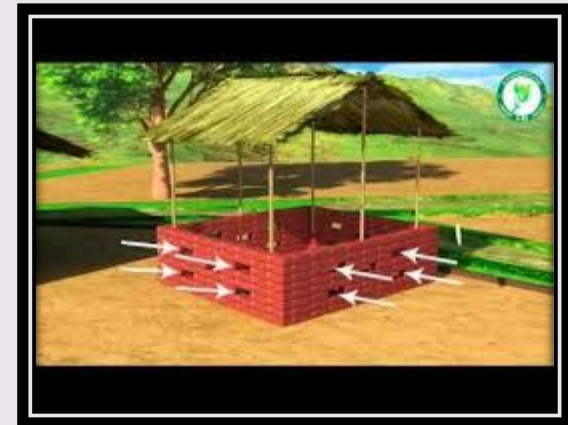




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# **Module 5: GREEN MANURES, LIQUID MANURES, PANCHGAVYA, BIODYNAMIC, NADEP AND VERMICOMPOST**



## **Session 2: PANCHGAVYA, PSB, VAM AND NADEP and VERMICOMPOST**



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# Panchgavya Preparation:

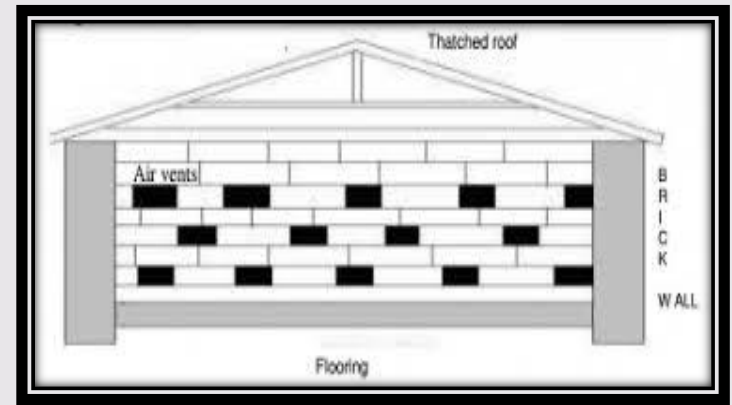
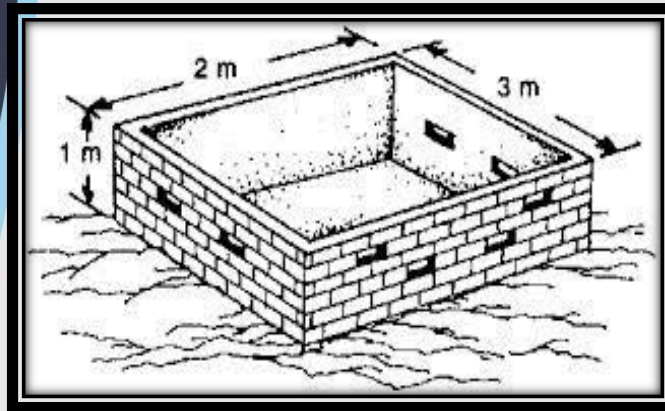


- ❖ As the name suggests it uses five products from cow and a few more natural ingredients for the fermentation process.
- ❖ It is a special bio-enhancer prepared from five products obtained from cow-dung, urine, milk, curd and ghee. Dr. Natrajan from TNAU has further refined the formulation suiting to the various horticultural and agricultural crops.



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# NADEP Method of Composting:



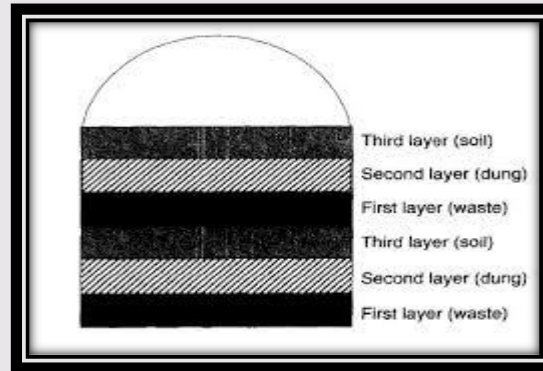
- ❖ NADEP method of making miracle compost was first invented by a farmer named Narayan Deotao Pandharipande (also popularly known as “Nadepkaka”) living in Maharashtra (India).
- ❖ This method becomes quite popular among the farmers in western India.
- ❖ In dryland conditions, organic manures play a great role as they not only supply balanced nutrients but also retain substantial amount of moisture.



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# Selecting and Preparing the Site for NADEP Tank:



- NADEP method uses a permanently built tank of mud or clay bricks, or cement blockettes. It is, therefore, important to choose the permanent site for the tank with care. This is good anytime of the year where moisture is limiting, and is the best way to make compost after the rains have finished and during the dry season.
- Prepare and dig the pit, or better still, a series of three pits, when land is moist and easier to dig, and/or when there is a gap between other farming activities.



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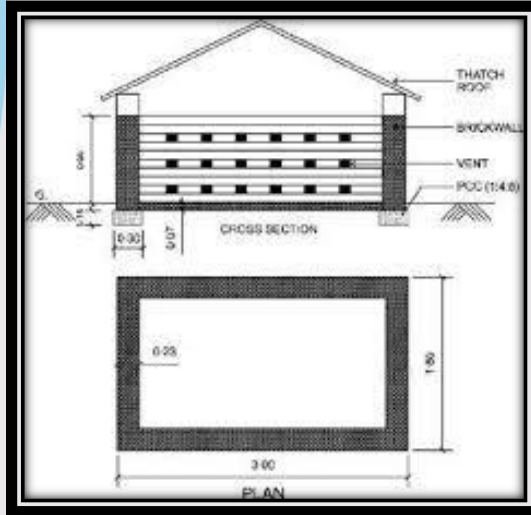
- If possible, make compost immediately at the end of the rainy season while there are plenty of green and moist plant materials.
- In the dry season, make the pit near a place where water can be added, e.g. next to the home compound where waste water and urine can be thrown on the compost materials, or near a water point, e.g. a pond, or near a stream where animals come to drink.
- Mark place of the pit with a ring of stones or a small fence so people and animals do not fall into it accidentally.





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# Construction of NADEP Tank:



1. The inside dimensions of the tank are as follows:

Length: 3 metres

Width: 2 metres

Height: 1 metre



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2. This size of tank requires 120–150 blockettes or mud bricks, four 50-kg bags of cement, and two boxes of sand. Five iron rods can be used to strengthen the floor, but they are not essential.
3. The building should be done by a properly qualified mason, i.e. someone who knows how to build such a structure.
4. The floor of the tank is made of bricks or blockettes laid on the ground and covered with a layer of cement.



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# Filling the Tank:

## NADEP Method

### Method of Filling Tank

Slurry made of cow dung and water should be sprinkled on the floor and the walls of tank. The filling of tank follows these steps:

#### First layer

Vegetable residues are spread evenly in layer up to 6 inches (50-100 Kg) in tank.

#### Second layer:

4-5 Kg Cattle dung of *gobber* gas-slurry in 70 litres of water should be apply on the first layer.

#### Third layer:

50-60 Kg sieved soil added on the second layer of tank .

In this way, the tank is filled layer by layer up to 1.5 feet above the brick level of tank (30 layers)

Filled tank should be covered and sealed by 3 inch layer of soil (300-400Kg)

It should also be pasted with a mixture of dung and soil.





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## *Contd...*

5. Each of the four walls has three rows of holes or gaps between the bricks or blockettes.
6. After the tank is built, the walls and floor are covered with a light plaster of fresh cow dung mixed with water, and then the plaster is left to dry.





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## Following up on the NADEP Compost Making Process:

- It is important to keep the contents of the tank moist, i.e. with a moisture content of 15–20%.
- Check the mud plaster seal on the top of the tank and fill any cracks that appear with cow dung plaster.
- Pull out any weeds if they start to grow on the surface, as their root systems can damage the cover and take water out of the compost.



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## *Contd...*

- If the atmosphere gets very dry and hot, such as in the dry season, water can be sprayed through the gaps in the walls of the tank.
- The decomposition process for compost to be made takes about three to four months in a warm climate. When it is mature, it is dark brown, moist, and with a pleasant earthy smell: little can be seen of the original materials that were put into the tank. This mature compost should not be allowed to dry out or it will lose a lot of its nitrogen.



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## *Contd...*

- Vermicomposting is a method of preparing enriched by which worms are used to convert organic materials (usually wastes) into a humus-like compost. Earthworms consume biomass and excrete it in digested form called worm-casts. The casts are rich in nutrients, growth promoting substances, beneficial soil micro flora and having properties of inhibiting pathogenic microbes.







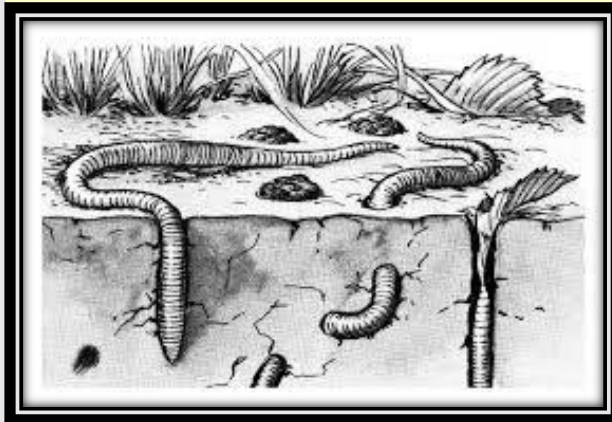
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- ❖ There are nearly 3600 types of earthworms in the world and they are mainly divided into two types:

(1)

**burrowing**



(2)

**Non-  
burrowing**







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## Contd...

- The burrowing types live deep in the soil. On the other hand, the non-burrowing types convert the organic waste into vermicompost faster.
- The earthworm species commonly used for vermicomposting are:



*Eisenia foetida* (Red earthworm)



*Eudrilus eugeniae* (African earthworm or night crawler)



*Perionyx excavatus* (Composting earthworm)



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# Different Methods of Vermicomposting

- **Pits below the ground:**
  - Pits made for vermicomposting are 1 m deep and 1.5 m wide. The length varies as required.





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## *Contd...*

- **Heaping above the ground:**

- The waste material is spread on a polythene sheet placed on the ground and then covered with cattle dung. Considering the biodegradation of wastes as the criterion, the heap method of preparing vermicompost is better than the pit method.





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## *Contd....*

- **Tanks above the ground:**

- Tanks made up of different materials such as normal bricks, hollow bricks, asbestos sheets and locally available rocks can be used for vermicompost preparation. Generally, it can be made with dimensions of 1.5 m (5 feet) width, 4.5 m (15 feet) length and 0.9 m (3 feet) height.





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- **Cement rings:**

- Vermicompost can also be prepared above the ground by using cement rings. The size of the cement ring should be 90 cm in diameter and 30 cm in height.



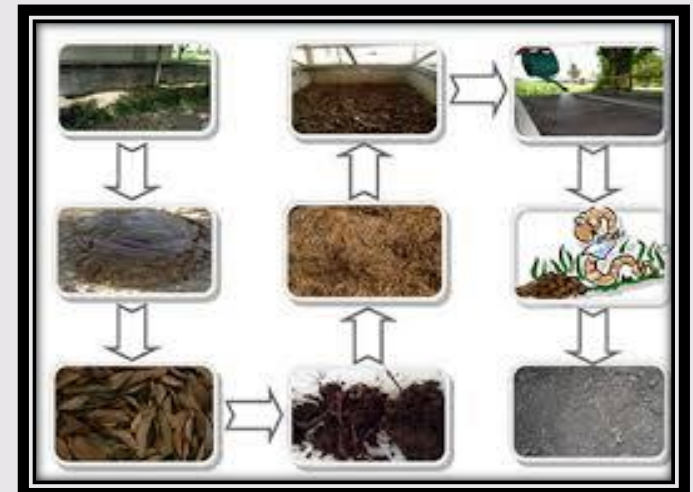




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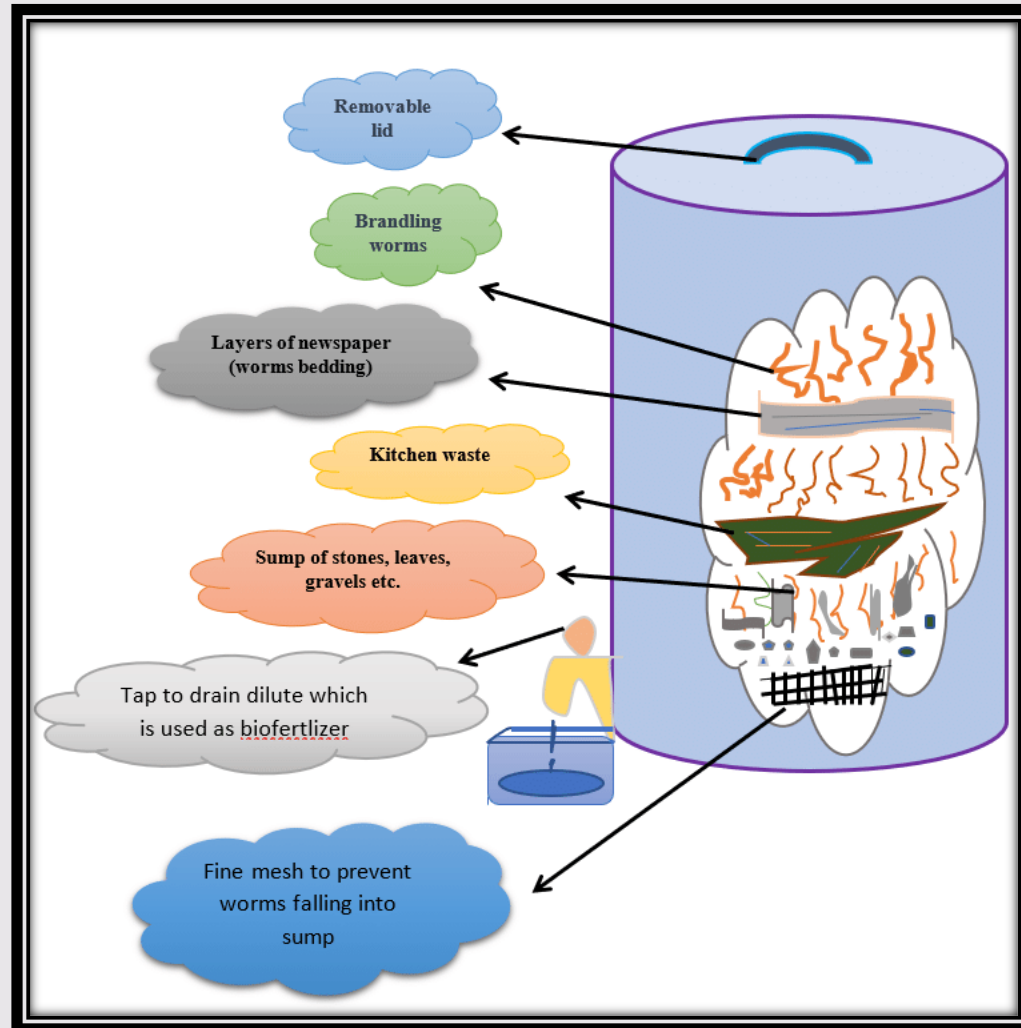
# Materials Required for Vermicomposting





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# Procedure of vermicomposting

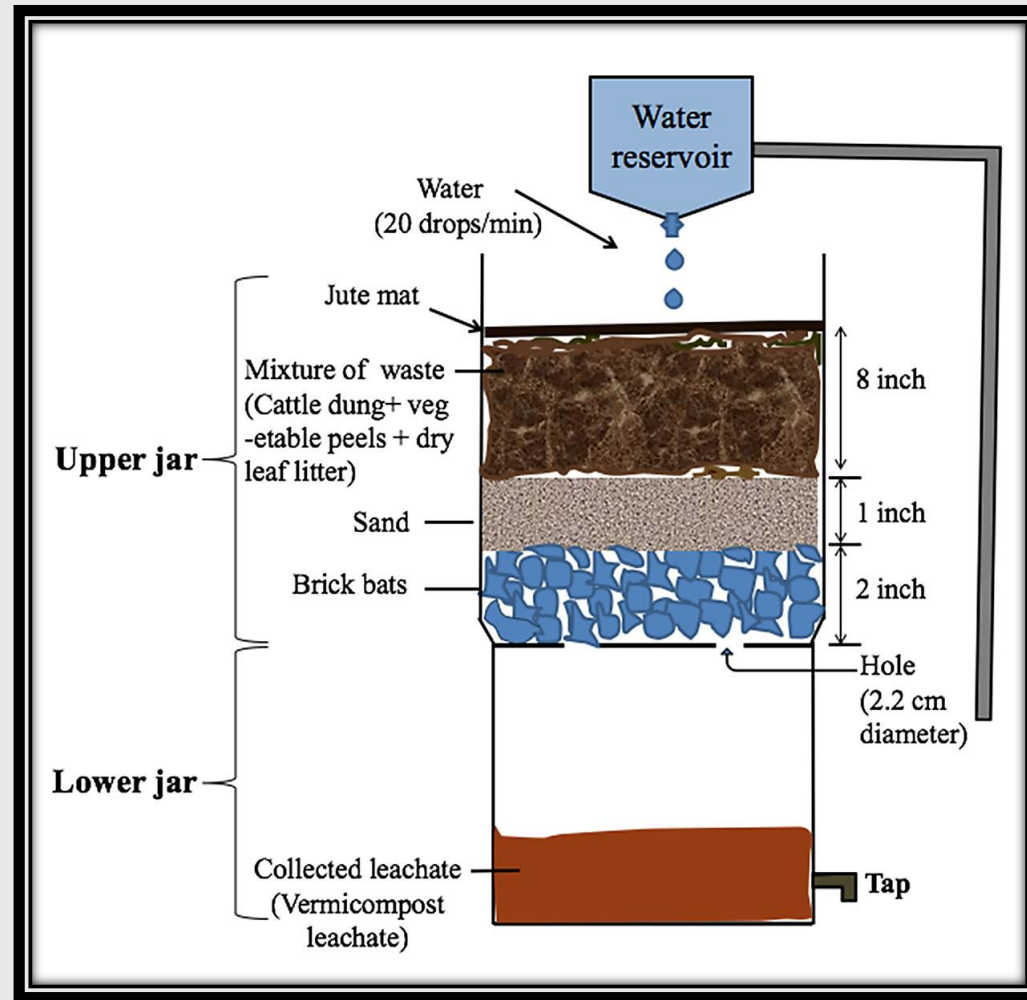




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