

**EM Products
for kitchen gardens**



EM-1

The original EM solution that can be expanded for various usages.

*The bottle design varies in each country/area.



Molasses

Mineral-rich feed for EM

*The bottle design varies in each country/area.



**EM Super Cera
-Ferment C**

EM ceramic powder for better microbial environment.



Magic Box

Compost bucket with a drainage cock.



EM Bokashi (type 1)

Fermented material for EM Compost

EM BOOK series

No.1 Let's start EM life!

A booklet full of information to start EM life; how EM works, how to use EM, how to make Activated EM-1 etc.



Contact your local EM Distributor about EM products, their application, and anything else about EM.
Find a distributor near you! → www.emrojapan.com/?findyourlocal

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No. 2

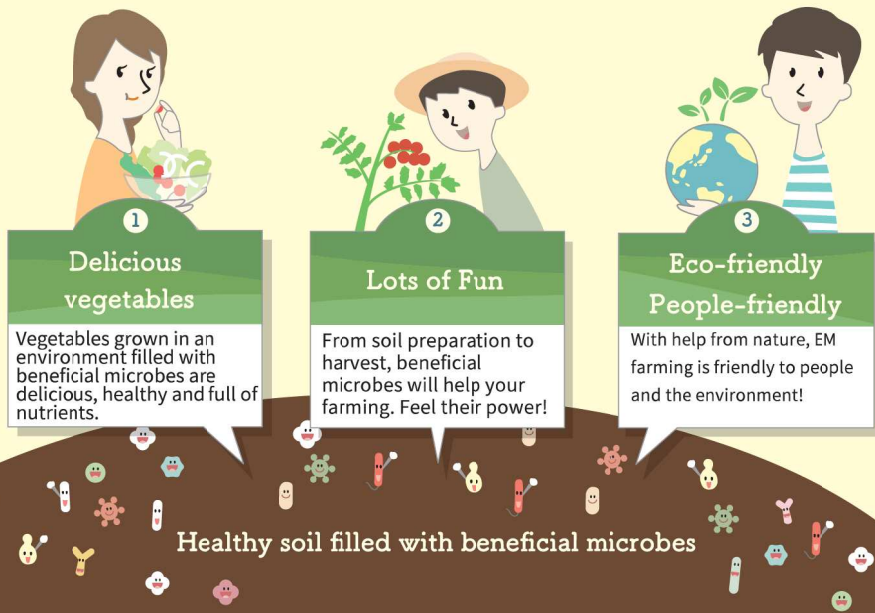
**Let's start
EM kitchen gardens**



Grow exciting kitchen gardens with EM



3 benefits of EM kitchen gardens



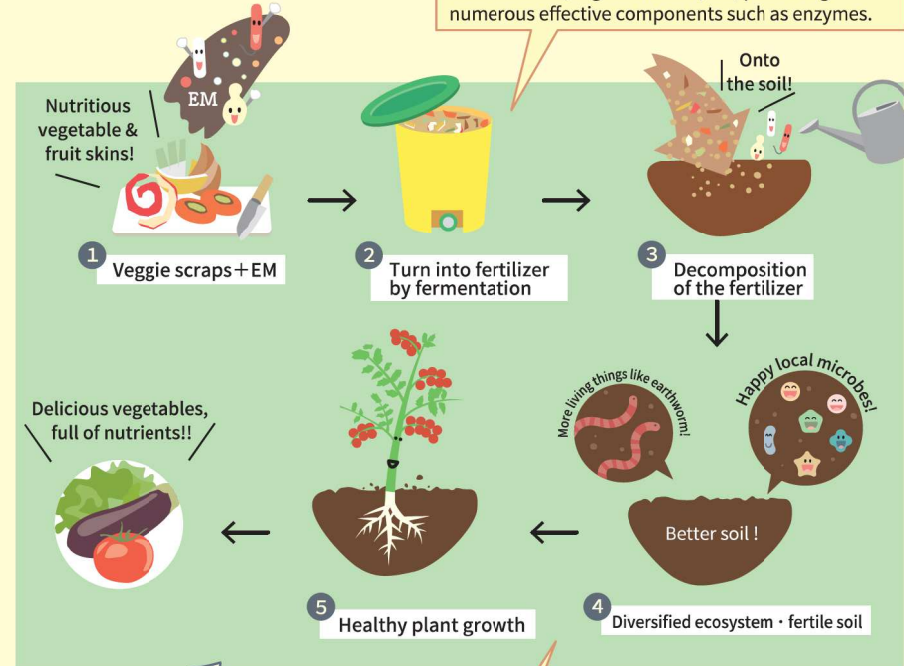
What's EM?

EM is a people-friendly and environmentally safe cloud of beneficial microorganisms such as lactic acid bacteria, yeast and phototrophic bacteria.

Learn more from EM BOOK1

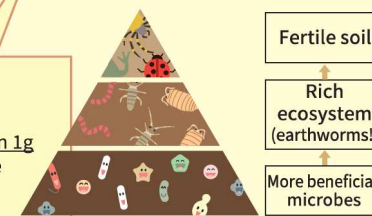
Earth-friendly cycle

What makes EM different is its power to ferment organic matter. With its fermentation power, vegetable scraps can be reused, making it possible to grow a kitchen garden that is friendly to people and the environment.



Beneficial microbes enrich the ecosystem!

Microorganisms form the bottom of the ecosystem pyramid in soil. It is said that their number is greater than hundreds of millions in 1g of the soil. When beneficial microbes become active, the ecosystem is enriched, making the soil more fertile.



1

EM Bokashi (type1)

in a small air-tight container



What's EM Bokashi (type1)? →

Rice bran material to ferment kitchen waste

Rice bran with numerous beneficial microbes. Mixing it into kitchen waste will ferment kitchen waste and turn it into nutritious fertilizer.

What to prepare

Makes 1.5kg (EM Compost 2.6ℓ [p7] X 2 batches)

1 Rice Bran 1.2kg



2 Activated EM-1 300ml
*less than 1month old
(25 weight% of the rice bran)



If Activated EM-1 is not prepared in advance, mixing these 3 ingredients can substitute.

EM-1 15ml
Molasses 15ml
Warm water 270ml

Mix well until molasses is thoroughly dissolved.

Activated EM-1 Recipe EM BOOK1 p9

3 EM ceramics powder 12g
(1 weight% of rice bran)



4 An airtight container (2.6ℓ)

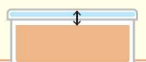


5 A large bowl



Choose your container according to the amount you need
Container capacity (ℓ)
=Weight of the rice bran × 2.15

When you use a container of a different size, adjust the amount so that there is the thinnest layer of air between the lid and the rice bran mixture.



Work Time (10~15minutes)

Recipe

Point 3



1 Place rice bran and EM ceramics powder in a large bowl, and mix well.



2 Add Activated EM-1 little by little. Do not add all at once.



3 Lumps should be broken down.
Mix very well and break lumps, so that the mix is uniformly moisturized.
(This is the most important step!)

Point 4



4 If 3 can make a fragile ball that breaks down by a flick of a finger, the moisture level is just about right.



5 Stuff the container with 4, letting the air out, and put the lid on.



6 Store in a warm place with a stable temperature until it ferments well.

1 month and a half~

Temperature 25~35°C
(No lower than 20°C)

Fermentation Period 45 days or more
The longer it ferments, the better the quality.

How to use p7
FAQ p22



When it smells sweet and sour, it's ready to use.

Quality Check !

- Put EM Bokashi (type 1) 10g and water 100ml in a glass bottle with a lid, close the lid tightly and shake well for 3 minutes.
- Check 1**
Check pH of the supernatant liquid.



- Close the lid tightly and store it indoors for a week.
- Check 2**
Smell it 1 week later.

pH5.0 or below → OK !

*pH test papers are available online.

No unpleasant smell → OK !
*Either one of the checks will do.

2



EM Compost in a small air-tight container



Can kitchen waste be fertilizer ?

Kichen waste makes nutritious fertilizer.

Just as fermented pickles are more nutritious than fresh vegetables, fermenting kitchen waste with EM Bokashi, full of numerous beneficial microbes, will produce nutrients that are essential for plants.

What to prepare

Makes **2.6ℓ** (enough for Making Soil with EM Compost [p9])

1 Kitchen Waste
(Vegetable and fruit scraps)



2 EM Bokashi (type 1)

Recipe p5



3 EM ceramic powder



4 An air-tight container with locks (2.6ℓ)



How to make good compost

Point 1 Treat the kitchen waste while it's still fresh.



Point 2 Try not to make the kitchen waste wet.



Point 3 Cut the kitchen waste as small as possible.



Point 4 Use cooking scraps, not left-over food.



Recipe

Work Time (5~10 minutes)



1

Mix kitchen waste and EM Bokashi at 1:1 volume ratio, and put it in an air-tight container.



2

Sprinkle 1 teaspoon of EM ceramics power over [1].



3

Mix well and push the air out.

2nd time and after



4

Close the lid and store in a place without direct sunlight.

Repeat [1]~[4] until the container is full.

FULL 1~2 weeks

When the container is full, store in a place without direct sunlight for 1~2 weeks for fermentation.

Point

Just putting the mixture onto the old layer is fine. No need to mix it from the bottom.

Done



The white mycelia on the surface are beneficial microbes, and there's nothing to worry about.

How to use
FAQ

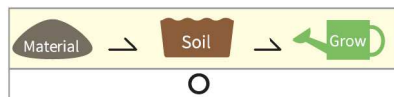
p9
p22

Not exposing to air is the key to success !



Make sure to use a container with high sealability. If it exposes to the air, unwanted bacteria might get into the mixture, making the kitchen waste go bad. You can also process one day's kitchen waste at a time. Put it in a small plastic bag and then into the container for fermentation. Squeeze the air out from the bag before tying, and be careful not to let the air in.

3



Soil Making in Planters

Using EM Compost

Let's start growing plants in planters, using EM Compost made from kitchen waste. All you need to do is mix soil and compost, and let it ferment in a planter. Making good soil will result in growing healthy and strong plants that can fight off diseases and pests.

What to prepare

- 1 Planter (14ℓ)**
*Must be a planter with drainage holes.
- 2 EM Compost 2.6ℓ**
Recipe p7
- 3 Activated EM•1**
Recipe EM BOOK1 p9
- 4 Soil (small grain) 6ℓ**
Air-permeable, water-retentive, and fertilizer-retentive soil
- 5 Leaf mold 3ℓ**
"Natural fertilizer" made from corroded leaves and bark.
- 6 Soil (large grain) 1ℓ**
Air-permeable and water-retentive pumice stones to be placed on the bottom of the planters for better drainage.
- 7 EM ceramic powder 1 teaspoon**
- 8 Watering can**
- 9 Large tray for mixing**
- 10 Newspaper**
- 11 String**
- 12 Plastic sheet (big enough to cover the whole planter)**

Recipe

Working Time (about 1 hour)



1

Put EM Compost, EM Ceramic powder, soil and leaf mold in the mixing tray, and mix well. (Leave 1/3 of the leaf mold.)



2

Spread the large-grained soil onto the bottom of the planter at 1~2cm high.



3

Add 1 to the planter.



4

Spread the rest of the leaf mold to cover the surface.



5

Pour Activated EM•1, diluted 10 fold, to wet all over the surface.



6

Cover the planter with the newspaper, and then with the plastic sheet, fix with the string, and keep it under the shade, avoiding the sunlight.

2 weeks

MIX

2 weeks

Done



7

After 2 weeks, uncover the planter and mix the soil to promote decomposition. Do not mix the large grain soil at the bottom.



8

Cover the planter again like 6, and store for 2 more weeks. (You can reuse the same newspaper.)



It's ready when the kitchen waste is mostly decomposed. Start seeding and planting! (Egg shells etc. will not be decomposed, but that's no problem.)

➡ Growing plants p19
FAQ p22

4



EM Bokashi (type1) in a large quantity



What's EM Bokashi (type1) ?

Rice bran material to ferment kitchen waste

Rice bran with numerous beneficial microbes. Mixing it into kitchen waste will ferment kitchen waste and turn it into nutritious fertilizer.

What to prepare

Makes 12kg (for EM Compost in a bucket [p13] X 6~7)

- 1 Rice bran 10kg
- 2 EM-1 Liquid Mixture 2.5ℓ (25 weight% of the rice bran)



- 3 EM Ceramic Powder 100g (1weight% of the rice bran)
- 4 Plastic sheet
- 5 2 thick plastic bags (for 45ℓ and over) & a container big enough for the bags



- 6 String
- 7 A watering can



- Optional
- 8 Rice husk 500g~1kg



*You can make EM Bokashi without rice husk.

Recipe

Working Time (About 30 minutes)

Point 1



Spread rice bran and EM ceramics powder over a plastic sheet.



Add EM mixture liquid gradually to 1. Do not add all at once. (Repeat 2 ~ 3 to adjust moisture level).

Break lumps!



Mix very well and break lumps, so that the mixture is uniformly moisturized. (This is the most important step!)

Point 2



If 3 can make a fragile ball that breaks down by a flick of a finger, the moisture is just about the right amount.

Don't let the air in!



Place 4 in plastic bags in double layers and tighten the bags with strings, squeezing all the air out.



Put it in a box to avoid sunlight and damages. Store in a warm place under a stable temperature until it ferments well.

1 month and a half~

Temperature 25~35°C (No lower than 20°C)

Period 45 days or more
The longer it ferments, the more mature it gets to make better-quality EM Bokashi.

How to use p13, 15
FAQ p22



When it smells sweet and sour, it's ready to use.

Quality Check !

- 1 Put EM Bokashi (type 1) 10g and water 100ml in a glass bottle with a lid, close the lid tightly and shake well for 3 minutes.



- 2 Check 1 Check pH of the supernatant liquid.

pH5.0 or below → OK !

*pH test papers are available online.

- 3 Close the lid tightly and store it indoors for a week.

- Check 2
- 4 Smell it 1 week later.

No unpleasant smell → OK !

*Either one of the checks will do.

5



EM Compost in a bucket



Can kitchen waste be fertilizer ?

Kichen waste makes nutritious fertilizer.

Just as fermented pickles are more nutritious than fresh vegetables, fermenting kitchen waste with EM Bokashi, full of numerous beneficial microbes, will produce nutrients that are essential for plants.

What to prepare

- 1 Kitchen waste (veggie & fruit scraps)
- 2 EM Bokashi (type 1)
- 3 EM ceramic powder
- 4 Compost Bucket



Recipe p11

How to make good compost

- Point 1** Treat the kitchen waste while it's still fresh.
- Point 2** Try not to make the kitchen waste wet.
- Point 3** Cut the kitchen waste as small as possible.
- Point 4** Use cooking scraps, not left-over food.

- 5 Spatula
- 6 Newspaper



- 7 Plastic sheet (Bigger than the bucket diameter.)



Recipe

Working Time (15 minutes)



1

Fold a sheet of newspaper and place it at the bottom of the bucket. Then, sprinkle EM Bokashi (type 1).



2

Add kitchen waste and EM Bokashi at a 5:1 ratio, and sprinkle a teaspoon of EM ceramic powder.



Mix with a spatula.



4

Sprinkle EM Bokashi on top.



5

Place a plastic sheet and push hard to squeeze the air out.



6

Close the lid and store in a place away from direct sunlight.

Second time and after

Repeat [2]~[6] until the bucket is about 80% full.



Drain the fermented liquid frequently. The liquid can be used as liquid fertilizer. Dilute it 500 fold and spray on the farm.

80% or more

1~2 weeks

Store in a place away from direct sunlight and let it ferment for 1~2 weeks.



Just piling up the layer is fine. There is no need to mix the whole thing from the bottom.

Point

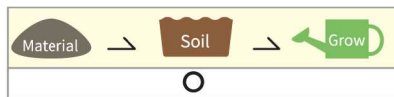


No need to worry about the white mycelia on the surface. It is produced by beneficial microbes.

If it will take more than 1 month to fill up the bucket, composting in a small container (p 7) is recommended.

How to use p15
FAQ p22





Making soil with EM Compost

Fertilizers made by fermenting kitchen waste contain wide varieties of nutrients, and will grow healthy and tasty vegetables. They are also earth-friendly, as resources are circulated within the household. And you don't have to buy fertilizers any more!

What to prepare

- 1 EMCompost 3~4ℓ/m²
Recipe p13



- 2 Activated EM·1 100ml/m²
Recipe EM BOOK1 p9



- 3 EM Bokashi (type I) 300g/m²
Recipe p11



- 4 EM ceramic powder 1 handful/m²



- 5 Watering can



Optional

- 6 Covering material (Mulching sheet, hay, straw etc.)

Avoiding rain and wind keeps higher temperatures and moisture levels in the soil, preventing the surface from hardening or eroding.



Polyethylene mulching sheet
Easy to use and easy to store, a very handy and accessible material.



Organic mulch
Easy to be decomposed. Turning it into the soil after the harvest will enrich the soil.

Recipe

Working Time (12 hrs)



1 Make 10cm furrows between where ridges are to be made.



2 Place EM Compost and EM ceramic powder in the furrows, and mix with soil.



3 Cover with soil and make the ridges.



4 Sprinkle EM Bokashi (type I) evenly on the surface of the ridges.



5 Sprinkle Activated EM·1 (100 fold dilution) until the ridges are wet.



Optional
Covering the surface with hay, straw, chaff, or mulching sheet will help prevent dryness, activate beneficial microbes, control weeds, etc.

2 weeks



After a few days, white mycelium appears on the soil surface. Leave it as it is for 2 weeks. It will be gone after a few more days.

Growing plants p19
FAQ p22

Done



Start seeding and planting!

Soil grows better and better!

After the harvest, repeat 1-4 for the next crop. Adding EM and organic matter improves the soil condition, making continuous cropping possible. With EM, the longer you continue, the better the soil gets!



7



Soil Making with EM Bokashi (type 2) and compost

EM Bokashi (type 2), fermented rice bran with oil cake and fish meal, is rich in nutrients such as amino acids. You can produce a large amount at a time. Using it with compost to improve the soil helps you enjoy home gardening with ease.

What is EM Bokashi (type 2)?

Bokashi made by fermenting rice bran with nutritious oil cake and fish meal. It works as fertilizer, too.

What to prepare

1 EM Bokashi (type 2) 200~500g/m²



How to make EM Bokashi (type 2) (10kg)

<What to prepare>

Rice bran 6kg, Activated EM-1 3ℓ, EM ceramic powder 100g, Oil cake 2kg, Fish meal 2kg



Plastic drums are recommended when you make a large amount!



<Recipe>

Same as EM Bokashi (type 1) (p11)

Fermentation: 30 days or more

2 Cow manure compost (or humus) 3ℓ/m²



3 Activated EM-1 100ml/m²

Recipe EM BOOK1 p9



4 EM Ceramic Powder 5g/m²



Optional

6 Covering material (Mulching sheet, hay, leaves, straw)



5 Watering can



Recipe

Working Time (1~2 hours)



1 Sprinkle EM Bokashi (type 2), cow manure compost and EM ceramic powder where ridges are to be made. Leave some Bokashi for later use.



2 Mix with soil and make the ridges.



3 Sprinkle the remaining EM Bokashi (type 2) evenly on the surface of the ridges.

2 weeks or more



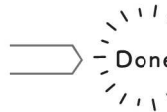
4 Sprinkle diluted Activated EM-1 (100ml/1m²) until the ridges are wet.



Optional
Covering the surface with hay, straw, chaff, or mulching sheet will help prevent dryness, activate beneficial microbes, control weeds, etc.



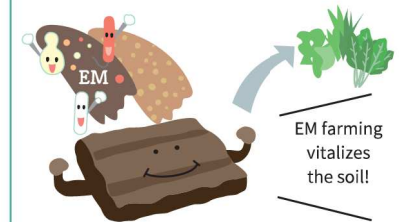
After a few days, white mycelium appears on the soil surface. Leave it as it is for 2 weeks. It will be gone after a few more days.



Enjoy home gardening!

Soil grows better and better!

After the harvest, repeat 1-4 for next crop. Adding EM and organic matter improves the soil condition, making continuous cropping possible. With EM, the longer you continue, the better the soil gets!



EM farming vitalizes the soil!

Tips for growing p19
FAQ p22

Soil is ready. Now, let's start growing plants!



Before seeding Effect: Help sprouting



1 Soak seeds in Activated EM·1 (1,000 fold dilution) overnight.



2 Wipe off excess water.



3 Place the seeds in a bag and coat them lightly with EM ceramic powder. *Dust off the excess.

Once seeds are soaked in water, they wake up from sleep and become activated. Put them in soil before they get dry again.



Use EM ceramic powder before seeding!



Storing the seeds
Coat dry seeds lightly with EM Ceramic powder and store at low temperatures, away from moisture.
*Wet seeds cannot be stored.

Seed potatoes Effect: Help sprouting



Coat seed potatoes with EM Ceramic Powder. As for big potatoes, cut in half and coat the sections thoroughly with powder.
*Dust off the excess.

It also prevents seed potatoes from going rotten.

Point

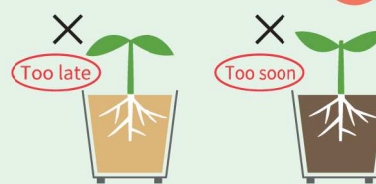
Watering Effect: Help growth

Use 500 fold diluted Activated EM·1 for everyday watering. (Use 1000 fold diluted solution until true leaves come out.)

⚠ Undiluted Activated EM·1 is very acidic and may yellow the leaves. Make sure to **dilute** it before use.



When to water the plants

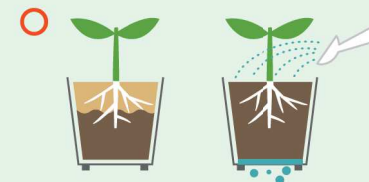


All soil is dry

Lack of water will interfere with plants' growth.

All soil is wet

Too much moisture sometimes damages the roots.



The surface is dry

Water until the water runs out from the bottom of the planter.

Foilar Spray Effect: Help growth

Spray 500 fold diluted Activated EM·1 to the front and back of the leaves, once~twice a week.

Point

Spray so that the waterdrops on leaves wouldn't fall off.



Let's try!

Activated EM·1 with Salt



Add more minerals for even healthier growth! Recommended when plants seem weakened.

Recipe Just mix 3% of salt (preferably natural salt) into Activated EM·1. (i.e.: Activated EM·1500mL+ salt 15g)

How to use Dilute by **500~1,000 fold** and use it for watering and foilar spray.

⚠ Make sure to **dilute** before using. High concentration may yellow the leaves.

STEP UP



Adding fertilizer

Effect: Supplying more nutrition

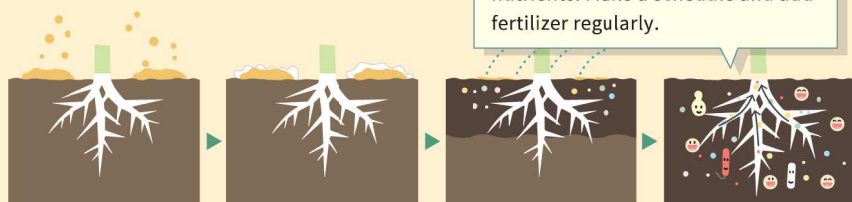
Why is it necessary? → Adding fertilizer while growing plants.

Nutrients in the soil decrease as they are used for plants' growth. In order to supply more nutrients, add fertilizer at appropriate timings.



Organic fertilizers like EM Bokashi take time to decompose and release nutrients. Make a schedule and add fertilizer regularly.

How fertilizer is absorbed into plants



Sprinkle EM Bokashi (type2) on the surface of the soil.

White and fluffy mycelia grow on the surface, gradually decomposing the Bokashi.

The nutrients are transferred with water into the soil by watering or rain.

The roots will absorb the nutrients.

Point

When adding fertilizer, sprinkle Activated EM·1 as well to increase beneficial microbes even more.



How to make Activated EM·1 → EM BOOK1 p9

How to add fertilizer

When to add fertilizer

Add fertilizer according to the growth of plants.

For example...

- When leaves turn yellow
- When they bear fruits and fruits start to get bigger
- For tomatoes, when the first fruits start to become red.



1

Sprinkle EM Bokashi (type 2) between plants or on the ridges. Apply 50~100g/1m².

*Do not apply EM Bokashi (type 2) directly on plants.



2

Apply Activated EM·1, 500 fold dilution, until EM Bokashi (type 2) is thoroughly wet.

How to make EM Bokashi (type 2) → p17

FAQ

Q How long does EM Bokashi last?

A There is no certain shelf life. When it is stored in airtight containers, away from air, it will last longer without mold. In such cases, the longer it is stored, the higher its quality gets. When EM Bokashi is moldy, or smells foul, do not use it and bury in the corner of your farm. Also, EM Bokashi lasts even longer after drying.



How long?

Q Can we compost salty food?

A Yes. If the food is not too salty for you to eat, you can compost it.



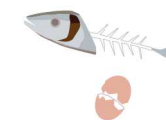
Q Is it OK to add coffee grounds and tea leaves when you make EM Compost?

A Yes. Make sure to squeeze water out first, and mix with larger amount of EM Bokashi (type 1).



Q Is there anything that is not suitable making EM Compost?

A When you use what goes bad easily like meat and fish, make sure you use larger amount of EM Bokashi. Eggshells, seashells, fish bones, etc. can be fermentec, but they take very long to decompose. Left-over food is not recommended as it contains a lot of water and will rot easily.



Q When I add EM Compost to soil, it gets moldy. Is that OK?

A No problem. It sometimes gets moldy when kitchen waste is being decomposed, but the mold will go away when it is fully decomposed.



Q Can I reuse the soil after growing vegetables in a planter?

A Yes. You can reuse the soil by adding EM Compost, EM Ceramic Powder and some leaf mold. Refer to p9.

