

Composting Down Under

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For those ready to go beyond the standard compost pile, here are some creative ideas for subterranean composting that can help solve some common garden problems.

INFINITELY USEFUL yet woefully underutilized, composting in excavated holes or trenches is a method every compost gardener should know. It is the best way to take soil improvement to new depths when creating planting space in sites with rocky or compacted subsoil.

Underground composting also works well in porous, sandy soils because deeply buried organic matter is less prone to leaching by rainwater. And it is useful in hot, dry climates because buried composting materials are insulated from surface heat and evaporation. In any soil situation, as well as in gardening sites that are not particularly problematic, underground composting puts organic matter exactly where it is needed, within easy reach of roots.

The most attractive aspect of taking compost underground is that it cannot be seen or smelled. On the practical side, some underground composting methods provide safe ways to put weedy manures or other problem materials to good use. When buried more than a foot deep, most weed seeds will eventually perish.

Some may consider it a disadvantage that finished underground compost can be awkward to scoop out compared to an aboveground heap, but this is not an issue if the compost is never scooped. If you make compost in the dark depths where topsoil and subsoil come together,

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As an alternative to unsightly aboveground compost heaps, underground composting techniques put organic matter in the root zone, right where plants need them.

and later grow plants on top of your masterpiece, the compost is exactly where it needs to be. These underground composting methods are basically on-site in their nature, so they should be used in spots where you want more and better soil for garden plants.

Here we will explore three simple ways to put underground compost to work:

■ **Layered Craters.** These ready-to-plant

beds combine the benefits of double digging with layers of organic matter, so they are an ideal way to wake up a new garden space.

■ **Treasure Troughs.** Do you need to extend a bed or add a row to the outside edge of your garden? Dig a trough, fill the bottom with compostable waste, and start planting.

■ **Honey Holes.** Use a rich stash of un-

derground compost as the heart of a working garden bed.

LAYERED CRATERS

If you layer different types of compostable materials into an excavated hole or trench rather than piling them up on the ground, you have a “layered crater.” This is an ideal method for making huge, lasting improvements in sites that have compacted subsoil or thin to nonexistent topsoil.

Historically, the layered crater method shares its background with a well-known innovation made by market gardeners living near Paris, France, in the 1830s. They discovered that by digging the soil very deeply—to two feet or more and improving its tilth with organic matter, they could get large yields from plants spaced closely. This practice of “double digging” became the foundation of the French Intensive method of gardening.

Like other underground methods, layered craters require a substantial amount of work up front, with little or no follow-up labor. The good news is that after only one season, a layered crater will show you how good your previously awful soil can become if you juice it up with plenty of biologically active organic matter.

Most gardeners who make layered craters do so because their soil needs a lot of work. Rocks may need to be broken up, lifted out, or sifted from the excavated soil



Once the digging is done, fill a layered crater with a rich mixture of compostable organic matter that will benefit the soil for years.

using a compost sifter or similar device. Removing rocks and roots reduces the volume of the excavated soil, about half of which should be piled next to the hole for layering back into it along with other materials. You will need a place to set aside the extra excavated soil, which can be used

for other projects.

Creating a Layered Crater

The crater hole can be of any shape but should not be so large that you cannot reach the middle when you kneel at the edge. Once created, the layered crater will become a footfall-free zone where physical compaction is kept to a minimum, so your plan for the site should include pathways that allow easy access.

After digging as deeply as you can, begin filling the crater by covering the bottom with a three-inch-thick layer of coarse compost materials, such as stemmy dead plants, hay, or thin sticks broken into small pieces. Using a coarse, slow-rotting base layer will keep a little air trapped at the bottom of the crater, and help to provide drainage in the event of prolonged wet weather. Next, add a two-inch-thick layer of shredded leaves or other high-carbon brown material, topped by an inch of soil. Sprinkle a light dusting of a dry organic fertilizer over the soil and water well. As an insurance policy against having the bottom layers dry out, you can install an access pipe, or “composter’s conduit” that will allow you to water during dry spells. (See “A Composter’s Conduit to Deliver



In arid regions, subterranean composting conserves moisture and helps loosen compacted soil.

Moisture,” right.)

Now the crater is ready for a two-inch-thick blanket of high-nitrogen green material, such as grass clippings, manure, or chopped green leaves. Top the green matter with another two-inch-thick layer of browns, an inch of soil, and a light sprinkling of organic fertilizer. Water well. Continue adding layers (greens, browns, soil, and fertilizer) until the top of the layered crater is four inches higher than the surrounding soil.

The filled crater will begin to compact and sink immediately, so plan to add more compostable material as needed to keep it from becoming a sinkhole. At the end of the season, use a digging fork to lift and mix the material in the crater, which should be nicely decomposed by this point. If the texture of the mix seems too light and fluffy, mix in more soil. After this bit of fine-tuning, your layered crater can be worked like any fertile, deeply dug bed.

TREASURE TROUGHS

Let's say that compacted subsoil is a fact of life in your landscape, but you've managed to enrich your topsoil to the point where it does a good job of supporting plants. You're still bothered by your subsoil, so you'd like to open up the hardpan as you enlarge existing beds. Now let's add another factor: You have lucked into a supply of animal manure that's easy enough to get but is likely to be rife with weed seeds. Or maybe you have another potentially putrid material at your disposal. The solution is to turn to the composting technique we call “treasure troughs”—on-site excavated trenches in which compostable materials are buried deeply, where they stay forever.

A treasure trough can be of any size or shape, but an oblong trench dug along the edge of an existing garden bed is the most versatile plan. If you dig carefully, you can eventually extend the bed without injuring plants that are growing along its edge. A treasure trough is a great technique for adding a few square feet of growing space to an established perennial bed, or you can treasure trough your way to a bigger and better “color bed” planted with long-blooming annuals. In your food garden, a new treasure trough can be put to work immediately as a home to deeply rooted plants, such as sunflowers or amaranth.

To create a treasure trough, simply dig

A COMPOSTER'S CONDUIT TO DELIVER MOISTURE

The lower portions of a layered crater have no access to fresh air beyond the spaces between the coarse materials at the bottom. Should the materials dry out, it can be difficult to restore the moisture to all of the layers simply by watering from the top. Installing a composters conduit helps get air and water down into the crater, and the conduit provides an easy way to deliver water to plants you are growing in the site.

To construct a conduit, take a length of PVC pipe and drill a row of holes in it. Then lay it at the bottom of the layered crater with the holes facing down. Fit two shorter pieces of PVC pipe, also drilled with a row of holes facing away from the longer pipe, to each end of the horizontal pipe at a vertical right angle with a PVC elbow connector so that they will protrude about five inches aboveground after the crater has been filled. These two pieces of pipe allow air to flow beneath to the compost and also provide a port for a watering hose.



A conduit constructed from a PVC pipe allows air and moisture to reach the bottom of a layered crater.

out the soil as deeply as you can, and pile it up next to the excavated hole. Place four to five inches of compostable materials in the bottom of the trench and then backfill it with the set-aside soil. Allow for future shrinkage of the buried organic materials by using enough soil to raise the surface level of the refilled trough two to four inches higher than surrounding ground.

Discourage Determined Diggers

A treasure trough filled with kitchen wastes may prove to be a magnet for the same curious critters that are drawn to food scraps in aboveground compost piles. A trough at least a foot deep with eight inches of soil over the compost ingredients is your best defense; shallowly buried or lightly covered materials are most likely to attract the unwanted attention of prowling varmints.

Even if your treasure trough is well secured with soil, once an animal discovers it, you'll need to add another layer of protection. A roll of 18-inch-wide poultry netting, also called chicken wire, works well

for guarding the buried treasure.

Secure the end of the wire netting a few inches beyond the edge of the trough and roll it out until you've covered every bit of the treasure trough. If you're covering a completed trough, use metal snips to cut off the wire and fasten down the other end. You may want to pin or stake down the netting at intervals along the trough, too, for extra security.

You should consider the poultry netting a temporary measure. After three weeks or so, before weeds can grow into a tangle within the wire, take it up and replace it with cardboard or newspaper covered with more attractive mulch.

HONEY HOLES

Before fertilizer became available for sale in bags, people came up with interesting ways to stash away nutrients in the soil. Some Native American tribes regarded the burying of a fish beneath each corn seed as a spiritual necessity, and early peach growers in Georgia are said to have buried an old

leather boot at the bottom of planting holes. In both cases, these traditions created hidden caches of bioactive nutrients that were slowly released as the materials degraded, which is part of what happens when you make compost in a “honey hole.” We don’t recommend planting right on top of a honey hole, however, mostly because it’s filled with a more massive amount of active organic matter compared to a fish or a shoe. In addition, planting in a honey hole would compromise its sec-

moisture from the honey hole.

No matter what compostables you put into a honey hole, or what you plant around it, after a year, it will change from a compost project into a remarkably fertile, well-drained spot in your garden.

Materials for Honey Holes

As in other compost compositions, a balance of nitrogen-rich greens and high-carbon browns will help a honey hole decompose quickly. But maybe you don’t care how

are high in carbon—are always welcome in honey holes. Corncobs make fantastic filler, as does weathered sawdust or hand-sized pieces of cardboard. For greens, you can use early season grass clippings, foliage from alfalfa or another cover crop, or newly pulled juvenile weeds. Rough layers or coarse mixtures are fine, because each material will support a slightly different community of microorganisms, which can go about their business in peace, without being set back by mixing and turning.

Avoid using a honey hole as a depository for a glut of high-nitrogen manure. Plant roots that wander into a moist environment that’s rich in nutrients may suffer damage from chemical overload.

To make a honey hole, select a bed that is approximately eight feet square or a similarly sized rectangle, circle, or oval. In the middle of the space, dig a 20- to 30-inch-wide hole up to two feet deep, or as deep as you can go. Then fill the hole with compostable material or add layers over a period of time. (The hole should be completely filled by the time the companion plants are planted or emerge from dormancy.) During the growing season, water the honey hole each time you water your garden and pile garden trimmings over the hole to reduce moisture loss.



Chicken wire laid over the top of a treasure trough helps to keep out unwanted scavengers.

ondary function as a reservoir for moisture when there is little water to be had.

Because of these dual talents, a honey hole is best used as the heart of a planting plan for four to six upright plants that encircle the hole. You can grow any plants you like around a honey hole, but the best candidates are those equipped to take advantage of all that honey holes have to offer:

- Tomatoes and other plants that send out strong lateral roots will take advantage of both the nutrients and moisture they find in the honey hole.

- Roses and other plants that need wide spacing to ensure good air circulation benefit from the open space created by a central honey hole, and earthworms moving in and out of the honey hole help to maintain good drainage.

- Blueberries and other shallow-rooted shrubs with limited drought tolerance are much less likely to be damaged by extremely dry weather if some of their roots are able to access a reliable supply of

fast the process moves along, because you have no plans to do anything with the finished compost except to spread it around a bit. If you can be patient until the growing season ends, constant moisture (rather than an exact balance of greens and browns) will have turned the materials into finished, cured-in-the-hole compost.

Very absorbent materials—even if they



Honey holes give shallow-rooted plants such as blueberries (*Vaccinium* spp.), a reservoir of nutrients and moisture.

TAKING THE LONG VIEW

All the underground composting methods we’ve described have one thing in common—they force you to get behind a spade and dig. Deep digging gives you an honest look at your soil in its raw, unimproved state, and the more you know about what’s down there, the better you can customize composting methods to your soil’s particular needs.

In the short run, soil improved using underground composting may seem chunky and littered with undecomposed materials compared to soil that is mixed with finished compost. Stop worrying about the short run. You’re keeping a composter’s garden now, where time is not measured in days or weeks, but in months and years.

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