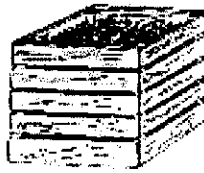


How to make

Healthy Compost



Successful Composting

A compost pile is home to a living, growing community of organisms. These factors contribute to the success of the composting process:

1. TEMPERATURE

Bacteria in a compost pile create heat as they work and grow. The best temperature for speedy composting is about 140° at the center of the pile. To maintain good temperatures, an ideal compost pile should be at least 3'x3'x3'. You can start a small pile and build as you go.

Check the center of your pile - is it hot?

2. OXYGEN

Aerobic, "oxygen-loving" organisms work quickly and without odors. If a compost pile does not have enough air, anaerobic organisms will take over and odors will develop. Encourage aerobic decomposition by turning the pile whenever you add materials. Mix in dry leaves or straw to discourage matting down or compression.

Odor? Turn pile to add oxygen.

3. MOISTURE

All organisms, including those in a compost pile, need water for growth. A dry compost pile will decompose slowly. If it is too wet, the oxygen supply will be limited, and anaerobic decomposition could occur. You may need to add water or dry materials after dry or wet spells of weather.

Do the "Squeeze Test" - composting materials should be about as moist as a wrung-out sponge.

4. FOOD

The creatures that do the work of decomposition view our waste as their food. Microscopic organisms need a mixture of carbon and nitrogen to grow and reproduce. Generally, "green" or wet materials are high in nitrogen (decompose rapidly), while "brown", dry or woody materials are high in carbon (break down slowly).

<u>Green (wet) Nitrogen-rich</u>		<u>Brown (dry) Carbon-rich</u>	
grass clippings	kitchen wastes	leaves	straw
fruit wastes	rotted manures	cornstalks	sawdust
alfalfa hay	fresh garden-clippings		dried garden-clippings

Preparing Materials

- ◆ Chop up stalks, vines, large twigs, straw or hay.
- ◆ Run the lawnmower over leaves to reduce their size.
- ◆ Remove litter from yard waste.

When is Compost "Finished"?

Finished compost is a brown, crumbly, earthy-smelling, soil-like material. It takes between six months and one year for a pile to yield a finished product, depending on how much attention it is given. You should not be able to recognize the waste materials that went into the pile.

- ◆ Screen before use for finer compost.
- ◆ Put undecomposed materials back into the pile to break down further.



How to Use Finished Compost

- ◆ Work it directly into garden soil (improves structure, adds nutrients).
- ◆ Sprinkle it on the lawn to keep it green without much water.
- ◆ Apply it around trees to feed the roots and reduce water needs.
- ◆ Apply it directly to the garden a few times a year as a mulch.
- ◆ Mix with potting soil for indoor gardening needs.

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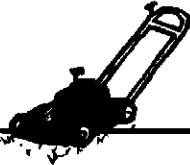
DO COMPOST

DO NOT COMPOST

Food Waste
coffee/tea bags
vegetable scraps
fruit scraps
egg shells
rice/grains/pasta

Yard Waste
leaves
grass clippings
garden trimmings

Other
pine needles
(small amounts)
wood ash (small
amounts)
manures (horse,
cow, goat,
chicken, rabbit)



meat or fish scraps
pet wastes or kitty litter
diseased plants
cheese or other dairy products
charcoal briquettes
weeds which spread by roots and runners
bulky woody waste
fat or greasy wastes
insect-ridden plants
weeds with seeds
peanut butter, oils

COMMONLY ASKED QUESTIONS

What should I do with grass clippings?

Keep your lawn healthy by leaving grass clippings right on the lawn. If you collect and compost grass clippings, mix them well with a bulky "brown" material to keep them from becoming compacted and smelly.

What should I do with leaves that don't fit in my bin?

To decrease the volume of leaves, run the lawn mower over them before adding them to the pile, or wet them down and cover with a tarp to keep them from blowing away. Add them to your compost bin throughout the year to cover food waste or to provide "brown" materials for your composting recipe. Leaves and yard waste (not food waste) can easily be composted in a pile without using a bin.

Can I compost through the winter?

Although the process will slow down in cold weather, some bacteria activity will continue. Food waste can still be added as long as it is covered each time with leaves or straw. You can further insulate your pile by covering it with thick, dark plastic.

Should I add...

lime? It is not necessary (and can sometimes cause problems) to add lime to adjust the acidity of a compost pile.

pine needles? Pine needles have a high acid content and are good to use as mulch on acid-loving plants such as strawberries or rhododendrons. Pine needles take a long time to fully compost. No more than 10% of a pile should be pine needles at one time.

wood ashes? Use wood ashes cautiously; they have a high alkaline level. However, they do provide potash, a valuable nutrient for your garden. Add ashes to your compost pile in small quantities - no more than a quarter of an inch at a time.

THE BENEFITS OF COMPOST

- ☛ increases the organic matter in soil and helps build sound root structure
- ☛ balances the pH of the soil
- ☛ makes nutrients in soil more readily available to plants
- ☛ attracts earthworms, considered the "earth's greatest recyclers"
- ☛ makes clay soils airy so that they can drain better
- ☛ improves the ability of sandy soils to hold moisture and resist erosion
- ☛ raises the vitamin and mineral content of food grown in a compost-rich garden
- ☛ reduces reliance on petroleum-based fertilizers



Produced by Center for EcoTechnology, a non-profit energy/resource conservation and waste management organization, through a grant from USDA Rural Utilities Service.

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Which bin do I want?				
Bin	Assembly	Rodent Resistance	Maintenance	Cost
Open Pile	None	None	Simplest system but results may be slower	None
Snow Fence	Easy	Little	Easy to turn & mobile	Very Inexpensive
Wire Bin	Very Easy	Some but animals can dig underneath it	Easy to turn & mobile - can also be used as a leaf staging area	Inexpensive
Shipping Pallets	Easy	Little	Easy to turn but difficult to move w/o disassembling	Usually no cost from local businesses
Wood & Wire	Difficult	Very good if used with a hinged lid and bottom	Easy to turn and mobile and sturdy	Moderately expensive
3-Bin System	Very difficult	Very good if used with lid and bottom	High maintenance - more frequent turning - large capacity	The most expensive of the do-it-yourself plans
Garbage Can	Easy	Very good	Easy to use but low capacity	Inexpensive
Rotating Drum	Difficult to DIY - usually purchased	Excellent	Quick compost but low capacity - easy to use	Very expensive
On-Ground Commercial Bins	Generally very easy	Varies - moderate to good with lids and bottoms	Varies - check ease of turning and capacity	Moderate to expensive



12 *Keep Your Compost Happy*

<u>CONCERN</u>	<u>POSSIBLE CAUSES</u>	<u>SOLUTION</u>
ROTTEN ODOR	excess moisture (anaerobic conditions)	turn pile, add dry, porous materials, such as leaves, sawdust, wood chips, or straw
	compaction	turn pile, or make smaller
AMMONIA ODOR	too much greens (nitrogen)	add brown (carbon) materials, such as leaves, wood chips, straw or leaves
LOW PILE TEMPERATURE	pile too small	make pile bigger or insulate sides
	insufficient moisture	add water while turning pile or cover top
	poor aeration	turn pile
	lack of greens (nitrogen)	mix in green sources such as grass clippings, manure, or food scraps
	cold weather	increase pile size or insulate pile with an extra layer of material, such as straw
HIGH PILE TEMPERATURE (+140° F)	pile too large	reduce pile size, or divide into two
	insufficient ventilation	turn pile
PESTS rats raccoons insects	presence of meat scraps or fatty food scraps	remove meat and fatty foods from pile, or cover with a layer of soil, leaves, or sawdust, or use an animal-proof compost bin or turn pile to increase temperature

*Reproduced, in part, from
N.E. Regional Agricultural Engineering
Service, Ithaca, NY.*

COMPOST SCREEN

A compost screen can be made in various sizes depending on your needs. These instructions are for a screen that measures 15" x 20". Place it over a wheel barrow or box when screening your finished compost. Coarse or incompletely decomposed materials that remain on top of the screen, such as nut shells or twigs, can be returned to the compost pile. The finely textured compost material that passes through the screen is ready to use. You can use either a 1/4" or 1/2" mesh, depending on how fine a finished material you want. You may prefer the finer mesh if you plan to use the finished compost as a top dressing on your lawn or for a seed starting mix.

MATERIALS

1 - 1" x 3" x 72"
strapping or scrap lumber
pieces

2' of 1/4" galvanized
mesh

carpenter's glue

nails

1 - 72" quarter-round
trim

staples

TOOLS

Handsaw and chisel

Hammer

Tinsnip

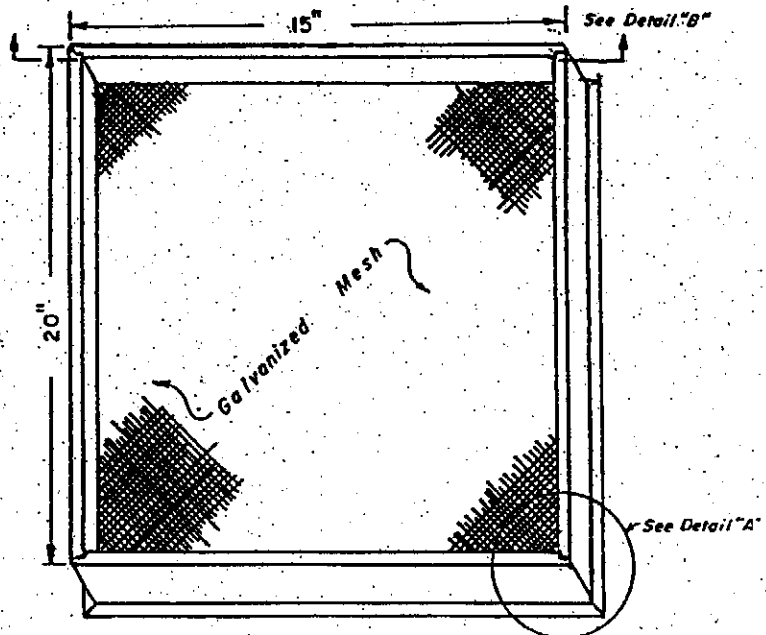
Pencil

Carpenter's square

CONSTRUCTION

Cut 6' of the 1"x3" into four pieces, two at 20" and two at 15". Cut a 1/2" deep and 1" wide (or the width of your strapping) section out of the two 15" ends. Use handsaw and chisel to cut out these four lap cuts. (See Detail A)

Make square frame fitting the 20" sides into the 15" lap joints. Put enough carpenter's glue to hold it together, then nail it.



COMPOST TEA

One way to use finished compost is to make compost tea. Place the compost in a burlap bag and insert it in a barrel of water. Let it steep for a few days. The nutrient-rich tea can then be used on your garden.

Materials:

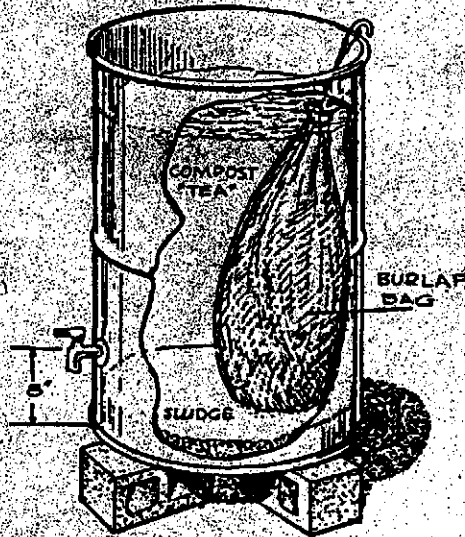
plastic drum
tap
silicone
screen mesh

Procedure:

Place a tap at the bottom of the drum. Seal it with silicone and place a wire mesh over the tap from the inside of the drum. You can add a lid if you wish.

Variation:

On a smaller scale, you can fill a watering can half and half with water and finished compost, and let it steep until the compost tea is ready.



This fact sheet is being distributed as part of COMPOST ONTARIO, a project run by the Recycling Council of Ontario with funding from Barclay Recycling Inc. and the Ontario Ministry of the Environment.

Recycling Council of Ontario
489 College St., Suite 504
Toronto, Ontario M6G 1A5

October 1990



Healthy soils grow healthy plants which foster healthy people!

Experienced gardeners know that amending the soil every year is the single, most important aspect of organic vegetable gardening. Even if you are lucky enough to have started with a garden consisting of rich soil, over time you will need to add compost and organic matter to keep it that way. The first and most important thing to remember is that healthy soil is a living, breathing mass. Soil needs to breathe, retain moisture and provide a good food supply for all of the microorganisms, insects and other members of this intricate community named the Soil Food Web.

When cultivating soil, there is one primary goal. That is to ensure that conditions are suitable for the soil micro-organisms which will enable them to do their work in an efficient manner, thereby producing healthy crops. These organisms are dependent upon organic matter in the soil for their food. They navigate their way through the soil consuming food, and, anything they don't need is excreted as wastes. The plants' roots then readily absorb this nutrient-rich food source. The soil needs to be well aerated which will allow the microscopic organisms to convert nutrients into forms available for plant growth. It should also be moist to keep the organisms active but well drained enough to stop harmful organisms that thrive in airless conditions. A well structured soil has plenty of pores (air pockets) which enable the plant roots to grow deeper into the ground because of the available air and water. These healthy soil requirements can be met by amending your garden beds with organic compost yearly.

Organic matter applied to the soil in the form of compost and mulch...

1. Improves the soil structure by opening up clay and sandy soil. Organically fed soil warms up much more quickly in the spring. The more compost you add, the deeper the roots are able to grow, the healthier the foliage above ground is, and, the heavier the production of flowers and subsequent fruiting is.
2. Increases soil fertility naturally. Organic soils are highly fertile and are able to supply your food plants with a continuous source of the nutrients that they need, in the right amounts at the right time, unlike chemical fertilizers.
3. Encourages rigorous growth. Well-structured soil and a balanced, continual food supply enhances and prolongs a plant's active life which results in higher crop yields.
4. Protects plants. Plants are more likely to withstand cold spells and grow more successfully, especially in cold areas, if they are fed a highly rich, organic diet.
5. Improves the quality of the crop. Anyone who has eaten organic produce knows that it has exceptional flavor, is more succulent and contains more nutrients than conventionally grown produce bought in the supermarket. Organic produce also offers a better shelf-life and cooking properties.
6. Results in higher crop yields. Highly fertile soil is able to sustain crop yields for a longer period of time resulting in more produce.
7. Increases plant health and disease resistance. A soil that is rich in compost provides crops with a rich source of nutrients and beneficial microbes. Some beneficials even synthesize their own protective antibiotic chemicals that battle harmful pathogens. Adding organic matter to your soil can increase the pathogen-fighting microbe populations up to 1,000-fold.

8. Increases the nutritional quality of the produce.

All of these benefits result in....

- Improved flavor of leaves, stems, roots and grains due to a healthy bacterial population because of the micro-nutrients supplied by adding compost.
- Increased succulence due to a constant supply of water and vitamins.
- Sweeter food. A balanced supply of gases from microbial activity results in the right proportion of sugar to starch because of the improved soil porosity and proper drainage.
- Tender, succulent root crops. Tough, dry produce is caused by soil that is too hot and dry. Organic matter and mulch hold moisture in the soil and moderate the temperature.
- Enhanced color of leaves, fruit and flowers. This is due to improved water retention and a sufficient supply of nitrogen and carbon dioxide gases.
- Reduced blemishes due to disease on the produce. Soil borne diseases can infect crops year after year when infected soil splashes onto the lower leaves of the plants. Putting a layer of mulch at the base of the plant will avoid spreading disease.
- Longer storage life. Amending with compost increases the soil water retention and produces crops that have a higher moisture content.
- Improved firmness and less likelihood of bruising. Healthy soils contain a sufficient amount of calcium which fosters strong cell wall growth in crops.
- Better culinary qualities due vigorous growth because of a balanced food supply.
- Food that is more filling. Resulting crops contain essential nutrients that the body needs in the right amounts and in forms that are readily absorbed.

CALCIUM AND CHITIN...WHY TOMATOES LOVE LOBSTER!

Calcium All plants (especially tomatoes) need calcium to produce strong cell walls, which in turn help to protect the plants from attacks by pathogens which cause disease. In addition to fighting disease, calcium is also essential for enzyme activity, plant vigor and metabolism.

One of the biggest plagues to tomato, eggplant and pepper plants, is **blossom end rot**. This condition develops in these vegetables mostly due to a calcium deficiency in the soil. It manifests itself as a watery spot near the blossom end (the bottom) when the fruit is about one-third developed. Eventually, the spot will darken and spread quickly, destroying the fruit and rendering it inedible. Using a fertilizer that is high in calcium will help to prevent blossom end rot.

At Coast of Maine Organic Products, we understand that calcium perhaps plays more roles in the overall health of the plant and the soil than any other nutrient (including nitrogen, phosphorous and potassium). We know that if we get the calcium right in our hand-crafted compost blends and fertilizer, most of our work is done.

Chitin (kite-in) Chitin serves as a rich food source for soil microbes which, in turn, provide the soil ecosystem and plants with essential building blocks for healthy growth. Recent studies point out that it is a good inducer of defense mechanisms in plants and helps them develop healthy immune systems.

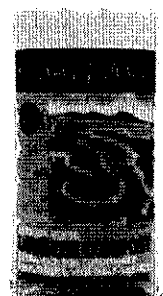
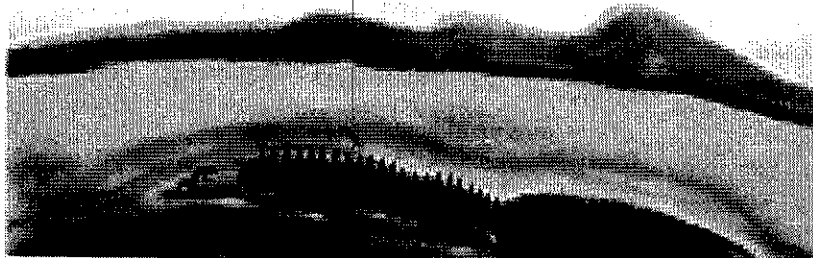
So, here's how to start off your tomato plants right!

Putting the calcium right around the root ball means that it's going to be readily available and give your tomato plants the boost and protection that they need. The process is extremely simple.

1. Purchase Quoddy Blend Lobster Compost; a dark, nutrient-rich compost made with lobster and crab shells that are composted with aspen bark. The composted shells are a rich source of calcium and chitin and make an exceptional addition to our organic compost line of products.
2. Amend the planting hole with equal parts of existing garden soil and Quoddy Blend Lobster Compost.
3. After planting, topdress with Lobster and Kelp organic fertilizer according to the directions on our bag.
4. Ensure that the tomato plants receive at least an inch of water a week.

Happy gardening from your friends at Coast of Maine Organic Products!

Visit us at www.coastofmaine.com and like us on Facebook!



CAN I USE WOOD ASHES IN MY GARDEN?

Use caution when using ashes in the garden. The ashes contain a good amount of lye which is a caustic agent. For this reason, refrain from placing them on young tender plants. Wear gloves when handling the ashes. Use a mask to avoid breathing in the residue and protect your eyes with sunglasses or goggles. The pH of wood ashes runs between 9 - 13 and it is mostly calcium carbonate.

Slightly rake around deciduous trees, shrubs and vines. Place 1/2 inch of ash over the soil and rake to work it in. Water to release the micro-nutrients into the soil. Do not use around azaleas, rhododendrons or junipers. Acid-loving plants will react adversely to the neutralizing effect of the ashes.

Place one gallon of ashes per square yard over your garden bed in loam or clay soils. Use only a half of a gallon per square yard in sandy soils. Work them into the soil prior to planting your garden.

Do not use wood ash around potatoes (it can promote potato scab) or any acid-loving vegetables (endive, rhubarb, soybeans, sweet potatoes and radishes. Also, avoid use around phlox, roses, blueberries or strawberries. Many of the most commonly grown garden vegetables prefer slightly acid soil with a pH between 5.5 and 7.0. These include beans, peas, broccoli, cabbage, carrots, celery and cucumbers, as well as peppers, soybeans, parsley, squash, sweet corn, tomatoes and turnips. If the soil test indicates a pH of 6.5 or above, then there is no need for lime.

Place a ring of ashes an inch high around any plants that snails or slugs like to eat. They will go through the ash and be killed by it before they reach your plant. After it rains, scrape off the wet ashes and replace them with dry ashes.

Place 1/4 cup of ashes in the planting hole of tomatoes or other calcium-loving plants when planting. The ashes will give them a great head start.

As with most fertilizers, be careful not to use ash near germinating seeds.

Do not mix ash with any nitrogen fertilizer or one that contains ammonium sulfate, ammonium nitrates or urea. These fertilizers lose their nitrogen in the form of ammonia gas when mixed with high pH materials such as wood ash. For a lawn, wait at least a month after wood ash is applied before putting down a nitrogen fertilizer. This will allow the soil to reduce the alkalinity of the wood ash. Top dress your lawn with 1/4 to 1/2 inch of ashes each year. Water them in immediately so the ash does not blow away.



Six Easy Steps to Setting Up a Worm Bin

by Jen Fong and Paula Hewitt

Once you have worms and a bin, follow these six easy steps to set up a worm bin. Soon worms will be recycling food scraps into a healthy, nutrient-rich soil amendment called compost.

1- Acquire a bin. Reuse an old dresser drawer or fish tank, build a box out of wood or find/buy a plastic bin. The approximate size is 16" x 24" x 8" or 10 gallons. Make sure the bin is clean by rinsing it with tap water to remove any residues which may be harmful to the worms. For wooden bins, line the bottom and sides with plastic (an old shower curtain or plastic garbage bag works well).

2- Prepare the bedding. Instead of soil, composting red worms live in moist newspaper bedding. Like soil, newspaper strips provide air, water, and food for the worms.

- Using about 50 pages, tear newspaper into 1/2" to 1" strips. Avoid using colored print, which may be toxic to the worms.
- Place newspaper strips into a large plastic garbage bag or container. Add water until bedding feels like a damp sponge, moist but not dripping. Add dry strips if it gets too wet.
- Add the strips to the bin, making sure bedding is fluffy (not packed down) to provide air for the worms. Bin should be 3/4 full of wet newspaper strips.
- Sprinkle 2-4 cups of soil in bin, which introduces beneficial microorganisms. Gritty soil particles also aids the worms' digestive process. Potting soil, or soil from outdoors is fine.

3- Add the worms. Before adding the worms, find out how many worms you are starting with. The easiest method is to weigh the worms. If you do not have access to a scale, determine the worms' volume. The amount of worms is important for knowing how much food to feed them and for record keeping.

4- Bury food scraps under bedding. Feed the worms fruit and vegetable scraps that would normally be thrown away, such as peels, rinds, cores, etc. Limit the amount of citrus fruits that you place in the bin. **NO MEATS, BONES, OILS OR DAIRY PRODUCTS.**

- Cut or break food scraps into small pieces--the smaller, the better.
- Measure the amount of food. Feed worms approximately 3 times their weight per week. Monitor the bin every week to see if the worms are or are not eating the food. Adjust feeding levels accordingly. (If you start with one pound of worms, add 3 pounds of food per week.)
- Bury food scraps in the bin. Lift up bedding, add food scraps, then cover food with bedding.

5- Place a full sheet of dry newspaper on top of the bedding. This will help maintain the moisture balance, keep any possible odors in the bin, and help prevent fruit flies from making a home in the bin. Replace this sheet frequently if fruit flies are present, or if bin gets too wet.

6- Cover and choose a spot for the bin. Cover the bin with a lid made of plastic, plywood or cloth, but leave the lid ajar so the bin receives some air. If desired, you may drill holes into the bin. Place the bin away from windows and heaters.

FEED, WATER and FLUFF!!! To keep worms happy, feed them about once a week. If bedding dries up, spray with water. (If bedding gets too wet, add dry newspaper strips.) Fluff up bedding once a week so the worms get enough air.

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