



Compost for Healthy Soil

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UCCE Master Gardener Program of Riverside County

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



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Why Is This Important?

We may walk all over it, take it for granted and treat it like *dirt*. However it is **SOIL**, and our lives depend on it!

- Soil is the upper layer of the earth in which plants grow
- Soil is a complex, natural material
- Plants need healthy soil

Learning Goal:

Students will learn how to compost and the value of adding compost to existing soil.





Healthy soil is a *living* system that includes:

- **45% Inorganic material:** Rocks and mineral particles
- **25% Air**
- **25% Water**
- **5% Organic matter:** Living organisms including roots, worms, microbes, and decomposing/decomposed organisms



Teaming With Life

- The organic matter in soil contains billions of microbes, including bacteria and fungi, which are dependent on each other.

What is an Ecosystem?

The soil food web demonstrates how organisms are interdependent



Soil Food Web

- In healthy soil, the food web will support many different plants, animals, arthropods, earthworms and microbes.
- These organisms feed on organic matter from a variety of sources.
- Soil organisms are affected by what happens to the soil ***and also*** affect the soil.



Keep These Organisms Alive!

- To maintain healthy soil in your garden
- By following gardening practices that allow the beneficial soil organisms to live



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Best Gardening Practices for Healthy Soil

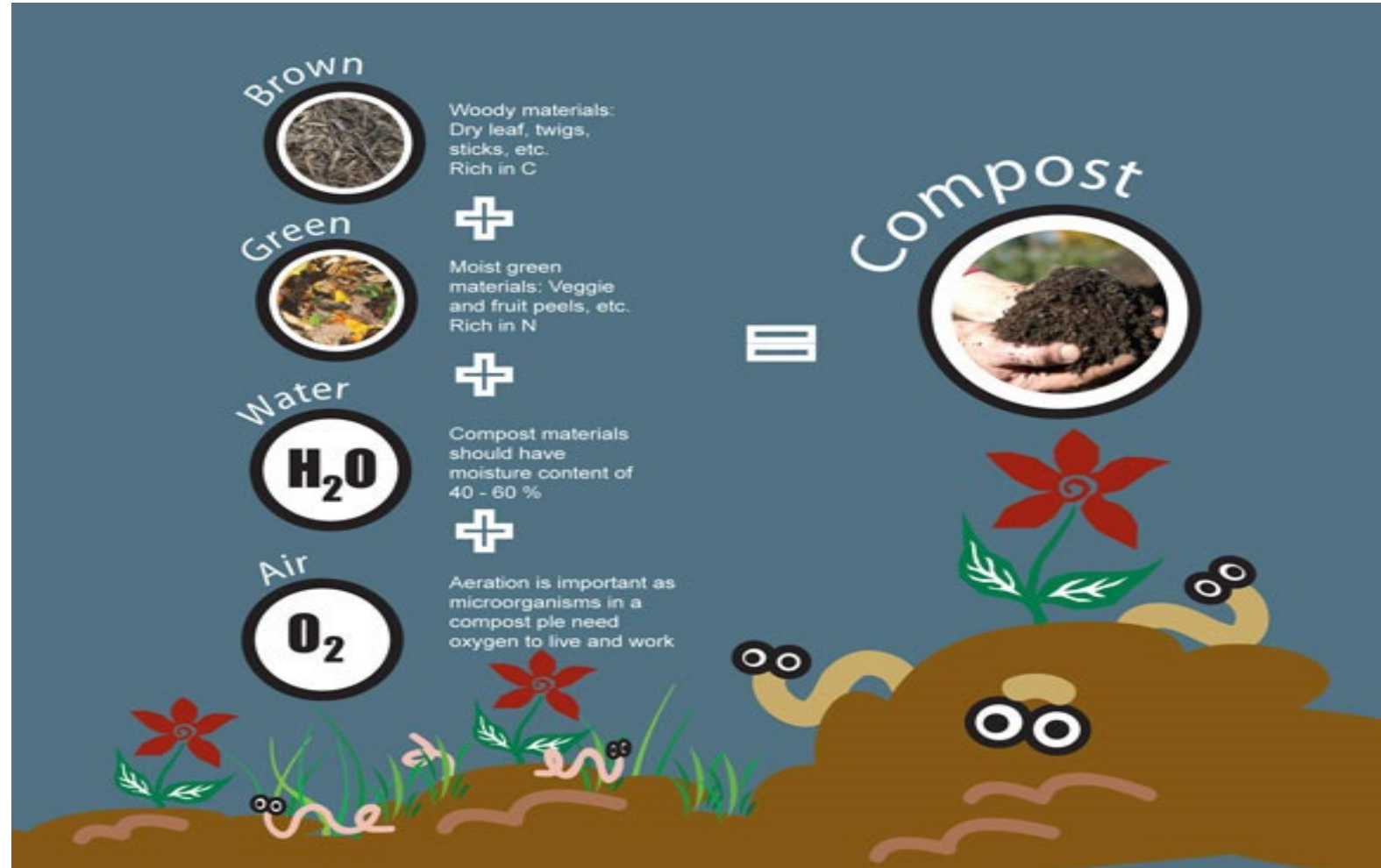
- Avoid excessive soil disturbance, such as digging.
- Don't work in or walk on wet, soggy soil. This compacts it.
- Avoid under or overwatering your soil.
- **Most importantly, use compost**



Compost is a Recipe for Healthy Soil!

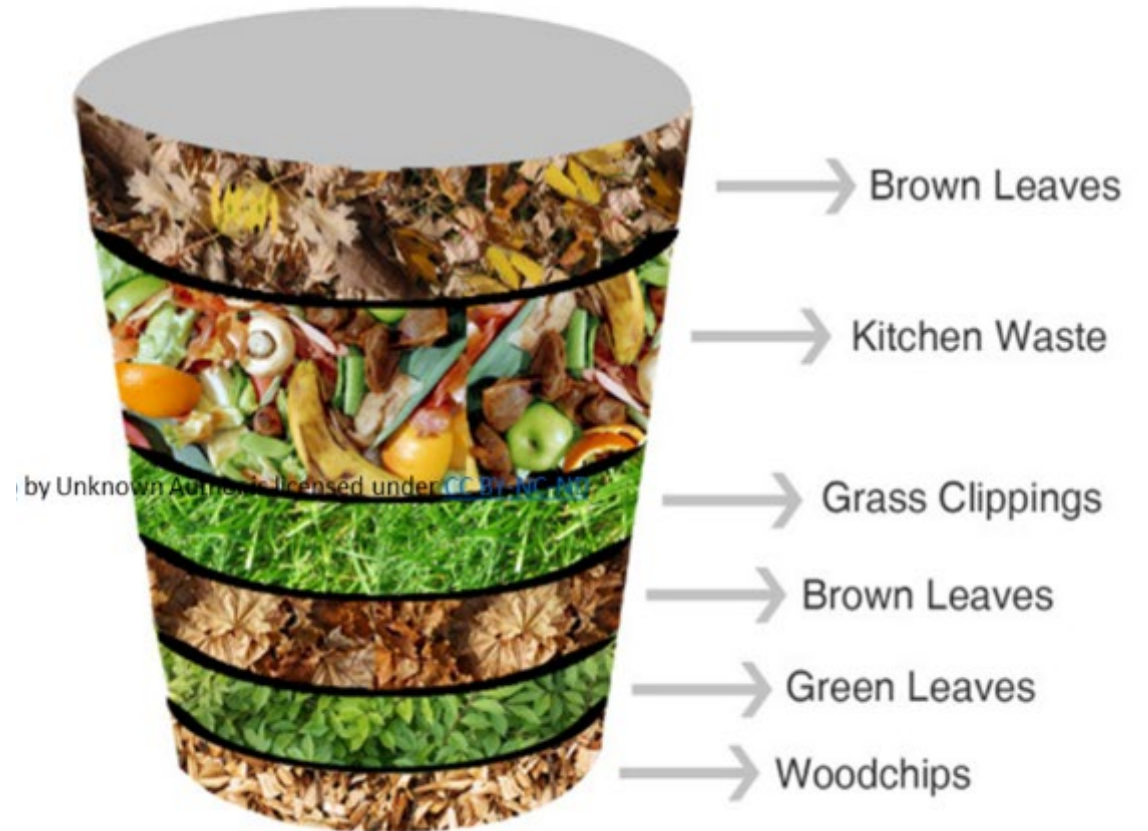
Ingredients

- Equal parts **brown** and **green** organic matter
- Water
- Air



Steps

- Chop greens and browns into small pieces about 1 ½ inches in size so they can breakdown.
- Layer greens between browns.
- Kitchen waste such as vegetable and fruit scraps, coffee grounds (including the filters), and crushed eggshells can be included, but should be covered with browns.
- Do not use seed-bearing weeds.



Steps - Setup

- Arrange into a pile. Keep adding browns and greens to a pile size of about 3 feet by 3 feet.
- Add water just to the feel of wrung-out sponge.



Steps - Maintenance

- Turn compost pile often.
- Do not let your compost pile overheat (above 160 degrees).
- Add water as needed to maintain the wrung-out sponge moisture level.



Steps – Compost

- As the organic matter decomposes, it will reduce in volume and change in color to dark brown.
- Add compost into the top few inches of soil or potting mix.
- Enjoy a beautiful and healthy garden!



Video: How to Start a Compost Pile



Video: [Creating a Compost Bin](#)

Review

What are the 4 components of soil?

How do soil organisms help maintain soil structure?

Describe a best gardening practice for maintaining good soil structure.

What are the basic ingredients of a compost pile?



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Application

Go outside to a garden with an adult and identify 3 greens and 3 browns that could be used in a compost pile. Remember they need to be natural material. Write what you found on a piece of paper.

Extension

- Vermiculture is a way to raise redworms in boxes, feeding them kitchen waste. The excrement from the worms can be used to enrich soil. Watch this video to learn more:
- [Creating a Worm Bin](#)



Next Generation Science Standards

- 3rd Grade
 - LS2.C Ecosystem Dynamics. When the environment changes some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.
 - LS4.C Adaptation. For any environment, some organisms survive well, some survive less well, and some cannot survive.
- 4th Grade
 - LS1.A Structure and Function. Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Next Generation Science Standards (Continued)

- 5th Grade
 - LS2.A Interrelationship of Ecosystems. The food of almost any kind of animal can be traced back to plants.
 - LS2.B Matter and Energy. Matter cycles between the air and soil and among plants, animals and microbes as these organisms live and die.

Resources

- Next Generation Science Standards, Grades 3, 4, and 5.
- California Master Gardener Handbook, Second Edition 2015
- Healthy Soils and Carbon Farming: Soil Biology June 20, 2012; Rural Solutions SA
- Roots, Shoots, Buckets and Boots;
- Soil Food Webs PowerPoint; Amanda Hodson, PhD; UC Davis
- Sustainable Gardening; Contra Costa County UC Master Gardener Program:
<http://ccmg.ucanr.edu/files/141617.pdf>www.nrcs.usda.gov

Resources Continued

- www.nrcs.usda.gov
- <https://www.soils4teachers.org/lessons-and-activities>
- www.usbg.gov
- Images: Creative Commons; kiddle.com; USDA; www.sciencenewsforstudents.org
- Video: Orange County Master Gardeners Composting Video Series, [http://mgorange.ucanr.edu/Soils-Fertilizers-Compost/Composting-Video-Series-386/How to start compost pile/](http://mgorange.ucanr.edu/Soils-Fertilizers-Compost/Composting-Video-Series-386/How%20to%20start%20compost%20pile/)
- Video: Recipe for Success, <https://www.youtube.com/watch?v=t3s9US4cl20>

Gardening Questions?

- Email the UCCE Master Gardeners of Riverside County
- Email Helpline
 - anrmgriverside@ucanr.edu
- [Riverside Master Gardeners Website](#)



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