Mulch& Protect& Grow.

Tuning Los Angeles' Soil Engine

What's under the hood? Soil is the engine as we travel the road to resilience. Here are the three essential management practices for creating healthy soils.

LA Urban Soil COLLABORATIVE

April 2023

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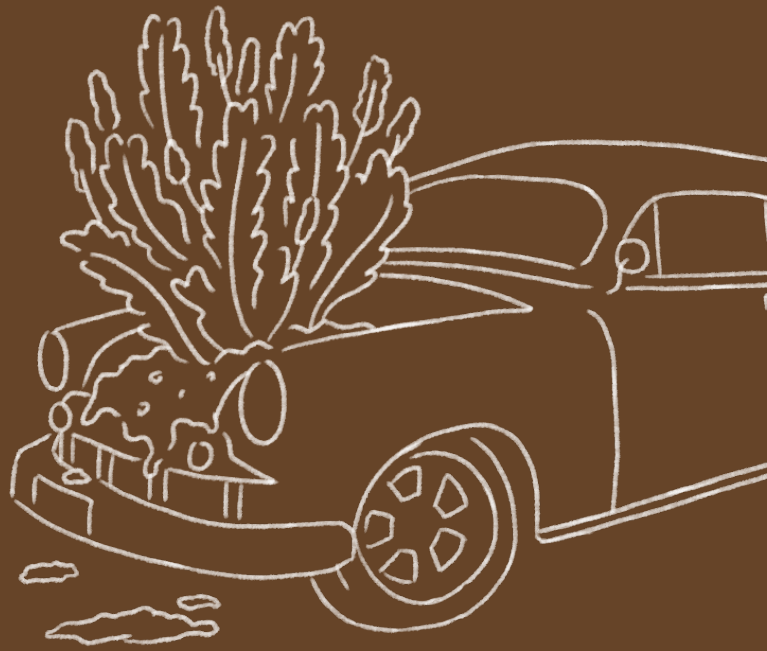

A Report of the
Los Angeles Urban Soil Collaborative

Meeting the Soil-based Knowledge, Resource, Management, and Community Needs of Greater Los Angeles

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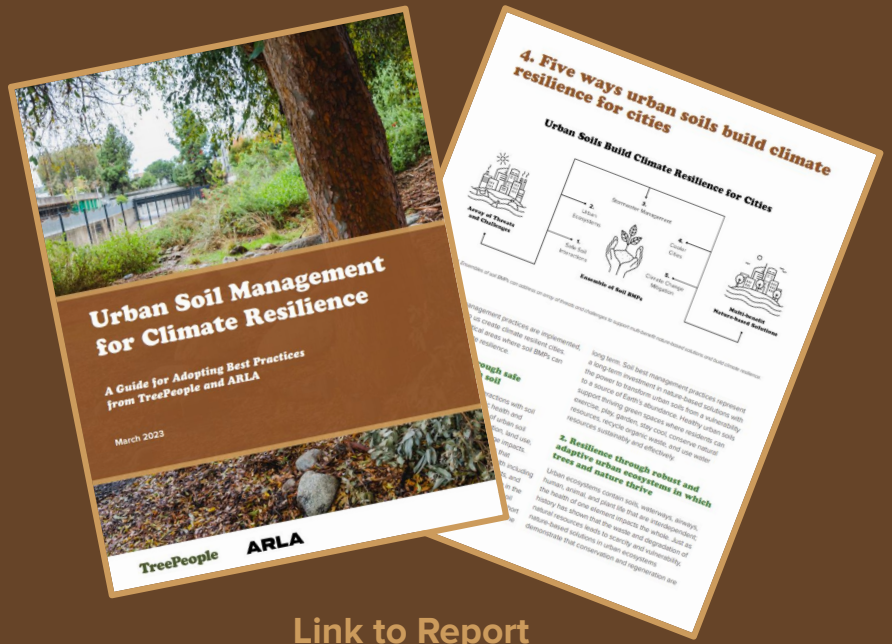
Soil is the Engine on the Road to Resilience



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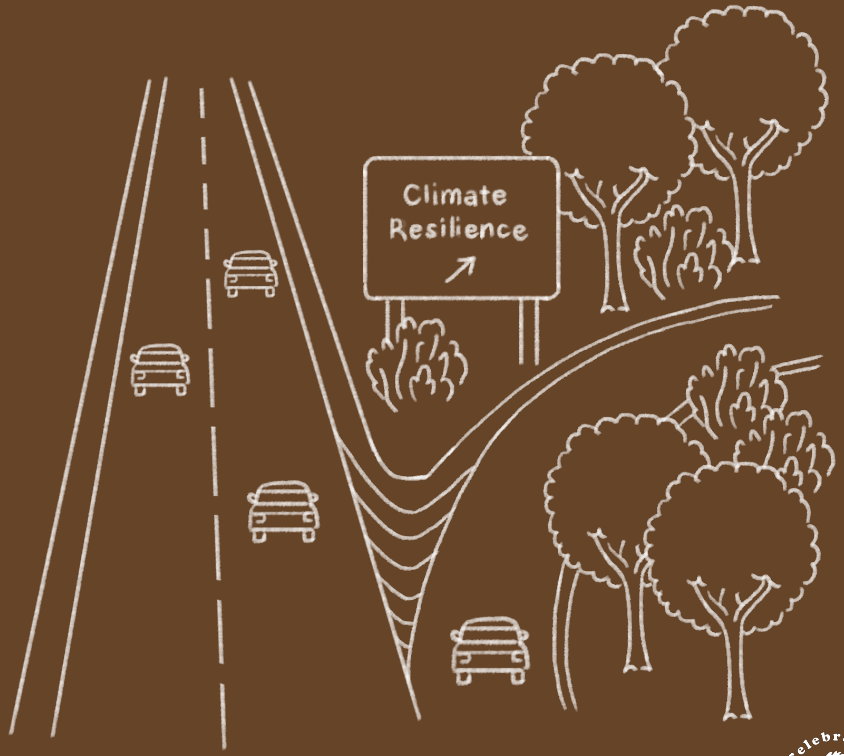

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Activating healthy soil development

Degraded Soil

Healthy Soil

Urban soils are often degraded and in two common ways that limit their performance: compacted and low organic matter.

The antidote is three practices that activate the development and maintenance of healthy soils: mulch, protect, and grow.

MPG - Mulch

Organic material on top of soil

Ecosystems mulch soil naturally through leaf litter and other organic materials that are decomposing. Managed landscapes can take advantage of these natural processes like letting leaves on the ground as well as adding mulch amendments.

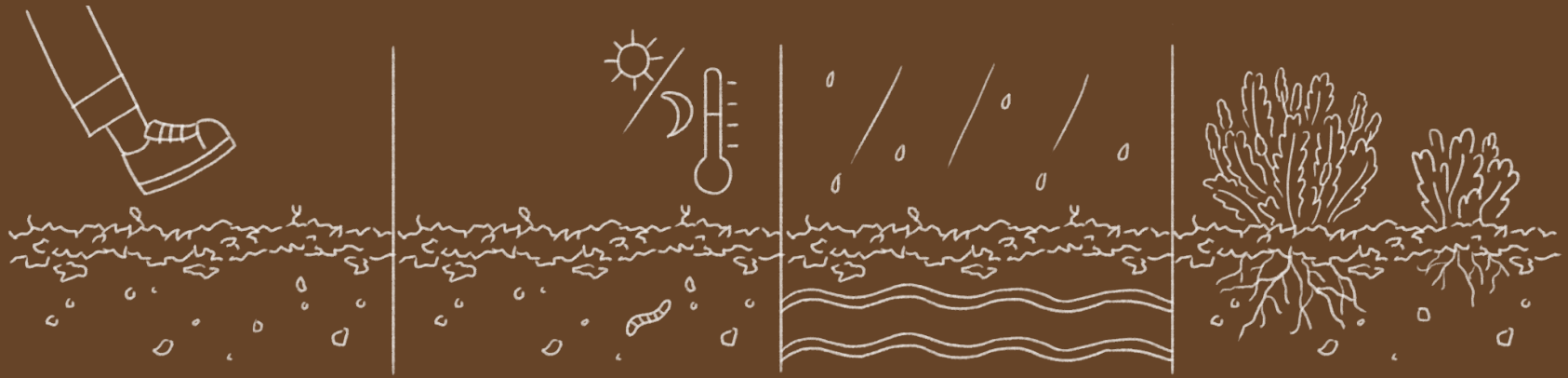
Many mulches are essentially wood chips that are high in carbon relative to nutrients like nitrogen which leads to a slow decomposition that is desirable in most situations.

Other organic amendments such as compost can be used instead or in addition as a high nutrient mulch for more quickly building up soil organic matter and plant nutrient supply in depleted soil.

Mulch & Protect & Grow.

MPG - Mulch

How mulch is essential for soil health



Prevents sealing of soil surface from impacts (e.g., water droplets, foot traffic)

Acts as a thermos. Keeps soils cooler on hot days and warmer on cool nights.

Lets water in and slows its evaporation

Provides nutrients and carbon

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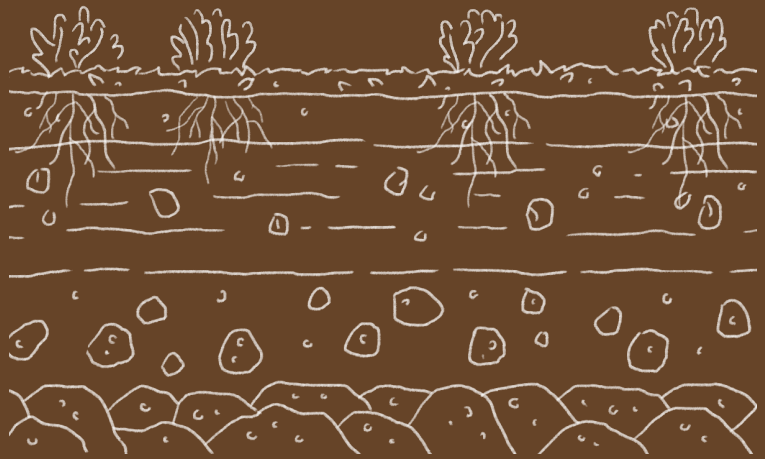
MPG - Protect

Because damage compounds and is long-lasting



Protect the surface. Protecting against surface impacts keeps the soil from being compacted. Compacted soil restricts water permeability, root growth, and other vital processes for developing healthy soils.

Protect the profile. Protecting against disturbance of the soil profile preserves the vertical layering soil develops through time to support the plants and to optimize for multiple benefits of the ecosystem.

MPG - Protect

Protection of soil can come in many forms:

- **Physical.** Big and small barriers that prevent foot traffic, cars, or construction equipment. Mulching and living ground covers can also act to protect soil from low force impacts such as raindrops and light foot traffic.
- **Behavioral.** Personal actions and social norms, such as staying on sidewalks or other paths. Intentionally avoiding soil interactions when they are very wet or when new plants are establishing as these are times when the system is more vulnerable to damage.
- **Policy-driven.** Many policies can be used to add protection. Perhaps most important is policy to limit destruction from construction activity by limiting the footprint of soil disturbing activities.

MPG - Grow

Plants are essential

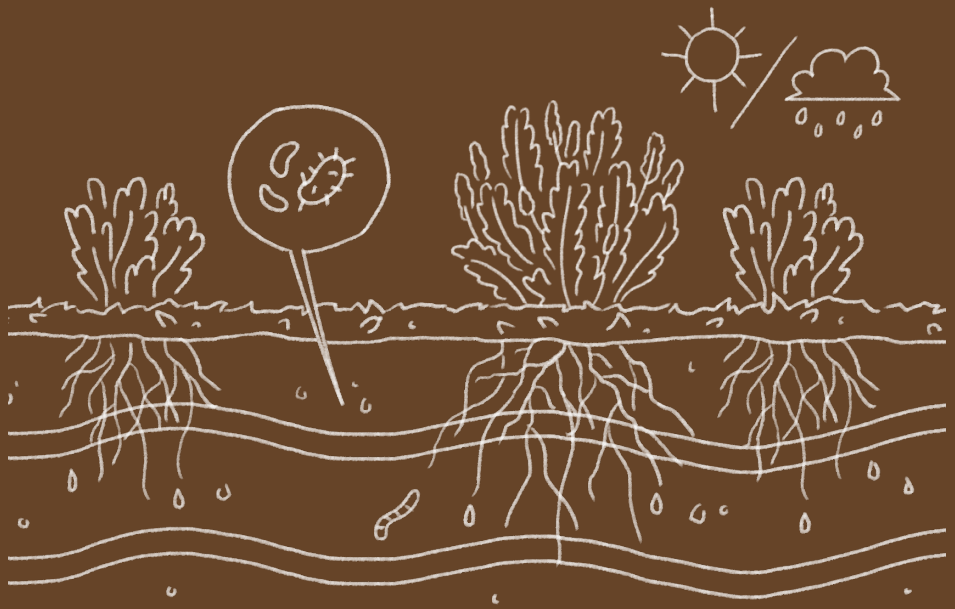
Soil development is a living process and plants are needed to activate and drive the process.

If living plants are not part of the system, soil will slowly degrade.

MPG - Grow

Plants drive soil development in multiple ways:

- Growing roots create channels in the soil to improve water permeability.
- Plants stimulate microbial activity. Microbial activity is necessary for soil development.
- Plants provide natural protection and mulching.
- Plant-soil feedbacks build ecosystems in which the plants and soil co-evolve with the climate and our management to build resilience



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Time

Soil MPG practices set soil development on a trajectory of continuous improvement.

Patience and persistence in the practices are necessary.

Soil is like a hidden oak tree that starts poorly but gets better year over year, decade over decade.

Photo and sticker credit: Dr. Yamina Pressler

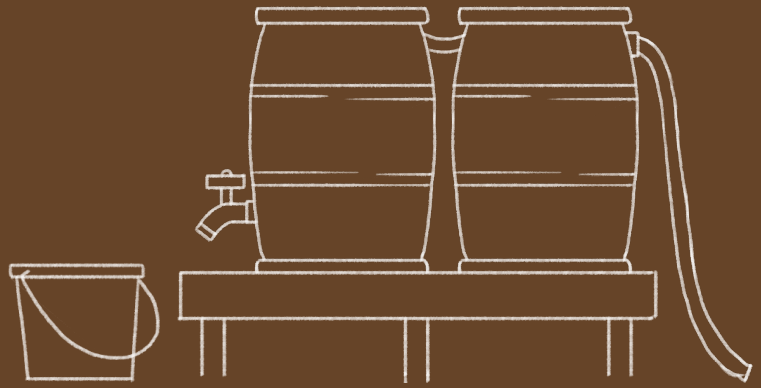
MPG + W

Speeding Up the Slow Process of Soil Development

Even with the soil MPG practices, it can take a long time for soil to restore itself and improve its performance. But there is a trick for speeding up the process! **Just add water.**

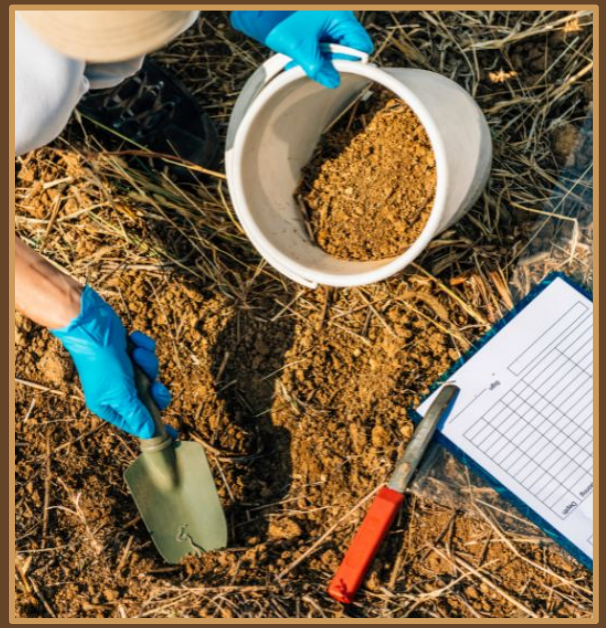
The more water that moves through the soil the faster soil develops.

Tips for Using Water to Speed Up Soil Development



- Wet but not mucky. Too much water slows soil development as soggy soils limit oxygen. Soggy soils are also more vulnerable to damage from surface impacts.
- Consider adding a rain-collection barrel or cistern and use the water to wet the soil in the dry stretches between rains in the winter and spring months.
- Don’t neglect the mulch; it speeds soil development by slowing soil drying.
- A few good soil soaks during the summer and fall months can not only keep plants healthy but ensure soil development continues year-round.

Contamination Caveat



The practices presented here are about improving the ecosystem functioning of soils. A precondition to managing for healthy soils is the mitigation of legacy pollutants and exclusion of new hazards.

The soil management practices here can mitigate exposure when dealing with soils with pollution legacy. However, they do not address the decontamination of polluted soils!

Soil testing and, as necessary, remediation of contaminants is a pre-step to managing urban soil for its desired ecosystem function contributions.

New LA Urban Soil COLLABORATIVE actions on the horizon!

A mound of activities are planned to advance the guidance in this report including: developing education resources, designing governance and resource systems to support these practices, and building our understanding of the intersection of soil, the future ecosystems of Los Angeles, climate resilience, and equity.

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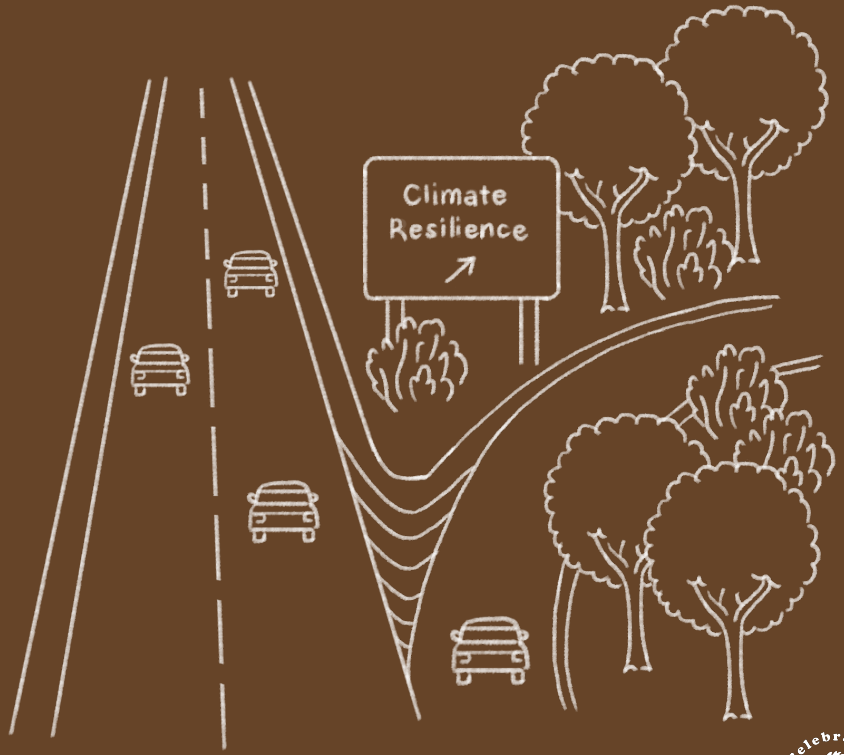

“The soil under the grass is dreaming of a young forest, and under the pavement the soil is dreaming of grass.”

- Wendell Berry

Thank You!

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