

BOKASHI BUCKET COMPOSTING

1. What is Bokashi bucket composting?

The term Bokashi is a Japanese word meaning “fermented organic matter.” (wikipedia.com)

For composting purposes Bokashi refers to an anaerobic form of food scrap decomposition. It uses specific microorganisms to ferment organic matter. The resulting fermented product can be rapidly digested by the living organisms found in soil.

The completed compost is the result of a 2-stage process: first discarded food scraps are anaerobically fermented, and secondly, it is mixed with soil to complete the process by allowing the microorganisms in soil to complete the decomposition process and form humus.

2. What are the advantages of using the Bokashi method?

- Most types of food waste can be composted, including meat, dairy and cheese
- A plus in our dry desert climate: no water is added in the first stage of the process; the moisture level is intrinsic to, and balanced through, the organic materials that are added
- The carbon-to-nitrogen ratio doesn't matter
- It can (and should) be done indoors or in the garage
- Food waste is protected from insects and rodents
- It can be done on a small scale
- There is an odor associated with the process, but the smell is more “yeasty” or vinegary than putrid and most people are not bothered. Also, the container is sealed most of the time so odors are less likely to escape
- Minimal or no green house gases are produced

3. What materials are needed?

- A container for holding food scraps
- Most any 2-4 quart container with a lid will do. There are commercially made containers which are certainly more attractive, but no more effective. Most of these are 1 gallon containers
- A bucket container for the fermenting process—do-it-yourself (DIY) or commercially manufactured
 - If a self-made bucket is used, incidental materials such as a debris screen for catching large particles, a pressure plate and potato masher, and other items may be required, depending on what system is chosen
- A weighted pressure plate for compressing the organic material to remove excess air. The commercial buckets do not come with such a device. There are many approaches to making your own pressure plate, an internet search will turn up several ideas
- A piece of plastic cut to fit snugly over the fermenting material in the bucket
- Activated effective microorganisms (AEM) which can be purchased or homemade
- Optional: a potato masher for compressing new material when added

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An example of a commercially made Bokashi bucket. Several varieties are available on Amazon or from individual



Examples of two DIY Bokashi bucket systems. The one on the left uses a single bucket with added spigot, grit guard and screen debris catcher. The one on the right is a two bucket system with gamma screw-on lid, screen debris catcher, potato masher and pressure plate.

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A commercially produced bag of effective microorganisms (EM or AEM)

4. How much space is required?

- The Bokashi bucket(s) can be scaled to fit available space by varying the dimensions of the containers used in the fermenting stage. The commercial buckets occupy approximately the same space as a 5 gallon bucket, but the DIY containers can be made using 2 or 3 gallon buckets.
- A smaller container (1-4 quarts) is needed to temporarily store food scraps. A corner or a shelf in the garage or even space under the kitchen sink will do for placement of this container. *Yuk Alert:* Many people are not comfortable with having food scraps sitting around on the counter or under the sink, even in a sealed container. Alternatively, the container can be stored in the refrigerator or freezer, or placed outside in a shaded location.

5. How much does it cost to implement?

Several commercially manufactured Bokashi buckets are available on Amazon. The Amazon Choice model (in Black) is around \$35. The commercial systems usually ship with a small bag of the AEM so, for that price, you have everything needed to get started.

A DIY system involves the cost of the bucket or buckets (\$0 - 5) and lid (\$0-\$12) plus some additional bits and pieces such as screen for a strainer and a wood, plastic or cardboard 'pusher' to remove air, plus the purchase of the bran. A 2.2 lb. bag is \$11.85 on Amazon. Even with free buckets, a DIY system can cost up to \$30 and more, depending on how elaborate you get.

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6. What is the process?

- Collect kitchen scraps (avoid using moldy material) in a container with a lid. A tightly fitting lid is important to keep insects (and pets) out of the scraps. The scraps should be chopped or shredded so there are no large chunks.

Yuk Alert: DO NOT store scraps in a container larger than 1 gallon, and for many that may be too large. The larger the volume of material and the longer it sits, the more likely there is to be compaction which can lead to the beginning of anaerobic decomposition and the unpleasant odors associated with that process.



Commercial 1 gallon food scrap containers



Alternate, smaller, salvaged food scrap containers.

- When your holding container is full, place the scraps in a clean Bokashi bucket with a debris screen on the bottom, add the AEM at the rate of 1 tablespoon for every cup of scraps. A full 1 gallon container of scraps will have about 16 cups of material, requiring approximately 1 cup of AEM.



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- Mix the AEM into the scraps so it is reasonably evenly distributed. Use a potato masher or pressure plate to force as much air as possible out of the material. Cover with a piece of plastic to seal the material from exposure to residual air, leave the pressure plate on top, then place the lid on the bucket. Make sure the lid fits tightly—it is important that the environment be anaerobic in order for fermentation to take place.



Add AEM and mix/stir into the scraps



Have a pressure plate and or potato masher at hand



To press as much air as possible out of the material



Seal the bucket with an air-tight lid

- Often a liquid or leachate is produced, especially when the scraps and AEM are compressed to remove air.

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- *Yuk Alert:* This leachate can be the source of offensive odors; when not exposed to air a foul odor develops. If you have purchased or made a container with a spigot at the bottom, drain off the leachate regularly and frequently. It can be diluted with water, at least 100:1 and poured on your garden soil, or poured full strength down the drain. There is little or no empirical evidence about the benefits or drawbacks of using the leachate in either way. It can also be added to a compost pile.
- Alternatively, to prevent the formation and accumulation of leachate, mix dried leaves, shredded paper, paper towels or egg cartons into your scraps in sufficient quantity to absorb excess liquid, so it will not be necessary to have a chamber to collect the leachate.



Example of a spigot salvaged from a drink cooler used in a DIY Bokashi system for draining leachate.

- When another quantity of scraps has been collected, repeat the process, mixing bran and scraps together on top of the previous addition—do not mix the new material into the previous layer. Quickly reseal the bucket to limit exposure to air.
- Do not open the sealed bucket until you are ready to add new material, and avoid doing that on a daily or frequent basis. Introduction of oxygen slows or stops the fermentation process. For this reason, make sure all your equipment and material is organized and ready for use before opening the bucket.
- Although you want to limit the exposure to air, you also do not want your accumulating scraps to begin to mold or smell from anaerobic decomposition. It may be necessary to make new additions a little more frequently if you find you are storing your scraps long enough for mold or smells to begin. Alternatively, you can store scraps in the refrigerator or freezer until you are ready to make another addition.
- When the bucket is full, seal and label it with the date. Allow 2-3 weeks before moving on to the second phase. Ideally the container should be kept out of direct sunlight, at a temperature of between 60 and 90 degrees. Temperature can be difficult to control sometimes, but try to keep the bucket indoors or in the garage, especially during winter and the hot months of summer. It is alright for the fermented pre-compost to have some white mold growing on the surface.

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7. What do I do with the fermented product?

The finished fermented product, or pre-compost, still looks exactly like the scraps you added but the anaerobic microorganisms have broken down the original material into the perfect food for the aerobic microbes found in soil. Phase 2 involves giving those microbes the opportunity to do their work, producing humus. You can:

- Bury the bucket contents directly. Choose a location at least 12" from plant roots and dig a hole or trench about 18" deep. Thoroughly mix the dirt and pre-compost together, sprinkling with water to moisten. Refill the hole with the mixture, cover with 6"-8" of soil, then mulch. The decomposition time will vary depending on soil temperature, it usually takes 3-6 months.
- Incorporate in a compost pile: Use the fermented material as the nitrogen source for the compost pile, mixing it with dead leaves, shredded paper, and other carbonaceous materials. Make sure the pile is appropriately aerated and moistened for your climate.
- Rejuvenate old potting soil: Save all the "used" potting soil left over from last summer's porch plants, mix it with the pre-compost in a bucket or tub, moisten, cover loosely (not air-tight) and allow to sit for several weeks. An approximate ratio of 1 part Bokashi to 2 parts soils is ideal. The result is a revitalized potting medium.



Several pots' worth of old potting soil mixed with a 5 gallon container of fermented Bokashi in a 27 gallon tub.

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- Feed your worms. The fermented material is quite acidic, so it should be “finished” before being fed to your composting worms. Mix a carbon source such a straw or shredded paper with the fermented pre-compost, cover and let rest for a few days. The pH will become more tolerable for the worms and it can then be used as a food source for them.

Bokashi Resources:

Composting: Scraps to Soil in Weeks, by Adam Footer, 2014, New Society Publishers

- Teraganix.com - sells EM mix & liquid
- SCDProbiotics.com
- bokashicompostinghq.com
- bokashicycle.com
- amazon.com - sells EM mix, kits and liquid EM.

DIY Effective Microorganisms:

- <https://thecompostess.com/2015/04/22/how-to-make-bokashi/>
- <https://www.teraganix.com/EM-Bokashi-Recipe-s/262.htm>

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