

## COMPOST

As I see and understand it. Dick Gross

The primary distinction identifying soil as growing medium is the amount of organic material it contains. In its basic form, organic matter is humus; compounds made up almost entirely of two elements, carbon and hydrogen. These are the building blocks of all living matter whether vegetable or animal. Earth rich in humus (organic matter) that we call soil will sustain plant life. The medium we home gardeners usually refer to as dirt is lacking in humus. It does not sustain healthy plant life.

Desert soils in the Salt River Basin typically lack organic matter. Back yard composting is an attempt to correct that deficiency by rendering all unused, raw, vegetative debris--roots, stems, leaves, fruit and other plant matter considered waste--to a chemical state that living plants can use for raw materials and nutrients to build new cells.

I use only non-poisonous plant material. I haven't proof of any harm from their use but toxic plants like oleander never end up in my compost bins. I don't grow them, either.

I also resist the use of animal waste **in any form**. Pathogens (disease causing agents) have been traced to poorly composted manure. The entire compost mass must reach a critical temperature to neutralize them. In my opinion, a back yard pile can never sustain enough heat to make them safe and the calculated risk is far outside my comfort zone.

**Compost** is what happens when thousands of species of microscopic organisms numbering millions per cubic inch of soil eat and digest the plant debris. A common carrot may, I'm guessing, contain compounds of nitrogen, phosphorous, iron, copper, zinc, chlorine, manganese, magnesium, cobalt and a host of other elements. Composting releases those same nutrients back into the soil to be later re-absorbed with the help of a symbiotic relationship with mycorrhiza and the actions other microorganisms through the feeder roots of the new, living plants. The rate at which decomposition happens in a given pile varies widely with differences in temperature, moisture, air (oxygen), particle size and the type of materials used. If you just make a pile of plant waste and let it set, compost will happen but at such a slow rate to be of no immediate use and with time many useful elements would be leached away. We want composting to be complete and we want it to be relatively quick.

Listed below are practices that I use in my own back yard. Some are the conclusions of my own trial and error and some from the results of other people's experiments. I have made a few discoveries first conceived by cave men and already common knowledge to every one else. Specific sources are too obscure to identify but I could name a hundred experts preaching compost technique. I can only claim that this is what works for me in my back yard. I am, however, confident that there is much more to learn and I will happily share that knowledge as I stumble across it.

- • **How to contain it.** Recycled trash containers sold by the City of Phoenix for \$5 are, in my opinion, the simplest and most effective device. Different cities on the program may have containers with slightly different shapes. These are green, cone shaped 1/4<sup>th</sup> inch plastic with tops and bottoms removed and sides perforated with many 1" holes for aeration. They are, roughly, 36 inches tall with a 22-inch diameter at the top and 30 at the bottom. Set the wide end at the bottom. To turn the pile, insert a forefinger into one of the holes on both sides of the bin and lift it off the pile, like a jelly mold, with little effort and set it aside. Then use a pitchfork, digging fork or shovel to put all the stuff--aerated, blended and re-wetted as necessary, back in again. To get maximum efficiency, turn the mass at least weekly or as often as you can.
- • **Alternate containers.** If the volume of organic debris is too small for the larger trash receptacles, you have several options. Pick a secluded spot, shade will work just fine, in your yard where you can just pile the chopped-up waste. Keep it damp, turn it over weekly and salt a little ammonium sulfate in it as you do. You will see the material turn into rich compost in about three months. If the material added is fairly constant in volume, your pile will reach a certain size and stay pretty much the same until you screen and bag it. You can also use 2 cubic foot empty potting-soil bags, like those you get at the nursery--and five-gallon plastic pails. To turn it, just dump the stuff out on the ground or on the lawn, check moisture, add a little green material or nitrogen from a bag as needed and shovel the aerated material back in again. It is best to dump the bags but you can treat them, until they get too heavy, like Shake and Bake--the end tied, of course, or just roll them back and forth.
- • **Particle size.** The single, most-critical factor in rapid, complete composting is particle size. The finer you can grind, chop, chew or break it up, the faster it will decompose. Finer particles grossly increase the surface area upon which microorganisms can feed. A pile of logs in a dry climate might require a hundred years to become humus. Reduce them to fine sawdust, add the required nitrogen and you could get finished compost in weeks. If you don't have a chipper or shredder, use any method you can contrive to break it down. An old butcher block, a tree stump with a wooden mallet and a sharp hatchet are very effective tools for pulverizing green material up to an inch or so in diameter. Wear safety glasses and guard those fingers. The chore is a bit tedious but quite rewarding. Dry limbs are more challenging but, if they can be broken up, their high carbon content helps chemical balance.
- • **Heat in the pile** is the energy released through the chemical digestive activity in the microorganisms. Aside from climatic variations, the intensity goes up or down with changes in the amount of available nitrogen. To keep the mass active after it has cooled down, I dissolve a half-cup of ammonium sulfate or nitrate in a two-gallon sprinkler-can and sprinkle the solution over an already wetted pile. The affect is similar to adding green grass and much easier.
- • **Odors.** You are familiar with the disgusting odor of wet, anaerobic (no oxygen) compost usually associated with grass clippings. To avoid that state of affairs, blend the grass with dry material or already working compost, or dry it out a bit first. To rid the smell, you can bury it or figure out a way to dry the stinky

mess with lots of air. Spread it back over the lawn or on the ground, dump the bucket or bag on any concrete slab and spread it out to dry. I've never known it to stain but don't do it on your living room carpet. You can also dilute the stinky mass with dry soil or dry organic material. When the aroma is tolerable again, rake it up and put it back in its original container. Anaerobic compost is okay stuff but unfortunately just too offensive for our delicate nostrils.

- • **Air.** Composting requires oxygen and to keep the pile active you have to do whatever it takes to aerate it. I like to keep the pile loose. The most efficient method is to move the mass frequently from one spot to another churning it up with a pitchfork and adding water as you do to adjust wetness to approximately that of a damp sponge. This is also a good time to add nitrogen either from greens or from a bag. The soil organisms can't distinguish one from the other because they are chemically identical and the critters can't read the label anyway.
- • **Starters.** Garden Store shelves and catalogues display many products that claim magical results from the addition of a cup or two of the *stuff* to your compost. I tried them all until learning that the same thing is accomplished better by throwing a couple shovels full of active soil or some working compost from another pile into the new material.
- • **Rodents.** These vermin will rarely invade compost built strictly from vegetative material but, if they appear, frequent turning of the pile will usually make them move their homemaking and colonization efforts to another locale. **Insects?** Get used to them. The pile may host a healthy herd of cockroaches but they're not too likely to abandon such a lush habitat to scrounge around in your somewhat sterile, I presume, kitchen.
- • **Finished compost.** Consider it finished when 80 or 90 percent of the original matter--twigs, leaves, etc., can no longer be identified. It will fall through the tines of a pitchfork. Sift it through half-inch screen. Store the nearly finished material in a separate container. Plastic bags, 2 cubic foot size, work fine. It will continue to work if kept aerated and damp. Throw the coarse screenings into another working pile or use it for mulch. Don't mix them into soil because the continuing compost activity will suck up some of the available nitrogen needed by the plants.
- • **Miscellaneous.** Most dissertations on composting get into lengthy explanations about the carbon/nitrogen (C/N) ratio. My advice to the home gardener is this; forget about it! It doesn't work. Classify the information as "don't need to know". Following the guidelines above, use only those materials available and you will, I guarantee, have good, rich compost. Put the calculator back in the drawer. Never add ashes or lime to desert compost or soils. A final note, eucalyptus makes good compost despite expert opinions to the contrary. I have used it for years.

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