New Start Community Garden

Garden Curriculum

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NEW START COMMUNITY GARDEN

GARDEN CURRICULUM

The purpose of this curriculum is to provide educational materials to support student and community visitors to the New Start Community Garden, aka the Shark Garden. It is designed for ages 10 and up and many lessons and activities can be used at home as well as in the garden. Our goal is to create inclusive curriculum that encourages sustainable organic gardening, environmental stewardship, and multicultural appreciation for food. For more information about the Shark Garden, contact info@sharkgarden.org

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Hot Composting

Regular composting, also known as cold composting, involves placing a variety of organic materials in a compost bin, enclosure, or even just in a large heap, and leaving it there until it breaks down several months later. Microorganisms such as worms, bugs, or fungi assist in providing a nutrient-rich soil and encourage soil break down for compost. It's a very slow process and typically takes 6 to 12 months. It can be sped up by turning the compost, that is, moving around the material at the bottom of the heap to the top and vice versa to mix it up and get more oxygen in there, but it's still a long wait. But there's a better way to do composting.

The other approach to composting is hot composting, which produces compost in a much shorter time. It will effectively destroy disease pathogens (such as powdery mildew on pumpkin leaves), weed seeds, weed roots and weeds which reproduce through root bulbs (such as oxalis). This process breaks down the material much better to produce a very fine compost.

By comparison, the slower cold composting methods will NOT kill disease pathogens or weed seeds and roots, so if this compost is put into the garden it may spread weeds and plant diseases, hence the common advice not to (cold) compost diseased plants.

The other issue with cold composting is that it produces a coarser compost, with lots of large pieces of the original materials left over in the compost when the process is completed, whereas hot compost looks like fine black humus (soil), because of the use of chopping composting materials which aids in a quicker process and none of the original materials are distinguishable.

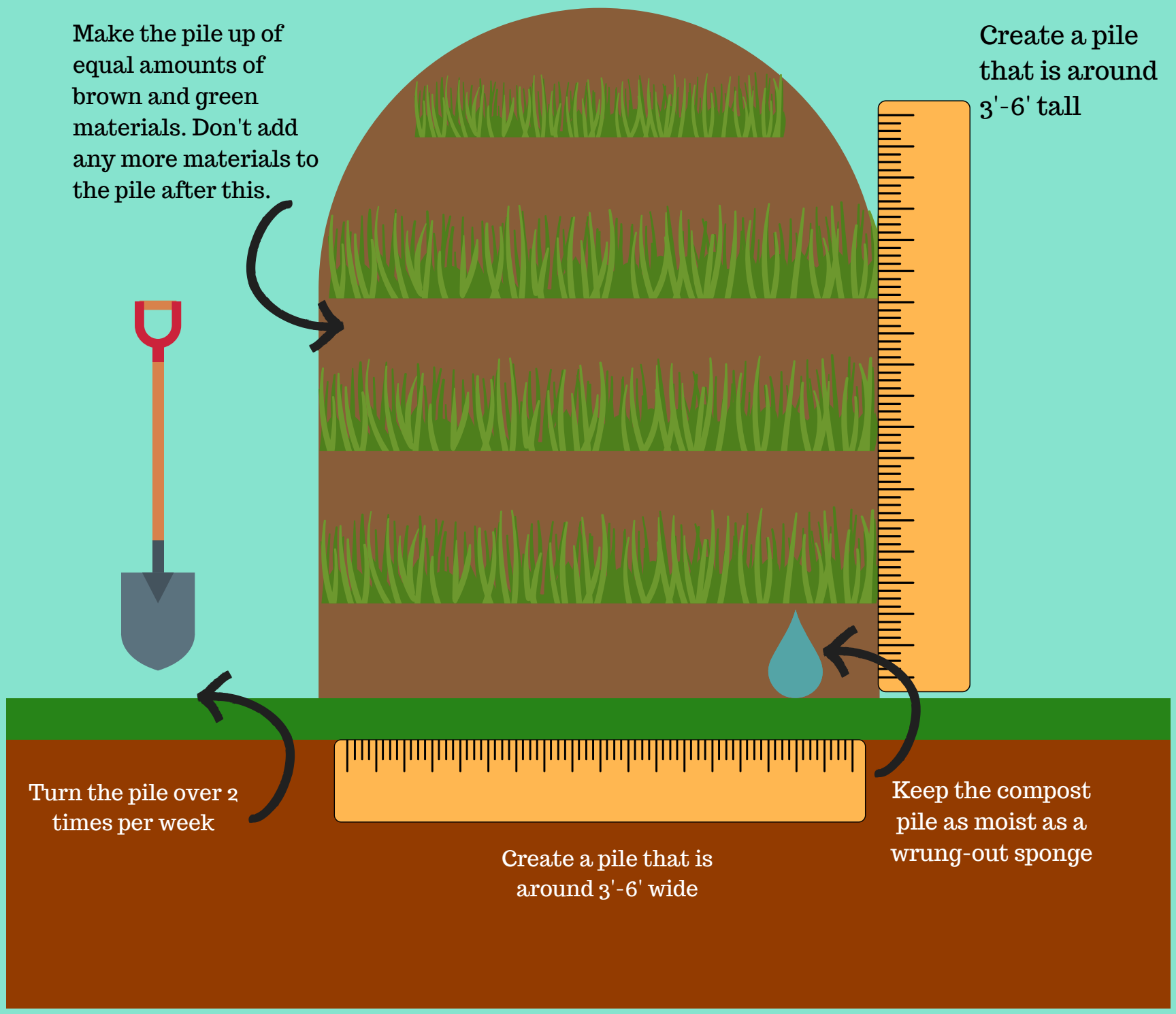
Hot Composting is a form of accelerated composting that yields finished compost in 3-6 weeks (longer in winter), instead of the 3-6 months needed for cold composting techniques. Hot composting traditionally is completed by using a three-bin system which will be demonstrated and explained to assist in a quicker, richer, and healthy compost soil.

This compost is dark, rich, and free of viable weed seeds and plant diseases.
In a hot compost pile, the size of the pile—and the particle size and mix of materials that go into it—are optimized to generate high temperatures.

This steamy heat kills weed seeds and plant diseases and dramatically accelerates the composting process, but it has to be managed carefully. Temperatures in a large, poorly managed hot compost pile can reach 180°F (82° C). On hot days, the dry materials on top of these piles can spontaneously combust! To prevent hot composting piles from getting too hot, we recommend utilizing a composting thermometer to consistently check and observe compost temperature.

Build Your Own Compost Pile

A hot compost pile that has a good balance between carbon, nitrogen, moisture, and oxygen will heat up to 113 degrees and 160 degrees. Hot piles yield finished nutrient-dense compost in 8-12 weeks (2-4 months).



Three-Bin Composting

What Is A Three Bin Compost System?

A 3-bin compost system is a set of three bins for composting large volumes of garden waste quickly. The bins are arranged side by side for easy turning from one bin to the next. Each compartment contains compost in different stages of maturation.
Three-bin systems come in various designs and can be used in different ways. The most popular way to use this system is to make hot composting easier.

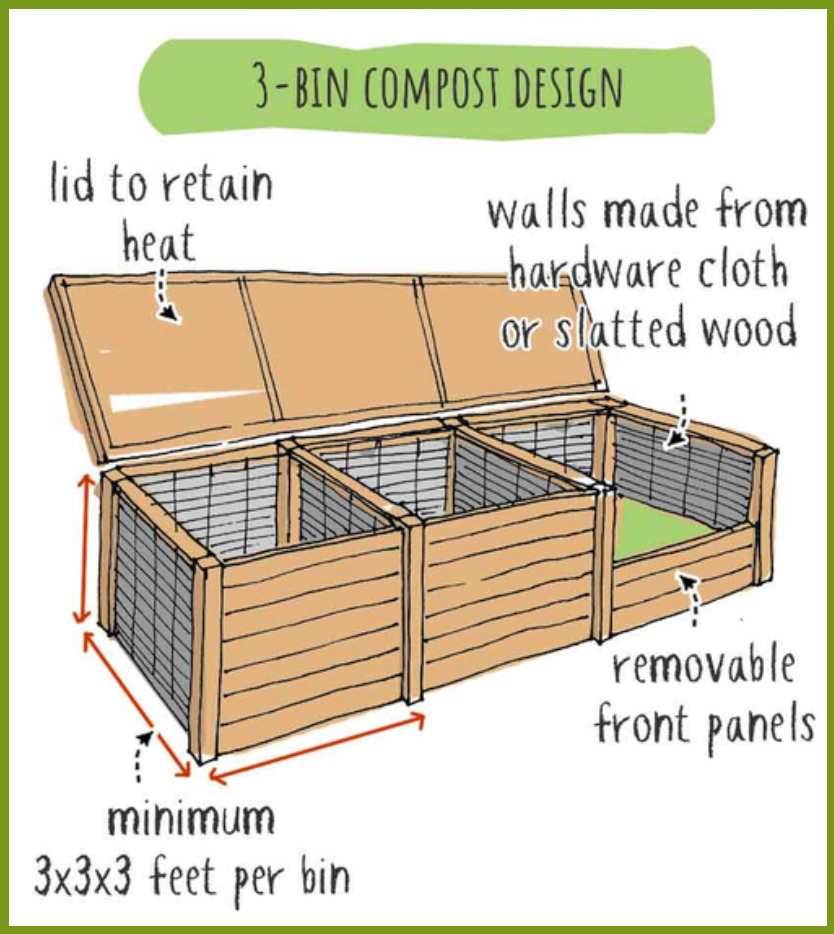
3-Bin Compost Systems Make Turning Compost More Convenient

You need to turn your compost regularly if you want it to heat up.
Turning your compost keeps air flowing, and this is essential to hot composting because it gives composting microorganisms the oxygen they need to work hard enough to make temperatures soar.
Regular turning also spreads heat throughout the compost, encouraging all organic wastes to break down at the same speed.
In a 3 bin setup you regularly and easily move the contents from one bin to another. This ensures the whole of the organic matter is well mixed and aerated by the turning process.

3-Bin Compost Systems Makes It Easier To Monitor The Compost's Water Level

Hot composting will only happen if your compost's moisture content is just right. The moisture level you're aiming for is 40-60% water, which feels similar to a wrung-out sponge.

Three-Bin Compost Design



You can buy the parts for your 3-bin compost system and assemble them at home or make your own DIY structure from scratch.

Designs for 3-bin compost systems allow for flexibility, so select your size, shape, and materials based on your preferences and budget.

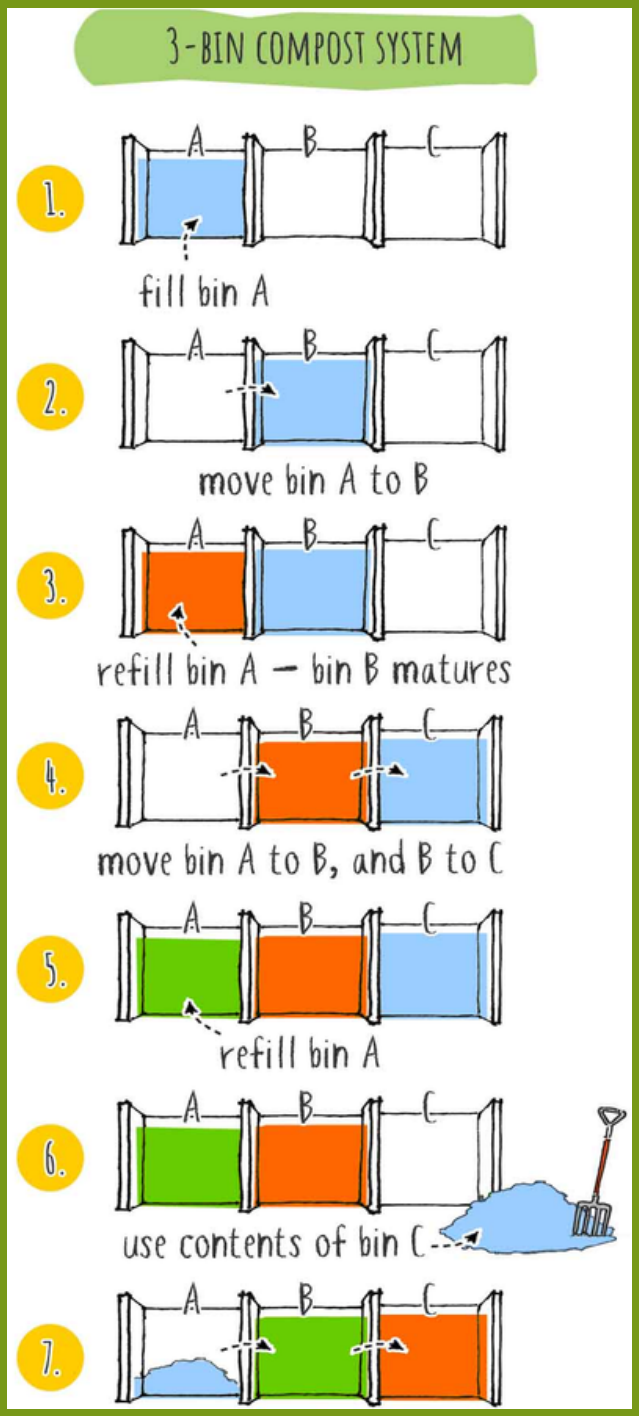
The bins are usually rectangular, consisting of joined panels forming 3 identical bins. They often have a removable panel at the front (for improved airflow and easy loading and emptying) and should have lids to retain heat and keep rain and pests out.

3-bin compost systems are usually made from wooden pallets or a wood frame and hardware cloth. Stacked cinder blocks also work well.

The size of the bins matters if hot composting is your goal. Each bin should be big enough to hold 1 cubic yard (or 3 x 3 x 3 feet) of compost to generate enough heat for quick composting.

Three-Bin Composting Process

Here's a diagram to help you visualize how to use a 3-bin compost setup:



The simplest way to use the bins is to fill 1 bin at a time, turn and moisten the contents as needed, and then leave the wastes to mature when the bin is full. It's the same process as with 1 bin, except you have triple the space.

A more sophisticated way to use the 3-bin system is to turn the contents from bin to bin. This is how you'd use the system when hot composting.

Basically, you'd follow these steps:

- Step #1: Add organic wastes to bin A until it's full.
- Step #2: Turn bin A's contents into bin B.
- Step #3: Refill bin A while bin B's contents mature.
- Step #4: When bin A is full again, turn bin B into bin C. Then turn bin A into bin B.
- Step #5: Refill bin A. (By the time bin A is full again, the compost in bin C should have matured, and bin B should be halfway there.)
- Step #6: Empty bin C by using the compost.
- Step #7: Continue the cycle by moving bin B to bin C and then bin A to bin B.
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The big advantage of this process is it keeps compost aerated, spreads heat, and helps you monitor water levels to keep them just right. By moving the contents of a full bin into an adjacent compartment, you mix everything up and get a more even breakdown of the organic matter. And all these factors encourage hot composting for speedy results.

Sources

Anthony, & Anthony. (2022). 3 Bin Compost System (Fully Explained!). Help Me Compost. https://helpmecompost.com/home-composting/methods/3-bin-compost-system/

Hot Composting, Accelerated Composting, Thermal Composting. (n.d.). Grow It Organically. https://www.grow-it-organically.com/hot-composting.html

How to Make Compost in 18 Days using the Berkeley Hot Composting Method. (n.d.). Deep Green Permaculture. https://deepgreenpermaculture.com/2010/05/08/hot-compost-composting-in-18-days/