

How to use bio-inputs to increase soil health and plant growth before sowing



What need does the playbook address?

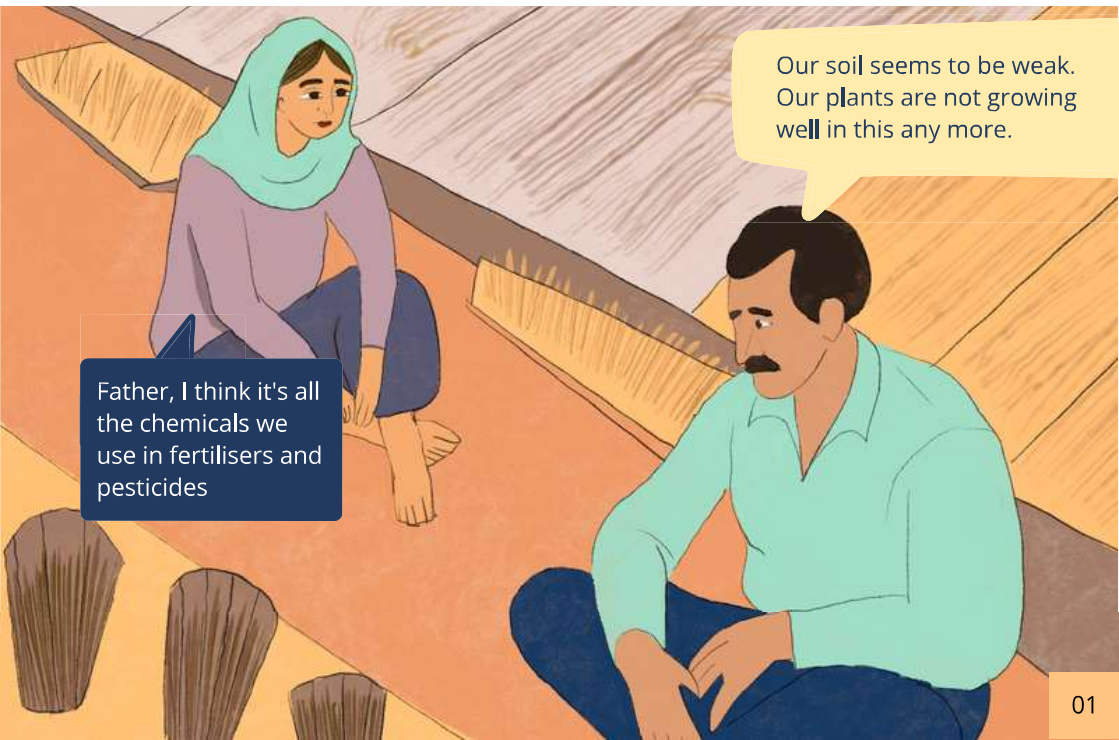
- To increase agricultural yield and improve soil health, farmers have resorted to inorganic, chemical-laden fertilizers.
- This causes long-term health effects for farmers and consumers of the produce
- This destroys beneficial bacteria and microorganisms in the soil and has an adverse impact on soil health.
- This also incentivizes misuse or over-use of these chemicals and creates a cycle of dependency on these chemicals which can be expensive for farmers.

This solution can be adopted if:

- You are a small/marginal farmer
- You have access to raw materials and ingredients mentioned in the bio-input recipes
- You have enough space to prepare and store the bio-inputs

Who can use this Playbook: Trainers, Community Resource Persons

This playbook is designed using the expertise of Trust Community Livelihood (TCL), which works on augmenting incomes among socio-economically disadvantaged communities and landless/marginal farmers in the Barabanki and Bahraich districts of Uttar Pradesh.



Father, I think it's all the chemicals we use in fertilisers and pesticides

Our soil seems to be weak. Our plants are not growing well in this any more.

What

are the benefits to farmers through use of bio-inputs?

Our pesticides are killing useful insects and microbes in the soil. And overuse of fertilisers over the years is reducing fertility of the soil.

What do you mean excess chemicals?

But, beta, what other option do we have?

We could try organic fertilisers. These are "Bio-Inputs" we can prepare at home itself and slowly reduce our use of chemicals.

Does it work? How will we benefit from this?

Because it is natural, it preserves all the useful micro-organisms within the soil. It has no side-effects, and so, there is no danger of overuse.

Will this be expensive?



What

are the benefits to farmers through use of bio-inputs?

We will be using local ingredients to make it. The process takes time, but is very cheap. Moreover, because we are using less chemical-fertiliser, we end up saving money on it.

I don't know beta. Compared to my father's generation, we use a lot more fertilisers and pesticides. But, it is leading to greater yields. I feel like it is difficult to make a change.

But papa, it is time to see the future. Use of fertilisers is not sustainable. The soil you will leave behind for your children will be unhealthier. Which means, we will have to use more chemicals to be able to grow crops. Which means, we spend more and more money to pollute our own soil. Instead, if we shift to natural bio-inputs, we can replenish the soil every year. Healthy soil will lead to healthy profits.

You are right. Let's start with the small things first. What can we do to improve soil health?

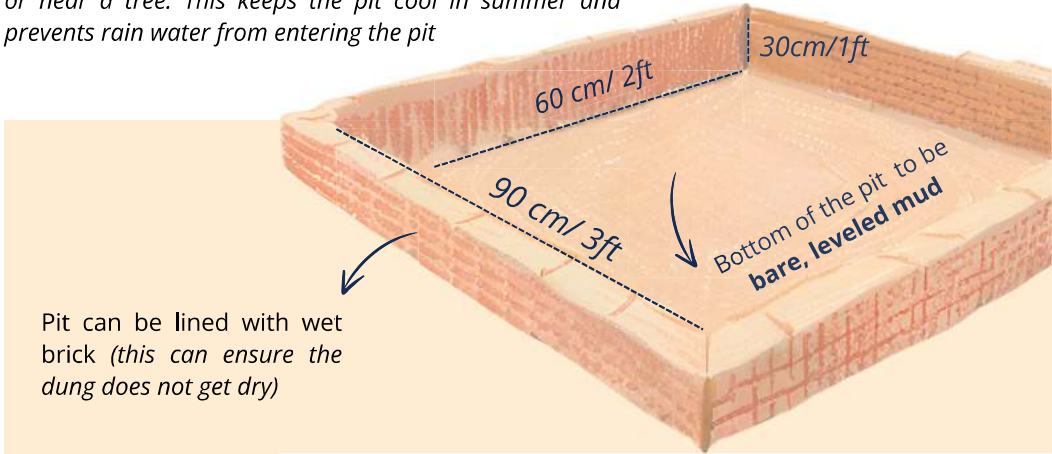
Solution

Preparation of bio-inputs and encouraging its use for improving soil health and nutrition

01 Cow Pat Pit

Making the Pit

Choose a site with **good drainage, well-shaded and aerated**. For instance, next to the overhanging of a house or near a tree. This keeps the pit cool in summer and prevents rain water from entering the pit

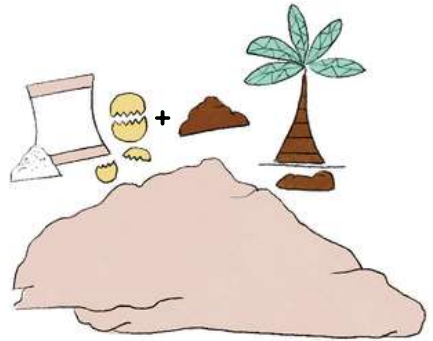


Filling the Pit



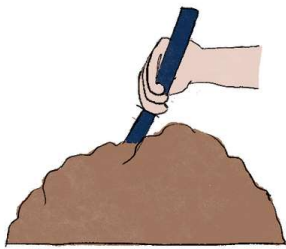
1

Collect 65kg of cow dung (can be mixed with cow urine too). Sprinkle water to ensure dung is not too dry or not too wet

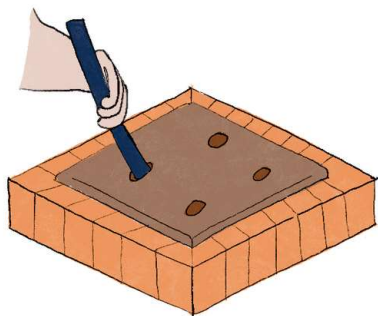


2

Add 200gm of chuna (crushed limestone) or eggshell, 200gm of basalt dust or borewell soil or soil from under peepal/banyan tree,



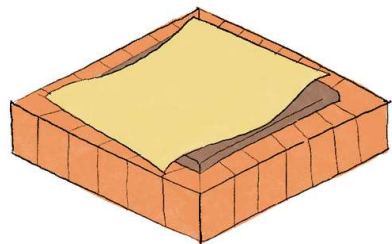
- 3 Mix the dung to aerate it and then put into the pit.



- 4 Gently pat mixture and smooth the top of the dung. Make four-five holes, around 4cm in diameter.



- 5 Insert BD 502-507 in each of the holes.



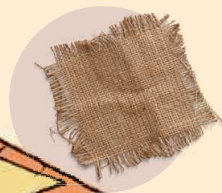
- 6 Place a wet jute sack over the cow pat pit to maintain moisture.

Maintenance of Cow Pat Pit

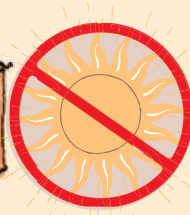
Total time for the manure to be enriched **90 days**



Ensure the jute bag covering is damp or wet at all times (*sprinkle water on it every 2-3 days*)



Remove the entire mixture after 1 month and mix it thoroughly. Put it back in the pit. Then, remove and mix mixture every 15 days



Dry it in the shade - 1 week before use



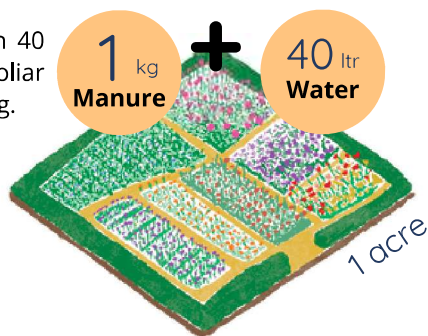
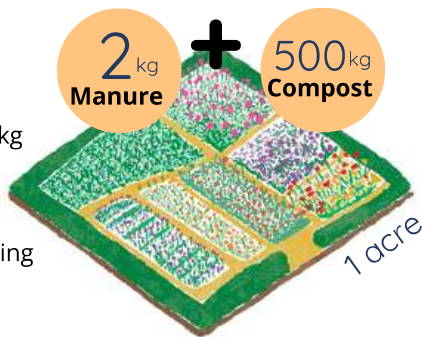
Result

25
kg

After 90-125 days (assuming it is summer and 60-70% humidity): **25 kg of enriched manure**

How to use it?

- 1 2 kg of enriched manure, mixed with 500kg of compost can irrigate 1 acre of land.
- 2 Mix manure with soil during last ploughing (before the seed is placed in the soil)
- 3 Mix 5 kg per acre of Cow Pat Pit (CPP) in 40 litres of water and spray over land using foliar spray. CPP should be applied in the evening.

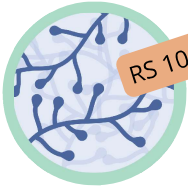


02 Enriched Farm Yard Manure

Enhances the quality of manure (cow dung) or vermicompost obtained naturally.

Materials and Recipe

Mix thoroughly and use



RS 100/kg



Rs. 20-25/kg



200 gm
Trichoderma
(powder or liquid
form)

2 - 5 Kg
Neem Khali (powder)

1 Quintal
Farm Yard Manure
(Cow Dung or
Vermicompost)

How to use it?

1



Mix with soil in the last ploughing
(just before sowing)

2

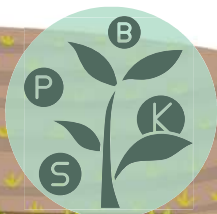


Preferably in the evening

Benefits

Prevents fungal growth

Enriches nutrients in the soil



03 JeevAmrut

Recommended as an alternative to cow pat pit in places where fresh cow urine can be collected.

Method



100 Ltr
Water



10 kg
Cow dung



10 Ltr
Cow
Urine



1 Kg
Banyan
tree soil

Mix these well with a wooden stick.



2 Kg
Jaggery



2 Kg
Besan

Mix the solution well and
keep in shaded place



Mix solution **thrice daily** and let it ferment for 5-7 days.

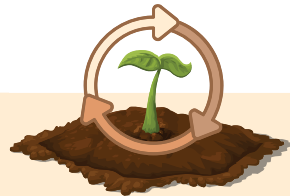
How to use it?




1

It can be sprinkled on soil or applied through irrigation water.

2



It should be applied three times in a crop cycle: before sowing, after twenty days of sowing and third after 45 days of sowing.

A man with a mustache, wearing a light green shirt and dark blue trousers, stands on the left. He is holding a white sheet of paper. A woman wearing a light green headscarf and a purple long-sleeved shirt stands on the right, also holding a white sheet of paper. They are in a rural setting with a brick building in the background and a blue sky with white clouds. The ground is dirt with some green plants.

This looks really easy to do. Is there a way to reduce our pesticide use too?

What do you think papa? Isn't this useful?

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Supported by



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