

# Bokashi Basics

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## What is bokashi?

Bokashi is a fermented material (solid or liquid) that is used as a microbial inoculant and/or as a fermentation starter. There are various bokashi methods, ways to make and apply the bokashi in many different fields (including crop farming, gardening, livestock, water and wastewater treatment, organic waste, and bio-remediating and regenerating nature).

The term bokashi means *fermented organic matter*.

It is a generic Japanese word with other definitions, and many Japanese may not know bokashi as described here. Farmers may be familiar with bokashi (bokashi farming), but many of them may not know or practice bokashi due to the continuing predominance of modern agricultural practices (i.e., the use of agricultural chemicals). As a generic word or common noun, bokashi is not capitalized unless it is part of a brand name, referring to a product brand or business (search for "bokashi prices" to see examples; go past the first search results page).

## The Purpose of Bokashi

Primarily,

- to increase **microbial** population and diversity – by inoculation/introduction into an environment and/or by fermentation (culturing microorganisms);
- to make **nutrients** more available (bioavailability) – by both adding bioavailable nutrients and making nutrients that are inaccessible in the soil/environment bioavailable by microbial activities and their metabolites;
- to increase/replenish **organic matter** content – by returning organic waste back to the soil/environment (especially if they are usually taken away elsewhere) and facilitating/expediting their breakdown.

By the situation, purposes include the following:

- In the case of generally good or not so bad soil, to improve **soil health**; similarly, for soil maintenance, to sustain the soil's viability, and to recharge or replenish the soil with microbes, nutrients, and organic matter.
- In the case of generally poor, dead (sterile), or non-existent soil, to **rebuild the soil**, including restoring, rejuvenating, regenerating, or creating new soil.
- In the case of toxic soil, as well as water, to **bioremediate** polluted, contaminated **soils** and **waters**, and **the environment**, in general.

## How is bokashi used?

In terms of direct application (with one fermentation) where, for example, the plant residue after harvesting is fermented in piles and then applied back to the field to recharge the soil with microbes, nutrients and organic matter. Other direct application after first fermentation include fermenting nutrient-rich materials (such as a mix of rice bran, fish meal[post-fish oil extracted pulp], and oil cake[post-seed oil extracted pulp]) and then applying it directly to soil.

In terms of bokashi as a fermentation starter (with two fermentation steps) where a material is first fermented (such as wheat bran, coffee chaff, or cocoa husks) and then used as a microbial carrier to ferment another material (such as food waste). In this case, the material in the first fermentation does not need to be rich in nutrients, but it must be fermentable in order to carry/house the microorganisms to be able to ferment some other material.

## By Area of Application

**Agriculture:** farming (direct applications to the soil); livestock (adding to the animal's feed).

**Gardening:** amend soils in beds, pots and planters; direct microbial treatments to soils and plants.

**Composting:** organic waste: plant waste (post harvest residue, yard waste, etc.); food waste.

**Bioremediation:** of soils, waters/waterways, and the environment.

**Wastewater:** septic systems and treatment plants.

**Odor management** (bokashi liquid spray): dog run, landfill, post-flood putrefactions, etc.

**Cleaning methods** (bokashi liquid spray): slow method, relying on microbes to eat away grime, stains, and grease at their pace.

*Note on biodigesters, bokashi can only be used either in pre-treating the feedstock (for example, bokashi used to grow plants/crops that become part of the feedstock, and/or treating/composting the post-biodigested matter; if bokashi is used in the biodigester, it can hamper or prevent the production of methane (that is, inhibit the function and growth of methanogens—the methane producing archaea).*

## How is bokashi made?

There are different techniques depending on the type of bokashi and the ingredients, as well as, scale (small or large applications). Basically, a liquid microbial culture mix (EM-1) is used with a mineral-rich sugar source (blackstrap molasses – to feed the microbes), both at 1% to 5% of the amount of water. When making a solid bokashi (bokashi sprinkle), the liquid mix is added to a dry material such as wheat bran, rice bran, coffee chaff, or shredded organic matter (e.g., coconut coir). The amount of water depends on the material, but generally enough to moisten the material to about 30%. When making a liquid bokashi (bokashi spray), the liquid mix is put in a bottle or container, preferably with an airlock. For both the liquid and solid bokashi, they are let to ferment for two weeks in an airtight (anaerobic) condition at room temperature.

For the specific microbes in EM-1 and for further information, see [recyclefoodwaste.org](http://recyclefoodwaste.org).