MAKING BOKASHI COMPOST AT HOME WITH KITCHEN WASTE

Bokashi technology was invented in Japan more than 40 years ago by Dr. Developed by Tero Higa. Bokashi is made with beneficial microorganisms that enable waste or residues to be converted into compost in an airless environment.

Food residues can be used as well as vegetable and animal wastes to be converted into compost. Bokashi compost has just started to become widespread in our country and it is a method that is both convenient for a sustainable environment and can be made easily and economically at home.

Figure 1. Collecting kitchen wastes in Bokashi bucket

Figure-2: Conversion of kitchen wastes into Bokashi compost

1. MAKING BOKASHI COMPOST

When making bokashi compost, as bokashi compost is produced as a result of microaerobic (oxygen-free) fermentation;

a) We need a bokashi bucket with an airtight tap,

b) We need beneficial microorganisms (solid bokashi bran or liquid bokashi serum).

Beneficial microorganisms must be fermented (pickled) by applying to the wastes in the form of bokashi bran or serum so that the residues accumulated in the bokashi bucket can turn into compost.

We can make these materials practically ourselves at home, or we can buy commercially produced buckets on the market. Home and commercial bokashi buckets are shown in the photos below.

1.1. BOKASHI BUCKET

We can make this bucket by adding tap, lid and strainer to plastic drums. The reason for installing the faucet; as the wastes are broken down by microorganisms, the liquids (bokashi leachate) contained in the food accumulate at the bottom of the bin and it must be evacuated at regular intervals. Because an excessively humid environment causes problems in making compost.

Figure-3: Domestic Bokashi Buckets

Figure 4: Commercial Bokashi Buckets

1.2. HOME PRODUCTION OF USEFUL MICROORGANISMSS

First of all, A- We need to create the main culture (yeast), then B- In terms of being economical, we should make bokashi serum or bran so that we can multiply a large number of beneficial microorganisms with this yeast we obtained.

1.2.1. HOME PRODUCTION OF BOKASHI MAIN CULTURE

1- Two glasses of chlorine-free water (purifier, ready water or soaked water) and one glass of rice (carbohydrate source) are shaken for 10 seconds in a glass jar. Let stand for 15 minutes and filter. After waiting for 1 week in a dark place at room temperature (about 21 ℃), it is filtered again (Figure-5).

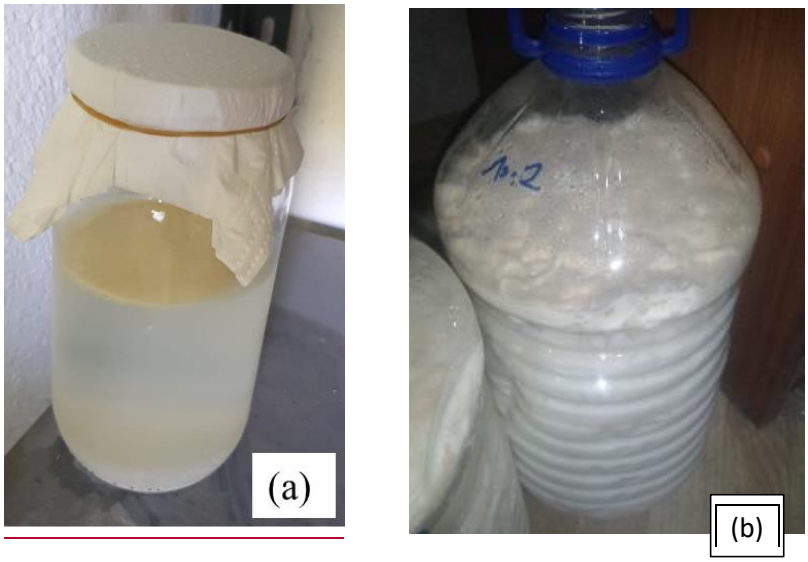

Figure 5. Rice and water soaked for 1 week (a) and Bokashi parent culture (b)

2- The rice is taken to a separate place, 10 glasses of farm milk (source of microorganisms) are added (1:10 v/v), the mouth is loosely closed and kept in a glass jar for 1 week (Figure 5a)
3- At the end of this period, the solidified part is filtered and two tablespoons of sugar beet molasses [1:1 v/v] are added to the liquid portion (to feed the microorganisms) to form the bokashi main culture (Figures 6a and b). It can be stored in the refrigerator at +4°C for 6 months. The mouth of the glass jar should be left slightly loose because gas may accumulate in the jar during fermentation.

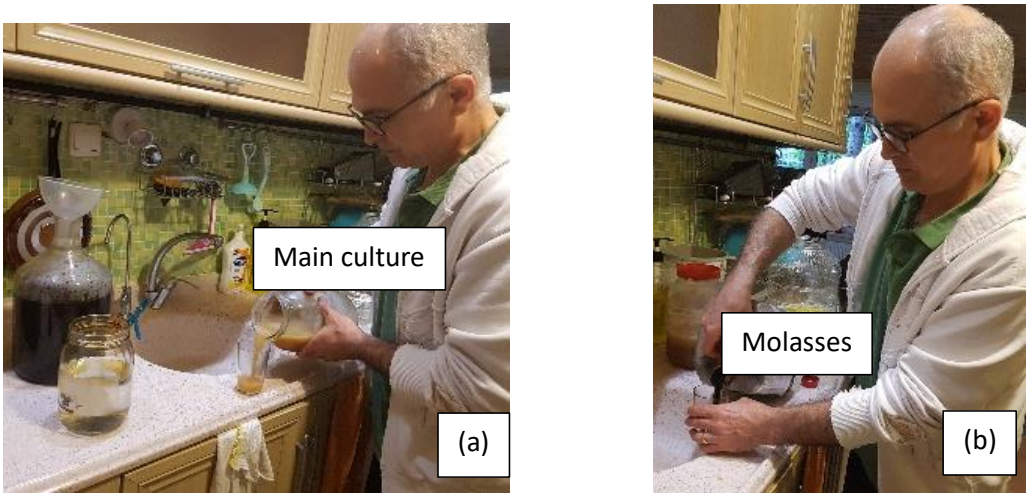

Figure 6: Bokashi main culture (a), Molasses added (b)

1.2.2. PRODUCTION OF BOKASHI SERUM

Bokashi serum; It contains organic acids with antioxidant and antimicrobial properties such as malic, acetic, propionic and benzoic acids, mostly lactic acid. Due to its pH being <4, it prevents unwanted disease-causing organisms in the environment and thus creates a healthy environment (Footer, 2014).

Compost can be made directly using the main culture, but to save money, time and labor, microorganisms can be multiplied, for example, 5 liters of bokashi serum can be produced using 1 glass of main culture.

Bokashi serum is produced using master culture; 1 glass of mother culture is mixed with 5 liters of chlorine-free water, 1 glass of molasses, and the jar or can is closed with an air trap and kept in a dark place at room temperature for 15 days (Figure 7). When Bokashi serum is ready for use, the serum should have a pH of less than 4 and have a vinegar-like odour.

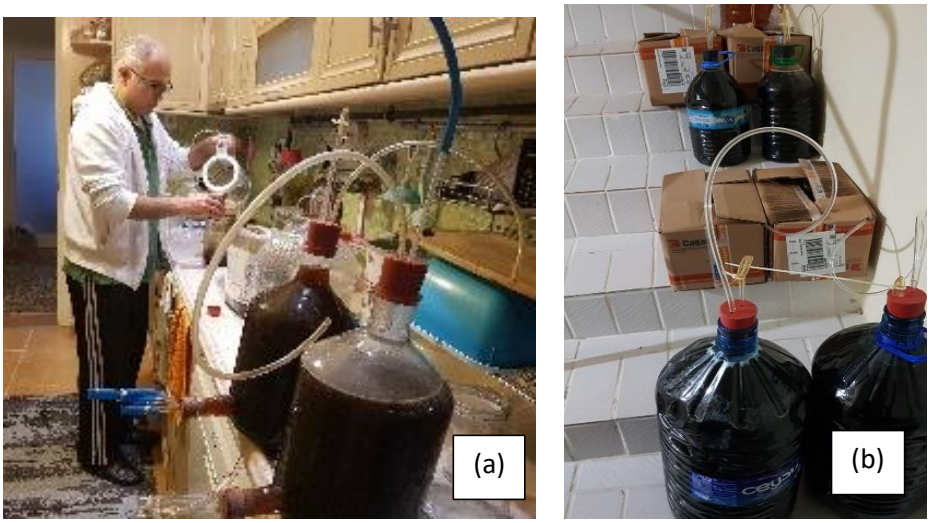

Figure 7: Bokashi serum (a) multiplied in a glass jar with an air trap and bokashi serum (b) prepared in a plastic drum.

1.2.3. BOKASHI BRAN PRODUCTION AT HOME

In addition to liquid Bokashi serum, compost can also be made with powdered bokashi bran. It can be preferred because it will be easier and longer to store than liquid bokashi serum.

Bokashi bran is produced using the main culture; 1 tea glass of main culture, 2.5 liters of chlorine-free water, 1 tea glass of molasses, 5.5 kg of wheat bran, 4 tablespoons of clay and 2 tablespoons of rock salt are mixed and put in ziplock bags. It is kept in the dark at room temperature for 15 days (Figure 8). Because daylight can cause the death of microorganisms. It is then laid out in a thin layer and dried for 1 day. It should not be dried in an oxygenated environment for a long time.

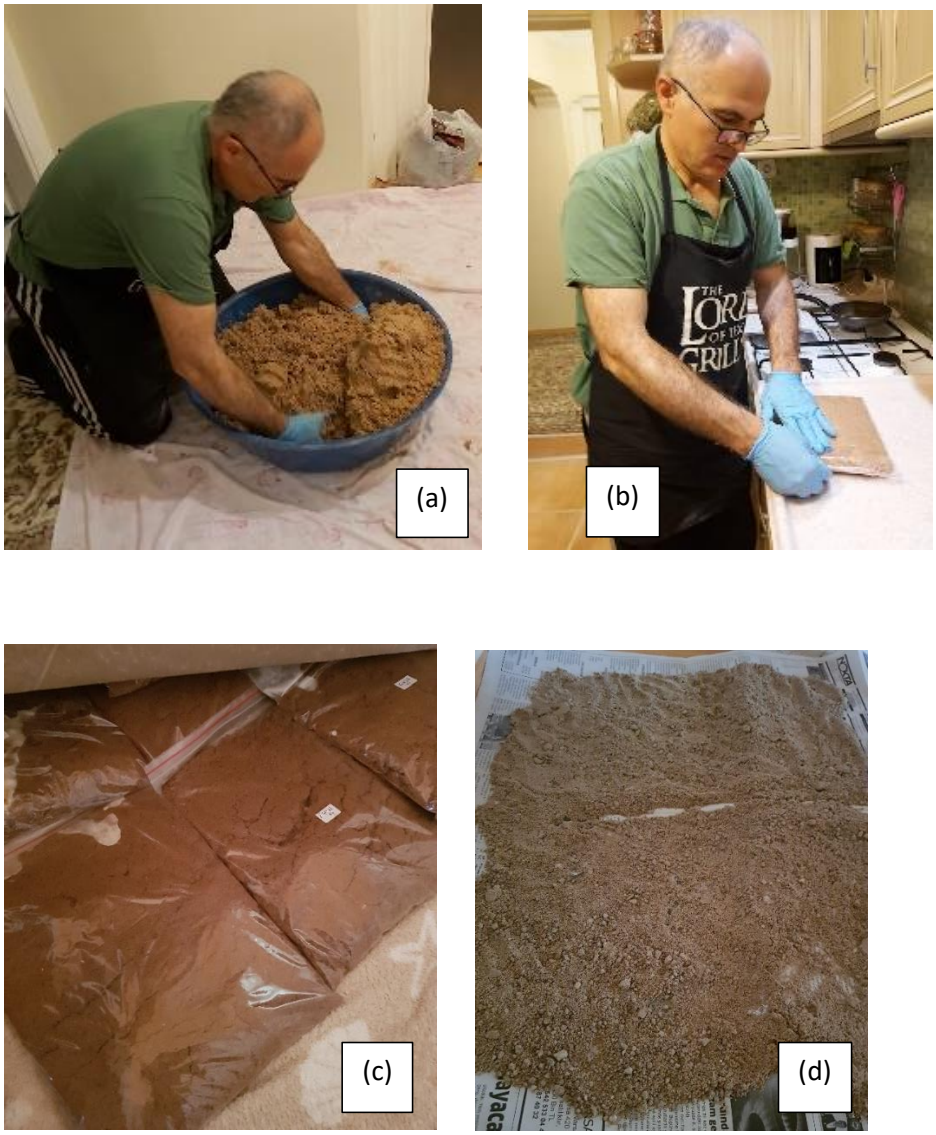

Figure-8: The ingredients are mixed (a), placed in sealed bags in an airtight manner (b), allowed to ferment for 15 days (c) and dried (d).

2. MAKING BOKASHI COMPOST AT HOME

1- A thin layer of bokashi bran is sprinkled at the bottom of the bokashi bucket.

2- Kitchen waste divided into small pieces of 2.50 cm thickness is added on it.

3- A handful of bokashi bran is sprinkled on the kitchen waste.

4- With a plastic bag, the bokashi bran is pressed onto the kitchen waste you sprinkle. Then it is covered with a bag and the lid is covered in an airtight manner.

5- One layer of waste and one layer of bran are continued until the bucket is completely filled. After the bucket is filled, it is kept at room temperature in a place out of direct sunlight for at least two weeks without opening the lid.

6- Bokashi leachate is drained from the tap at the bottom of the bucket every other day. It can be applied to plants by diluting the leachate with 100 times of water, or it can be used directly as a drain opener without diluting.

7- After two weeks, the bokashi pre-compost in the bucket (sour, apple cider vinegar smell) is mixed into the soil and after waiting for 15 days, the plant can be planted on it.

Figure 9: The bucket is completely filled by sprinkling a layer of kitchen waste, a layer of bokashi bran.