

## **BOKASHI COMPOSTING COMPREHENSIVE GUIDE WITH RECIPES (edited Jan, 2017)**

Join the Bokashi revolution and turn your kitchen scraps into garden compost. Bokashi is a safe, non-toxic compost starter used in conjunction with an indoor composter to conveniently recycle food waste right in your kitchen. Bokashi can also be used to rejuvenate your household plants and control unwanted odors in your home.

First developed centuries ago by Japanese farmers, the technique has been passed down through the centuries. Enhanced with probiotic technology and utilizing the power of all natural beneficial microorganisms, bokashi quickens the composting process by fermenting food waste. Complete breakdown of the waste will occur after it has been transferred to the soil in approximately two weeks depending on the climate and soil conditions.

Bokashi controls odor normally associated with food decay, allowing you to conveniently start the composting process after every meal. Join us to learn how to process your kitchen excess, decrease your landfill waste, and provide an exceptional boost to your garden using Bokashi's effective microorganism cold composting. Your gardens will thank you.

How many of you don't have any idea what to do with all of the food waste that you throw in your garbage cans every day?

How many of you wish you could fertilize and feed your gardens and flowerbeds without harsh industrial fertilizers that don't come close to replacing the 50+ nutrients your plants use but only give the main three: nitrogen (N), phosphorus (P), and potassium (K)?

Are you tired of worrying about that old tired backyard compost heap releasing harmful greenhouse gas emissions into the atmosphere such as methane, nitrous oxide, carbon dioxide, simply because there is no other alternative?

Well I have good news! There is a better way and it solves all of those problems and more!

Introducing .... The Anaerobic all season indoor Bokashi composting.

Having perfectly good scraps and nothing to do with them is not a new phenomenon. According to the Environmental Protection Agency, the average household garbage consists of 14% of edible waste. Of course, if nothing productive is done with scraps they end up in overflowing landfills.

Fortunately there is a way to process the kitchen excess at home and provide an exceptional boost to your garden. If you're willing to step outside of the familiar compost pile that most of us know, fermenting food waste using "effective microorganisms" (marketed as EM – 1) with the Bokashi cold composting is a convenient way to turn potential landfill fodder into something beautiful.

Bokashi isn't new. It derives from the practice of Japanese farmers centuries ago of covering food waste with rich, local soil that contained the microorganisms that would ferment the waste. After a few weeks, they would bury the waste. 45 years ago, Dr. Teruo Higa, A horticultural professor at the University of Ryukyus in Okinawa, Japan, discovered a combination of microbes that fed the soil using key microbes. From there, he refined the discovery and learned of its far-reaching implications. For decades, this concoction of beneficial bacteria and yeast has been used in everything from cleaning up polluted ponds and water systems to mitigating animal waste odor. The microbial mixture is also the powerhouse behind Bokashi composting.

This simple method requires you to sprinkle an inoculated carrier (typically wheat bran) on your kitchen scraps and let it ferment. You can either purchase or make your own inoculated carrier. The EM-1 liquid is mixed with wheat bran, warm water, and molasses, which helps the good bacteria and yeast in the EM-1 serum thrive. The inoculated carrier is dried after a period of fermenting and sprinkled on top of food waste to break it down in weeks instead of months or years.

### **Aerobic versus Anaerobic**

The first step is getting past the traditional image of how to compost. Traditional composting relies on naturally occurring fungi and microbes to break down vegetable matter. In order to do this efficiently, you need to create an ideal environment for them to turn the matter into compost without stalling out or overheating and turning it into a stinking pile of yuck.

The basic recipe for a traditional pile is layering green (kitchen scraps, garden debris) and brown materials (leaves and dried grass clippings). It's then a delicate balance of turning the pile to circulate air because the microbes require oxygen to break down the materials. It must also stay moist ... not too wet that you can squeeze water from it but not dry enough to slow the process. Heat is another critical component to traditional composting. On a positive note, temperatures between 130 to 145° kills pathogens and weed seeds. Unfortunately, as the temperature climbs so do water requirements and the release of greenhouse gases.

On the opposite end of the spectrum Bokashi composting requires an airless anaerobic situation in order to ferment properly. To visualize how it works, compare it to making sauerkraut without the brine. When anaerobic conditions are paired with the right micro organisms, the end result is a fermented product that stays nutrient rich. All of the nutrients stay in your bucket so they go straight to the plants. Bokashi Compost has replaced my industrial fertilizer and my plants look wonderful!

Another benefit of the Bokashi method includes not using up the nitrogen in the materials to break down organic matter so nutrients are not wasted in the process. Bokashi also handles weeds and pathogen's without the heat. The pathogen's are killed by the acidity through fermentation. Some people even add meat and dairy to their bokashi buckets because it ferments and does not pose the same problem as it would in a traditional compost pile.

Bokashi composting is easily accomplished indoors. If you've ever had a conventional compost bucket under the kitchen sink, you know it can become rank after a few days but Bokashi compost won't do that. It might have a vinegar like scent if the lid is off, but it won't be putrid. I use a small bucket under the sink and empty it every day into my five gallon pail in the garage. It becomes dormant in the cold months but restarts itself when it thaws and well in time to transfer it to the garden soil before planting.

If homeowners want to compost food waste they will be reducing the amount of waste going into the landfills and reaping the benefits of the end product. Using this method, every ton of food waste produces one cubic yard of composted soil. This is gardening gold. It's one thing to consider national statistics on average food waste amounts, but it's another thing entirely to physically see what might go into the garbage. "For so many years everything from food off our dinner plates to vegetable parings went to our chickens. I never realized how much was truly there until I started Bokashi composting".

When I started my buckets it opened my eyes. On average it takes me less than two weeks to fill a 5 gallon bucket in a household of two. Throwing it into the trash would be close to an extra bag in the dumpster. Multiply that by 52 weeks, and it's enlightening.

**You will need:**

1. Two five gallon pails, preferably food safe. Drill about fifty 1/4" holes in the bottom of one bucket. You may also use a single purchased Bokashi bucket with a spigot in the bottom to drain the compost tea ... OR ... A single bucket that you will need to drain regularly. The last option is the least expensive but the most messy. Out of these three options I use the double bucket method most.
2. Bokashi Bran ... Either purchase it or make your own.
3. EM-1 "Starter" ... You must purchase a bottle of this, but you can craft "secondary" batches of your own to stretch your purchased EM-1 tenfold (By crafting **Activated EM-1**, recipe below).

**Activated EM-1 Recipe:****Ingredients**

40 ml un sulphured Molasses

50 ml EM-1 "starter"

De chlorinated water to fill a PLASTIC airtight 1liter bottle with a screw on lid.

**Directions**

1. Heat some of the water to 115–125 Fahrenheit.
2. Pour water into your bottle and dissolve the molasses.
3. Mix in the EM-1 starter.
4. Add the remaining water and stir or shake very well. There should be an airspace equivalent to about 10% of the bottle on top. I usually leave about 1 inch.
5. Tighten the lid and keep warm (95 - 110F is optimal) for at least two weeks, preferably longer. \*\*Varies with climate, mine takes a good month sitting in the kitchen counter.
6. After the first few days, the container needs to be burped every day or two, as gases are formed that will expand the bottle. The mixture should be stirred and/or gently shaken daily for the first three weeks. It should also have a sweet smell somewhat like molasses.
7. Best left for at least 4 weeks for highest benefits.

\*\* Can be kept warm in an oven with the oven light or in a cooler with a terrarium heater or some other heat source, or many other ways. The whole process can be done at 70°F but it could take 6 to 8 weeks, and the odds of failure are higher. If it smells rotten or bad it is probably a failed batch.

**Storage:**

1. EM Mother Culture stores for 6 to 24 months, or potentially a few years.
2. Activated EM stores for up to two years if it is a good batch. Cooler temperatures will keep it longer. Store larger amounts in a dark cool space with the lid tight. Keep a smaller bottle under the sink for daily use, such as adding a few drops to sink water to clean fresh fruit and veggies.
3. While it is good to brew Activated EM with a bit of air space and stir or shake it daily during the first few weeks of brewing, it is best to store it after that with limited air space.

Activating EM is not an exact science. As such, the occasional batch may fail to drop in pH to an appropriate level. You may try adding a bit more EM and other optional ingredients, or you may decide to throw it into the compost or down the drain if it smells bad and start again.

### **Some of the most common reasons for failure are:**

1. Inappropriate containers (previously containing chemicals, putrefied food, bad AEM batches).
2. Poor water quality (distilled, reverse osmosis, polluted, very high in chlorine).
3. Filling the container to full during initial fermentation stages (best if only 90% full).
4. Not optimal temperature (too hot or too cold).
5. Not burping and stirring/shaking daily.
6. Trying to cheat by using more molasses than EM.

If you follow the directions above, you will be very likely to produce a beautiful activated EM.

### **The Original EM-1 Bokashi Bran Recipe:**

Ingredients and materials needed:

1. 10 lbs wheat bran. You may use other carbon based ingredients such as rice bran, wood chips, nut hulls, etc,. I prefer wheat bran because it is the easiest to find.
2. 10 cups water, heated to 115-125° fahrenheit.
3. 4 Tablespoons unsulphured molasses
4. 4 Tablespoons Activated EM (or) EM-1 "starter" (mother culture).
5. A large black plastic bag or airtight container ... I use a vacuum sealing bag and keep it in a warm dark room or closet with a towel around it ... Wherever is convenient as long as it's warm and dark.
6. Something to mix the the materials in. I use a plastic bushel basket.

Procedure:

1. Mix molasses in the warm water until it dissolves, then mix in the EM-1.
2. Add the wheat bran (or whatever you're using), and stir well until the moisture is completely incorporated. It should be thoroughly moist, but not so wet that water squeezes out of a ball pressed in your hands. If it is too wet, add a little more bran. If it is too dry, add a little more water.
3. Put the lid on tightly and set it somewhere out of the sun to ferment for at least a couple of weeks. I put it in a warm closet in vacuum sealed bag and check it every day because sometimes the fermentation process causes air to build up in the bag so you'll want to remove that air to keep it anaerobic as possible. This step usually takes up to one month in my climate.
4. Note\* The mixture will smell like its fermenting, similar to yeast or beer. You may see some whitish mold on/in the Bokashi. This is good. Black or green mold means some air got in the container or it was too moist and is not desirable.
5. Once the mixture has fermented, spread it out on the sheet or newspapers out of the direct sunlight to dry. I spread it out on a plastic tarp next to my dehumidifier downstairs and turn it frequently for a few days until it is completely dry. You might need to stir it around and make sure that it dries thoroughly. Break up any clumps.
6. You can also use the material as is without drying, stored in a closed container, for up to two weeks, or dry for long-term storage. Store in airtight bags or containers whether it's dry or wet.
7. This recipe can be multiplied to make as large a batch as you need.

**To compost ALL food waste, including meat scraps:**

For every two inches of food waste sprinkle on a handful (approx 1/4 cup) of dry Bokashi bran. Tuck plastic or a dinner plate tight onto the compost to keep it as anaerobic as possible. I use an old dinner plate. White mycelium mold will grow on the scraps which is exactly what you want to see. If you see black mold, scrape it off and add more dry Bokashi bran.

**Transferring the compost to your garden.**

Now that your bucket is full, you're ready to help enrich the soil providing important nutrients to help your lawn and garden grow.

**Option 1**

Transfer the material directly into your garden for further fermentation.

Dig a trench approximately 12 inches deep to bury the compost (deeper if possible in areas where animals may be prevalent). Mix the fermented organic material with soil as you add it to the trench. Be sure to cover the compost completely with soil to assure further fermentation and to prevent your pets or unwanted critters from feasting on the fermented food waste. Fresh compost like this is rich in microbes and can be stressful to plants at this stage. Wait two weeks before planting your favorite veggies, fruit trees, and flowers.

**Option 2**

Transfer material directly into a planter box or container for further fermentation.

Fill 1/3 of a container with potting soil. Add compost from your all seasons indoor composter and lightly mixed together with soil. Finally, fill the remaining 1/3 of the container with potting soil and cover with a plastic bag to maintain anaerobic conditions. Wait two weeks before planting your favorite vegetables, flowers, etc., or transfer soil into smaller pots for planting.

**Option 3**

Add the fermenting waste from your all seasons indoor composter directly into the compost pile in your backyard or community garden. Water lightly, keeping in mind that your fermented Bokashi is quite wet. Turn as normal and sprinkle with a heavy dose of all seasons Bokashi. Keep tightly covered to help the fermentation process continue.

### **Helpful tips for composting indoors:**

1. You can never add too much Bokashi bran ... better too much than too little to ensure complete fermentation and good smelling compost.
2. Only add fresh garbage to your compost bucket. Never add rotten or moldy waste.
3. Break or chop large waste into smaller pieces.
4. The less air that comes in contact with the compost the better. Be sure to compact the waste by pressing it down each time to remove air. You may also want to use a barrier to separate the compost from the remaining air in the bucket. A plastic garbage bag, old lid or bag filled with beans will work. Whatever you use, it should completely cover the surface of the compost.
5. Always close the lid tightly.
6. When your bucket is full you can bury the compost directly in the soil. Or, you can let it sit in the composter for 1 to 2 additional weeks to speed the fermentation process prior to putting it in the soil. Having multiple compost buckets allow you to continue composting, adding kitchen waste every day all season long. During the winter season I use several buckets and bury them in my gardens in early spring several weeks before planting.
7. Drain the liquid "tea" that accumulates at the bottom of the bucket frequently and make sure you drain the tea prior to burying the compost in the soil.
8. When adding the fermented waste to the soil, always mix with dirt and wait two weeks. This helps produce good compost, and is less stressful on plant roots.
9. Do not add water, excessive amounts of fluid, or place your compost bucket in the sun.
10. Appearances of a white growth on the surface of the waste, as well as the presence of a sweet and sour pickle like smell, are good indicators that fermentation is in progress.
11. If foul odors occur, this indicates decay (a bad thing). Add a significant amount of Bokashi bran to try and reverse the process, or discard contents of the bucket and start again.
12. Wash the bucket with water after each emptying.
13. SCD Probiotic products are made from a liquid blend of powerful, beneficial micro organisms. They are all natural, biodegradable, not chemically engineered or genetically modified. Safe for use around children and pets, SCD probiotics are products made for a sustainable future for your family and for our planet.

This is a new approach to composting. Don't be afraid to experiment with it until you get a feel for how this process can work for you.

Thanks for making a difference in your yard - and our planet!

### **Other uses for Bokashi bran, Bokashi compost, Activated EM-1 (or) EM-1:**

1. Add Bokashi compost to your languishing compost pile to kick it into gear. Dump it into a pile of leaves enclosed in either a compost bin or trash container. The microbes in the bokashi will break down the leaves, and you'll have a fantastic amendment for the garden by spring.
2. Bokashi can also be added to a vermiculture set up, and some insulated compost bins will keep worms going all winter long partly due to the constant infusion of Bokashi compost.
3. Use Bokashi compost tea from the bucket to fertilize your plants. Use 1 Tbs per gallon of water ... This stuff is potent!
4. Sprinkle Bokashi bran directly on your vegetable garden for extra bits of nutrients.
5. Use undiluted Activated EM-1 in your drains and tub to break down grease, grime, and dirty sludge and you'll never have to worry about clogged drains again.
6. Sprinkle Bokashi bran in your litter box to reduce odors.

**Resources:**

SCD Probiotics at [www.scdprobiotics.com](http://www.scdprobiotics.com) or call 913-541-9299.  
This is where I purchased my first EM-1 Starter and Bokashi bran.

Gardens from Garbage ... Home base for Captain Compost: [www.gardensfromgarbage.org](http://www.gardensfromgarbage.org)

TeraGanix ... Supplies all things Bokashi and EM-1 related: [www.teraganix.com](http://www.teraganix.com).

Google Bokashi composting and you will find lots of information if you are interested in learning more.

\*\*This guide was written for personal use and not for resale. I do not take credit for writing this summary guide in full, but instead have taken recipes and some quotes directly from the above cited sources and other online sources.

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