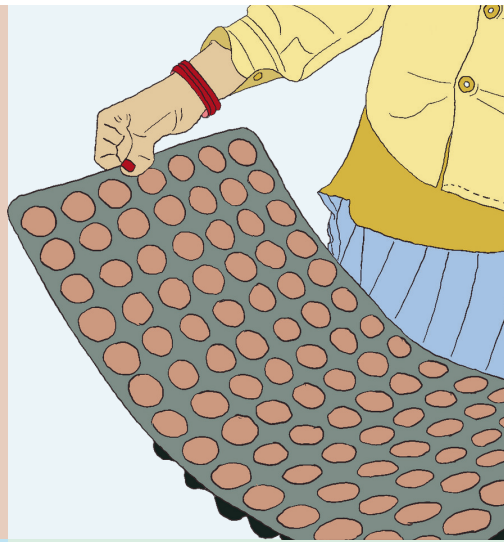
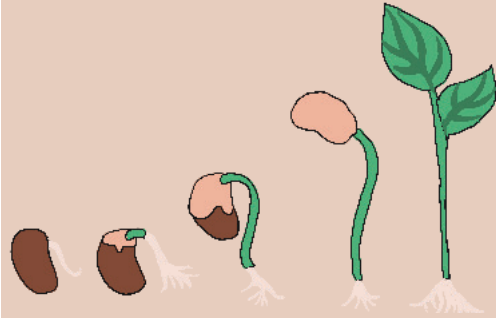




# HOW TO build a hi-tech nursery for flowers & vegetables?



# What need does the playbook address?

Flower or vegetable cultivation needs nurseries where seeds can be germinated. Farmers usually grow these nurseries in a small area of the farm. These open-air plots are susceptible to losses due to rains, heat, and other forms of inclement weather. Open-air nurseries also make it difficult to keep track of germination rates, judge if seeds are of good quality, and cause losses to saplings when being transplanted to the farm. Hi-tech nursery can be made before harvesting the previous crop on the farm which saves time in transplanting the next crop onto the farm. Rate of germination also increases in this method.

## This solution can be adopted



by small and marginal farmers.



if a minimum 10ft\*15ft land parcel size in homestead garden or backyard or terrace is available.



Availability of all ingredients required for the soil mix

This playbook can be adopted by: **Community resource persons** and **farmers** growing flowers and vegetables in arid regions of North-West India.

*This playbook is designed using the expertise of Ibtada, which encourages hi-tech nurseries among socio-economically disadvantaged communities and small & marginal farmers. These nurseries nurture seeds into saplings in a protray that is protected/covered by a green net.*







Didi! It has been raining since a week now. What will happen to my crops? It seems this year, it will be a loss too.



Oh, sorry to hear that..but anyway why don't you try Hi-tech nursery? It's very effective and better than open-air nurseries.



Oh, what is a Hi-tech nursery now? I don't know what is it..Do you though?



Oh, yes yes..Let me briefly share the benefits of it and the process. You can then ask me questions if any.



So, let's get started.



## What are the benefits to farmers through hi-tech nurseries?



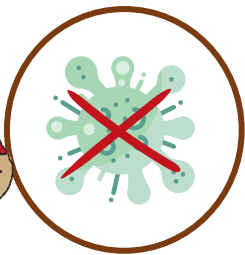
Helps to keep a tab on germination rates



Leads to faster germination rates



Healthy sapling can be produced and can be saved from bad weather



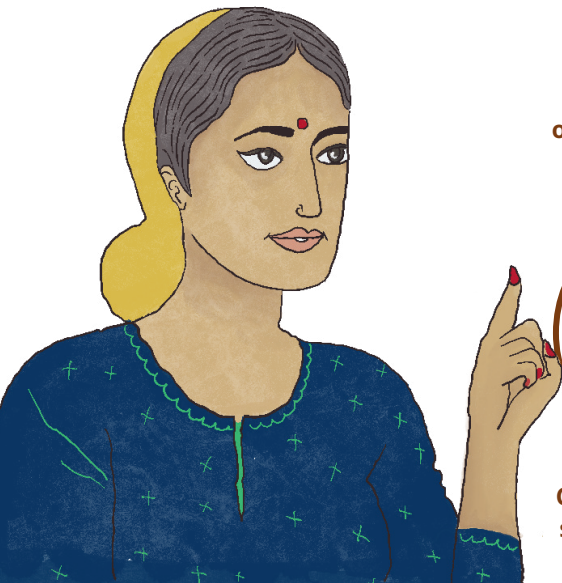
Can be spared from spread of diseases.



Can be moved to safer places when needed



Protects plants from damage due to animals



# Steps to start a Hi-tech nursery

1. Identifying the land

2. Setting up the shade

3. Prepration before sowing the seed

4. Maintaining and Protection





01

How do we choose a good location for a Hi-tech nursery?





Identify a location that is near your house or on even on top of your roof. Make sure that the land is not too far from where you live.



### Places where the nursery can be built



**Near the house**



**Flat roof or terrace**



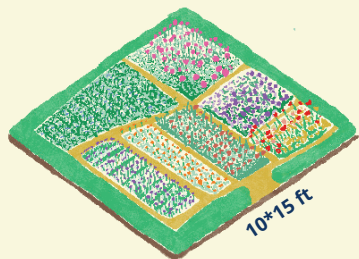
Identified land should be accessible.  
It should be a place with shade.





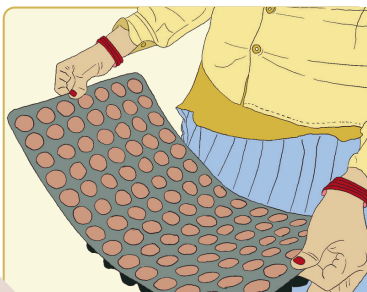
And, how much space will the  
Hi-Tech nursery occupy?





A plot of land of

**10\*15 ft**



can accomodate upto

**70 trays**



which is upto

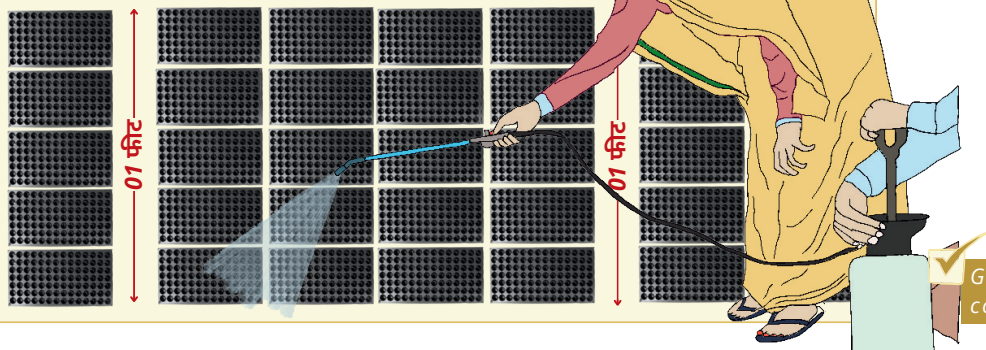
**700 saplings**

*in case of 100% germination*

Each tray has

**98-100 slots**

After four sets of trays, there should be **a gap of 1 feet gap to walk through and water the pro-trays**

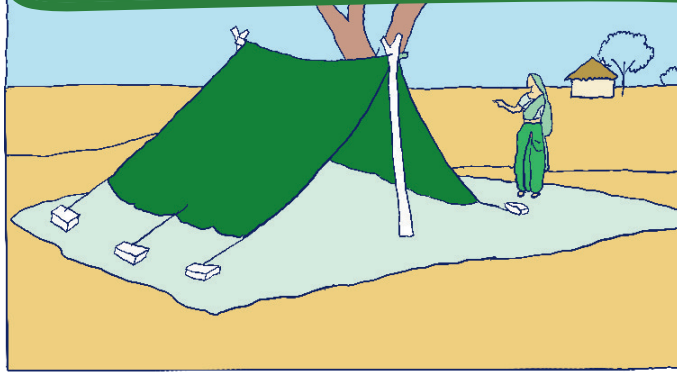


*Germination depends on weather conditions, seed quality & maintainance*

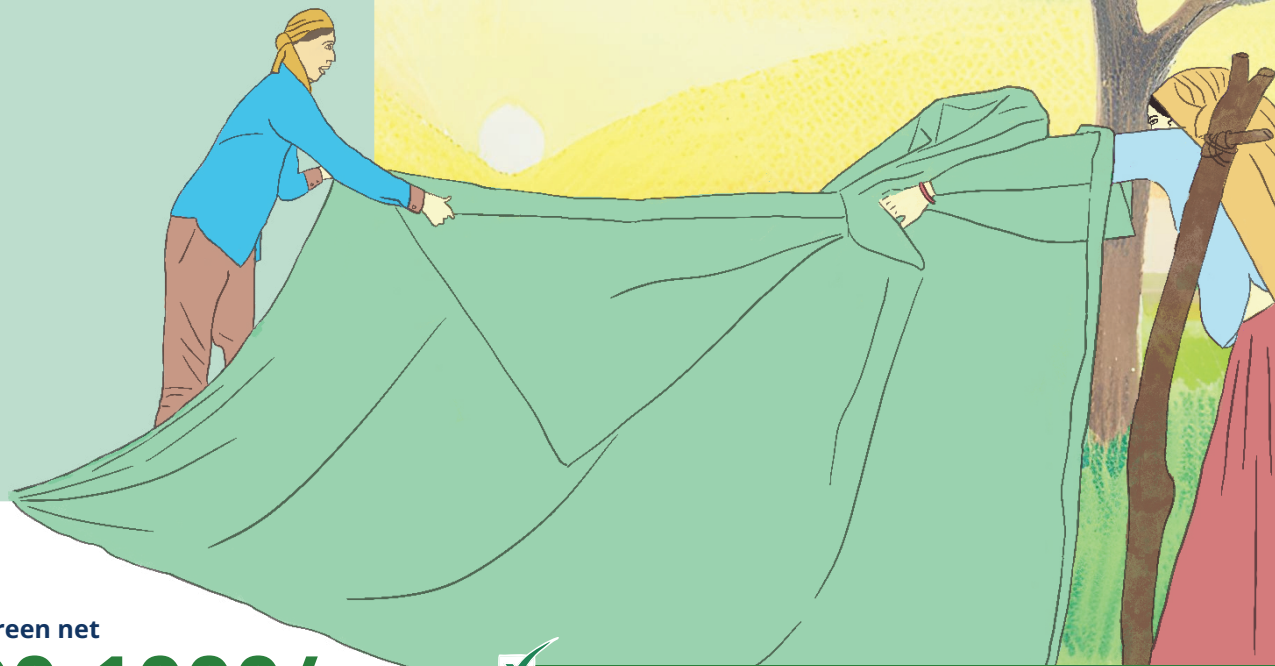


02

But, how do we make the location secure?



First, purchase a green net with dimensions 15ft × 15ft. This net will be used to create shade for the nursery. For a 10ft × 15ft nursery, a 15ft × 15ft green net is required, which will cost approximately Rs. 1,000/-.



₹ One green net  
**900-1000/-**



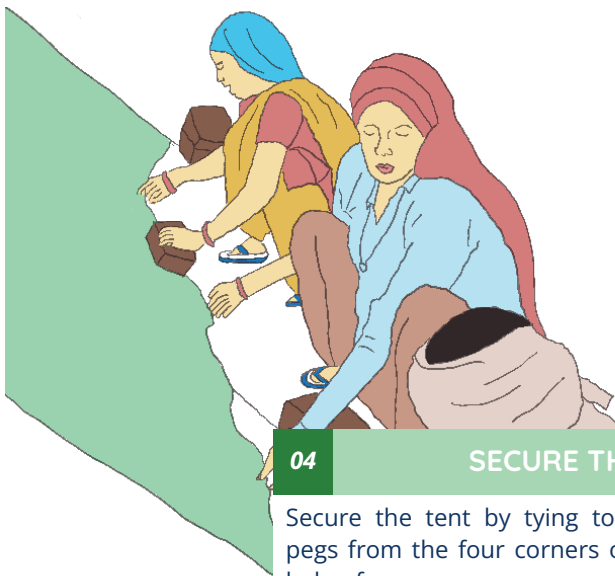
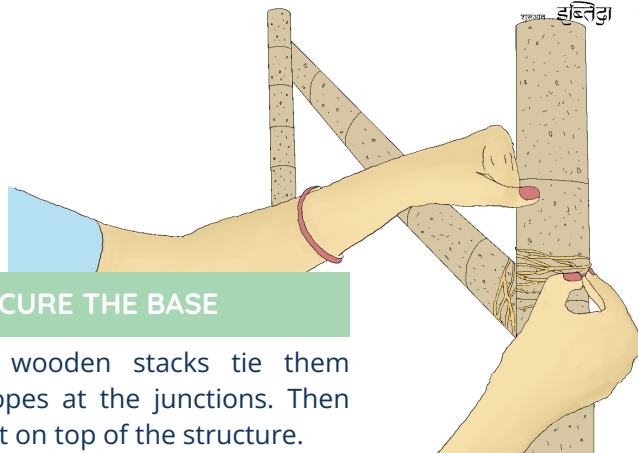
*Best results: Nursery East-West orientation. This allows sunlight in the morning and evenings, & protects it from the noon sunlight.*



To set up the shade, get **two bamboo poles vertically** placed apart and **one horizontally** touching the two from the **top**.



To secure the wooden stacks tie them together with ropes at the junctions. Then put the green net on top of the structure.



Secure the tent by tying to bricks or wooden pegs from the four corners of the tent with the help of ropes.

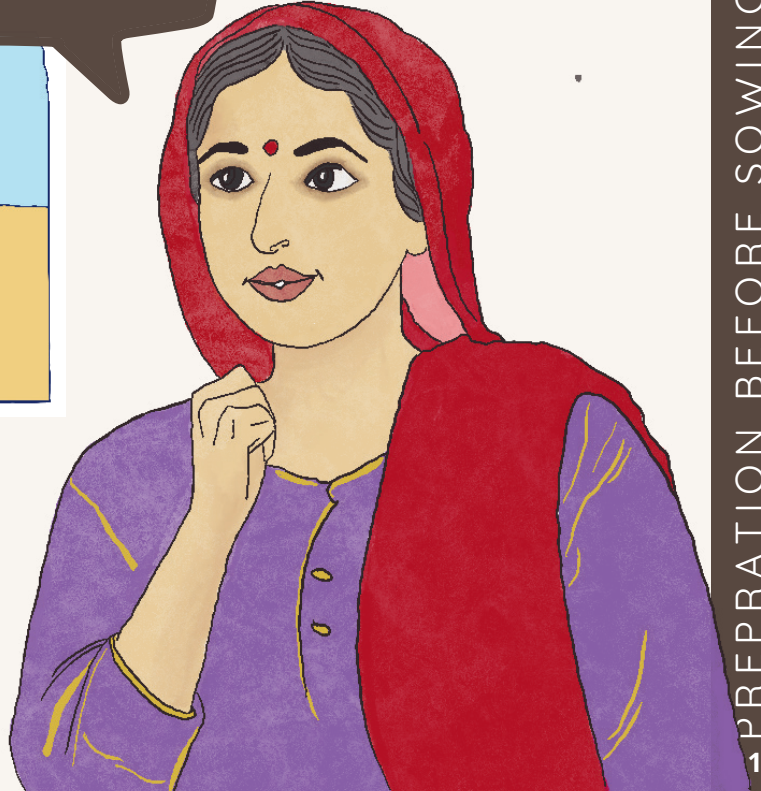






03

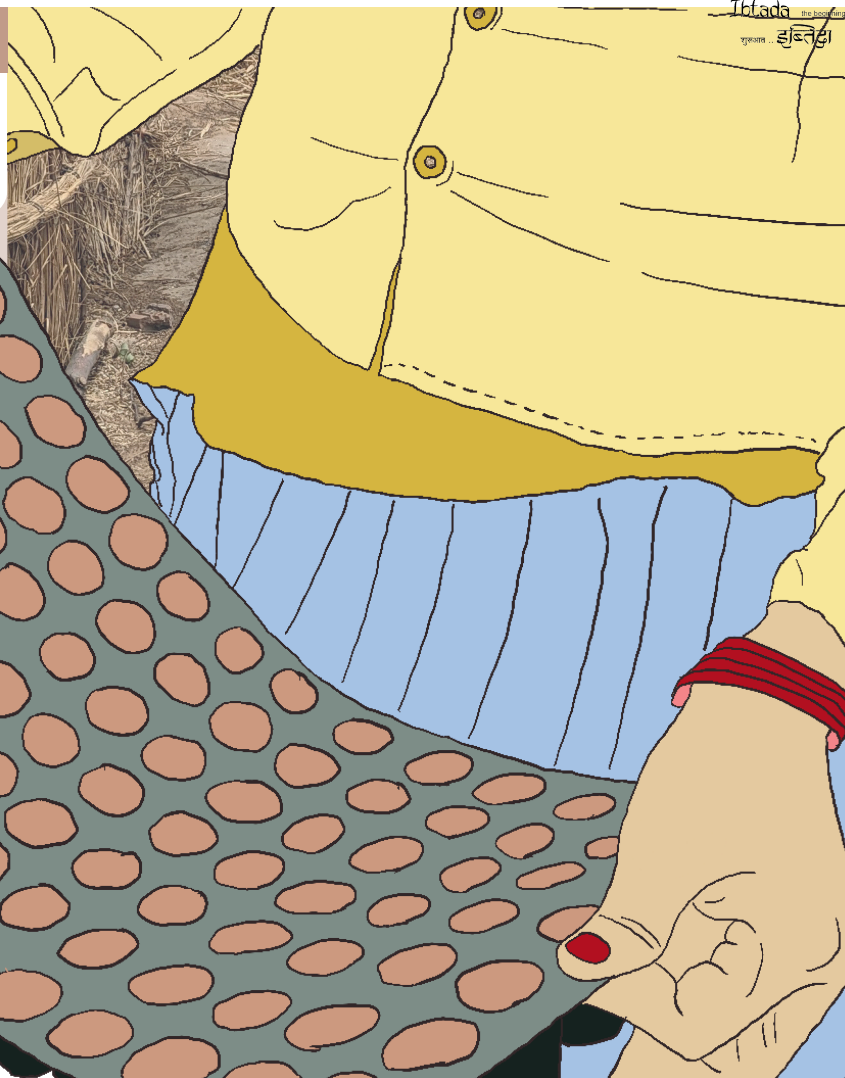
How do we prepare the soil mix needed for sowing the seed?



Buy pro-trays. It is essentially a container with Plastic strips with 98 holders to insert the seeds and medium. A small hole drains excess water from the plastic tray. Each pro-tray is around 1x2 ft.

₹ One pro tray  
**35-40/-**

**48** pro-trays  
aproximately for a  
10x10 feet nursery



Mix Cocopeat in water to expand the mixture. Fluff it up and spread it out. Then, make a mix of Cocopeat, Vermi Colite, and Perlite: a naturally-occurring mineral.



Along with using the mixture for forming the base of the pro-tray, keep aside some mixture for making a raised bed on the identified land

For 10 - 15 protrays



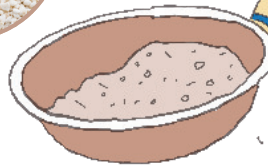
**03** kilo  
Cocopeat



**01** kilo  
Vermi Colite



**01** kilo  
Perlite





Oh wait, how much will  
all of this cost though?







This calculation is as per 10-15 trays

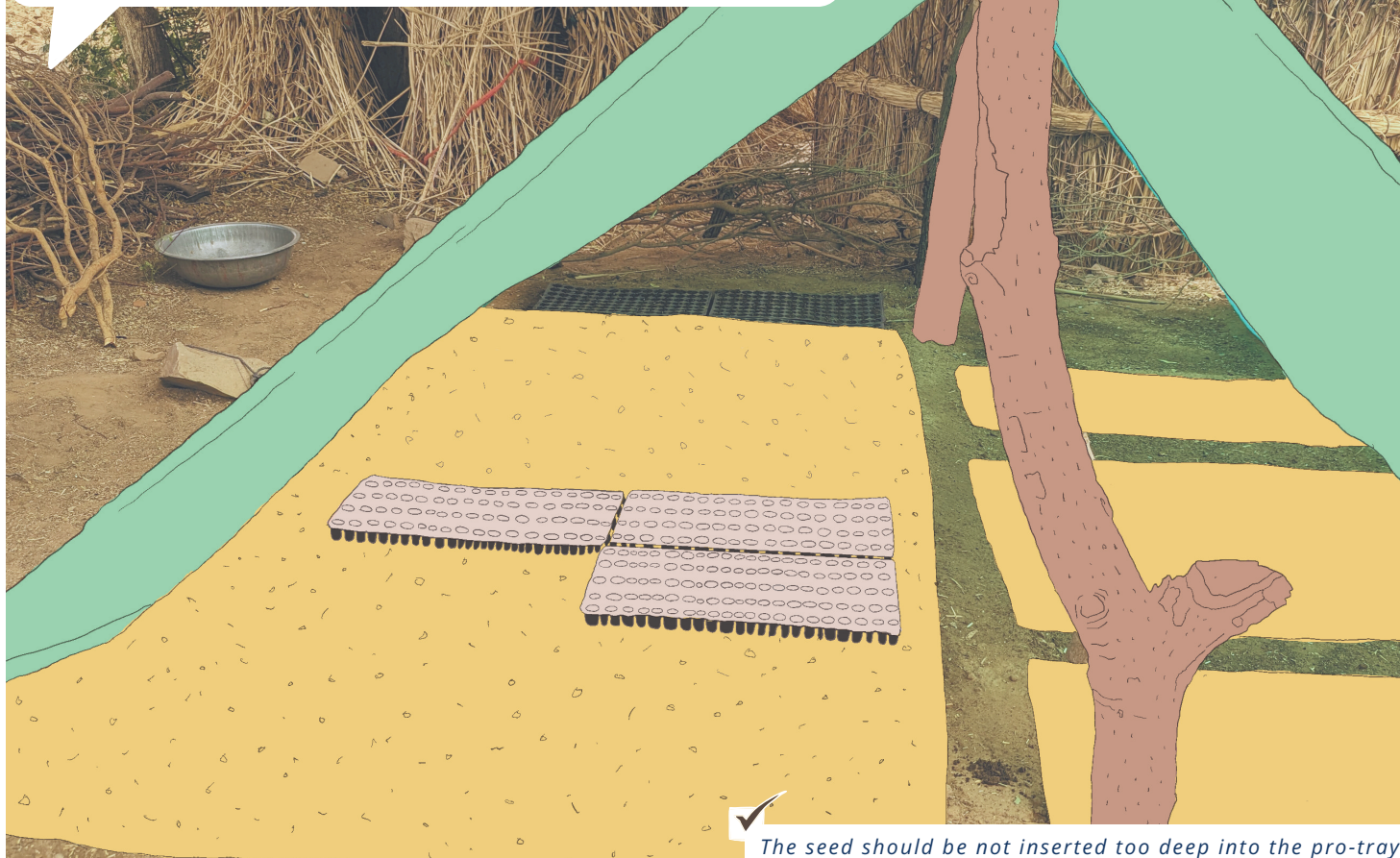
| MATERIALS  | QUANTITY | COST               |
|--|----------|--------------------|
|  Cocopeat     | 03 kg    | Rs 150-200/<br>3kg |
|  Perlite      | 01 kg    | Rs 150-200/ 1 kg   |
|  Vermi Colite | 01 kg    | Rs 150-200/ 1 kg   |

Note: Cost of seeds depends on the crop and quality of seeds. Germination rate depends on the seed variety and the atmosphere.



## 05 INSERTING THE MIXTURE AND SEED INTO THE PROTRAY

After mixing the medium in the right quantity and order, insert the treated seed at **2 cm** depth and keep the pro tray inside the green net.



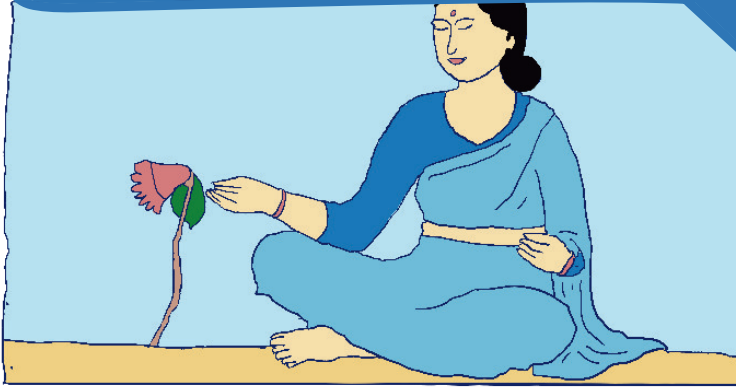
*The seed should be not inserted too deep into the pro-tray.*





04

How do we protect and maintain the nursery?

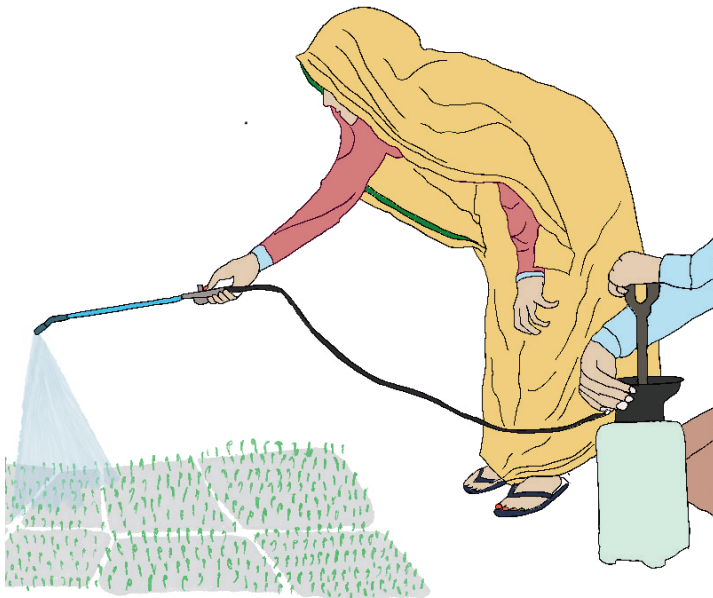


To maintain the nursery, it should be watered regularly. It should be applied only by sprinkling or spraying. Mixture should be mildly wet: Moisture content should be around 70%.

✓ *Water should be sprayed or sprinkled*

✓ *In winters, water once in 5 days*

✓ *In summers, water daily*



Nursery should be covered with branches/wires to ensure that animals/birds do not enter the area.





## CROPS THAT CAN BE USED IN HIGH TECH NURSERIES



**Chilli**



**Tomato**



**Brinjal**



**Cabbage**



**Broccoli**



**Pumpkin**



**Cucumber**



**Bottle Gourd**



### No. of Days Required for Germination

| Crop Name    | Zaid       | Kharif     | Rabi       |
|--------------|------------|------------|------------|
| Chilli       | 6-8 Days   | 6-8 Days   | 10-12 Days |
| Tomato       | 5-10 Days  | 5-10 Days  | 10-15 Days |
| Brinjal      | 7-10 Days  | 7-10 Days  | 10-15 Days |
| Cabbage      | 7-10 Days  | 7-10 Days  | 15 Days    |
| Cauliflower  | 10-12 Days | 10-15 Days | 15 Days    |
| Cucumber     | 8-10 Days  | 8-10 Days  | 10-20 Days |
| Bottle Gourd | 6-8 Days   | 6-8 Days   | 10-15 Days |



### No. of Days Required for Transplantation

| Crop Name    | Zaid       | Kharif     | Rabi       |
|--------------|------------|------------|------------|
| Chilli       | 25-30 Days | 25-30 Days | 40-45 Days |
| Tomato       | 30-35 Days | 25-30 Days | 40-45 Days |
| Brinjal      | 30-35 Days | 25-30 Days | 40-45 Days |
| Cabbage      | 25-30 Days | 35-40 Days | 45-50 Days |
| Cauliflower  | 25-30 Days | 35-40 Days | 45-50 Days |
| cucumber     | 30-35 Days | 25-30 Days | 40-45 Days |
| bottle Gourd | 30-35 Days | 25-30 Days | 40-45 Days |





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