

## Bokashi

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Keith O. Mikkelsen, executive director of an orphanage and children's home called Aloha House in the Philippines, shares some of the ways EM is used on their farm in his book *A Natural Farming System for Sustainable Agriculture in the Tropics*. On his farm, EM is used in the form of bokashi (fermented plant matter). According to Mikkelsen, anaerobic composting, or fermentation, results in material that is fermented but not yet decayed (as would happen with aerobic composting).

Mikkelsen describes the process of making bokashi: "We mix one sack of copra meal to three sacks of low-grade rice bran and three sacks of charcoal. We charcoalize rice hull in a specialized process ahead of time. These ingredients are mixed dry with shovels on a cement floor.

"Then we pour an EM solution into the mixed grains and waste material. We use 200 ml of EME and 200 ml of molasses diluted in ten liters of water to make the solution. We add additional water depending on how dry the materials are. If we substitute manure for copra meal, the moisture is higher and we don't need as much water. However, the target is 40 to 50% moisture content. You get a feel for it after a while. We do the squeeze test. Just take a handful of your moist bokashi and squeeze it. If it crumbles in your hand after you release it, add more water. It should stick together without dripping when squeezed. This moisture will help fuel the fermentation process and prepare the ingredients for fertilizer use. [The bokashi] doesn't change form till it is buried in the soil." Mikkelsen commented that the 'recipe' for bokashi can be changed based on what organic wastes are available in your area (e.g. eggshells from a bakery; copra from a coconut oil factory; hulls from a grain mill).

Bokashi can be added to kitchen waste. At Mikkelsen's farm, they "use one kilo of bokashi per 20-liter pail. We add the bokashi to the bottom of the pail to insure smooth fermentation. Then we add our kitchen wastes; things like peelings, bones, cooked food and old rice, layer by layer with the bokashi. We mix each layer of food waste with a stick. The key is to recycle at source. Set it up right in your kitchen. This allows the whole family to participate in the fun of creating your own fertilizers for producing your own vegetables or fruits. The results are worth the effort.

"We pack it tight to keep out the oxygen. Anaerobic composting is always without air. This permits the lactic acid forming bacteria to go to work eliminating diseases. When the plastic container is full, just seal it up. It will remain airtight! We place it in the shade for two weeks. A label with the date is helpful.

"This container will not discharge liquids or cause odors because it is leak proof and air proof. This is the first stage in anaerobic composting and it takes two weeks. Then bury the fermented kitchen garbage in the soil. Mix some of the soil that was removed from the hole with the waste. This will [ensure] decomposition within two weeks."

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