

Composting and Sustainable Gardening Guide

For San Mateo County



SAN MATEO COUNTY
**Sustainability
Department**

www.smcsustainability.org
888-442-2666

Composting

Hot and Cold Composting

You can put many more materials in hot and cold compost piles than composting with worms alone.

Hot composting is best done in a 3'x3'x3' bin. Materials are gathered and typically added at once. The pile should be turned often.

Cold composting can be done by adding materials slowly and doesn't need to be turned regularly.



Composting with Worms (Vermicomposting)

This is a great option if space is limited, you don't have a backyard, you don't have materials other than food scraps, or live in an apartment or condo.



Hot and Cold Composting versus Composting with Worms			
	Hot Composting with a Bin	Cold Composting with a Bin	Composting with Worms
Space required	Requires largest space at least 3'x3'x3' (also for storing gathered materials and turning)	Requires larger space about 3'x3'x3'	Requires the least space about 2'x2' for a purchased bin or you can make them smaller or larger
Volume of materials	Large volume Food scraps, yard trimmings, cardboard, and paper	Smaller volume Food scraps, yard trimmings, cardboard, and paper	Smallest volume Food scraps, cardboard, and paper only.
When is it ready?	Compost is ready in 4-6 months	Compost is ready in about a year	Compost is ready in about 3-4 months

Composting and Sustainable Gardening Benefits



Enjoy a Healthier Garden

Valuable nutrients, cycled by using sustainable gardening and landscaping techniques such as composting, support plants that are healthier and resistant to pests and disease.

Save Money

Using compost reduces the cost of buying soil, fertilizers, amendments, and mulch. Drip irrigation reduces your water usage, which saves you money.



Save Time

A sustainable garden requires less time to manage. Save time and the hassle of raking, sweeping, bagging, and throwing out grass clippings by just leaving them on your lawn. Planting drought resistant native plants will not only require less water, it'll require less time for you to maintain.

Help the Environment

Sustainable gardens are beneficial to the environment as they help conserve precious resources like water, reduce the need for harmful chemical applications, and help prevent green materials from going to the landfill.



Sustainable Gardening and Landscaping Techniques

A sustainable garden works in harmony with nature. There are many techniques that can improve the health of your garden and minimize negative impact on the environment.

Incorporate sustainable, environmentally friendly, and healthy practices into your garden. Sustainable gardening and landscaping improve the soil, use native plants to create beautiful landscapes, and create opportunities to help you manage your garden in ways that are minimally disruptive to surrounding environments and involve far less maintenance.

Reuse and recycle

Items that are normally thrown away can be used in the garden. Paint-stirring sticks and old forks can be used to display vegetable seed packets. A broken pot can be a toad house. An old chair or table can hold container plants. Visit a salvage yard to find used materials! Make your garden fun and whimsical and a joy to visit!



Organic gardening

Organic gardening is growing food without the use of petrochemical pesticides, herbicides, and inorganic fertilizers. The chemical runoff contaminates our ground water, bay, and ocean. Organic gardening relies on the use of beneficial insects, diversity of plants, and the use of compost to supply the soil with nutrients.

Drip irrigation

Drip irrigation is a controlled, slow application of water that drips out of tiny holes that are made in a hose wall or from fittings called emitters. Soil moisture remains constant, and air is always available. Little water is lost to evaporation or runoff.

Native plants

Planting native plants and trees is one of the best ways to work with, rather than against, nature. By matching native plant species to your particular area, you will have plants and trees that require less time, effort and water to thrive than exotic species.

Mulch

Mulch protects the soil by helping it retain moisture, suppressing weeds, and insulating plants from extreme temperatures. Any material such as wood chips, straw, cardboard, sawdust, leaves, grass clippings, rock, glass, or compost can be used as mulch. Mulching is a way to recycle materials that might otherwise be discarded while simultaneously improving your soil.



Grasscycling

Grasscycling is leaving your grass clippings on the lawn. Clippings decompose quickly and release valuable nutrients back into the soil.

Benefits of grasscycling:

- 1 Slows evaporation from the soil surface, enhancing your lawn's drought tolerance while conserving water.
- 2 Reduces fertilizer and water usage, which means less runoff from your lawn that can lead to surface and groundwater pollution.

When to grasscycle

Prolonged wet weather, mechanical breakdown of mowers, or infrequent mowing are situations when grass clippings should be collected. You can add excess grass clippings to a compost pile or use them as mulch around flower beds, trees, and shrubs.



Mowing

Proper mowing is the key to grasscycling. Mow your lawn often enough so that no more than 1/3 of the length of the grass blade is cut in any one mowing. Frequent mowing will produce short clippings that will not cover up the grass surface.

Cut the grass when it is dry and make sure the mower blade is sharp. There are several brands of recycling mowers available that cut grass into small pieces and force them into the soil. These mowers are effective, but not necessary to grasscycle.

Almost any mower will work by raising the cutting height. If your mower has a collection bag, remove it to allow the clippings to drop into the soil. If your mower does not have a safety flap covering the opening where the bag fits into the chute, or a plug for the chute, contact your local retailer to purchase a retrofit kit.

Watering

Most grasses in California need about one inch of water every five to seven days in the growing season and much less during slow growing months. Lawns watered too frequently tend to develop shallow root systems, which may make them more susceptible to stress and disease. Deep infrequent watering produces a deeper, extensive root system. Water in the early morning, if possible, as less water is lost due to evaporation. Watering in the evening may encourage disease development.



Plant native grass

Create a lawn out of native grasses. Native grasses stabilize soil, improve soil quality, and increase water retention. Their fibrous roots can tap deep soil water, allowing them to stay green year-round. As a result, California native grasses are relatively inflammable and can provide low-maintenance fire buffers around homes.

Hot and Cold Composting is Easy! Here's how:

1 Choose a location

Your compost bin can be placed in either a sunny or shady area, but should be located close to a water source and to the material you will compost.



2 Build a pile

Add approximately 60% browns to 40% greens in layers. Chop material first to increase surface area for beneficial bacteria to break it down.



3 Add water

Add water as you build the pile. Keep as moist as a wrung-out sponge.



4 Pile maintenance

Turning or mixing the material periodically has many benefits including:

- Adding oxygen
- Breaking up compacted material
- Helping to maintain beneficial microbes
- Helping to maintain an optimal temperature (between 100-160°F). Thermophilic bacteria are most efficient in turning material into compost in the 105-160°F range. Once the pile heats to between 120 and 140, turn every few days until it no longer heats up after turning.
- When mixing, use a turning fork to turn the material from the outer edges to the center, where the pile will be the hottest. Add water as needed.



5 Is it done?

Compost is finished and ready for use when the material in the pile is dark brown and has a crumbly feel. It will smell earthy like a forest floor. Remember, not all material decomposes at the same rate. Use a screen to separate any large material that is left and place the larger pieces back into the pile.



6 Use it as

- Soil conditioner
- Top dressing
- Mulch
- Potting mixture

What is composting?

Composting is a method of returning organic waste back into nutrient rich soil using the same process nature uses. Applying compost to your soil will improve the overall quality of your soil and help the environment.

Amount of material

For hot/fast composting, you need a minimum of 1 cubic yard of material to start a compost pile. The ideal volume for hot composting is 3' long x 3' deep x 3' high.

If you do not have enough material to start a hot compost pile, you can start with a small pile and gradually build volume. It will not heat up until you have more volume. Do not start a bin or pile with green material only (e.g., grass clippings), or you could end up creating an anaerobic condition and an unpleasant smelly mess. Food waste should always be buried under brown material such as leaves, newspaper, or sawdust to deter pests.

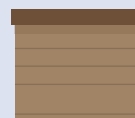
Choose a type of bin

There are many different options for compost bins. Many people prefer a holding bin to keep composting piles confined to a smaller space. Keep the bin four feet tall or lower for easy access to turn the compost pile. For information on discounted compost bins or a rebate for making your own bin, please visit

www.smcsustainability.org/composting.



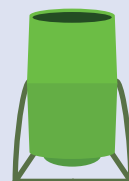
3 Bin System



Wood Bin



Plastic Bin



Tumbler

10 Good Reasons to Make and Use Compost

- 1 **30% of the waste stream** is yard and food waste.
- 2 Compost helps to **grow healthier plants** that have a greater ability to fight off pests and diseases.
- 3 Compost improves **drainage and airflow** in the soil.
- 4 Compost **improves moisture retention** in the soil.
- 5 Decomposed organic material **feeds beneficial organisms**.
- 6 Compost **amends** both sandy and clay soils.
- 7 Compost provides a balanced, slow release source of **nutrients**.
- 8 Compost **saves money** by eliminating the cost of buying soil conditioners, etc.
- 9 Grow more **nutritious produce** and improve your own diet. Plants grown in depleted soils have a reduced nutrient content.
- 10 Composting **educates children** about nature and the cycle of life.

Compost Critters

A multitude of critters from microscopic bacteria to earthworms (nature's recyclers) live in your compost pile.

Fungi and bacteria appear first and do a lot of the work, causing the pile to heat up.

When you see spiders, centipedes, millipedes, and earthworms, it means that the pile is cooling.

Finally, sowbugs and pillbugs come in to consume the leftovers.



What goes in a compost bin?

An active compost bin consists of approximately 60% "brown" material and 40% "green" material placed in layers.

Break down and reduce the size of the composting materials before you place them in the bin. Smaller materials have more surface area available for microbes to attack. Materials such as twigs should be chipped to a size of 2" or less before composting.

Sources of greens



- Grass clippings
- Coffee grounds
- Vegetables
- Herbivore manure*
- Hair
- Feathers
- Grains
- Fruit



Sources of browns



- Leaves
- Straw
- Untreated sawdust
- Newspaper
- Paper plates
- Paper towels and napkins
- Cardboard
- Dried plant material



What to avoid



- Diseased plants
- Weeds with seeds
- Dog or cat feces
- Toxic chemicals
- Meat, fish, poultry
- Dairy
- Treated wood
- Fats, oils, grease
- Plastic



* If composting at a school, check first if this is allowed.



How to feed your worms

Feeding your red wigglers, or red worms, is fun and easy. Anyone can do it!

Cut food scraps into small pieces before placing them in the compost bin. The smaller the pieces, the more surface area there is for bacteria to start breaking down the food, making it easier for the worms to consume.

Keep bedding over the food at all times. To feed the worms, place the food under the bedding in a different part of the bin each time. Do not bury the food in the castings.

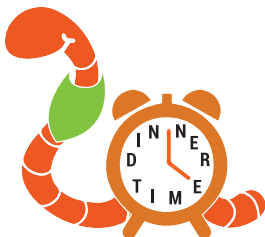


Feeding schedule

Unlike other critters, worms don't demand to be fed on a schedule. They can be fed once a day, every two or three days, or once a week. You can even go on vacation for a month without worrying about them! Just give them a regular amount of food before you leave and place plenty of shredded newspaper, cardboard, and paperboard on top of the food.

Make sure you leave the bin in an area where the temperature will not get too hot (not over 90°) and the cover material is wet enough that it will not dry out.

Happy worms will eat half their weight in food every day. When you get a few thousand worms living in a bin, food disappears rather quickly.



Feeding tip

Because worms have no teeth, they need to take in grit with their food. Rock dust or crushed oyster shells offer grit for their diet and can also help correct problems if you've added too much food to the bin. These can be purchased at most garden stores. Sprinkle a small amount on the food scraps once or twice a month.

Pulverized boiled eggshells are an excellent source of grit. If you are adding eggshells to your bin, you probably won't need to purchase other types of grit.



How much food?



To help worms adjust to their new home and food, do not overfeed them the first few weeks. In addition to the food you are providing them, worms will also eat their new bedding. Once they are settled, comfortable and happy, they will quickly munch through their food. The bin will require more food as the worm population grows.

Feed the worms just ahead of their rate of consumption. Before adding new food, consider:

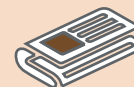
- 1 **Have the worms had enough time to consume old food?**
- 2 **Is there leftover food because the worms do not like it?**

Monitor the bin to learn how quickly the worms are consuming their food. Add food if the worms are consuming it at a good, healthy pace. If food is left uneaten, either cover it with bedding and stop feeding them for about a week or remove the food from the bin.

Bedding

Bedding helps keep the bin dark and moist and discourages fruit flies.

Organic materials such as coconut coir, burlap, shredded black and white newspaper, cardboard, and paperboard can be used.



The worms live in these materials and they also eat them.

Moisten first with water so it is damp like a wrung out sponge

Examples of worm food

Fruit

apples, pears, banana peels, strawberries, peaches, and all melons



Vegetables

beans, cabbage, celery, carrots, cucumbers, tomatoes, all greens, corn, corncobs, and squash



Cereals and grains

oatmeal, pasta, rice, non-sugared breakfast cereals, corn meal, and pancakes

Miscellaneous

coffee filter paper, eggshells, tea bags (remove staples), brown leaves, and dead flowers



Use caution when adding these

- **Breads** - can attract red mites
- **Potato skins, onions, garlic, ginger** - get consumed slowly and can cause odors



Do not use

- **Meat, poultry, fish, dairy** - protein attracts rodents
- **Potato chips, candy, oils** - worms do not like junk food and these attract ants
- **Oranges, lemons, limes** - citrus has a chemical substance (limonene) that is toxic to worms



Trouble shooting

Moldy food

If you have fed the worms too much, the food might become moldy. Remove moldy food as worms are unlikely to eat it and it makes the system vulnerable to infestations from other microorganisms.



Offensive odor

Uneaten food has become anaerobic. Make sure there is a generous amount of bedding placed over the food and stop feeding for a week. Add egg shells, rock dust, or crushed oyster shells.

Fruit flies

Bury food in bedding. Add more bedding to cover food.

Worms trying to escape

Bin may be too wet or too dry. Add more dry bedding if too wet, or moisten bedding if too dry.



For additional troubleshooting tips, please visit www.smcsustainability.org/composting.

How to use worm compost

1

Worm compost, or worm castings, are generally too fine grained and dense to use as a growing medium. It is best to make a planting mix using the worm compost as the basic ingredient. A successful mix is equal parts of worm compost, coir, and coarse sand. This is a very good mix for seed starter trays and cups.

2

Pure worm compost can be used as a general soil conditioner for houseplant containers. Because of the concentration of nutrients, it can be used as a slow release soil amendment.

3

Worm compost can also be sifted onto lawns, spread around the bottom of vegetable plants, or worked into the soil around shrubs and trees.

Composting Resources

Composting Workshops and Master Composter Program

Composting Workshops are two hours and offered throughout the year in-person and on Zoom.

The Master Composter Program is an in depth multi-week course offered once a year.

Learn how easy and fun it is to recycle your fruit and vegetable scraps, leaves, and plant cuttings into compost! It is rewarding to know you are turning what some consider waste into a nutrient rich organic material for your garden!

Discounts and Rebates

The Sustainability Department offers compost bins for purchase at a discounted rate and rebates for building your own bin! Visit our website for directions to build your own stackable bin or 3 bin system.

If you attend a composting workshop, receive an additional discount up to \$30 that can be added to a discounted bin or a \$200 rebate if you build your own bin while supplies last. One rebate OR discount per household or business located in San Mateo County.

Visit www.smcsustainability.org/composting
or call us at 888-442-2666 to learn about the next workshop or course coming up!

Bay Area Recycling Outreach Coalition

The Bay Area Recycling Outreach Coalition (BayROC) is a collaboration between staff representing over 40 San Francisco Bay Area cities, counties, and other public agencies working together on waste reduction and buy-recycled concepts. Visit <https://bayarearecycling.org> to learn about how to Stop Food Waste, Reuse To Go, Buy Recycled Products, Stop Junk Mail, and Bring Your Own Bag.

Bay Area Water Supply and Conservation Agency Workshops

The Bay Area Water Supply and Conservation Agency (BAWSCA) is a special district that provides regional water supply planning, resource development, and conservation program services to enhance the reliability of the 16 cities, 8 water districts, and 2 private water providers that provide water to over 1.8 million people and over 40,000 commercial, industrial and institutional accounts in Alameda, San Mateo, and Santa Clara Counties. Visit <https://bawasca.org> to learn about water conservation, landscape workshops, and discounts and rebates.

Still have questions?

Call 888-442-2666 or
visit www.smcsustainability.org for more information.

