What is composting?

- Composting is the natural process of 'rotting' or decomposition of organic matter by microorganisms under controlled conditions.

- Raw organic materials such as crop residues, animal wastes, leftover food, some municipal wastes and suitable industrial waste can be used as a fertilizing resource, after having undergone composting.
Compost

- Compost is a rich source of organic matter and nutrients essential for plants.
- It helps:
  (i) Soil becomes more resistant to stress such as **drought, diseases** and **toxicity**
  (ii) helps the crop in improved uptake of plant nutrients
Why we should Compost?

- To utilize your kitchen waste
- To create organic fertilizer for your Garden
- Less trash in your bin and dumpsters
- Less mixed waste going to landfill
- More value for recyclables
- Less greenhouse gas emission from landfill
Types of Composting

Composting may be divided into two categories by the nature of the decomposition process.

1. **Anaerobic composting**
   - Decomposition occurs where oxygen (O) is absent or in limited supply.
   - Takes several years and usually happens in Landfills.
   - By-product is an intermediate compounds including methane- leading cause of global warming

2. **Aerobic composting**
   - Takes place in the presence of ample oxygen.
   - Aerobic microorganisms break down organic matter and produce \( \text{CO}_2 \), ammonia, water, heat and humus.
Components of Composting

1. Bedding Material (Bottom layer of pit):

- It is bottom layer of the composting pile which absorbs leachate water and makes the pile porous.

- There are generally two types of bedding material.
  
  **Carbon Rich**: Dry leaves, saw dust, wood chips, wheat rye straw, paper, shredded cardboard, shredded tyres, coco peat.

  **Nitrogen Rich**: Cow dung, cow dung slurry, manure.
Components of Composting

2. Aeration/turning:
Aeration provides oxygen to microbes, regulates the temperature and moisture.

3. Moisture-
Moisture is necessary to support the metabolic activity of the microorganisms.
**Components of Composting**

4. **Bulking Agent:**
   - Carbon based material that adds structure to your compost pile
   - It makes composting pile more porous and aerated
   - Gives microbes room to breathe

5. **Effective Microorganism Solution (Inoculum):**
   - It contains microbes, responsible for biodegradation of waste and also enhance the composting process.
Components of Composting

6. Activator:

- Compost that breaks down slowly often lacks nitrogen.
- Activators help break down materials high in carbon.
- **Coffee grounds residue** and **dry leaves** are superb activators.

7. Leachate (Compost tea)

Residue viscous liquid which comes out from rotting of waste.
Components of Composting

8. Curing-

- Curing is aging, or maturing stage, and it is a long and important one.

- Uncured compost can produce phytotoxins (substances toxic to plants).
1. **Bin/Mataka Composting**-
   - For back yard or household level composting
   - Take terracotta pot at least 1 ft height and drill a hole of 1 inch diameter on top.
Methods of Composting

Don’t fill more than 3/4th of each unit with waste at one time.

Waste is first filled in Unit A. When Unit A gets 3/4th full, Unit A moves to the middle and Unit B moves to the top. Waste is now dumped in Unit B. While this is happening the waste in Unit A reduces in volume. This is then transferred to Unit C after Unit B is 3/4th full. Unit A is now empty and ready to be placed on top. Unit B is shifted to the middle.

This cycle repeats.

The leechate (water discharged by composting matter) filters down Unit A and Unit B to reach the bottom Unit C to be absorbed by the almost done compost.
2. Garden Waste (dry leaves) composting -

- Dry leaves contain high amounts of carbon and lignin.
- Simple yet time-taking process.
- Can be done in chicken wire enclosure or wooden pallets enclosure.
- Shredding and adding activator like coffee ground residue can speed up the process.
3. Pit composting

- Carried out in an enclosed elevated pit
- Suitable for composting 50-800kg/day
- 3-4 months for composting
- Churning or turning twice a week
- Regular monitoring of temp and moisture
- Curing is important after taking out compost from the pit
Methods of Composting

4. Vermicomposting-

- Composting with the help of **Red worms** (*Eisenia foetida*) or **European Night crawler** or **African Night Crawler**.
- 1kg worm for 100 kg waste
- Worms can consume half of their body weight per day. Excreta rich in nutrients
- Keep the heap between temp 28-32°C, water it regularly and cover it with jute sheets.
- After one month we will get compost by removing layer by layer starting from top.
Methods of Composting

5. Windrow Composting-

- Wind-row composting consists of placing the mixture of raw materials in long narrow piles called wind-rows
- Suitable for composting 1000kg-500 tonnes/day
- For city level composting units
FAQ

● What I can put in composting bin?
● What does not go into the compost heap?
● How often do I turn the pile?
● How can I speed up the process? Is shredding a good idea?
● How do I keep pests out of my compost?
● Should I put my compost in the sun or shade?
● How long does it take to compost?
● How do I know when the compost is ready?
● Will it smell bad?