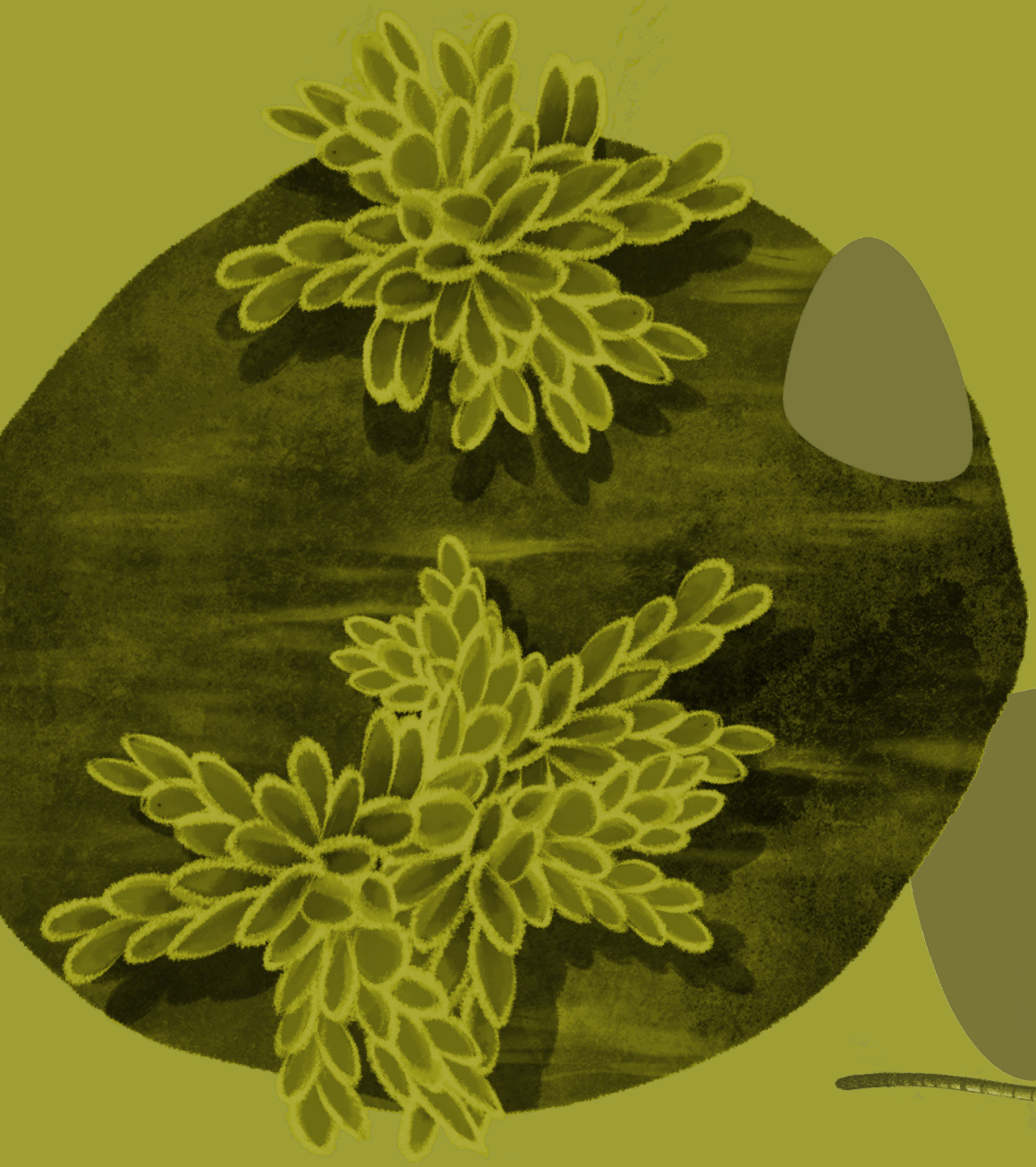

ORGANIC COMPOSTING METHOD

HRDP-ABOHAR
Parivartan Project, P0221

Sponsored by
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About the Organisation

The Centre for Advanced Research & Development (CARD) is a non-government organisation established in India with its HQ at Bhopal (Madhya Pradesh) with their activities of research, evaluation, documentation and programme execution spread nation-wide. To promote innovative action research and to apply its findings for the protection and development of the society and its environment has been the prime purpose to establish CARD.

CARD
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ORGANIC COMPOST METHODS IN HRDP-ABOHAR

Since the inception of the HRDP project in 2017 – 18, their focus has been towards increasing the usage of organic manure by the farmers in eight project villages. In the first year Centre for Advanced Research and Development intervened with vermicompost sheds. Under this 32 selected farmers were provided with vermicompost sheds and worms and were made to fill the sheds by themselves. Similarly, in the second year of the project (2018 -19), ninety-two farmers were given Vermin – bags filled with worms. This procedure was a bit different as vermin-bags were provided instead of a cemented structure, for filling the cow dung. In the third year (2019-20), CARD intervened with a new method which is known as NADEP. Under this method, construction of structures took place for the beneficiaries, with the dimensions 10 ft in length, 5 ft in width and 3 ft in depth. Here the beneficiaries had to fill these structures with straw, cow dung and soil in subsequent layers till it reaches to the top. On the top, the pit is covered and sealed with a mud layer. In the fourth year of operation (2020 -21), CARD has planned to introduce Azolla pit with 80 farmers in the project villages.

Why Organic Compost?

Punjab after the green revolution saw wide usage of chemical fertilizer and pesticides. This practice indeed had contributed to the surplus production but gradually led to the loss of nutrient retention capacity of the soil. Further, the leaching of chemicals from draining of water had contaminated water resources at many places. So the emphasis was being given by both government and civil society organizations to make farmers understand the importance of shifting to the organic method of applying fertilizers on the field as often as possible. Most of the farmers have adopted organic practices and have retained these practices in every cropping season, which caused a rise in demand from the other farmers also for the provision of organic compost making methods.

CARD, in the eight villages (7 in Fazilka District and 1 in Shri Muktsar Sahib District) is committed towards the cause of organic demonstrations and organic agriculture practices by farmers. The organic compost methods applied in the project is as below.

BENEFITS OF COMPOST

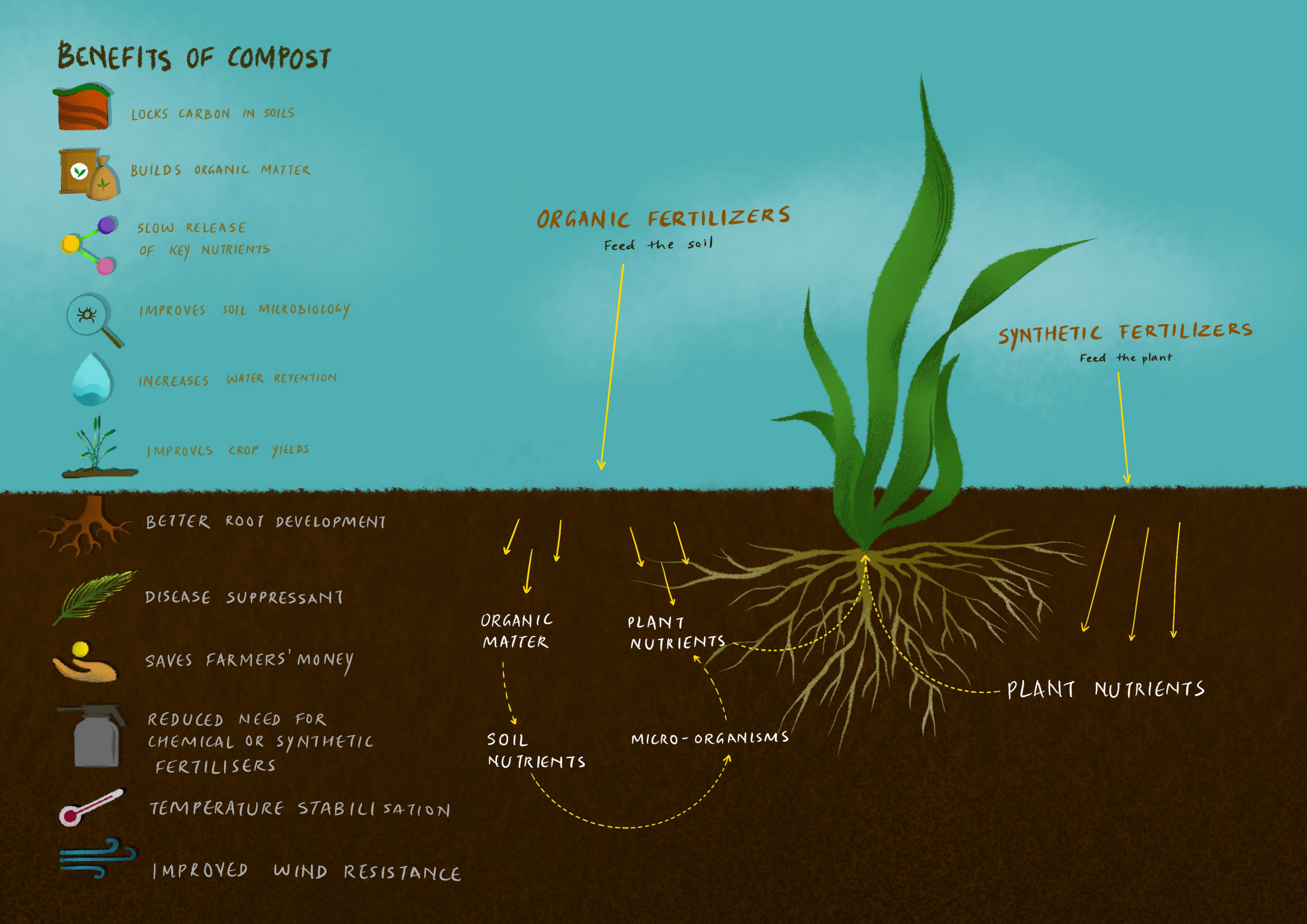
- LOCKS CARBON IN SOILS
- BUILDS ORGANIC MATTER
- SLOW RELEASE OF KEY NUTRIENTS
- IMPROVES SOIL MICROBIOLOGY
- INCREASES WATER RETENTION
- IMPROVES CROP YIELDS
- BETTER ROOT DEVELOPMENT
- DISEASE SUPPRESSANT
- SAVES FARMERS' MONEY
- REDUCED NEED FOR CHEMICAL OR SYNTHETIC FERTILISERS
- TEMPERATURE STABILISATION
- IMPROVED WIND RESISTANCE

ORGANIC FERTILIZERS

Feed the soil

SYNTHETIC FERTILIZERS

Feed the plant

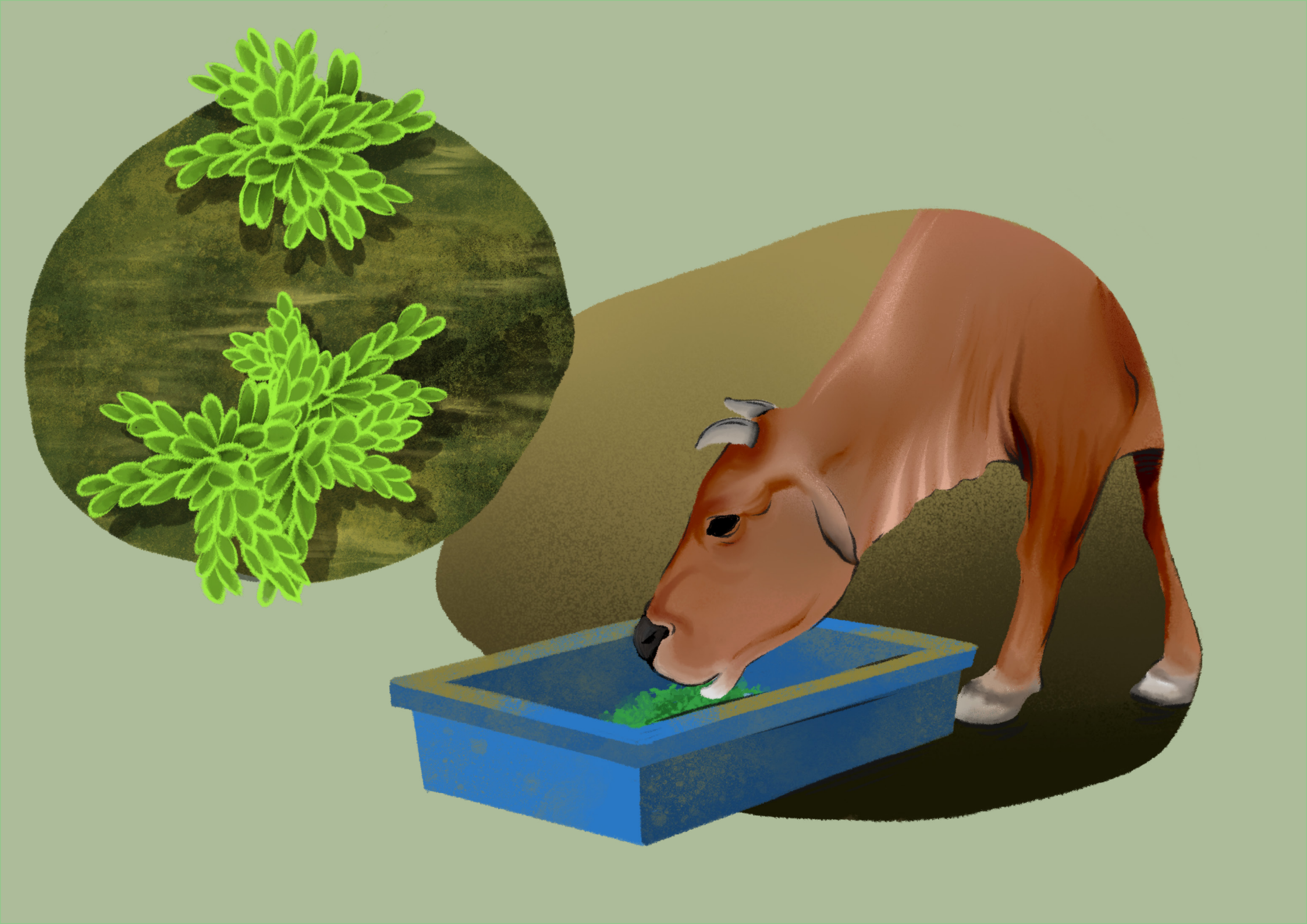


Azolla Method

Azolla is a waterborne plant which is a branched free-floating aquatic fern. As it rapidly grows on the surface of the water, many farmers use it as fodder for animals and as a biofertilizer. It has a wide range of use including fodder for dairy cattle, pigs, chicken, ducks and fish. Azolla is used widely as a biofertilizer due to its nitrogen-fixing capability. When rice paddies flood with water in the spring season, the farmers inoculate with Azolla, which then quickly multiplies to cover the water, suppressing the growth of weeds. The rotting plant material releases nitrogen to the rice plants. The size of the Azolla tank varies according to the needs of the farmers. But in the HRDP project, the dimension has been kept constant at 10 ft X 3ft X 1.5 ft.

Add about 1 kg of cow dung once every five days to maintain rapid multiplication of the Azolla and to maintain the daily yield. Ensure to maintain the temperature below 25 °C and incase, the temperature goes higher, reduce the light intensity by providing sufficient shade.

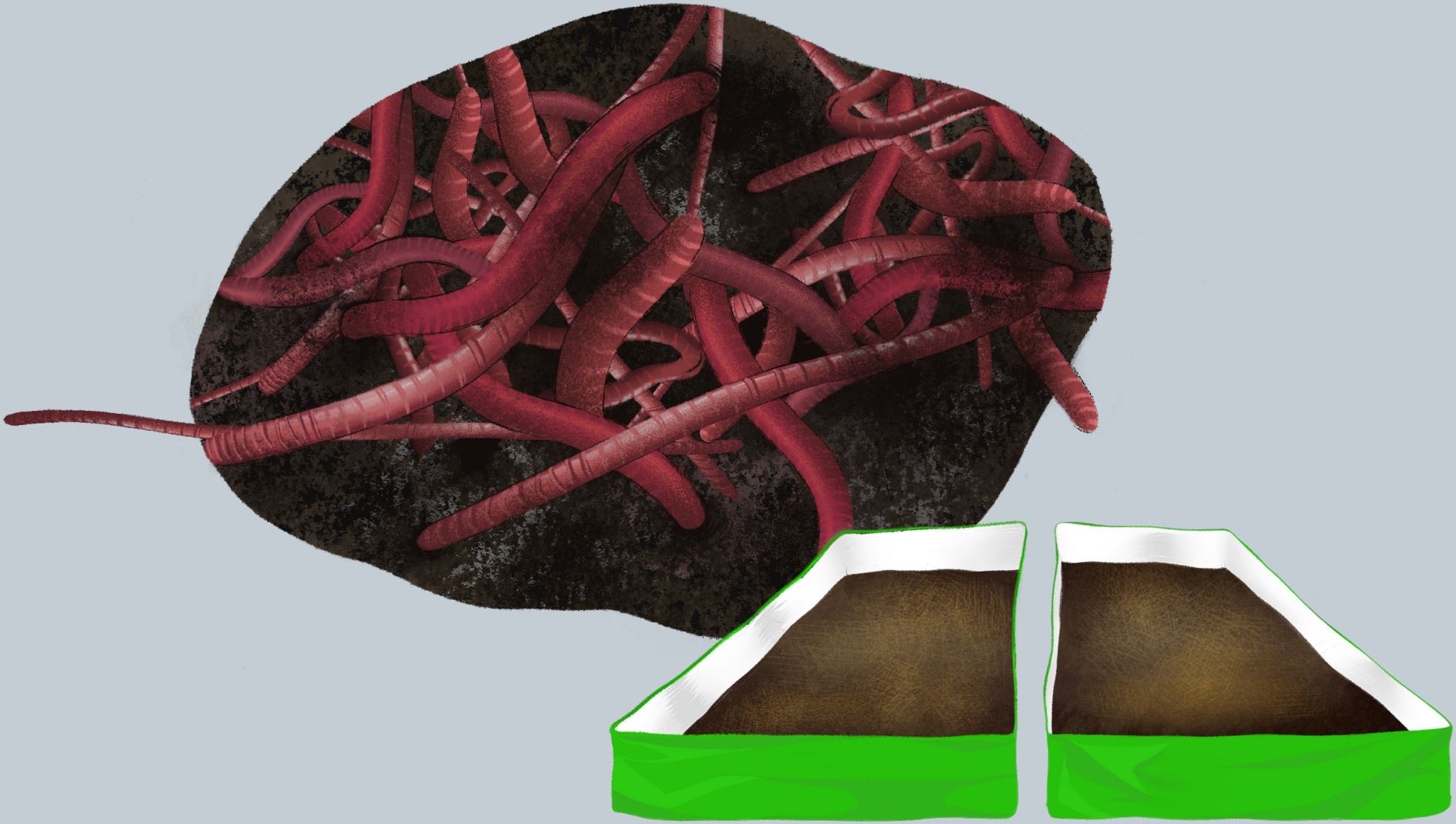
About 5 kg of bed soil should be replaced with fresh soil once in 30 days to avoid nitrogen build-up and prevent micronutrient deficiency.25 to 30% of the water also needs to be replaced with fresh water once every ten days. Clean the water bed and replace the water and soil frequently. Inoculate new Azolla once every six months.
A fresh bed has to be prepared and inoculated with a pure culture of Azolla when contaminated by pests and diseases. The Azolla should be washed in freshwater before use to remove the smell of cow dung.



Vermicompost Method:

Farmers use vermicompost pits or bags to produce manure broken down by the earthworms. Vermicast (worm faeces) is the end-product of the breakdown of organic matter by the earthworms. Farmers use earthworms of species Eisenia fetida for the production of compost. Vermicompost is the product of the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms, to create a mixture of decomposing vegetable or food waste, bedding materials, and vermicast. This process is known as vermicomposting, while the rearing of worms for this purpose is called vermiculture. These castings contain reduced levels of contaminants with a higher saturation of nutrients than the organic materials before vermicomposting.

Vermicompost contains water-soluble nutrients and is an excellent, nutrient-rich organic fertilizer and soil conditioner. Farmers use Vermicompost in farming and small scale sustainable, organic farming. Further, they collect vermin- wash in a chamber is also beneficial for the soil and can be used as fertilizer spray. Separation of worms is done using sieves/meshes. The earthworms and the thicker material, which remains on top of the sieve, are re-composted. The smell of the compost is earth-like. Any foul odour formed in the process is a sign that fermentation has not reached its final goal and that the bacterial processes are still going on. A musty smell indicates the presence of mould or overheating that leads to loss of nitrogen. If this happens, aerate the pile better or start again by adding more fibrous material and keeping this pile drier. Sieve the compost before they are packed.



NADEP Method

The NADEP method of organic compost uses a wide range of organic materials which includes dead plant material such as crop residues, weeds, and forest litter and kitchen waste. Compost making is an efficient way of converting all kinds of biomass into high-value fertilizer that serves as an alternative to farmyard manure, especially for crop growing households without livestock.

Description

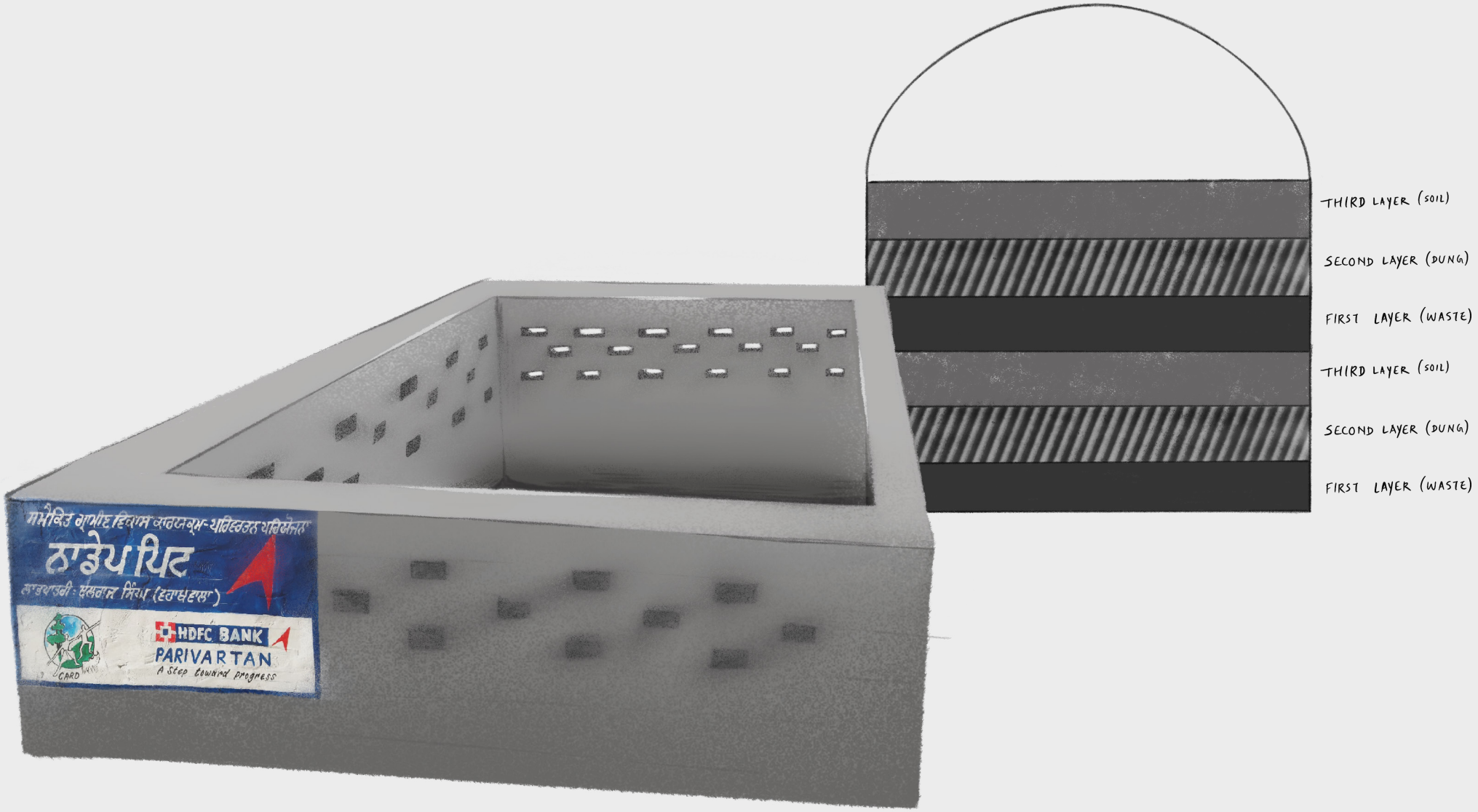
This method of making compost involves the construction of a simple, rectangular brick tank with enough spaces maintained between the bricks for necessary aeration. Using mud mortar or cement mortar for the construction of the tanks is usually followed. The recommended size of the tank is 10 ft (length) x 5 ft (breadth) x 3 ft (height). The four walls of NADEP tank have 14 vents created by removing every alternate brick after the height of 1ft. from the bottom for aeration.

Establishment Activities

NADEP structure will be a pucca structure having vents in the middle walls for proper aeration. It will be a single layer wall and will be firmly erected below the surface to give it the strength to stand. Fill the spaces covering the wall with mud, harvesting waste such as straw and cow dung into nine layers. The topmost layer will be covered by soil and compressed and left for three months for decomposition to happen and for the production of manure.

1. Agricultural waste (Dry & green) – 1350-1400 kgs.
2. Cattle Dung or Biogas slurry – 98 – 100 kgs
3. Fine sieved soil – 1675 kgs.
4. Water requirement – required to keep the slurry moist.

The prime technique in the manufacture of NADEP compost is that the entire tank should be filled in one go, within 24 hours and should not go beyond 48 hours, as this would affect the quality of the compost.


THIRD LAYER (SOIL)
SECOND LAYER (DUNG)
FIRST LAYER (WASTE)
THIRD LAYER (SOIL)
SECOND LAYER (DUNG)
FIRST LAYER (WASTE)
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Following organic compost methods helps in introducing organisms to the soil for the production of manure which contains high nutritional values. This method helps in the growth of irrigation without heavy usage of chemical fertilisers and pesticides. It also uses organic wastes from the household, helps reduce the pollution of land and keeping the environment safe and healthy.