

The Beauty of Compost Heaps

Yes, there is nothing better than a pile of rotting garbage! Not when it's within a compost heap, that is. Our ancestors never had a huge truck pull up to haul away whatever plants or animal matter they didn't use. Plants that were left dead on the ground were soon consumed by scavengers or simply decayed. Thus, the cycle of life brings value to these living plants and creatures even in with their death and decay. When gardeners create their own compost heaps they become part of something bigger than themselves. By the simple act of putting table scraps, yard clippings, fallen leaves, or anything of an organic nature into their compost heaps they are giving back to the earth a present of life. It is the supreme environmental act as it saves this "trash" from a landfill where it will receive very little air and have very little time to decompose naturally. What little matter does decay will be trapped deep within the earth, far too deep to be of much value to the plants on the surface. But when used in a gardeners compost heap, they become a valuable commodity, ready and willing to enrich and renew the very earth they originally sprang from. Mother Nature's design is responsible for the work of a compost heap. Inside, hidden from our eyes, billions of tiny decay organisms feed, grow, reproduce and die, while all the time recycling our household and garden wastes into into a wonderful organic soil conditioner and fertilizer. Nature's decomposition of dead biological matter is constantly, but gradually working all the time. By building a compost heap, we just use nature's plan and speed up the process a bit. All for our own greedy goal of dark, rich, fertile compost for our gardens. Sounds selfish, but its far from that. More and more municipal governments are getting into large scale composting programs as they have organized separated trash bins for their citizens to separate out yard clippings. Those cities that do large scale composting of these materials are few and far between, but they are to be applauded for their wonderful effort on the earth's behalf. Those systems can process literally tons of organic material, but what we'll discuss here will be on the much smaller, backyard variety scale. As much as three fourths of household garbage is organic and compostable. If everyone with the facilities had their own compost heap, we could reduce landfill use tremendously and avoid burying nutrients and trace minerals too deep within the ground to be of any use to us. Oh the gardens that could be grown around the world then!

About the only downside to this scenario would be that we'd probably have to lay off some sanitation engineers, but we're sure there would be plenty of openings in the recycling and produce export industries to compensate for this. Creating Your Compost Heap It's best to think of the compost heap as a living thing. An community of organisms that require four basic ingredients to live. Give them a balanced diet, air, water and warmth and your community will thrive and do just what you'd like them to. By understanding these basic needs, anyone can create a productive community of of hardworking composting microorganisms that will reduce your organic waste into a fertile soil additive that your garden will love you for.

A Balanced Diet: How would you like to eat apples, everyday, for breakfast, lunch, dinner and snacks. No,.. you couldn't put anything on them, just apples, day after day after day. You'd probably get pretty bored, pretty fast. More importantly though you'd also probably get pretty ill as your body needs more varied nutrients than just apples alone can provide. We all know that apples are a very healthy thing to eat, but nobody would eat only apples. Our appetites crave different foods for a reason. We need a balanced diet to survive. The microarmy within your compost heap likes and needs variety as well. They require the correct amounts of carbon for energy and nitrogen for forming protein (what composters call the C/N ratio) in order to live and function efficiently. A high C/N ratio indicates there is excess carbon which will slow down decomposition as nitrogen is depleted. A C/N ratio that is too low indicates there is too much nitrogen, and will waste nitrogen by allowing it to escape into the air, causing unpleasant odors, as well as leaching it into the water which then causes a source of pollution. Now before you're tempted to click away from this subject, we're not going to tell you that you'll be standing there with a measuring cup, putting each different type of trash into a measuring cup and adding it to the pile in precise quantities. That's not where we're going with this. Simply put, the quality and quantity of what ingredients you compost will effect the process and determine how tasty this will all be to your garden when it's done. If you simply keep this in mind when adding to the heap, you'll be able to better organize how you do so and thus better the result you'll end up with.

Kitchen scraps will usually be pretty well mixed as we humans do love our variety as much as our compost micro buddies. If you have a lot of yard clippings of all sorts, usually there will be no problem there as well. But certain items may require some extra thought. An example would be the high nitrogen materials such as grass clippings, and the high carbon materials like sawdust. Using alternate layers of each in between a layer of dirt will alleviate much of the problem. As a general rule of thumb, high nitrogen materials tend to be green, moist and usually sloppy. High carbon materials will usually be brown or yellow and tend to be dry and bulky. Just remember, too much of anything is a bad thing so try to diversify your heap as much as possible and you should be just fine. The following is a list to help you better understand how to diversify your waste: Compostables with the Mostables!

Greens (wet- higher nitrogen wastes):

Coffee grounds
Vegetable Scraps
Cover Crops (Green manures like Rye Grass)

Fruit wastes and grains
 Grass Clippings
 Hair (Pet or Human)
 Manure
 Milk
 Seaweed (better rinse well first though)
 Weeds (for hot piles only - will kill them off)
 Fish & Seafood Scraps *
 Feathers *
 Eggs and Eggshells *

* Most animal scraps will slow decomposition and sometimes attract animal pests. Also, some communities have compost pile ingredient restrictions so check with local authorities. Browns (dry, high carbon wastes):

Hay
 Leaves
 Corncobs and cornstalks
 Nutshells (preferably crushed)
 Pine Needles
 Sawdust
 Straw
 Vegetable stalks and Seeds (seeds for hot piles only)

There are some items even the composting zealots agree are best left out of your garden's compost heap. Pet and human feces may carry disease organisms so don't even think about it. Meat scraps and fatty materials break down quite slowly while attracting unwanted animals so leave them out as well. It's okay to add most ashes to your heap, but stay away from coal ashes. This includes those charcoal ashes found on the bottom of any barbecue. Coal ashes are extremely high in both sulphur and iron, carrying amounts that are toxic to plants. Also avoid adding any sort of colored paper like that found in magazines or newspaper inserts because of the potential for toxic ink and paper coatings that they may contain. The basic compost motto here is, "When in doubt, leave it out!" One thing you never want to include in your compost are plant materials that show signs of any sort of disease. Even though an ideal compost should reach temperatures great enough to kill the disease organisms, it's not worth the chance. You should throw these items in your regular trash bins, or if your community allows, you can burn them. Once completely burned the ashes can then be added to the compost heap safely. You'll need to begin with a breeding colony of little micro compost buddies by introducing them into your heap from some rich garden soil or finished compost material. This should contain enough micro soldiers to get the ball rolling, but you can also buy commercial compost activators. These activators are nothing more than the microorganisms needed that are dry and dormant. The moisture in your pile should bring them back into action. Be cautious with a container of compost activator though. Once opened, put the container in a plastic bag to prevent accidental moisture from activating the remaining portion.

Water, water everywhere: Even tiny composting microorganisms need water to survive. But again, too much of a good thing can be bad. If your compost heap is soaked, the water will drive out the air between the materials in the heap and you may kill or thwart your compost micro army. A good pile should be about as moist as a damp sponge. To ensure the proper moisture level there are a few things you can do.

- Layer the most wet and sloppy materials like fruit wastes with absorbent ingredients such as dried leaves or sawdust.
- Construct your pile in an area that has good drainage. You can place a bottom layer of gravel or sand if warranted by the chosen location.
- As you build your pile, water each layer. Remember that the pile will need moisture so recheck it in a few days to make sure it hasn't dried out.
- With a pitchfork or large shovel, turn over the pile to release excess moisture that can prevent proper heating. This also has the benefit of adding air to the pile (as we'll discuss later) as well.
- Protect your pile from excessive drying heat or rain by giving it a cover if you make a compost bin. If yours is a free form, consider covering it with straw, or other temporary ground cover capable of letting in air.
- If you live in a dryer climate, shape the top of your compost heap with a concave top that will trap rainwater and allow it to absorb into the pile. If your climate is too rainy, use a rounded top design so that water will quickly roll off it and drain away.

Where's the Air?
 Your legions of compost micro armies will need to breath under all that stuff. This can be very important to make a "hot" (active) compost heap. There are a few simple techniques you can use that will get the air where it's needed. The most important way to aerate your heap is to "turn the pile" every so often so that you can mix in air amongst the composting material. This will disturb the middle of the heap and slow it's decaying processes there, but only temporarily and with better results for the entire pile. Build your pile on top of some sort of course materials like wood chips or brush so that air can get in from underneath. If your building a compost bin, incorporate a space from below where air can

enter the heap. Put sticks into the pile as you are building it. Then when you're done, you can pull out the sticks and have ready made air shafts right into the heart of the pile, where air is needed most. Poking holes into the pile with a crowbar or garden fork will also achieve the same goal. Shred hay, leaves and garden scraps before adding to your pile. Don't use too much materials like grass clippings or paper as they can form impermeable layers when wet that can cut off air supply. Mixing these with other materials will help. Don't build your pile more than five and a half feet high as the weight of the compost heap will drive out any trapped air below. Use drainpipe that has been drilled with holes at intervals by burying it in the middle and creating a type of air shaft for the pile. Sunflower stalks and straw can be buried as well with their ends protruding as they will allow air to be drawn into the heap through their shafts.

Hot and Cool Compost Heaps
This is compost terminology for what temperature the compost heap is decaying at. The act of decomposition creates a certain amount of it's own heat. With the proper C/N ratio, moisture and aeration, a "hot" pile can reach temperatures of about 160 degrees Fahrenheit, but will still give good results if temperatures are as low as 120 degrees Fahrenheit. Often times people in colder climates will cover their compost heaps with insulating materials like leaves or bales of hay to keep the heap decaying even through the winter. A "cool" or "cold" compost heap is not good. Sometimes referred to as a "passive" pile, this usually occurs when the heap receives little or no "turning." There will still be some activity in the pile, but it will most likely be the slow "Anaerobic" type that will take much longer due to the lack of oxygen for the microorganisms that drive the composting process. In just about all cases, an "Aerobic" compost heap that is hot will be desired by most gardeners since you'll reap the benefits of the heap much sooner and with a better quality compost product. To help ensure a hot pile, never make yours less than three feet in diameter or the mass will be too small for proper heating. Conversely, too large a mass isn't good either as you'll then interfere with the pile's aeration.

Designing Your Compost Heap! Don't worry, put the blue prints away. Designing your compost heap isn't that complicated, but it is definitely a matter of personal taste. The main thing you need to keep in mind are the four things your little compost micro buddies will need to do their work. Namely, air, water, warmth and a good balanced diet. Air is an important consideration if you are designing some sort of bin or compost enclosure. You have to ensure that the heap will be able to get air from all sides as well as it's top. To create an even better and hotter pile, consider some design tricks to get air in from underneath as well. If circumstances prevent a design allowing for this, you can still add modifications like perforated drainage tubing inserted into the pile for air shafts. Keep in mind though that these will make turning much more difficult. Steel wire mesh formed into tubes also will work for this as well. Water must be allowed for in your design as well. Your pile will need to be kept moist, but not drenched so good drainage is important. Water retention is not to be dismissed as well. If building a compost bin with porous materials like brick or concrete blocks, drench them before adding your compost material so that they wont draw moisture from the pile. It's also a good idea to apply some water to them, letting it trickle down the walls. This way the pile may draw moisture from them. If you are constructing your site of brick or cement blocks, these materials may actually help to keep the pile warm as they will absorb heat during the day, retaining it even after the sun has gone down. Placing your heap in a sunny area is another way to ensure a good warm temperature. The balance diet that you'll feed your compost is not quite as important a factor in your heaps design as the above, but does warrant some thought for your convenience. The piles location will determine how far you'll have to haul your organic material to be include it in the heap. While you may not want it right next to the kitchen, close by will make it more convenient to include table scraps. Also think about whether or not you'll feed it a lot of yard clippings. Is there good access from where those will be collected to your compost heap? These factors wont really matter much to your pile, but they may save your back and possibly make it more likely that you'll keep up with the composting habit. Compost heaps don't really even need to be designed at all. A simple pile that's at least 3 feet in diameter will do just fine. New material can be just thrown on top and cover finely with a layer of soil. Add water occasionally and stir (aerate) and Walla! You'll have compost. You can make yours round, or square, whatever suits your purpose. Some people even dig a hole and fill it with their material, using the dug up earth to cover each layer. You can even dig a trench by a row of plants that would benefit, throw in your layers of material and cover. As this turns into compost in will enrich the nearby plants. Other people crave more structure in their lives and like to keep things neat and organized. These gardeners may want to build a compost bin to keep their heap in good shape and control animal pests access to the pile. These simple structures can be made up of steal wire mesh and treated stakes to use as support. They can be more elaborate by having the mesh in wood framed panels, some or all of which can be removed to allow access. Redwood planks can be used for a compost frame if slats are left exposed to the air so that the pile can breath. Bricks have been used as well for compost walls, but it's best to leave cracks between the sides of the bricks to ensure proper air flow. Cement Cedar blocks do nicely as well if laid on their sides for air exposure. Most are heavy enough not to even need mortar to construct. Wire mesh can be used to line any of these types, just take care when using a pitch fork that you don't catch the ends in the mesh. Worms to the Rescue!

That's right,.. worms. Not your garden variety earthworms, mind you, but compost loving worms that are bred specifically to help you decompose your compost pile while providing nutrient rich worm casings to the mix as well. Compost worms can be gotten from many sources and can speed up the decomposition of your

top layers of organic material. Having been bred specifically in warmer temperatures provided by most piles. Once introduced, they will most probably double their population within about a months time. Compost worms are sometimes referred to as "reds" or "blue-gray thins" but are different than your garden variety earthworms. Because they like warmer temperatures, they can also be used indoors during the winter in a "worm box" designed to process kitchen scraps. Using a box (commonly made of wood) you can place shredded newspapers, moldy leaves or manure as the bedding, then add your worms. In general, you'll need about 1 pound of worms to process about a half a pound of scraps per day. You can feed them your leftover vegetable scraps daily, but it's best to grind them up in a blender first so they can munch on them easier. As a bonus, these worms will produce "worm casings" (their waste products) which contain valuable microorganisms and are five times richer than most fertile soil. If your worms reside in your compost heap, they will simply add to the richness of your compost. If you use multiple side by side compost bin designs, allow for a dirt path between your air allowances so they can move from a finished pile into the rotting one next door. If you are utilizing an indoor worm box for your composting, you can move the built up worm casings and worms to one side, putting down another bed and fresh scraps on the other and allow the worms to go to the new food. When they've all headed for greener garbage, scoop out the worm casings and treat your garden to a very nutritious top dressing or throw it in your outside pile for use as extra microorganism activators. And who said worms were disgusting?! Using Your Finished Compost!

You'll know it's compost when it's appearance is crumbly and it smells like rich soil with no hint of rotting aroma. A great indication is when your pile cools down. At this point you're ready to use the compost to benefit your garden. Compost is very versatile and you wont have to worry about burning plants or polluting water. Some plants such as squash and corn thrive on unfinished compost that still shows signs of organic material. But most prefer it when it is finished, having been aged long enough so that the decomposition process has stabilized. Compost is a great material to condition soil before planting vegetables. It is best to work it into the first foot of soil in a decent proportion, then complete by liberally working it into the top two or three inches of soil. Most plants, especially trees will benefit from using your compost to top dress the soil. Avoid using compost enriched soil to back fill in new transplanted trees that will be growing in poor soil as it will tend to make their roots bunch up around the mixture instead of seeking out nutrients deeper into the soil. If you have plants that will benefit from a quick dose of nutrients, you may want to try making "compost tea" to water them with. By taking a cloth bag, filling it with compost and putting the bag into a container filled with water, you can leave it there to steep for about a week, then use the resulting enriched liquid on your plants. Whatever your reason for considering composting, your garden will surely benefit. Although this technique is more associated with organic gardeners, it is actually used by smart gardeners of all types, as well it should be. Not only will it provide you with a rich organic soil additive, but it will do so at no charge. It will also reduce the waste material that you and your family send to the city dump as well, and that's something anyone can feel good about. But most importantly perhaps, this is a tool that Mother Nature has given us all. A tool that shouldn't be wasted or trivialized. Perhaps the best thing of all is that it's so easy. By utilizing the information included above, there is no way to fail. Most of the work is done by the tiny microscopic compost organisms that are more than happy to eat your garbage into a rich and useful compost. If you've never tried composting, we urge you to do so. Your garden will love you for it, and so will our mother earth ©

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