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“Our seedling nursery is close to our home where we can take good care of the young crops until the rains have begun properly. We can get our crops going earlier to make the most of the shorter rains we have been suffering.”

Women farmers in Uganda





Seedling Nurseries

Strong seedlings increase the yield. You can plant seedlings very close together in small shaded plots. Give seedlings careful protection, watering and fertile soil conditions, to help them get strong until they are ready for permanent planting when the rains arrive.

What does the activity look like?

A small patch of ground or containers planted with seeds and protected from strong winds, heavy rains, birds, animals and strong sunshine, with a simple hand-made framework or sticks and covered with crop residues (stalks, leaves, etc.) or other materials.



Keep the seedling nursery watered and well shaded.

Photo: Kenya, 2018 © Alicia Melville-Smith/British Red Cross

What are the main benefits?

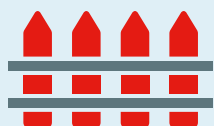
Shaded Seedling Nurseries are very quick and easy to start and have lots of advantages for crops and people:



Concentrating care - seedling nurseries help people to concentrate resources such as water, nutrient rich soil, compost and fertilisers at the most important time of plant growth.



Shading vulnerable seedlings reduces water stress (not enough water) and reduces the amount of rainwater and watering needed to give the plants a good start in life.



Protection - getting seeds and seedlings started in a safe place means the seedlings can be kept away from mice, rats, poultry, birds and animals, and people can watch carefully for any signs of pests and diseases. Plots close to the home are best.



By extending the harvesting season (earlier and later) it can help people get better prices when they sell their harvest.



People can get harvests for a longer period when they don't plant all their seeds at the same time. This can help ensure crops when rainfall is late, varied or unpredictable. Waste is reduced when planting of seedlings is 'staggered'. People then don't end up with too much produce all ready for harvest at once.



Plant seedlings as early as possible, because a small plot is easier to water. This allows planting of seeds well before the rains have fully started. Then transplant seedlings when you are certain that there is sufficient rain. This can help reduce crop failures caused by unpredictable rains.



Preparations

Timing tips

- ✓ A shaded seedling nursery is a very quick and easy activity to start at any time of year. It all depends on the type and size of the shade people decide to use. If people start with a simple seedling nursery just made of sticks and covered with leaves or crop residues (stalks, stems, leaves, seed pods, etc.) or perhaps using a plot that is already shaded from the mid-day sun by trees or a fence, it may only take them an hour or two to construct!
- ✓ The nursery will take a minimum of 2 weeks from the initial construction until some of the first seeds planted begin to grow. Construction can take longer if a more complicated structure is built.
- ✓ It will still be useful to have ongoing support and advice from the volunteer for more than one year, to remind people about protecting the seedlings from poultry and animals or floods, and to remind them about regular watering and adding compost and fertiliser to keep the seedling area productive. You can find more information in Section 2 'Compost', Section 4 'Homemade Liquid Fertiliser' and Section 7 'Water Harvesting and Conservation'.

What does the volunteer need to do before the activity can start?

The volunteer doesn't really need to prepare very much for this activity. Just follow the 'Essential guidance' in the Introduction on selecting appropriate activities and who to target and calling meetings and mobilising groups.

How to avoid risks

This is a low risk activity, especially if you encourage people to **keep the structures simple, protect the plot and water well.**



Photo: 2019 © J. Zaremba/British Red Cross

Fences and nets can shade nurseries and help to keep off animals and poultry.

Photo: India © S. Truelove/innocent foundation



How to implement the activity?

Step 1 Select a small patch of ground, an old container or sack

Step 2 Shade the plot

Step 3 Protect the plot!

Step 4 Prepare the soil and plant the seeds

Step 5 Transplant seedlings

Step 6 Maintain the seedling nursery well

Step 7 Encourage people to diversify the range of seeds they plant





Step 1: Select a small patch of ground, an old container or sack

Select a small patch of ground, or use an old container or sack and make sure it has:

- **Good soil** - or where the soil can be improved with compost or fertilisers (see Sections 2 and 4 on 'Composting' and 'Homemade Liquid Fertilisers')
- **Closeness to the home** - so people can keep an eye on the plot and water with wastewater from the home (see Section 1 'Gardens')
- **Shade** – (see step 2 for more information)



Photo: Kenya © S. Truelove/innocent foundation

A tree-shade nursery.

- **A source of water** – (see Section 7 'Water Harvesting and Conservation')
- **No risk of rainwater run-off or flooding** – if you think the plot is at risk, consider raising the plot and protecting the edges of the plot with logs, stones, rocks or other solid materials. Some people build a wooden or small brick wall around the plot:



Photo: Haiti, 2013 © IFRC Livelihood Resource Centre

Volunteers demonstrating how to use rocks to protect the base of the nursery.

Photo: 2020 © J. Zaremba



Trees are a good way to shade a nursery. Nurseries in sacks help to keep chickens from damaging seeds and seedlings and are useful in urban areas.

There is no need to build anything complicated.

A frame made of a few thorn bush twigs covered in old crop residues, leaves or old material like the one below, will work just as well!

Photo: Uganda, 2016 © African Revival



Simple structures can be made with freely available local materials.

Step 2: Shade the plot

Shading reduces the risk of water stress and need for watering. If there is not much natural shade, then encourage people to come up with ideas for how to shade the plot. Some people use old crop residues (stalks, leaves, seed pods, etc.) to lightly cover the seeds and seedlings, others build simple low-cost structures out of sticks.

Here is a drawing of a seedling nursery in a sack that is shaded beneath some trees.



Step 3: Protect the plot!

Encourage people to discuss what types of risks the seedling nursery may face and how they would prefer to deal with such problems (birds, poultry, mice, rats and ants are well known for stealing seeds and seedlings!). If the seeds or seedlings in the plot are at risk of damage by poultry, animals or children, then protect it with anything you can find (wire mesh over seeds, thorn bush twigs, stalks, stems, leaves, seed pods, sticks, waste materials or other fencing). Some people plant a thorny or dense hedge around their plots to protect from animals and strong winds. For any seeds that mice and rats like to steal such as beans and peas, you could try soaking the seeds in water until they start to sprout before you plant them or covering the planted area with a wire mesh or cloth until germination occurs.



Photo: 2019 © J. Zaremba/British Red Cross

This woman in Malawi has used a strong fence to keep animals and the wind off and an old mosquito net to protect from other pests and poultry and shade the plants from sunshine.

Step 4: Prepare the soil and plant the seeds

Prepare the soil by adding well-rotted compost or mulches (see Section 2) and liquid fertilisers (see Section 4). Use this nursery area to plant seeds very close together and look after them carefully. Regular watering the nursery will help get seedlings started early, ready for transplanting when the rains are more certain. Encourage people to experiment with:

- **Pre-soaking seeds in water** for a day or two before planting. This can help increase germination rates by 20 to 30% and helps to discourage mice and rats from stealing the seed.
- **Earlier planting** than usual with additional hand watering, to help get seedlings ready for transplanting once the rains start.
- **Staggering** the planting of seeds and transplanting of some seedlings, if people are not sure the rains have really started. Staggering also spreads out the time of harvest to avoid waste, and people can try to get better prices when selling the harvest at different times.
- **Keeping back a few seedlings**, just in case the rains do fail, and people will then still be able to plant a few later.
- **Thinning seedlings** – this is gently removing some seedlings if the seedlings start to get too crowded. But if water and fertiliser are adequate, seedlings can usually grow very close together without much long-term harm. People can always transplant the thinned-out seedlings to another plot or container or give or sell them to other people.

Step 5: Transplanting seedlings

When you think the rains have properly arrived, you should very gently remove seedlings and transplant them, following these instructions:

1. Firstly, water the seedlings in the nursery.
2. Remember to encourage people to always **keep back some seedlings** in the nursery, just in case the rains do fail.
3. Gently dig up a small amount of the soil in which the seedlings are rooted. Try to do as little damage to the fragile roots as possible.
4. Transfer the seedlings with the roots surrounded by soil into a tray, bucket or container to carry them to the transplanting site.

Photo: India © S. Truelove/Innocent Foundation



You can use palm tree leaves or long grass to make shades for the seedlings.

5. Keep the seedlings watered and shaded as much as possible as you transfer them.
6. Transplant the individual seedlings into damp soil and then water.
7. Place any fertiliser or well-rotted compost directly into the planting hole or trench if possible, so that the seedling roots can make most use of it. This also reduces the chance that heavy rainfall will wash the fertiliser or compost away.
8. If the days following transplanting are dry, then water the seedlings. Keep an eye on the seedlings and if they look dry or water stressed (limp), keep watering until they are growing well.

Step 6: Maintain the seedling nursery well

Weed the plot regularly and after harvesting **add nutrient rich** ash, dung and compost and fertilisers to keep the soil in good condition.



Step 7: Encourage people to diversify the range of seeds they plant

Once people are familiar with the process, volunteers could encourage people to consider planting seeds or crops they have not yet tried (see Section 1 on ‘Gardens’ and Section 9 on ‘Nutrition Awareness’). They might like to think about fruit trees, bushes, seedlings for fuelwood production or fodder crops for example.



Photo: Mauritania, 2013 © Katherine Mueller/IFRC



Photo: Niger, 2019 © Yuki Sugiura/British Red Cross



Photo: Bangladesh, 2019 © Farzana Hossen/British Red Cross

Links to other sections in this handbook

This activity links well to the other activities in this handbook:



Section 1
Gardens



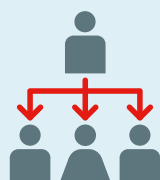
Section 2
Compost



Section 4
Homemade Liquid Fertilisers



Section 5
Improving Farming Practices



Section 6
**Lead Farmers and
Demonstration Farming**



Section 7
**Water Harvesting and
Conservation**



Resources and skills needed



What resources are needed to run the activity?

- Small area of land or space for a seedling sack or container.
- Other small tools are useful, but not essential, include a tool to dig and turn over soil.
- Seeds.
- People will need a minimum of half a day to listen to the messages from the volunteer. If they choose a simple structure, it can take as little as an hour to construct a simple shade, but it is worth spending time protecting the edges of the nursery from water run-off and floods and from poultry, birds and animals. Building a simple structure can take as little or as much effort, resources or capacity as people wish.
- Collect material for building any structure or container.
- Collect water or wastewater.
- It is worth encouraging people to invest in keeping the seedling nursery soil in good condition by adding nutrients regularly. This may involve buying fertiliser for use but making their own compost or liquid fertilisers is more sustainable (see sections 2 and 4).



Approximate costs

A shaded seedling nursery can be produced without much or any additional cost. It does involve small amounts of time and effort.



Photo: Zimbabwe, 2019 © Jordi Matas/British Red Cross