

GUIDEBOOK AND TOOL FOR ORGANIC WASTE MANAGEMENT AT HOME



Supported by:



Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection



giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Ministry of Housing
and Urban Affairs
Government of India



based on a decision of
the German Bundestag

WHAT IS ORGANIC WASTE?

Organic waste are **biodegradable by nature** and can be broken down into simpler, stable compounds such as carbon dioxide, methane and water by microorganisms.

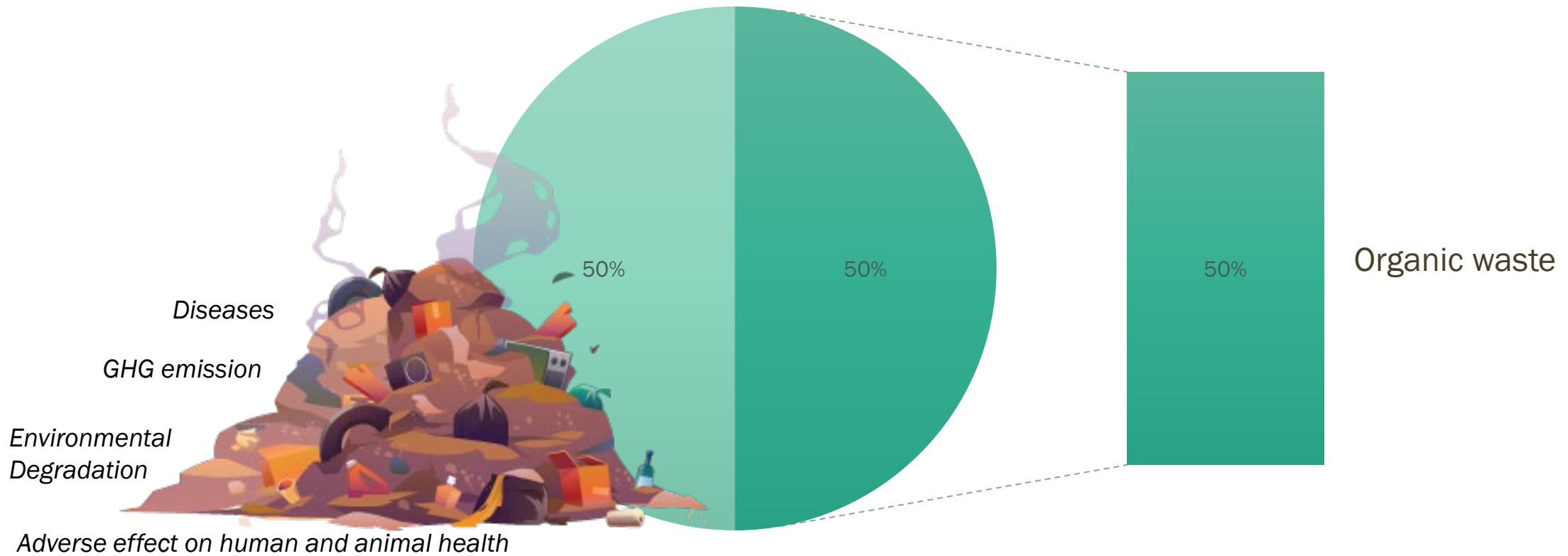
Examples of organic waste generated at home:



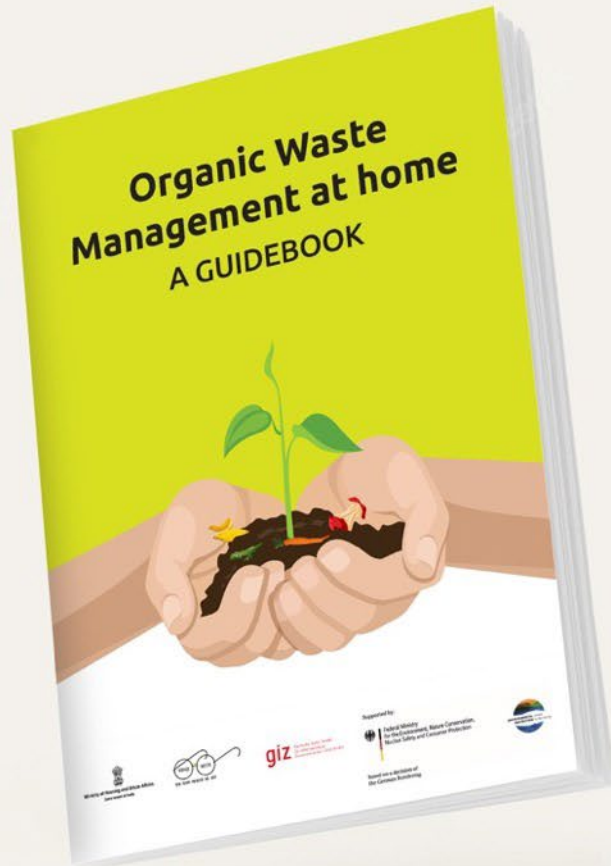
GENERATION OF ORGANIC WASTE

Municipal solid waste
generated per day in
India

1,60,039 MT per day

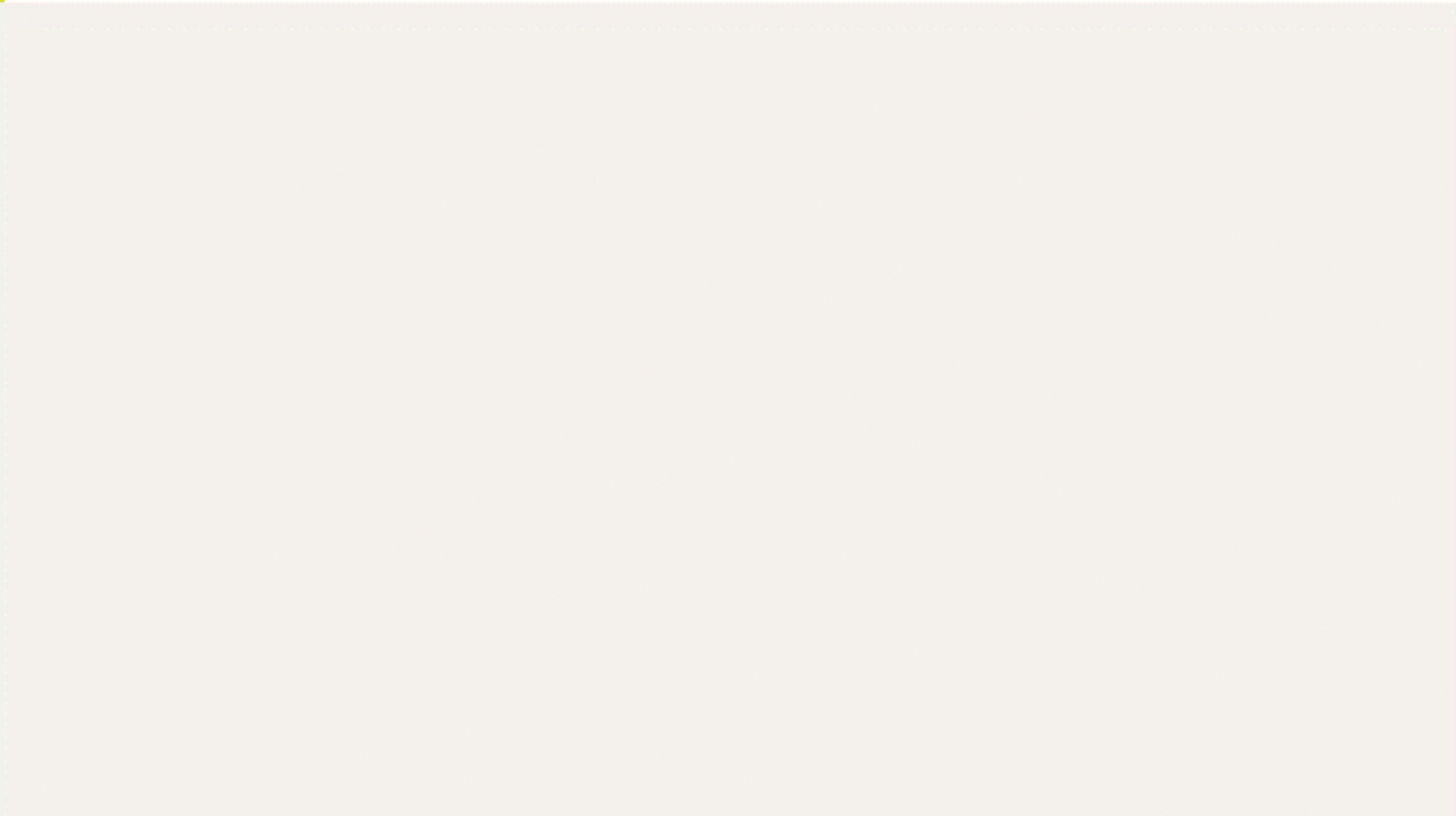


NEED FOR A GUIDEBOOK TO MANAGE ORGANIC WASTE AT HOME?



- **Increase awareness** about different and contextualised OWM techniques (including low costs ones)
- **Build capacities** of households to identify and select best solution to manage their organic waste
- A practical, interactive, holistic, engaging and **easy to understand guide** for OWM at home
- Bring about a **DIY mindset** in a fun creative way to manage organic waste at home
- **Develop an interactive offline tool** to help with decision making for best suited OWM technique

NEED FOR A GUIDEBOOK TO MANAGE ORGANIC WASTE AT HOME?



BENEFITS OF MANAGING ORGANIC WASTE AT HOME

Congratulations! This is how you have helped yourself and the planet :)



ABOUT THE GUIDEBOOK

This Guidebook contains

- **Different techniques of OWM** which encourages a “Do it Yourself” mindset to manage organic waste at household level.
- Techniques – for easily implementation- **step-by-step instructions** on the design, assembly and process to be followed.
- **Educational videos, graphics and FAQs** to help users understand the OWM techniques better and also resolve any questions that you may have.

Guidebook is also available in Hindi !

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ABOUT THE GUIDEBOOK

Composting

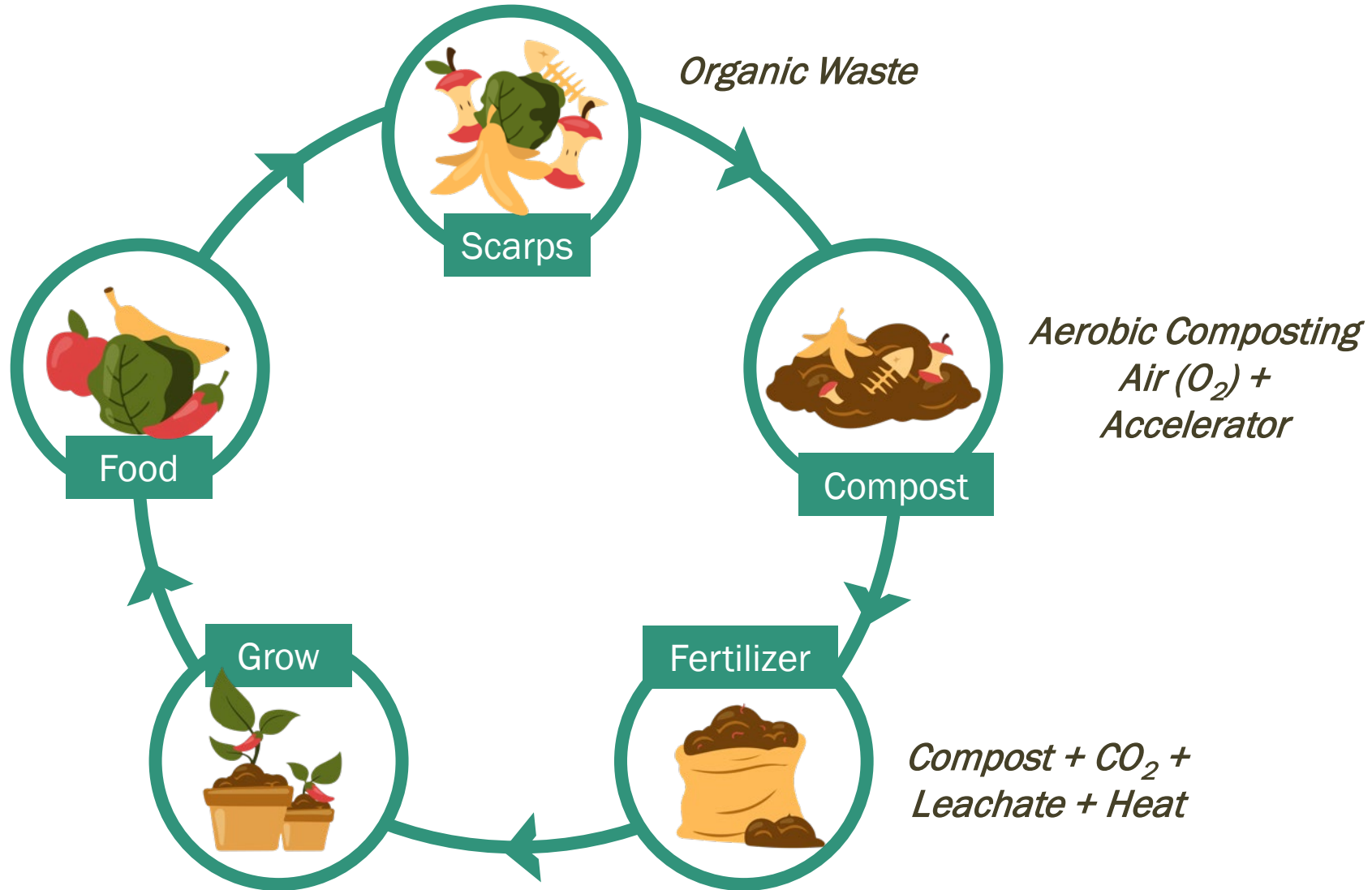
How is Organic Waste managed at home?

Anaerobic
Digestion



COMPOSTING

Composting



Anaerobic
Digestion

COMPOSTING TECHNIQUES

HOME COMPOSTING SOLUTIONS IN THE GUIDEBOOK



Pot
Composting

1.0 - 1.5 KGS



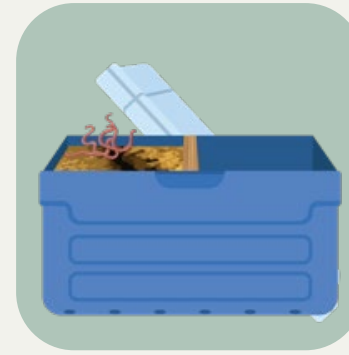
Pipe
Composting

1.0 - 1.5 KGS



Drum
Composting

~10 KGS



Vermi
Composting

1.0 - 1.5 KGS



Leaf
Composting

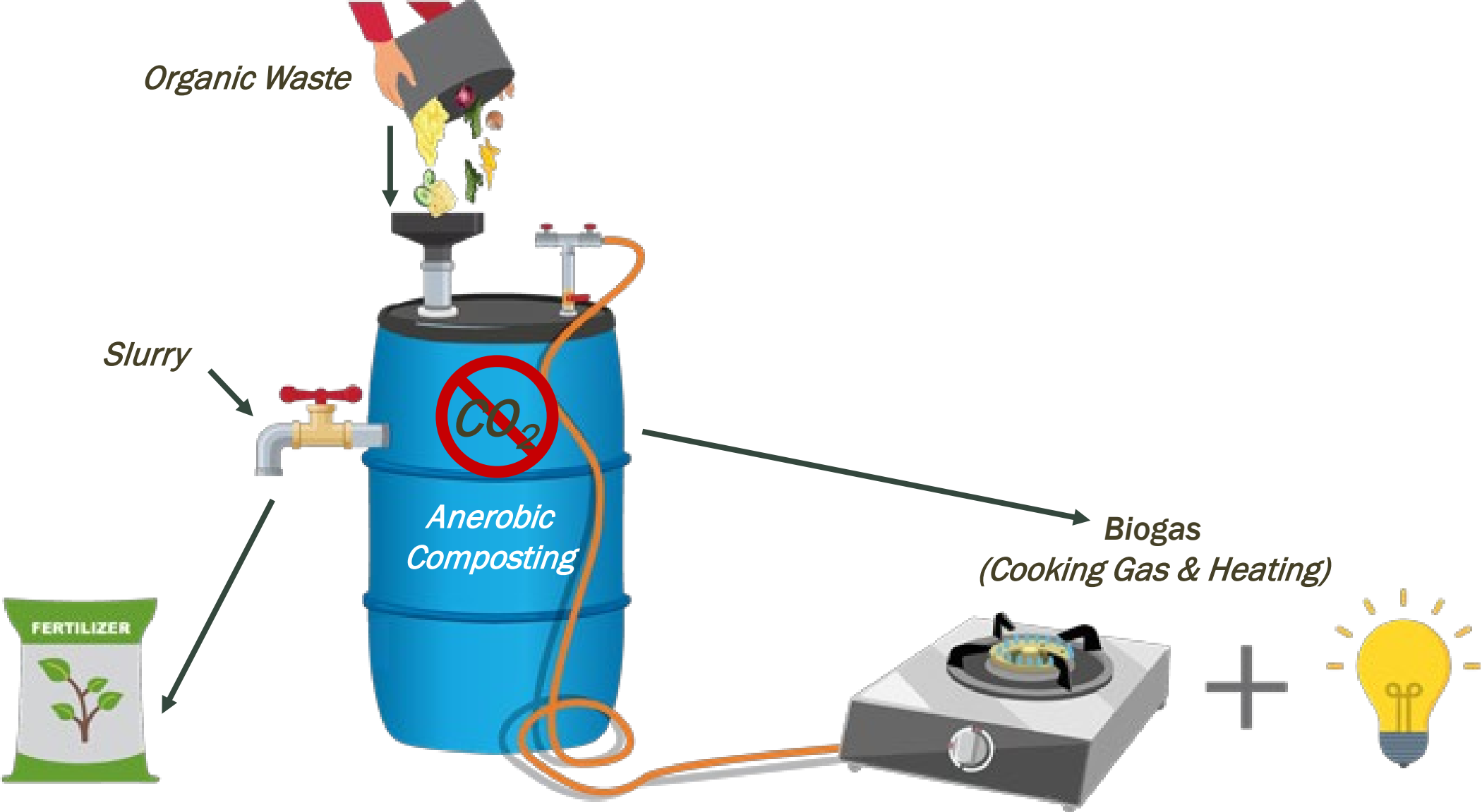
1.0 - 25 KGS

ORGANIC WASTE THAT CAN BE HANDLED PER DAY

ANAEROBIC DIGESTION

Composting

Anaerobic
Digestion



GUIDEBOOK FEATURES

MEET YOUR FRIENDS IN THE BIODEGRADABLE WASTE PROCESSING JOURNEY

In this chapter, we will introduce you to friends who will help make your waste processing journey an enriching one. So, let's meet each of them:



1 CONTAINER / DEDICATED SPACE

A container / dedicated space that hosts the process of decomposition of organic waste is your first friend. A container can be an earthen pot, plastic bin / bucket, a cylindrical metal mesh bin, a PVC pipe, wooden / plastic crate and / or a drum. For composting methods which do not require a container such as pit or vermicomposting, a dedicated area in your garden should be allocated.

The container / dedicated space must be located in an area protected from rain and excess sunlight as excess moisture and sunlight (heat) upset the delicate balance that is naturally maintained by microbes in the container.

2 TEMPERATURE

Climate parameters such as temperature is an important factors that affect processing of organic waste. This in turn is related to geographic region and altitude of the location. In most cases, India's climate is suitable for processing organic waste because it typically ranges between 20°C to 42°C in non-winter months.

Warm climate does not affect aerobic composting adversely because temperatures can reach 70°C in the container during the composting process, however moisture may be maintained appropriately through regular sprinkling of water.

During cold weather such as during winter months in north India or in high altitudes where temperatures can go below 10°C, the microbes go into a dormant state and organic waste processing becomes slow. This is why biogas systems do not function well in cold climate and are not common in these geographies. However, for composting you can follow these steps to continue processing during cold weather:

1. Move your compost bin to areas which get sunlight during the day and cover it with gunny sacks during night.
2. Use layers of **browns** to layer and insulate the compost.
3. Cold weather can also lead to the compost pile drying up, so add water to keep the waste pile moist.
4. Compost in larger containers because they have the potential to build up more heat.

3 AIR

In aerobic and vermicomposting, proper circulation of air is very important. In aerobic composting, air is needed for decomposition of organic matter and to control heat while in vermicomposting, air is required for survival of the earthworms.

4 GREENS AND BROWNS

The organic matter which breaks down and causes the biological conversion is of two types, the carbon-rich content (C) i.e. browns and the nitrogen-rich content (N) i.e. greens. The carbon rich content have less moisture content and the nitrogen rich content have high moisture content. Optimum C:N ratio (25:1 - 30:1) is a must for proper growth and upkeep of microorganisms in the process.

Here's the list of browns and greens that can be used to make good compost.

Nitrogen Rich Content - Greens (C:N ratio)

1. Fruit including peels (35:1)
2. Vegetable including peels (25:1)
3. Used coffee and tea powder (20:1)
4. Leftover cooked food (20:1)
5. Green garden trimmings (30:1)
6. Used flowers (50:1)

Greens provide moisture and nitrogen content required in the compost pile.

Carbon Rich Contents- Browns (C:N ratio)

1. Dry leaves (60:1)
2. Cocopeat / Shredded coconut husk (104:1)
3. Straw / Hay (75:1)
4. Sawdust / Paper (325:1)
5. Wood / Twigs (400:1)
6. Crushed cardboard (350:1)

Browns reduce excessive moisture and provide carbon content to the compost.

The C:N ratio of the materials can be calculated by using the table above. For example, if you have two parts of leftover cooked food (C:N = 20:1) and one part of dry leaves (C:N = 60:1) then combined you have a C:N ratio of $(20:1 + 20:1 + 60:1)/3 = (100:3) = 33:1$.

5 MOISTURE

Moisture is an important factor in the composting process because it is required by the microbes that are working on decomposition of organic matter. However, too much water can make the compost pile / batch into a slimy mess (can produce odour due to anaerobic conditions) and too less water can make the pile dry and microbes may not survive.

The right moisture content for the compost pile is around 55-65%. To test this, if a handful of organic waste pile is squeezed, one to two drops of water may ooze out. This is a sure sign of optimum moisture content, which is neither too dry nor too wet.

Greens have more moisture and therefore, if waste pile has lots of greens, you will not need to add water to the compost pile and may need to add browns. Also, in rainy season or humid climate, more brown may be added to maintain the right moisture content in the compost pile as the moisture in the atmosphere is higher. However, keep the optimum C:N ratio in mind.

6 ACCELERATOR / MICROBES

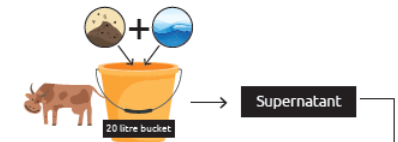
Microbial degradation of organic waste is a natural phenomenon, however to speed up the process, it is always good to accelerate the decomposition process using microbes under controlled conditions. These microbes can be found in:

1. Cow dung
2. Buttermilk / Curd
3. Old compost and soil
4. Microbial coco peat blocks available in the market
5. Microbial solutions available in the market.

Can we make accelerator at home?

Step 1

Mix 1-2 kgs cattle/buffalo dung (in 20 litre bucket) with water, let it settle for 4-5 hours and take supernatant out.



Step 2

Take 1 kg jaggery (or 0.5 liter molasses) and dilute it with warm water, let it cool.



Step 3

Mix both the supernatant of dung and jaggery water in a 20 litre bucket, to up to 10 liters.



Step 4

Be patient, cover the solution and keep it for three days with stirring at frequent interval. Once there is a sweet aroma, It shows that the effective microorganism solution is ready for uses.

Upto 50-100 ml

Can be used as and when waste is added to the container as an accelerator in initial stages of decomposition.

Upto 100 litres

Can be used initially in biogas digester to start the digestion process in the Plant.

More details can be found under anaerobic digestion section.

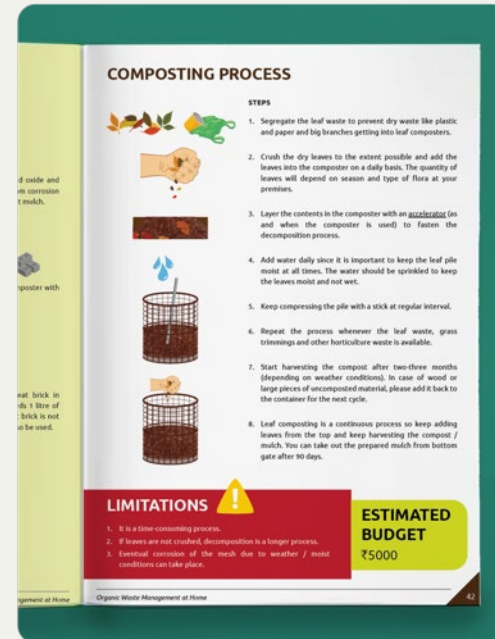
7 TOOLS

It is important to use the right tools during composting and anaerobic digestion. Each of the later chapters describe the tools that are needed for different organic waste processing techniques. Please do remember to use gloves while handling organic waste and a mask while turning the compost batch and / or checking on your digester.

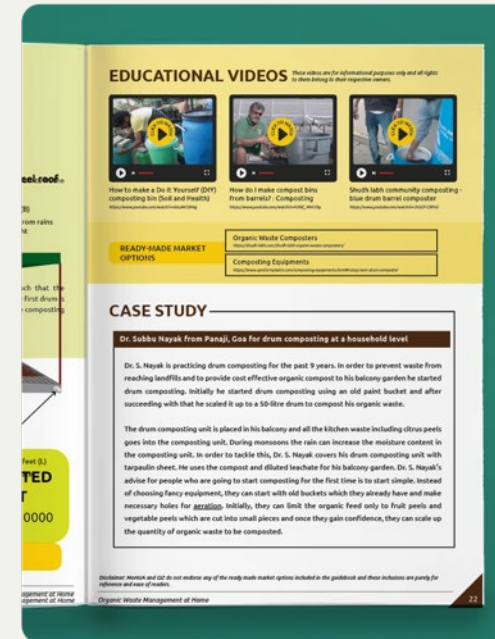
GUIDEBOOK FEATURES



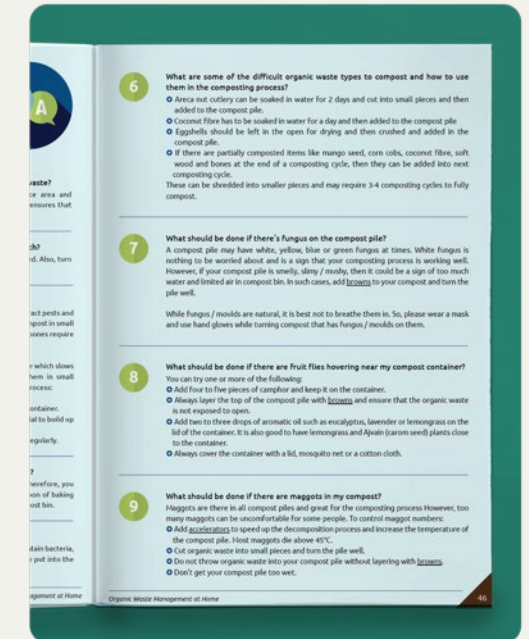
Step-by-step instruction on the design and assembly of different OWM solutions



Step-by-step process of the each OWM solutions



Educational videos, case studies and graphics



Frequently asked questions (FAQs) and troubleshooting

ABOUT TOOL

IT Tool has also been developed to help households with decision making regarding best suited OWM technique

Solution Tool for Organic Waste Management at Households



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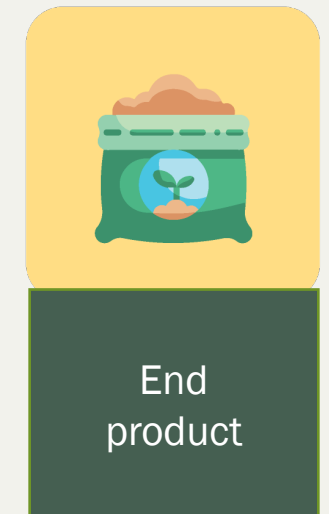
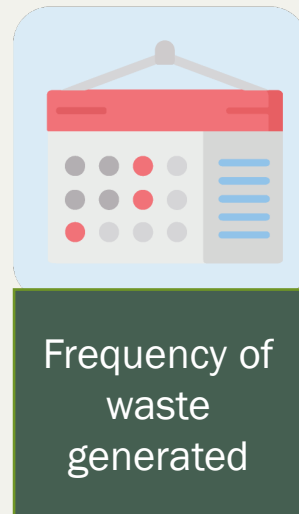
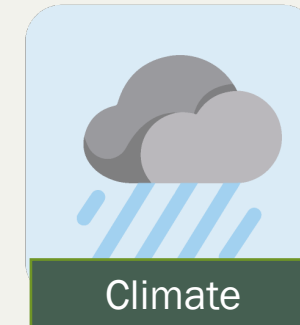
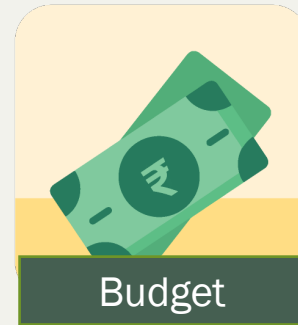
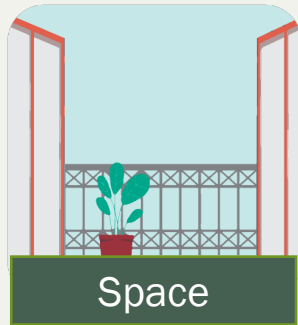


Ministry of Housing
and Urban Affairs
Government of India



MAIN PARAMETERS

To make your decision easy, questions on 7 main parameters for OWM have been developed in the **IT tool**. This will help households identify the OWM technique best suited for its needs



LIVE DEMONSTRATION OF
THE IT TOOL

Pot Composting

EARTHEN POT COMPOSTING

Handling 1-1.5 kgs of organic waste per day*

**typical quantity generated by a family of four to six.*

Pot composting is one of the natural composting method that can be used at home, especially apartments and houses that have no gardens / land. Earthen pots with their infinite micro holes (and additional holes), all over the surface allow circulation of air and hence provide a natural aerobic environment. Pot composting requires at least two or more pots that can be placed individually or stacked one on top of the other.

An earthen lid or cardboard sheet

- ▶ One / Two for covering pots / containers

Earthen pots

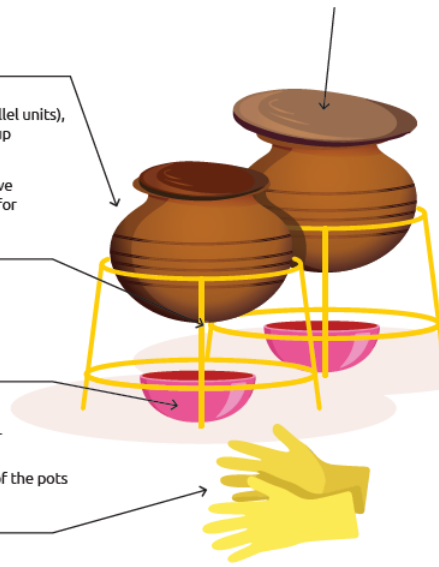
- ▶ Minimum two 20-litre pots (for parallel units), else three if you are stacking them up
- ▶ You will have to get the pots drilled to allow air circulation, as well as have a coin size drainage hole at bottom for leachate passing

Leachate container

- ▶ One under each bottom stand
- ▶ Any small plastic / earthen container can be kept, based on type of waste
- ▶ For collecting leachate coming out of the pots

Hand gloves

- ▶ One pair of rubber gloves which are impervious and can be washed and reused
- ▶ For filling as well as turning the batches



SPACE REQUIRED

Best suited for apartments and houses that have no gardens / land
Stacked pots: 2 square feet | Individual two pots are lined up: 4 square feet.

Bottom stand (optional for stable / cylindrical pots)

- ▶ Two (one if the pots can be stacked)
- ▶ 30 cm or more in height
- ▶ Made of MS / wood / brick pedestals
- ▶ Stability for the pots and to keep the leachate container below

Trowel

- ▶ One (small size)
- ▶ For turning and harvesting of compost

Browns

- ▶ Depending on requirement
- ▶ Layering the bottom of the pot / container and after each layer of organic waste



Pot Composting

ASSEMBLY / INSTALLATION

STEPS



1. Buy a pot with a hole at bottom make a coin size hole at the bottom of the pot. The hole is for leachate to escape.
2. Make some holes in the half top part of each earthen pot to allow air circulation. You can make these holes using small drill machine (1/8 inch holes). Around 8 holes per pot should be sufficient.

However, if the waste is relatively dry and you have access to lot of dry leaves, then the bottom hole is not essential as the leachate generation will be minimal.



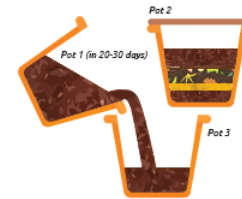
3. The pots should be kept on a stand for stability and also if you want to keep the leachate container below. The stand should be able to take the full load of the fully loaded pot that would weigh about 25-45 kgs.
4. Make a layer of **browns** at the bottom of the pot / container. Add two large spoons of **accelerator** to kickstart the composting process.

COMPOSTING PROCESS



STEPS

1. Put some **browns** at bottom of the pot to allow moisture absorption as well as air circulation.
2. Look at the types of food waste that is going into the pot. It should be segregated and food particles should not be larger than 3-4 cms. Chop the waste to accelerate the composting process. Liquids from the food such as curry and / or water should be drained out.



3. Layer the food waste in the pot, mixed with **browns** and **accelerator** to start the composting process. **Browns** should be at least half of the food waste and should be preferably hand crushed. Please refer to the section relating to **greens and browns** for more details.
4. After layering of food along with **browns**, cover the pot with a lid or put a cardboard sheet to prevent fruit flies and other insects. Please keep adding organic waste in the same way
5. Turn the pile once every 4-5 days. You may see insects and other bacterial growth inside. If the mix feels very dry, sprinkle water and turn and if too wet, add **browns** and turn the compost. The consistency of the mix should be such that if you take a handful and press it in your fist, it should bind but it should not ooze out water / leachate.
6. Once the pot is full, close it and leave it aside and start using the 2nd pot. You may change the position of this pot if you have a stacked pot system (but do not change the 3rd pot position). The organic waste in the first pot is likely to get filled in 20-30 days assuming a 20 liter pot is used and 1-1.5 kgs of waste is added per day. By the time the second pot is full, the waste in the first pot would have got converted into compost. You may empty this in third pot, and allow it to further mature.
7. Once you have the compost batch ready, allow it to dry, screen it and use it as manure. Follow the step 1 to restart the process.
8. Keep emptying the leachate container frequently because it has a strong smell and attracts flies.



LIMITATIONS



1. Earthen pots are heavy and are prone to breakage, therefore handling them is difficult. It is best that they are in areas which do not see too much human or pet movement.
2. Leachate collection happens in an open container that can attract flies and generate smell.
3. Difficult to remove compost from pots due to small opening.

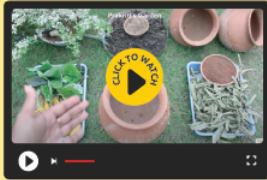
ESTIMATED BUDGET

₹1000 - ₹3000
Depending on size of pots

Pot Composting

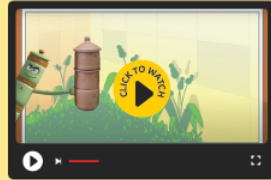
EDUCATIONAL VIDEOS

These videos are for informational purposes only and all rights to them belong to their respective owners.



How to make compost at home with kitchen waste

<https://www.youtube.com/watch?v=2H3Zd9H8z4>



Khamba (Stack composter) - composting the Daily Dump way

<https://youtu.be/tRuel2Y8PTI>

READY-MADE MARKET OPTIONS

Khamba 3 Tier Large | stack home compost bin for 4-5 persons

<https://www.dailydump.org/collections/composters-all/products/motalota-small-home-composter>

Mota Lota Small | Earthen 3 pot compost bin for small family

<https://www.dailydump.org/collections/composters-all/products/motalota-small-home-composter>

CASE STUDY

Sourabh Manuja from Aligarh, Uttar Pradesh for pot composting at a household level

Sourabh started pot composting in his balcony in 2019 at Aligarh, Uttar Pradesh. He chose home composting (stacked pot composter) over biogas because of the high temperature fluctuation in Western Uttar Pradesh region and frequent work travel (interrupted feed to processing unit). His family of 4 generates around 1 kg of organic waste every day where raw vegetables and cooked food is added to the compost pot. Sourabh avoids putting lemon and other citrus fruits in his composter.

The compost normally in summers takes around 45-60 days to get ready and is used for his plants. Some of the main problems he faced in the composting process were pots becoming too hot during summers and soldier flies / maggots coming out of the pot during very windy conditions. This was resolved by protecting the pot from direct sunlight and placing it away from winds. His composting journey has aided in source segregation efforts and raising awareness among family members about the waste problem and individual level solutions.

Disclaimer: MoHUA and GIZ do not endorse any of the ready made market options included in the guidebook and these inclusions are purely for reference and ease of readers.



“ When I initially started composting, I tried first in a plastic bucket which was thrown out by family due to odour issues (lot of moisture was retained in plastic buckets). But after the initial resistance and when the composting process was streamlined (with earthen pots), they saw value in it especially after seeing the compost generated. My kids are now the waste warriors at society, even promote composting idea at their school. My family is now fully aligned to the idea of composting at home. Also, maggots and soldier flies in compost are friends and one should not feel gross about it.

”

Drum Composting

DRUM COMPOSTING

The drum composting method is suitable for aerobic composting of organic waste in larger quantities and can be scaled easily for a community (generally apartments) that has 7-10 households by increasing the number of drums. In addition, given the size and closed nature of the drum, the organic waste and compost is better protected from rodents.

Handling
~10 kgs of
organic
waste
per day*

*typical quantity
generated by a family
of 10-12 members and
the drum used is of
200 L capacity.

SPACE REQUIRED

Approximately 8 square feet space is required for two drums of 200L.

Closed HDPE drum with openable lid

- ▶ Two drums
- ▶ 80L to 200L per drum depending on the waste generated
- ▶ Container that hosts the composting process

Stand or a small table for keeping the drum

- ▶ Two (one for each drum)
- ▶ 45-60 cm high
- ▶ Required if drums are placed on concrete, tiles and / or indoors



Drill

- ▶ To drills holes in the container for aeration

Tap for leachate removal

- ▶ Two (one for each drum)
- ▶ To remove the leachate from the drum

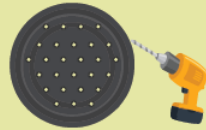
Plate / bowl that has higher edges

- ▶ Two
- ▶ Smaller than the bottom of the drum
- ▶ Collection of leachate

Drum Composting

ASSEMBLY / INSTALLATION

STEPS



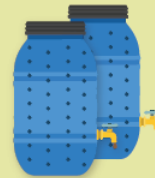
1. Make some holes on the lid and surface of the drum from top to bottom for aeration. The distance between the holes can be 10-15 cm and the distance between the rows of holes can be 15 cm.



2. Make a hole at the bottom of the drum to fit the tap for leachate removal.



3. In case you have a garden, the drum can be placed on the ground where the leachate can be absorbed by the mud. However, if you plan to place the drums on concrete, tiles and / or indoors, place the drum on a stand with the leachate collection plate at the bottom.



4. Two drums are recommended such that the second drum can be used when the first drum is full and set aside for the entire composting process.

COMPOSTING PROCESS

Same as pot composting.

LIMITATIONS



1. Initial financial investment to procure the drums is required.
2. Waste has to be turned in the drum every day, so as to maintain air circulation.
3. Leachate may attract flies and rodents. To prevent leachate the green and brown ratio should be balance properly. If leachate is produced it should be removed regularly.
4. Drums can be heavy during removal of compost.
5. Drums should be closed when not in use and should be protected from heavy rainfall.

ESTIMATED BUDGET

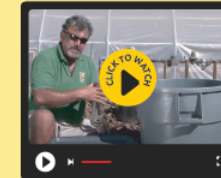
₹5000 - ₹10000

EDUCATIONAL VIDEOS

These videos are for informational purposes only and all rights to them belong to their respective owners.



How to make a Do It Yourself (DIY) composting bin (Soil and Health)
<https://www.youtube.com/watch?v=ksuNECBMg>



How do I make compost bins from barrels? : Composting
https://www.youtube.com/watch?v=H3NE_MK3Dg



Shudh labh community composting - blue drum barrel composter
<https://www.youtube.com/watch?v=3V9CF-C9H0>

READY-MADE MARKET OPTIONS

organic Waste Composters

<https://shudh-labh.com/shudh-labh-organic-waste-composters/>

Composting Equipments

<https://www.apinforplastic.com/composting-equipments.html#drag-twin-drum-composter>

CASE STUDY

Dr. Subbu Nayak from Panaji, Goa for drum composting at a household level

Dr. Nayak is practicing drum composting for the past 9 years. In order to prevent organic waste from disposal and to provide cost effective organic compost to his balcony garden he started drum composting. Initially he started drum composting using an old paint bucket and after succeeding with that he scaled it up to a 50-litre drum to compost his organic waste.

The drum composting unit is placed in his balcony and all the kitchen waste including citrus peels goes into the composting unit. During monsoons the rain can increase the moisture content in the composting unit. In order to tackle this, Dr. Nayak covers his drum composting unit with tarpaulin sheet. He uses the compost and diluted leachate for his balcony garden. Dr. Nayak's advise for people who are going to start composting for the first time is to start simple. Instead of choosing fancy equipment, they can start with old buckets which they already have and make necessary holes for aeration. Initially, they can limit the organic feed only to fruit peels and vegetable peels which are cut into small pieces and once they gain confidence, they can scale up the quantity of organic waste to be composted.

<https://www>

Drum Composting

Dr. Manindar Kaur from Agra, Uttar Pradesh for drum composting at a household level

Dr. Manindar Kaur is practicing home composting for the past 9 years. She is working as an associate professor at a university in Agra and in addition, is the president of a community organisation called Ecofriends Welfare Society.

The process of drum composting begins with covering the base of the drum with soil, dry leaves or cultured saw dust, thereafter, a layer of organic waste is put, and after that, the waste is covered with another layer of dry leaves or cultured saw dust. This process is repeated until the drum is full. The drum is then kept for 10 days as is and the leachate is drained on a regular basis from the tap (which is placed at the bottom of the drum). Thereafter, the compost is removed from the drum and placed in a pit or in a carton and covered with a layer of browns for 10 days and after which, it is ready to use.

“ Drum composting helps in diverting organic waste from landfill, which is a hazard to human lives. It is a cheap and effective way of composting large quantities of biodegradable waste in a small space. The compost can be used for growing plants and vegetables at home. ”



Pipe Composting

PIPE COMPOSTING

Pipe composting is one of the simplest and cheapest composting methods for small households. It is an **aerobic composting** process that uses Polyvinyl Chloride (PVC) pipes placed onto soil. This leads to organic waste decomposition along with feeding the soil with nutrients.

Handling 1-1.5 kgs of organic waste per day*

*typical quantity generated by a family of four members.

15 cm diameter » four pipes

25 cm diameter » three pipes

PVC pipes with an end-cap

- ▶ Three-four pipes
- ▶ 15 cm / 20 cm / 25 cm in diameter and 180 cm in height
- ▶ This will be the container

Drill

- ▶ One
- ▶ To drill 5mm holes in a straight line along the pipe (equidistant) and in the cap

Trowel / spade

- ▶ One in small size
- ▶ To dig a pit

SPACE REQUIRED

2.5 square feet is needed for the installation of one pipe assembly.

Large earthen / cemented pot if there is no garden or open space available

- ▶ One (with potted soil) which is at least 30 cm high
- ▶ Medium size
- ▶ Supports the composting process

Browns

- ▶ To absorb the moisture content and maintain the carbon:nitrogen ratio

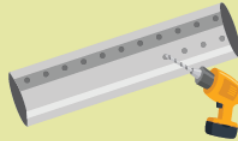
Accelerator

- ▶ To accelerate the composting process

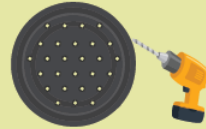
Pipe Composting

ASSEMBLY / INSTALLATION

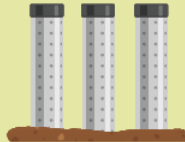
STEPS



1. Take the pipe and drill 5mm holes in a straight line which are equidistant from each other on the pipe for good aeration. This is very important for the aerobic decomposition process.



2. Drill holes on the end cap also.

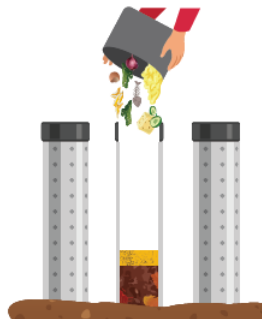


3. Dig a 30 cm pit in your garden and / or in a large pot and fix the pipe there. Place the pipes in shade and not direct sunlight.



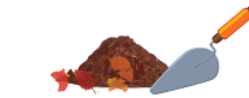
4. Add crushed browns and an accelerator in a layer of 5-7 cms approximately at bottom.

COMPOSTING PROCESS



STEPS

1. Add small pieces of segregated chopped organic waste (3-5 cms) into the pipe composter.



2. Layer the organic waste in the pipe with browns in the ratio of 1:1 and an accelerator. C:N ration should be considered while feeding organic waste in the pipes. Place a cap on the pipe after adding food waste to keep rodents and other pests away.



3. Repeat the process of adding organic waste and browns (using appropriate ratio as in greens and browns) till your pipe is filled. Generally it may take upto 2 weeks to fill one pipe.



4. After the first pipe is filled, start using the second pipe, repeating the first 3 steps. Similarly start using the third and fourth pipe.

5. By the time the third / fourth pipe is filled, the first pipe is ready for harvesting.



6. The ready compost can be harvested by lifting the pipe and screening the matter. The larger portions from screenings can be placed back to the container with fresh waste.

LIMITATIONS



1. Pipe composting will not work if the soil is too loose (sandy) or if the ground is too rocky, choose your ground/pot mix carefully.
2. If there is too much water present under the topsoil, it can hamper the leachate dispersion in the soil and thereby lowering the rate of decomposition, locate your pipe composter appropriately.
3. In rainy season, the pipes can be clogged. Place the pipe composter in no-flood zone and under shade.
4. The pipes can be heavy once filled and therefore, harvesting of compost which requires lifting of pipes can be difficult.
5. It is important to have holes for aeration in the pipes because absence of this can lead to anaerobic conditions and cause odour.

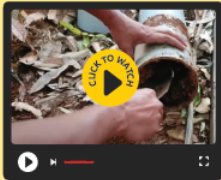
ESTIMATED BUDGET

₹2000

Pipe Composting

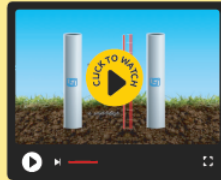
EDUCATIONAL VIDEOS

These videos are for informational purposes only and all rights to them belong to their respective owners.



DIY pipe composting using aerobic method

<https://www.youtube.com/watch?v=e22tEzCt900>



Pipe composting - easy way for composting at home

<https://www.youtube.com/watch?v=Qh-DNOCZ8P4>

CASE STUDY

Mr Ramakrishna from Udupi, Karnataka for pipe composting at a household level

Mr. Ramakrishna started pipe composting in 2020 when a local NGO explained to him about home composting in pipes. He and his wife installed 3 PVC pipes for composting the organic waste generated in his house. The organic waste including vegetables, fruit peels, egg shells, fish and chicken waste were fed. The pipes had holes drilled into them for proper aeration. He adds cocopeat, dry leaves and cow dung for carbon content and for accelerating the compost process. Once the pipe is filled, it takes 2-3 months for the compost to be fully ready. The ready compost is used in his garden for enriching the soil.

Udupi is a coastal city and it rains a lot during monsoons. During this time, Mr. Ramakrishna ensures that his pipes are well covered and he adds more brwns in the pipes to absorb the additional moisture. He also avoids food with too much moisture such as banana stems for composting in the pipes.

Disclaimer: MoHUA and GIZ do not endorse any of the ready made market options included in the guidebook and these inclusions are purely for reference and ease of readers.



“ Pipe composting is a cheap & a good model. But it needs patience because compost especially during heavy rains can take upto 3 months to get ready. Composting turns waste to a thing of value right at home and that is why it is important to teach the young kids about composting. ”

**Use this guidebook and tool
to start managing your
organic waste at home.
Help make a Swachh Bharat
and a healthier planet!**



THANK YOU

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