

# Black Gold

## Why Compost?

Nothing docx warms a gardener's heart like the sight of compost, the rich, organic material made from recycled vegetable peelings, grass clippings, leaves, twigs, and even coffee grounds. The gardener who has only a few Big Boy tomato plants in between Dark Red Irene geraniums and Bells of Ireland still appreciates a ripe pile of black, nutritious dirt.

Recycling is more popular than ever as conspicuous consumption gives way to a growing ecological awareness. Creating a compost pile, even a simple one, contributes to a healthier ecosystem. The person who recycles cans, glass, and newspapers, and who composts vegetable peelings, leaves, grass clippings, and so on, has taken a small step toward ecological balance. Once you start recycling, you will be reluctant to throw even one apple peeling into the garbage. Besides, most town dumps no longer take any yard waste: grass clippings, leaves and weeds, twigs, and basic yard material.

## What Is a Compost Pile?

Almost anything that grows can be used to make compost, and everything you need to create a compost pile is probably either in your kitchen or around the yard. Though compost looks like simple dirt, it is nutritionally complex.

Think of a compost pile in layers: green, brown, and black materials. The green layer provides all-important nitrogen for the soil, and includes things like grass, vegetable and fruit peelings, and eggshells and coffee grounds (not actually green, but important ingredients). If you live near the ocean, you can add seaweed, but you must rinse it with the hose to remove any salt. You can also add manure from cattle, sheep, horses, or chickens. The brown layer is made up of materials rich in carbon, such as harvested plants, fallen leaves, tree bark, sawdust, wood shavings, pine needles, hedge clippings, straw, and corncobs.<sup>1</sup> Solid materials, such as twigs and stalks; provide texture and aeration. The black layer comes from things that break down easily, such as torn or shredded newspapers and other paper products.

When making compost, your objective is to create a medium in which microbes, fungi, and worms can grow and feed. The gardener's real helpers are microbes. Microbes are efficient little machines that surpass roots in getting nitrogen, phosphorus, and water to plants. Millions of microorganisms attack the compost materials and turn them into crumbly, sweet-smelling dirt, which enhances the production of flower and vegetable gardens. In return, the plants provide the microbes with sugar. These microbes stay close to the roots, protecting their own food supply by warding off root-rot fungi and parasites that can topple the most graceful delphiniums.

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<sup>1</sup> Corncobs decay slowly. If you decide to add them, be sure to chop them into fine pieces.

It takes about a year for the bottom of a good-sized pile to produce 6 inches of *black gold* that you can add to your garden. It's all about cycles, and the gardener who maintains a compost pile is a vital part of these cycles. The living materials that gradually break down into compost are as important to a gardener as roots are to a living plant.

## How Do You Make a Compost Pile?

Once you've decided to create a compost pile, begin with a small plastic container that you can leave under the kitchen sink (easiest) or on the back porch (more remote, but still convenient). When you start saving vegetable and fruit peelings, you will be astonished at how quickly the ingredients for your compost pile build up and how quickly they break down into *black gold* for your garden.

### **Details**

Compost piles range from simple to complex. You can duplicate the simple two-hole system that the colonists brought from England. Or you can create a two-part, side-by-side system that will serve not only you but all its owners for decades. You can also create a dig-as-you-go system, which means digging holes alongside your vegetable and flower plants. First dig a hole and fill it with today's vegetable and fruit peelings and coffee grounds. Then dig a second hole right beside the first one, throwing the soil from it on top of the first hole. The next day, fill the second hole with peelings and maybe a few shredded pages from the newspaper, and dig another hole next to it. You can create this hole-by-hole system in all your flower and vegetable beds, beside shrubs, and along flowered walkways.

One way to have a compost pile is to buy prefabricated bins made of plastic, wood, wire, or metal. They are available at garden centers or from catalogs. These small bins can be placed on balconies or rooftops, patios or porches, beside front steps, or in back yards. The next step up is to make your own pile by choosing a site at the back of the yard or behind a tool shed or garage. You can plant a few small shrubs or plants to hide the compost if you are meticulous about having a yard free of clutter. Make a pile that you can access from behind to dig out, so that as the material becomes "ripe," you can shovel it out and add it to your garden. You can contain a small pile by using a garbage bag with the bottom cut out, making slits in the sides for ventilation. Then simply tip it over slightly, and dig out from the bottom.

If you don't mind taking the time to create this small compost pile, you can easily bump up your efforts to the next level. A mid-range compost pile can be created with a bin made of six wooden stakes approximately 5 feet long and enough chicken wire to cover the outside perimeter and make a divider down the middle. (Decide on the size before you go to the local hardware store to buy related supplies, such as a pitchfork for turning the mixture.) Pound the stakes into the ground, three in the back and three in the front. Tack chicken wire around three sides and place one length in the middle to separate the old material from the new. You can dress up the structure by adding two

swinging gates.<sup>2</sup> Dig up the grass at the bottom of the bin to improve drainage and to ease the way for the beneficial worms that will be feasting on your compost pile.

Start by layering the green, brown, and black materials you have on hand. If you have a variety of materials, you should start with the brown layer: branches, twigs, hedge clippings, and any of the thicker materials that will provide ventilation. Then add the green layer: grass<sup>3</sup> and soft-bodied plants. To the top, add the black layer: some shredded newspapers, soil, or ground limestone. Moisten the mixture, but be careful not to over water. You need enough moisture to facilitate decay, but not so much that you cut off ventilation, which could create a bad odor. In all cases, the smaller the materials, the better, especially when you are just starting a compost pile. You can let the combination sit for a while, or begin turning it over with a pitchfork.

The compost's best friend, next to the microorganisms that are its lifeline, is comfrey (*symphytum caucasicum*). For the gardener, comfrey is a catalyst that heats up the green, brown, and black layers and accelerates the decaying. Comfrey can be planted in front of or around the compost, providing a lovely green shield with soft pink and lavender flowers. The plant is very resilient. Once planted, the roots are there to stay. Break off the leaves down to the base of the stalk, throw them into your compost to fire it up, and within weeks new shoots will appear. The leaves and stalks contain a slippery juice that makes breaking them off more arduous than you would think. It's easier to cut the leaves and stalks with shears. In any case, placing a few comfrey plants around your compost pile will enhance your compost and your garden.

The Taj Mahal of compost bins is one made from cinder blocks. Again, you need to find a convenient place behind the garage or in the back corner of the yard, and you can camouflage the site by planting shrubs or comfrey plants. Even better, you can put potted plants on the edge, turning it into a showcase for your contributions to a better world. This pièce de résistance is made from two kinds of cinder blocks, standard with holes and solid. The bin is made up of two smaller 4-foot bins separated by a row of cinder blocks on top of a 3-inch cement foundation. The standard size of a cinder block is 15½ x 7½ x 7½ inches. A good-sized compost pile can be made with 17 half-size finishing cinder blocks, called *sofers*, and approximately 40 full-size cinder blocks. You can arrange the blocks in a variety of ways.

## What's the Cost?

The cost of making a compost bin from cinder blocks varies depending on whether you use a professional construction worker, but figure on \$500.

### **Order table**

Product Name	Price	Avaiable quantity	Requested quantity
Garden Hose (50')	€28,00	3	1
Gardener's Rake	€18,95	19	0

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<sup>2</sup> A gate makes access easy for you and prevents access by dogs, raccoons, rats, and other unwelcome night visitors.

<sup>3</sup> Grass clippings are a good source of nitrogen for a compost pile, but if you do add them to your compost instead of leaving them on your lawn, be sure to add them only in thin layers. Otherwise, they can bunch together, become slimy, and keep out too much air.

Grafting Knife	€18,95	25	3
Grafting/Splicing Tool	€57,95	50	0
Holster	€10,00	10	13
Long-handled Loppers	€64,95	60	0
Nutcracker	€18,00	100	0
Overhead Loppers	€69,95	7	15
Pruners, Left-handed	€54,00	10	0
Pruners, Right-handed	€54,00	25	0
Pruning Saw	€19,95	30	0
Saw	€34,95	50	0
Sharpener	€14,95	120	1
Timer, Greenhouse	€44,95	70	0
Timer, Watering	€44,95	60	5

## Hot or Cold?

Small compost piles are usually “cold”; that is, the material never heats up enough to kill weed seeds and other organisms that you do not want to recycle into your garden. The vents in plastic bags or small containers help with ventilation and water run-off, but these vents also cool down the mix. A “hot” compost pile is better. Because decomposition starts at about 68° and stops at about 140°, anything between those temperatures is ideal. A “hot” compost pile that stays between 130° and 160° for three to five days will kill most weed seeds or disease organisms that you may have inadvertently added to the pile and that can invade a garden.<sup>4</sup> Of course, the hotter the compost pile, the quicker it decays, and the faster the turnaround you will see from your clippings and peelings. The trade-off is that “hot” compost piles need to be kept moist and turned often, and they crave the green and brown ingredients.

## Compost and Soil

Most soil is either sandy or clayish. Adding compost to the soil enhances its quality, making it rich with *black gold*. A clayish soil will be lightened and aerated. A sandy soil will have more nutrients and retain more moisture after you’ve added compost.

## Composting DOs and DON’Ts

### **The DOs**

1. DO keep your compost pile at least 3 feet square.
2. DO keep it moist, especially in warm weather.
3. DO keep a healthy mix of green, brown, and black ingredients.
4. DO cut up heavy matter, such as melon rinds and corncobs, into small segments.

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<sup>4</sup> Even hot compost is not guaranteed to kill all weed seeds and organisms that cause diseases in plants. Experienced gardeners caution against deliberately adding weeds or diseased plant material to a compost pile.

5. DO turn over the compost to aerate and mix the ingredients.
6. DO cover with a chicken wire mesh to contain the pile and keep animals out.

### ***The DON'T***

1. DON'T add any cooked or raw meats, bones, or fat.
2. DON'T add weeds, especially if they are ready to or have already gone to seed.
3. DON'T add diseased plants or plants that have been treated with chemical pesticides.

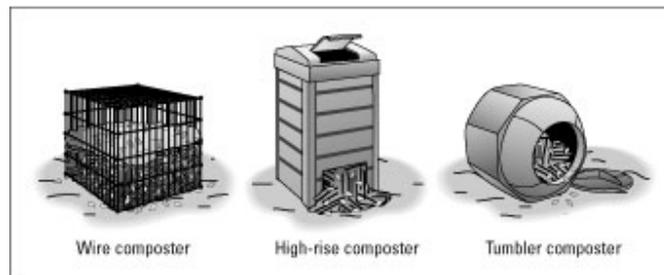
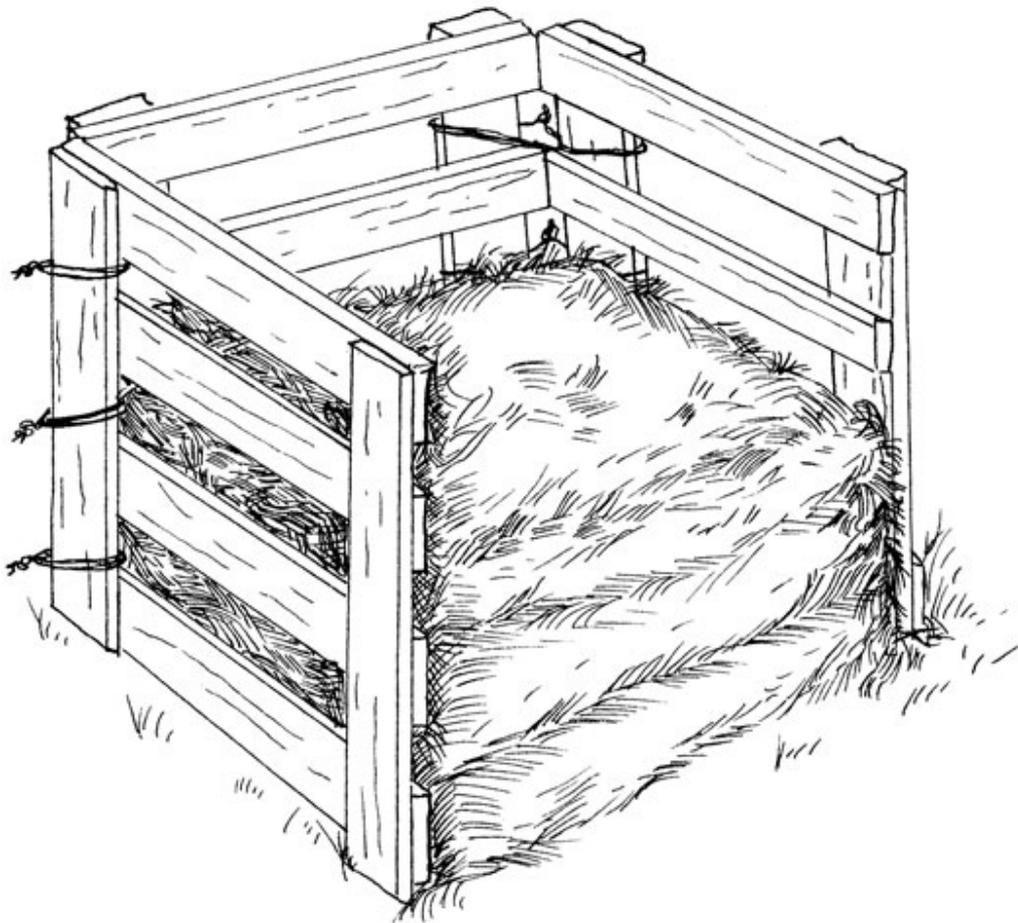
## **Making Compost**

The best and most refined of organic matters is compost, which is organic matter and/or manures that have decomposed until they resemble loamy soil. Thoroughly decomposed compost contains lots of humus — the beneficial, soil-improving material your plants need. Whether the original source was grass clippings, sawdust, animal manure, or vegetable scraps from your kitchen, all organic matter eventually becomes compost.

Making your own compost is probably the simplest way to ensure high quality compost and save some money. It's really not as complicated as you may think: The many commercial composting bins and containers on the market make it a mess-free and hassle-free process.

A well-constructed compost pile — built with the proper dimensions and maintained correctly — heats up fast; decomposes uniformly and quickly; kills many diseases, insects, and weed seeds; doesn't smell; and is easy to turn and maintain. Conversely, a pile just thrown together rarely heats up and, therefore, takes longer to decompose. This type of cold composting doesn't kill any diseases, insects, or weed seeds; may smell bad; and definitely looks messy.

Containing your compost pile makes it look neater, helps you maintain the correct moisture, and prevents animals from getting into it. You can build your own, as shown in Figure 1, or buy a commercial home composting unit. The advantages of a commercial composter include the availability of a wide range of attractive sizes and shapes and ease of use. Choose from box-shaped plastic and wooden bins and barrels or elevated and easy-to-turn tumblers, as shown in Figure 2. Store-bought bins are costly, however, and produce only small quantities of compost at a time, especially compared to a homemade bin that's built from scrap lumber or wire.



Here's what you need to know to build a good compost pile:

1. Choose a shady location, out of the way, but still within view so that you don't forget about the pile. The soil under it should be well drained.
2. Make a bin. Create a wire cylinder that's 3- to 4-feet in diameter or build a three-sided box (similar to the one in Figure 1), that's 4 to 5-feet high and wide.
3. Add brown materials. Add a 6-inch layer of "brown" organic matter — such as hay, straw, old leaves, and sawdust — to the bottom of the container.
4. Add green materials. Add a 2- to 3-inch layer of "green" organic matter, such as green grass clippings, manure, table scraps, or even high-nitrogen fertilizer, such as cottonseed meal, on top of the brown layer.

5. Repeat these layers, watering each one as you go, until the pile is 4 to 5-feet tall and fills the bin. A smaller pile won't heat up well and a larger pile can be difficult to manage.
6. Within two days, mix the layers together thoroughly. Particle size should be varied, smaller particles hasten decomposition.
7. Cover the pile with a tarp to keep rain away and preserve moisture. If the pile gets too soggy or too dry, it won't heat up.

Not all organic matter is good for the compost pile. Following is a look at what to add to a pile, what not to add, and in what ratios to add it.

What to add to the pile or composter: What you put in the compost pile is up to you — just remember that it needs to be from an organic material. Here's a short list of possibilities:

- Hay, straw, pine needles
- Leaves
- Kitchen scraps (egg shells, old bread, vegetable and fruit scraps)
- Animal manure, except for dog, cat, pig, or human
- Old vegetables, flowers, or trimmings from trees and shrubs
- Sawdust
- Wood chips
- Weeds
- Shredded black and white newspaper. (In the past, color printing used heavy metals in the ink. Most color printing now uses soy-based inks, but it's better to avoid them in the garden altogether to be on the safe side.)

Some items don't belong in your compost pile. While hot compost piles can kill off many diseases, weed seeds, and insects, it's not a sure thing, and some of these unpleasant guests may survive to invade your garden again. Certain materials can also invite unwanted wildlife to the pile or spread human diseases. Avoid adding the following to your compost bin:

- Kitchen scraps like meats, oils, fish, dairy products, and bones. They attract unwanted animals, such as rats and raccoons, to the pile.
- Weeds that have gone to seed or that spread by their roots, such as quackgrass
- Diseased or insect-infested vegetable or flower plants
- Herbicide-treated grass clippings or weeds
- Dog, cat, or pig feces.

In composting corners, you often hear about the C/N ratio or carbon to nitrogen ratio. Basically, all organic matter can be divided into carbon-rich (brown stuff) and nitrogen-rich (green stuff) materials. Using the right mixture of brown to green stuff when building a compost pile encourages the pile to heat up and decompose efficiently. Although

nearly any combination of organic materials eventually decomposes, for the fastest and most efficient compost pile in town, strike the correct balance (C/N ratio) between the two types of material — usually 25 to 1 (that is, 25 parts carbon to 1 part nitrogen).

Table 1 shows which common compost materials are high in carbon and which materials are high in nitrogen. Notice that the softer materials, such as fresh grass clippings, tend to be higher in nitrogen than hard materials, such as sawdust. Mix these together to form a pile with an average C/N ratio of 25-to-1 to 30-to-1, and you'll be well on your way to beautiful compost. Use the following ratios as guidelines. Actual ratios vary depending on the sources of the materials and other factors. And speaking of sources — be sure that your compost materials haven't been contaminated with pesticides or other chemicals.

Material and C/N Ratio
Table scraps, 15:1
Grass clippings, 19:1
Old manure, 20:1
Fresh alfalfa hay, 12:1
Fruit waste, 25:1
Corn stalks, 60:1
Old leaves, 80:1
Straw, 80:1
Paper, 170:1
Sawdust, 500:1
Wood, 700:1

### ***Quick and easy compost recipes***

To make the most compost in the shortest amount of time, try some of these proven recipes. For each recipe, mix the ingredients thoroughly and follow the directions in the next section, "Keeping your pile happy." Depending on weather and compost ingredients, you should have finished compost within one to two months.

Recipe #1: Four parts kitchen scraps from fruits and vegetables, 2 parts chicken or cow manure, 1 part shredded newspaper (black ink only), and 1 part shredded dry leaves.

Recipe #2: Two parts kitchen scraps, 1 part chicken manure, and 1 part shredded leaves.

Recipe #3: Two parts grass clippings, 1 part chicken manure, and 1 part shredded leaves.

### ***Keeping your pile happy***

A hot pile is a happy pile. If you follow the method of just throwing everything together, the pile will rarely heat up. If you follow the method of building the pile carefully with a balanced C/N ratio, the pile will start to cook within a week. Now you need to keep it cooking. Here's the procedure:

1. Keep the pile moist by periodically watering it.

Dig into the pile about 1 foot to see if it's moist. If not, water the pile thoroughly, but not so that it's soggy. The pile needs air, too, and adding too much water removes air spaces. If you built the pile with moist ingredients, such as kitchen scraps, it won't need watering at first.

2. Turn the pile when it cools down.

Using a garden fork, remove the outside layers and put them aside. Remove the inside layers into another pile and then switch. Place the outside layers in the center of the new pile and the inside layers along the outside of the new pile.

3. Let it cook again.

How hot it gets and how long it cooks depends on the ratio of C/N materials in the pile and whether you have the correct moisture levels.

4. When it's cool, turn it again.

You should have finished compost after two to three turnings. The finished product should be cool, crumbly, dark colored, and earthy smelling.

Sometimes, a compost pile never heats up, smells bad, or contains pieces of undecomposed materials. Chances are that one of the following conditions occurred:

- The pile was too wet or dry.
- You added too many carbon materials and not enough nitrogen materials.
- The pieces of material were too big or packed together. Shred leaves, branches, and pieces of wood to decompose more quickly.
- The pile was too small.

You can find lots of compost aids on the market. Bioactivators — packages of concentrated microbes — are one of the most popular because they can speed the decomposition process. These microbes occur naturally, however, and many are already present in a well-constructed compost pile. Save your money and use microbe-rich compost materials instead.