SIMPLE SOLUTIONS FOR ORGANIC WASTE MANAGEMENT

For HOUSEHOLDS, SHOPS, SCHOOLS, ACCOMMODATION PROVIDERS and OTHER SIMILAR HUMAN DWELLINGS

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Developed by WASTE WARRIORS

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JOURNEY OF WASTE IN INDIA

Collection of mixed waste

Segregation of recyclables from mixed waste

Dumping of remaining waste in a dumping ground

Household dustbin of mixed waste

Because of NOT SEGREGATING waste and throwing it, MIXED, we are not only adding to pollution, disease, man-animal conflict but also wasting valuable resource by not reusing, recycling or processing it.

Food waste or organic waste which is almost 60% of the total waste generated, can be easily converted to natural compost which is a valuable resource to give back to mother nature.
WHAT IS ORGANIC WASTE?

All the components of waste which are organic in origin are termed organic waste. It constitutes approximately 60-70% by weight of the total solid waste generated.

Organic waste can be further categorised into two:

**FOOD WASTE**
- Cooked and uncooked food waste
- **STORAGE**: in labelled, covered green bin with a tight lid to keep away from pests & rain.

**HORTICULTURE WASTE**
- Organic waste from farms and gardens
- **STORAGE**: in reusable bags with strings to close the mouth or pile in open space and compost

**SOLUTION**
- convert to natural compost that can be sold or used in your own garden, park or farm
ORGANIC WASTE

Wet Food Waste

Organic, Horticulture & Food Waste

Leftover food (cooked & uncooked)
Vegetable and fruit peels

Fresh grass clippings and garden trimmings

Manure (chicken, horse, rabbit, or cow)

Egg shells
Fish & meat bones

Coffee grounds, filters, and tea bags

Dry grass and leaves

Dry twigs, branches, straw and sawdust

Hair clumps and nails

Food stained paper

Floor sweepings and dust
Cooked and uncooked food waste can be given to your pets and animals if suitable.

If you have no animals then you can easily compost it

There are many ways to compost organic waste, vegetarian as well as non-vegetarian.

There are aerobic processes and anaerobic processes.

There are methods for city dwellers with little space and for farmers with large land holdings.

There are cheap solutions and expensive, fancy ones too.

There is a solution for every kind of requirement.
Composting Bin
an easy solution for food waste
for homes with little food
waste and no open space

Khamba Composter
to help you
compost food
waste at home,
conveniently
and hygienically
in little space

Vermi-Composting
to compost
select food
waste items &
horticulture
waste with the
help of worms

METHODS FOR COMPOSTING (1-3)
Biodynamic Composting
For composting large quantities of organic waste at one time

Enclosed Composting
to compost large volumes of garden and food waste in a wire enclosure

Heap Composting
composting horticulture or garden waste in a layered heap

METHODS FOR COMPOSTING (4-6)
Organic Waste Converter - a self-contained mechanized system of composting

NADEP Composting for composting large quantities of organic & food waste

Mantis Composter for composting food waste anaerobically

Methods for Composting 7-9
ENCLOSED COMPOSTING- ECU

A process to naturally convert all food (cooked & uncooked) & horticulture waste, into rich natural compost in an enclosed wire structure.

> The same process can also be followed for NADEP .
> This is an aerobic process requiring open garden space and should be created under shade, preferably in an east-west direction.
> Enclosure size should be 4ft tall, maximum 4ft wide and 6-8ft length (which can vary from 4 to 12ft).
> If multiple enclosures are created there should be minimum 5-6 ft distance between two structures.

Items required for an 8 x 4 ft ECU- Enclosed Compost Unit

> 6 poles 6-8 ft length,
> chicken wire 4ft wide x 30 ft length,
> nails to hold the chicken wire to the poles,
> wooden pegs to hold the wire to the ground,
> hammer,
> a bundle of thin lintel wire,
> horticulture waste (green leaves, brown leaves and sticks),
> Any kind of food waste,
> cow dung or bio-accelerator

Each structure of 8ft length x 4ft wide x 4ft height is enclosed with chicken wire (held together with 6 poles). Thereafter it is layered with a sprinkling of water, green leaves (for nitrogen), brown leaves (for carbon), sticks (for aeration), food waste (layered in the centre about 1ft AWAY from all sides). Cow dung/bio-accelerator and water should be sprinkled on each layer. Each layers should be approximately the same quantity by weight (50-60g). Care must be taken to not press the pile from the top to ensure aeration between layers. Cow dung could be replaced with a natural accelerator like NatureVel SW.
ECU - STEP 1

The first step is to look for the ideal spot for setting up the enclosure.
Dig holes of 1 ft depth to erect 6 poles in a rectangular shape; 4 poles in each corner and 2 poles along the longer length in the centre.
Wrap the chicken wire around the poles to create an enclosure. **Keep the 2 poles along the length outside of the net enclosure to hold the bulging of the wire when the structure fills with organic waste.**
Once the chicken wire is wrapped around the poles, fix it to the poles with smalls nails. Use small wooden pegs to hold the wire at the bottom to the ground from outside. Dig the ground inside the enclosure for aeration and then close the enclosure.
Sprinkle some water on the ground inside the enclosure then lay out dry sticks in a slant to provide aeration. Then spread a layer of assorted green leaves on top of the sticks. Liberally, sprinkle cow dung and water or natural accelerator solution on top of the green leaves.
Spread a layer of brown leaves above the sticks and green leaves. Sprinkle cow dung and water or natural accelerator solution on top.
ECU - STEP 6

Start the layering of sticks, green leaves and brown leaves AGAIN. This time a layer of food waste OR pickled food waste (from drum composting- DC) can also be added as the 4th layer, in the end. **Remember to keep it one foot inside of the edges of the enclosure.** Sprinkle cow dung and water mix or natural accelerator solution between each layer.
Continue laying thin layers inside the enclosure of green leaves, brown leaves, sticks, and food waste (in this order). Keep doing this until the structure is filled till the top. Layering can be added over a period of few days or on the same day depending on the amount of food waste. **LAST LAYER should be brown leaves.**
When the structure is full, layer the top with cloth or rags to maintain the moisture. Then seal the entire top surface with chicken wire to keep out animals and other elements.
While the compost is getting ready in the enclosure, spraying of water or cow dung and water or natural accelerator solution should be done especially on very hot days to maintain the moisture.
After 3-4 months, compost should be ready. Sieve it for finer results. Put big pieces of organic waste that have not decomposed, back into the enclosure for further composting. **Sell or use compost in the your garden or farms.**
You can make multiple enclosed composting units or NADEP structures in one plot. **Keep 5 ft distance between the enclosures.**

The enclosed composting method can take anywhere from 3 months (in summer) to 6 months (in winter) for the compost to be ready. You can check if it is ready by putting your hand in the middle of the pile, about 6 inches deep. If it feels crumbly & grainy then it means the compost is ready.
This a variation to the ECU (Enclosed Compost Unit) for establishments with lots of food waste but not too much space for multiple ECU's. The pickled food waste from these containers can be shifted to an ECU (after a few months) for further composting, lessening the total time it would take the food waste to compost if only layered in an ECU.

Even for smaller households, with small yards and not a lot of food waste, container compost systems are a good way to go! These will not be an eyesore in the garden and prevent smell & any rodent concerns.

For container composting, you can use an iron drum, plastic barrel, wooden box or any such similar container.

Contained composting is done anaerobically, so you will also require a plastic sheet/tarpaulin, large enough to cover the mouth of the container. Alternatively you can also choose a container with a tight lid.

**ITEMS REQUIRED FOR CONTAINER or DRUM COMPOSTING**

- Composting container (drum, barrel, box)
- Plastic sheet/tarpaulin to cover the container and rope to tie it
- Any kind of food waste
- Cow dung or bio-accelerator
Use a drill machine to make holes in the bottom of the container. Make 6-8 holes (about ¼-inch wide) spread across the bottom surface.

Find the ideal corner spot in your garden to place the container. Make a 4 inch deep hollow in the ground to place the container.
DC - STEP 3 & 4

Lay out a thin layer of sticks & green leaves at the bottom of the container followed by a sprinkle cow dung or natural accelerator solution.

Dump the food waste in & cover with a thin layer of dry leaves. This will absorb the moisture from the food waste. **Press & pack it in tightly.** Liberally sprinkle cow dung or natural accelerator solution between each layer.
To close the container, cover its mouth with the plastic sheet/tarpaulin and tie a rope around to fix it tightly.

To compost next batch of food waste, remove cover & repeat from Step 3. Liberally sprinkle cow dung or natural accelerator solution between each layer.
**DC - STEP 7 & 8**

Once the container is filled to the top, leave it for 30-60 days with the cover fixed tightly. A pickle like mass will start forming inside.

Remove this pickle and either mix with soil, where it will convert to crumby rich manure in a few weeks. You could also use this pickle as food waste for an ECU and continue from ECU Step 6 onwards to make natural compost.
The ready compost will be a crumbly dry mix, like rich soil. This can be spread in the garden or put in your pots for improving the health of plants. With ready compost, you can also start growing organic vegetables.
Reduce
Re-use
Recycle
Rot

4 R’s To help to responsibly manage waste