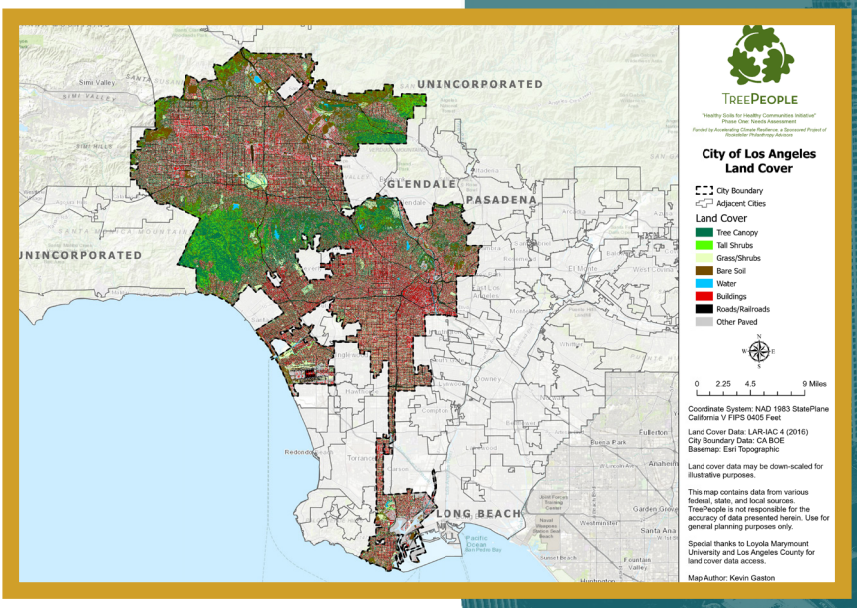
THE POTENTIAL OF LA'S URBAN SOIL

In an urban setting, understanding soil and its value is critical to a healthy environment. Sharing that knowledge by raising awareness about its properties, function, and ability to support the watershed, trees and plants, and grow food are part of the process to improve the health of urban soil. Open lots, parks, parkways, yards and other open space areas within an urban setting, all have the potential to support healthy and living soil. Imagining LA covered by healthy soils means diverse plant and wildlife ecologies, unleashing the potential for land in LA to act as a carbon sink, conserving water, and growing food regeneratively — healthy soils supporting healthy people and communities.

Brown Infrastructure

Soil plays a unique role as the "brown infrastructure" of our urban ecological system. Much in the same way urban trees are regarded as "green infrastructure" to help regulate air temperature and improve air quality, and bioswales and cisterns are considered "blue infrastructure" that support water quality and quantity, brown infrastructure provides ecosystem services attributed to soil.

Soil serves as the link between blue and green infrastructure to support the urban ecosystem. It also has the potential to improve the quality and health of urban life through enhanced green spaces and parks. When using green-blue-brown infrastructure that is designed appropriately, we can greatly improve the urban environment's resilience to climate change.



City of Los Angeles Land Cover Data (2016)

As of 2016, almost half of the land cover in Los Angeles was impervious. Impervious surfaces, such as buildings, roads, and parking lots cover soil and do not allow water to seep through, contributing to water runoff, flooding, and more.

- **48% Impervious Surfaces**
- **24% Tree Canopy Coverage**
- **16% Shrubs and Grasses**
- **11% Bare soil**
- **0% Water**

Looking at these results:

How can we ensure the health of bare soil?

How can we decrease the amount of impervious surfaces?

Healthy Soils FAQ

How does healthy soil help urban trees to thrive, not just survive?

Urban trees need uncompacted, aerated soil that allows their roots to access necessary water, oxygen, and nutrients. Healthy soil supports a tree's ability to grow and create the necessary spread of its branches and leaves—the canopy—to provide needed urban benefits such as regulating air temperature and creating shade. Providing adequate water and mulch will help the soil, and a tree's ability to survive in urban environments.

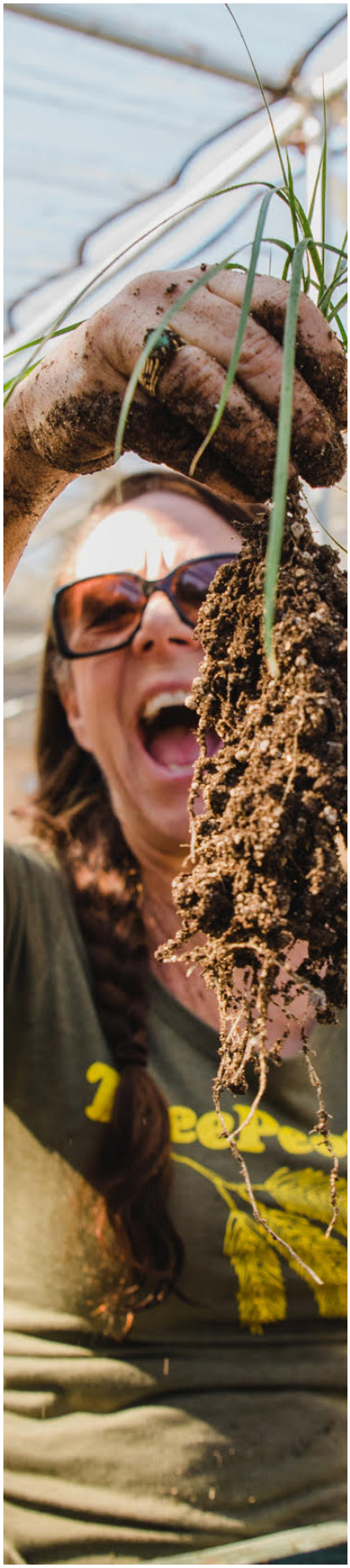
How does healthy soil support water's ability to infiltrate soil, reduce flooding, filter pollutants, and contribute to local water supply?

In urban areas, compacted soil and land covered by buildings and pavement, prevents water from soaking into the ground. Instead, we rely on storm drains to carry runoff across hardened soil and from roofs and paved areas, into streets and mostly channelized waterways that lead to the ocean — becoming wasted, polluted water. One of the roles of soil in our ecosystem is to capture water and allow it to percolate into the soil, become groundwater, and supply underground aquifers. The soil also acts as a filter where contaminants are captured by the particles in the soil helping to clean the water as it moves through the soil. In order to infiltrate, the soil needs pores and organic matter to allow water to move through it, and some of it to be stored for use by trees and plants. Removing impervious surfaces to allow for more infiltration, and improving soil health to ensure pore space, helps reduce runoff and flooding, and contribute to local water sources.

What is carbon sequestration and how can it be supported by healthy soil?

When carbon emissions from sources like factories and cars are released into the air, they trap heat in our atmosphere. When there is too much carbon/heat in the air it contributes to climate change that results in extreme weather conditions that can cause periods of drought, severe heat waves and even increased wildfire. Carbon sequestration is the process of capturing and storing this atmospheric carbon dioxide, and can be done in the soil. Healthy, living soils naturally sequester carbon as microorganisms break down and process organic matter. Creating more soil/plant surfaces with a continuous cover of vegetation and organic mulch increases the ability of urban soils to store carbon.

Soils store more carbon than the atmosphere and terrestrial vegetation combined. (FAO, 2017).



Talking About Soil

People care for things that matter to them. By sharing a more positive image of soil (it's more than just dirt!) and its value to our urban environment will help others make, or reignite, a connection to soils.

When gathering as a community, consider a discussion about soil and what it would take to support healthy soil in, and around the neighborhood. This includes hearing about priorities and concerns that are coming from the community, and how they potentially relate to soil.

General Outline

- Raise the awareness of soil through shared experiences.
- Begin by sharing memories of soil — current, childhood, cultural, and more.
- Define soil as a living ecosystem as opposed to it just being considered dirt.
- Share the benefits of healthy, living soil to the urban environment.
- Discuss the connection of healthy soil to other issues in the community.
- Discuss where soils are healthy and unhealthy in the area.
- Share ways that support the community in improving soil health, such as creating a community compost hub, how and where to get mulch, planting trees, and how to connect with organizations that can help.

Discussion Guidelines

- Create a welcoming environment for discussion. If possible, sit it in a circle allowing each person an opportunity to share.
- Listen. When providing an opportunity for sharing, actively listen rather than spending time figuring out what you will share. Listen with your ears, but also with your heart.
- End the discussion with next steps for taking action.

Conversation Starters

Everyone has some connection with soil. How people express those connections can be extremely diverse. Rather than starting with a scientific fact, begin with a personal story — highlight the unique interconnectivity between communities and soil.

- Share a childhood memory involving soil, for example, making mud pies, sand castles, or finding worms and pill bugs.
- Share a family connection to soil, for example, "My grandfather always grew corn because of our sandy soil."
- Share a cultural connection to soil. "When my great aunt was pregnant, she would sometimes eat pieces of a clay pot or a spoonful of soil for the minerals and to help with nausea."
- Share interests related to soil, for example gardening, composting, climate change, nutrition, green spaces.

Kiss the Ground, an LA-based non-profit organization, has a Soil Advocate Training that is designed to equip people with in-depth knowledge about soil regeneration solutions and how to inspire hope. It is an 8-module course that includes readings, resources and monthly webinar. For more information go **here**.

COTTONWOOD URBAN FARM

In the winter of 2012, former TreePeople educator, Elliot Kuhn, began converting a dusty, vacant plot in Panorama City into a highly productive urban farm. Nestled in the basin of the Tujunga Wash, Cottonwood Urban Farm is dedicated to the cross section of food, community, and education.

“After a soil test, a few months of cover crops and manure, we began hand digging beds. It was a slow and humbling process, but one bed at a time we converted forgotten soil into rich food producing magic. It became quite apparent that the soil we were working with was a little short of perfect. The Tujunga Spreading grounds once sprawled over the valley floor only about a block and a half away from the farm, and with the first shovel pressed into the ground, we realized we were dealing with that wonderful sandy loam — the envy of any green thumb.”

Cottonwood Urban Farm now serves as a resource for locally grown food and sustainability connecting community members with the process of urban agriculture in Los Angeles, and facilitating the transformational process of cultivating the soil and taking food from seed to the table.

For more information, go **here**.

YOUR SOIL'S CHARACTERISTICS

Learning its characteristics is the first step to understanding your soil. Knowing your soil's texture, drainage, and pH will help you choose which trees and plants are best suited to your landscape.

Soil Texture

Knowing how much sand, silt, or clay particles are in your soil is important as different plants prefer different kinds of soil. For example, some plants prefer fast-draining soils that have more sand and less clay, and others do fine in a combination of all three.

For guidelines on how to determine your soil texture, go **here**.

Soil Drainage

Soil drainage is the soil's ability to move water through the soil and deliver nutrients to plant roots. Knowing how fast the soil drains provides another indicator for which trees and plants will do well at your site. For compacted, poor draining soil, compost may be needed to help create better drainage and ensure plant root systems can establish.

For guidelines on how to determine your soil drainage rate, go **here**.

Soil pH

Learning about the pH of your soil can be helpful in determining what nutrients are available to plant roots. Soils may be more acidic, alkaline, or neutral. The measure of the chemical reaction of the soil is its pH value. Most plants adapt to soil pH that ranges from 6 to 7.5, but some prefer more alkaline soils and some more acidic, such as blueberries.

Basic soil test kits are available from local nursery or home improvement stores. Some not only test the levels of pH, but include testing for nutrients such as calcium and potassium.

BUILDING HEALTHY SOIL

Depleted soil is devoid of organic matter, has poor structure, is compacted, lacks oxygen and is unable to hold water. This makes it difficult for plants to get necessary water and nutrients to their roots. For soil to function at its best, building and maintaining soil health is essential.

This can begin to be achieved by covering bare soil with organic mulch, increasing soil life diversity by adding organic matter and compost, and using both to reduce compaction.

Mulch

To reduce soil compaction and reestablish the carbon cycle in the soil so it can function at its best, mulch can be used. Mulch is placed on top of the surface of the soil.

Organic mulches include leaves, shredded or chopped bark and branches, and grass clippings. Mulch reduces weed growth, evaporation, and insulates the soil from heat in summer and cold in winter. It acts like a sponge to hold and absorb moisture. It is broken down by worms and microorganisms, helps to create pathways for needed water and oxygen, and ultimately is broken down into soil.

For guidelines on how to mulch, where to get it and how to properly apply it, go **here**.

Unhealthy Mulch

There are some items that are used as mulch that are not recommended:

Rocks and gravel: these store heat, increasing the temperature of the surrounding area. If using rocks and gravel, these should represent no more than 20% of the landscape, and are best for paths, patios, and desert plants.

Artificial turf: a heat-retaining and heat-producing product that does not help to build soil and can actually prevent water from reaching the ground below.

Weed barrier cloth: covers the soil while not holding back weed growth. The holes in the cloth often become clogged, preventing water and oxygen from passing through. It prevents organic matter from getting into the soil to feed the microbes and create good soil structure.

Compost

To add nutrients and beneficial microorganisms to the soil, compost can be used. Compost improves organic matter, enhances carbon sequestration, supports bioremediation strategies, helps improve water conservation, and supports healthy food production through regenerative farming techniques. It serves as an amendment that is mixed into the soil.

Compost is decomposed organic matter that is part of a natural process of recycling organic material such as leaves and vegetable scraps into a rich soil amendment. When carbon-rich materials such as twigs, branches and dried leaves are layered with nitrogen-rich materials, such as fruit and vegetables scraps, coffee grounds and grass clippings, and includes moisture and oxygen, the decomposition process creates an ideal organic supplement. Composting what may be considered “green waste” is a great way to keep this organic material out of landfills.

For guidelines on how to compost, go **here**.

LA Compost

LA Compost began in 2013 with the collective efforts of volunteers, friends and family. They started by riding bikes with trailers that allowed them to haul food scraps, leaves, paper, and other organic material from restaurants, homes, and schools to local compost centers. They have since grown to a network of decentralized community compost hubs where organic materials are cared for, maintained and used by activated community members. LA Compost hubs are built in places where people coexist — in churches, schools, gardens, and workplaces. They now have over 30 community compost hubs throughout LA County, and are expanding each year. Each hub reflects the community in which its located, creating shared spaces for people to connect with each other and the natural world through organics processing, compost creation and continued education.

For more information, go **here**.

Reducing Soil Compaction

Healthy soil has pore space that allows air and water to flow between soil particles. When soils become compacted, these spaces are compressed, reducing the soils ability to hold water necessary for plant roots. Compacted soil limits water infiltration, and increases water runoff.

Compacted soil does not have the ability to allow water, oxygen and nutrients to feed plant roots and other soil organisms, and results in bare, weedy and eroded soil. To prevent soil compaction, maintain plant cover and reduce trampling (especially when wet).

For guidelines on how to reduce soil compaction, go **here**.

Composting FAQ

What can I do with my yard trimmings if I can't compost?

If you are unable to compost at your site, green bins are provided by Los Angeles Sanitation and Environment (LASAN) for yard trimmings / green waste that is anything that grows from the soil.

The following can go into the green bin:

- Yard trimmings such as branches, flowers, and leaves
- Grass clippings
- Fruit and vegetables grown in your yard that are whole, uneaten and unprepared

The following can NOT go into the green bin:

- Meat, fish or egg products
- Fruits and vegetables that were not grown in your yard
- Painted wood products
- Non-organic materials such as recyclables, trash and construction materials
- Household hazardous waste materials such as electronics and automotive oil, pesticides, etc.
- Animal waste
- Dirt and rocks

LASAN processes the yard trimmings into a reusable compost or other soil amendment products that are offered free to the public at designated self-serve locations. For more information go **here**.

What if I am a renter?

For those that may have space restrictions, but still want to contribute to healthy soil, there are several options to explore:

- Join a curbside compost pick-up service, such as Compostable LA, that picks up appropriate food scraps and delivers them to community farms, gardens and community composters where it is turned into healthy soil.
- Join a community compost hub or compost co-op through organizations such as LACompost. These are shared spaces in gardens, schools, parks and more. They have food scrap drop off where compost is typically used for food production. Or, if a co-op, put in volunteer hours and take home finished compost.
- Try worm composting (vermicomposting). Small bins are kept in your home and utilize a particular species of earthworm to break down decomposing food scraps and paper. The results can be used in gardens and potted plants.
- Talk to the land owner of your site to find out what you can do in the yard. Come with a plan and share the value of building healthy soil and the value to the property.

See the Resource section for links.

What about fertilizers?

Using organic compost, beneficial microbes and certified organic products is a preferred alternative to commercial fertilizers, pesticides and herbicides. Compost acts as a "slow release" fertilizer. As it decomposes it provides the same nutrients (and more) as an artificially produced fertilizer. Beyond that, compost is much more than a fertilizer as it improves the overall soil ecology. Inorganic products can kill off beneficial soil life and contribute to water pollution.

Residential Parkway Land

Communities throughout Los Angeles have been working for decades to improve the land where they live in order to tackle issues of food insecurity, toxics remediation, and lack of green space. While many projects have successfully converted unused lawns into food gardens and vacant lots into community parks, there remains a significant amount of undeveloped land that is less frequently used, such as residential parkways.

In LA, these parkways are the strip of land between sidewalks and the street, located in front of a residence. Typically, they contain compacted soil that is covered in grass or weeds. Although often only 2, 3, or 4 feet across, these parkways make up a vast gridwork of potentially productive soil that can be used to boost climate resilience, address food scarcity, and improve the built environment. Following specific guidelines, landscape improvements to residential parkways are exempt from General Permit Requirements in and around the neighborhood.

Consider

- Removing grass and replacing it with native plant ground cover.
- Utilizing compost, mulch, and cover crops to rebuild the soil.
- Planting food and medicine crops.
- Adding trees that provide additional ecosystem benefits.

Restored, productive parkways would create noticeable change to the surrounding ecosystem and even includes the added benefits of increased mental and physical health.

For the City of Los Angeles Residential Parkway Landscaping Guidelines that include a list of preferred drought-tolerant plant species, go **here**.

Integrating Brown, Green, and Blue Infrastructure

When communities join together to transform their urban neighborhoods into a sustainable ecosystem, utilizing nature-based solutions to heal and support the environment, we build a functioning community forest, where:

- Healthy soils allow water to percolate and fill underground aquifers, and sustain tree and plant life.
- Tree canopy strategically shades walkways, streets, buildings and recreation areas, providing shade and reducing urban heat.
- Rainwater is conserved and captured and allowed to permeate into the ground, building local water resilience.
- Native and climate-appropriate trees and plants support a healthy watershed.
- Concrete and asphalt surfaces are replaced by greenery and mulch.

The following how-tos, videos and resources provide additional support and ideas for how to integrate brown, green, and blue infrastructure and help create a more climate-resilient, healthy urban environment.

Tree Planting

For guidelines, video, and more related to trees, go **here**.

Rainwater Harvesting

For guidelines, videos, and more related to rainwater harvesting, go **here**.

Native Plant Gardening

For guidelines, video, suggested plant lists, and more, related to native and climate-appropriate plants, go **here**.

RESOURCES

Local Soil Supporting Organizations

- **MakeSoil**: makesoil.org/plan
- **Kiss the Ground**: kisstheground.com/
- **LA Compost**: lacompost.org/
- **Compostable LA**: compostablela.com/
- **Epic Renewal**: epicrenewal.org/home/about-us/

Community Gardens and Urban Agriculture

- **Los Angeles Community Garden Council**: lagardencouncil.org/
- **The Ron Finley Project**: ronfinley.com/
- **Cottonwood Urban Farm**: cufarm.org
- **Community Healing Gardens**: communityhealinggardens.org/gardens

Cover Crops

- **USDA**: nrcs.usda.gov/wps/portal/nrcs/detail/national/climatechange/?cid=stelprdb1077238

Mulch

- **LA City Sanitation**: lacitysan.org/cs/groups/public/documents/document/y250/mda4/~edisp/cnt008922.pdf
- **Chip Drop**: getchipdrop.com/

Soil and Water Testing Guidelines

- **Los Angeles Public Health**: publichealth.lacounty.gov/eh/docs/ab1990_soilwatertestingguidelines.pdf

Additional Soil and Urban Gardening Information

- **Food and Agriculture Organization of the United Nations**: fao.org/soils-portal/en/
- **EPA**: epa.gov/sites/production/files/2014-03/documents/urban_gardening_fina_fact_sheet.pdf
- **USDA-NRCS Web Soil Survey**: websoilsurvey.nrcs.usda.gov/app/
- **Supplement to the Soil Survey of Los Angeles County, California, Southeastern Part**: nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/losangelesCA2017_SE_supp/Supplement_LA_County_CA_SE_Part.pdf
- **Worm Composting**: epa.gov/recycle/how-create-and-maintain-indoor-worm-composting-bin

TreePeople

treepeople.org/learn