Complete Guide on Composting
Compost is vital for the garden. It provides nutrients, gives good texture, fixes poor soil, retains water, buffers pH, and provides a home for billions and trillions of beneficial microbes and Fungi. Compost is a bit of an art, and it is certainly not something you can rush. The best soils on earth have taken hundreds of thousands of years to be what they are today, so we must keep that in mind when we worry about five or six months to make a great compost. In this guide we are going to touch on every aspect of compost from what is compost, types of compost, how to make it, and lastly benefits of compost in the garden.

What is Compost? — Compost is any organic matter that is broken down into its simplest form. Finished compost is called humus (and no that is not what you eat, that is called hummus) pronounced HEW-MUS. It is black or dark brown, and almost all the original inputs are unidentifiable. The pH of compost is neutral or right around 7.0 making it a perfect buffer for acidic or alkaline soils.

Types of Compost

- Cold Compost — This is a pile that is left for years to weather without ever being flipped or added to. The pile is essentially “cold” because it does not heat up like its closest relative; the HOT compost pile.
  - Pros: The benefits to a cold compost is that the lack of extreme heat allows for a more diverse range of beneficial bacteria, insects, and fungi to colonize the pile. It is by far the most natural route to composting.
  - Cons: The downside to cold composting is since there is no flipping or adding, or stimulating, the compost may take 1-3 years to fully break down.
**Hot Compost** – Hot composting is the process of piling material up into a large pile, and actively wetting and flipping the pile to keep specific bacteria highly active. This high level of activity is what generated heat, and can reach up to 180 degrees! A hot compost pile is recognized by the steam that is emitted from the center when flipped.

- **Pros:** Hot composting is one of the fastest forms of composting. Due to the level of heat many weed seeds, diseases, and harmful fungal spores are killed off.
- **Cons:** Due to the high levels of heat many species of beneficial bacteria, worms, and other beneficial insects will die in this environment. In rare cases compost piles have caught on fire.

**Vermicomposting** – This type of compost is made from the process of digestion from worms. Vermicomposting is the act of putting worms into an enclosed container with food, and their natural function is to digest food making for convenient and very effortless compost.

- **Pros:** The nutrient quality of vermicompost is nearly triple that of regular compost. The digestion process also incorporates billions of beneficial microbes into the compost which interact with plant roots and help to create a healthy environment for life. Vermicomposting is also very easy, they require very little care and the food has to be added only once every week or so.
- **Cons:** Worms need to be fed in order to stay alive. Also worm bins need to have moisture and be indoors because of the many animals that feed on worms.

**Bokashi Compost** – This type of composting that involves anaerobic bacteria breaking down food scraps in an enclosed bucket. Bokashi
composting utilizes beneficial bacteria much like the bacteria found in our stomachs and soil. The bacteria belong primarily to three strains: yeasts, \((Saccharomyces\ spp.)\), bacteria that produce lactic acids \((Lactobacillus\ spp.)\), and (phototrophic) purple non-sulfur bacteria \((Rhodopseudomonas\ spp.)\). These, or bacteria like them, are the active organisms in yogurt and in silage.

- **Pros:** Bokashi composting is easy, and does not require the maintenance that a hot compost pile does. The fact that it is beneficial bacteria in an anaerobic environment, many things that would normally never be safe to compost are. This allows for about 90% of the food we would normally have to throw away to actually be composted. Things like; meats, eggs, and greasy foods.

- **Cons:** One of the downsides of bokashi composting is that the starter for the compost must be purchased on a very regular basis. Making your own bokashi compost starter is very dangerous and can breed E. Coli bacteria if done wrong. Also, the process can smell more foul than the other methods of composting, and since it requires plastic buckets, this is another expense to you.

**How to Make Hot Compost** — Hot compost as we discussed earlier in this article is the process of piling up organic matter to be broken down by extremely active bacteria. In this section we will also cover the ever so confusing “Carbon to Nitrogen Ratio”. The steps to getting to the point of heat is crucial, here is how.

**Step 1** — Gather 1 part brown material (e.g. shredded cardboard, mulched leaves, dead grass clippings) this is a carbon source. Carbon makes up every living thing and is the building block for life. You need that and 1 part green material (e.g. green grass, plant matter, fruit and vegetable scraps) this is your nitrogen source. Nitrogen feeds bacteria, and its only purpose is to act as a catalyst in the compost pile to stimulate the bacteria.
NOTE: “green” material **DOES NOT** have to be green in color. This is what adds to the confusion, because green material is anything that has a high nitrogen makeup. Green plant material like grass is in fact green in color but also high in nitrogen. An example of something not green but high in nitrogen is coffee grounds, animal manures, and yes…. Urine. While they are not green they are VERY high in nitrogen. So why the brown and green thing? Really that is just an easy way to remember what is required for the compost pile to have the ability to heat up enough to be considered “hot”. Really as gardeners what we are worried about is equal parts carbon to equal parts nitrogen.

**1 PART BROWN** AND **1 PART GREEN**

**Step 2** – Take the brown and green ingredients and pile them up. This is where it becomes crucial to the effectiveness of the compost pile. A small pile say 1 foot wide by 1 foot tall will NEVER heat up because there is not enough organic matter to feed the microbes and create a core hot enough. The pile must be **AT LEAST** 3 feet wide by 3 feet tall. Also, the pile cannot be something like 5 feet wide and 1 foot tall because that again will NEVER heat up to the point where hot composting begins.
Step 3 – Moisture is critical to help microbes survive. They need water just like you and I do, and they need lots of it to keep going. After piling the ingredients together, you want to wet the compost pile down. Soaking the pile is not necessary, but you do want to feel a noticeable wet texture in the center of the pile, almost that of a damp sponge.

Step 4 – Flipping a compost pile is vital to ensuring everything composts at the same rate, and also provides food for the microbes that they have not come in contact with. It is important to flip the outside in, that way the more composted material is on the outside. A pitchfork also comes in handy when it comes time to flip. When you flip the compost pile, you will know if things are working when you see steam even on a warm day. This is because a hot compost pile can reach temperatures of up to 180 degrees! Flipping should be done once every week or so as soon as the pile decreases by roughly a 1/3 its size.

Step 5 – After about 3-5 months your compost will cool down and begin to look very black. No matter how much water or flipping you do the pile just won’t heat up. This means that the pile is done and the compost is finished. It is important to cover the compost pile with a tarp, this will ensure that the quality of compost will remain until it is ready to be used on the garden.

Benefits of compost in the garden
o **Improving Soil Texture** – Compost helps to break up clay soil by preventing clay particles to bind to each other. This improves aeration in heavy clay soil. It also helps in sandy soil to give something for water and nutrients to hold onto.

o **pH Buffer** – Compost has a pH of roughly 7.0. This makes for a great way to fix acidic soil or alkaline soil.

![pH Buffer Chart]

- **Acids**: Increasingly acidic
- **Neutral**: Neutral
- **Alkalis**: Increasingly alkaline

o **Retains the Perfect Amount of Moisture** – Compost is very porous, this acts as a sponge to soak up water, as well as hold onto it. As we discussed this can help in sandy soil because of a lack in water retention. This can also help in areas where droughts are common. Compost will hold onto water, and allow plants to take what they need when they need it.

o **Re-mineralize The Soil** – Compost has many minerals essential for plant life. Compost has an NPK of around 2-1-1 making for an extremely gentle fertilizer that will never burn plants. Compost also has essential minerals like calcium, iron, magnesium, and many other smaller amounts of trace minerals. This well balanced feeding will give your plants exactly what they need.

o **Good Porosity** – Porosity is the measure of how porous something is. We already discussed how the porous nature of compost is good for retaining water, it also retains nutrients. Nutrients flow out of the soil in a process called leaching. Leached nutrients can be soaked up by compost’s sponge like properties and held on to for future use.

o **Home for Beneficial Microbes & Fungi** – As we just discussed in regards to porosity, this has to do with it as well. The sponge like nature of compost has TONS of surface area. This surface area allows for microbes and fungi to colonize. Having good amounts of beneficial fungi
and bacteria in your soil is very good since research has shown a direct correlation between plant health and soil microbial counts.

**Conclusion** — I hope this guide has helped you in some way to make better compost, and to incorporate compost into your garden. Composting is something as gardeners we must start doing in order to give back to the soil what we took out. Modern agroculture is based on the premise of keep taking but give nothing back. We cannot sustain that path or we will be looking at our own dry, cracked, and barren land we once used to grow crops on. Always remember.

“The nation that destroys its soil, destroys itself” – Franklin D. Roosevelt

Thank you for reading!

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