

5. Seedling production



Above is an example of a seedbed. The cover of reeds that are tied together provides wind and sun protection for the seedlings.

To start

- ❖ Make sure you have good, fresh seed
- ❖ Make sure you have clean water close by (really muddy water is not good)
- ❖ Make sure you have fertile, soft, smooth soil (see also the *Improving your Soil* leaflet in this series).
- ❖ Make sure you have some shade.

Golden rules with water

- ❖ Water must be close by
- ❖ Water must be clean - very muddy and dirty water will make it hard for seedlings to grow.

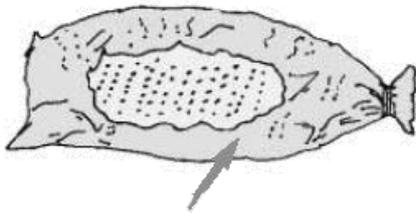
Golden rules with seed

- ❖ Seed must be fresh: Keep seed for only 1-2 years. Look on the packets you buy for a date. You can do a germination test on seeds to see how well they grow, before planting them (see below)
- ❖ Seed must be kept cool, dark and dry. If you buy from a shop, look to see whether the seeds are kept in a cool, dry place. If the packets are in the sun – do not buy them
- ❖ If you keep your own seed, make sure you plant seed without any mould, scratches or holes
- ❖ If you buy seed, write the month and year you bought it on the packet, so you can check the dates later

Experimentation



GERMINATION TEST - you might want to try this if you are unsure of the quality and freshness of your seeds



Evaporated moisture inside the bag from the damp cloth

Before planting seeds they can be tested for germination. You will test how many of your seeds will grow.

- ❖ Take 50 seeds and place them on top of some damp paper, cloth or toilet tissue. Do not let the seeds stand in water or dry out.
- ❖ Place the paper or cloth with the seeds inside a plastic bag and blow air into the bag, before closing it.
- ❖ Check the seeds regularly to see how many germinate. This should take 3-10 days.
- ❖ Then count the seeds that have germinated.

Here for example 40 out of 50 seeds germinated. This is a germination rate of 80% (80/100). This means that only 80 out of 100 seeds that you plant will start to grow.

Measurements



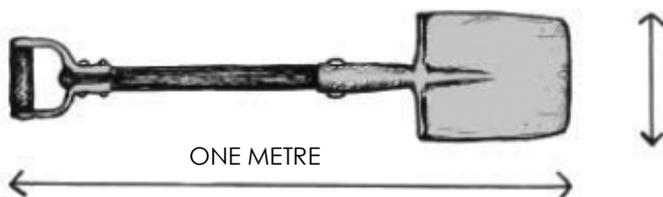
ONE FINGER = 1.5 cm



TWO FINGERS = 3 - 4 cm



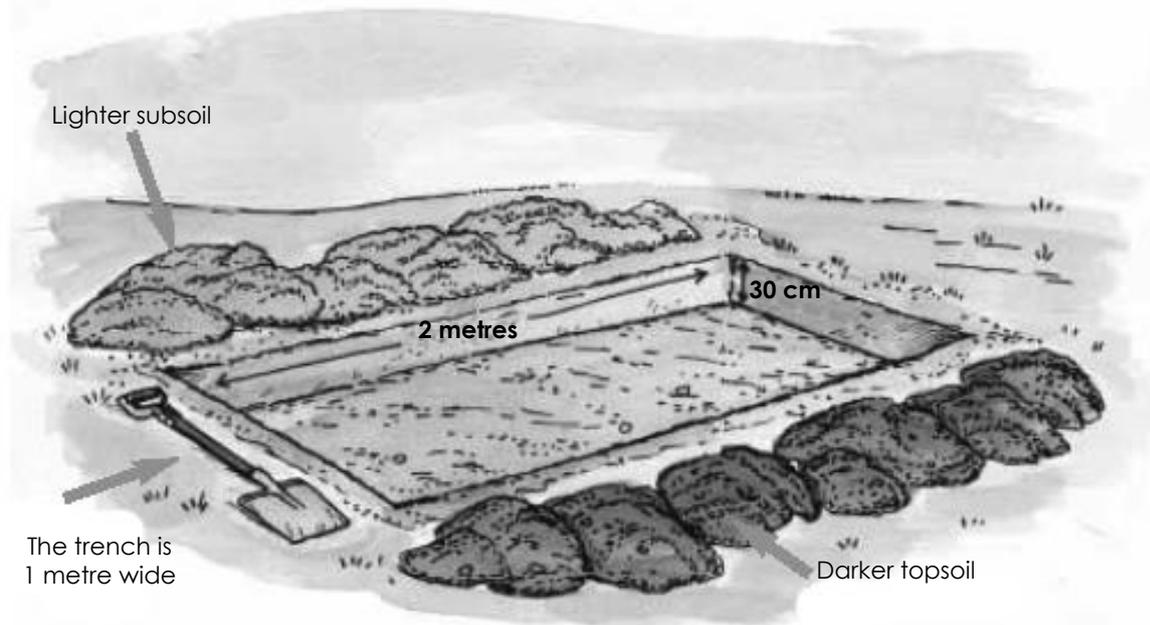
ONE HAND = 20-30 cm



Preparing the seed bed

A seedbed is a small part of the garden with very rich soil and a roof to shade the growing seeds. The roof also provides frost protection.

Dig a trench about 30 cm deep (about as wide as a spade) and 1 metre wide (about as long as a spade). The trench can be 1 or 2 metres long.



Separate the more fertile soil on the top (which is usually darker) from the rest of the soil. Loosen the bottom of the trench with a fork or a spade.



Then mix the topsoil with an equal part of manure and ash mixture or compost (see also the *Improving Your Soil* leaflet in this series to find out more about preparing manure and compost).



Sieve this as you put the mixture back into the hole. If you can not sieve the mixture, make sure it is free of anything that can stop the seedling from growing, such as sticks, leaves, stones, pebbles and hard clods of soil. It is important never to step on your bed once you have prepared it.



The width of the seed bed should be about 1 metre (or the length of a spade). This is because it makes it possible for you to reach the middle of the bed from both sides, without having to walk or step on your seed bed. Stepping on soil especially when it is wet, will spoil its soft, smooth texture, and make it hard. This hardness will make it difficult for seeds to grow.



An inexpensive shade structure for the seedbed can be made with poles / reeds /bamboo and thatch grass.

Planting seeds

Different seeds need to be planted in different ways.

1. Direct sowing

Some seeds need to be planted where the crop will grow, as the small plants do not like being moved. This is known as **direct sowing**.

This includes beans, beetroot, carrots, cucumbers, garlic, maize, peas, potatoes, pumpkins, radishes and turnips. The furrows / holes into which seed will be planted need to be fully watered beforehand.

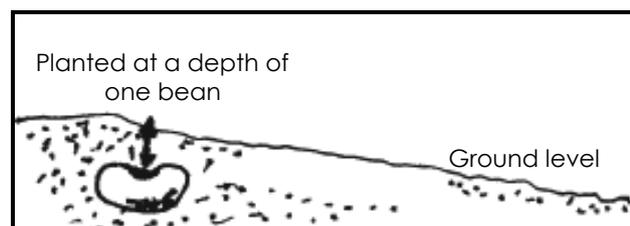
Seeds are sown thinly and evenly



Planting furrow is 1.5 – 2 cm deep

Small seeds like carrots, radishes and turnips are not planted very deep. Make a furrow about 1.5 cm deep (1 finger width) Sow the seed carefully with your finger and thumb into the furrow. Make sure you do not sow the seeds too thickly. Seeds need to be spaced one finger width in the furrow. Spread the seeds out as evenly as possible. Cover the seeds with a layer of fine compost, manure or soil. Press down with your fingers.

Larger seeds such as beans are planted at a depth of 1-2 times their size. If they are planted too deep, they will not grow. If they are too shallow, the small plants will fall over.



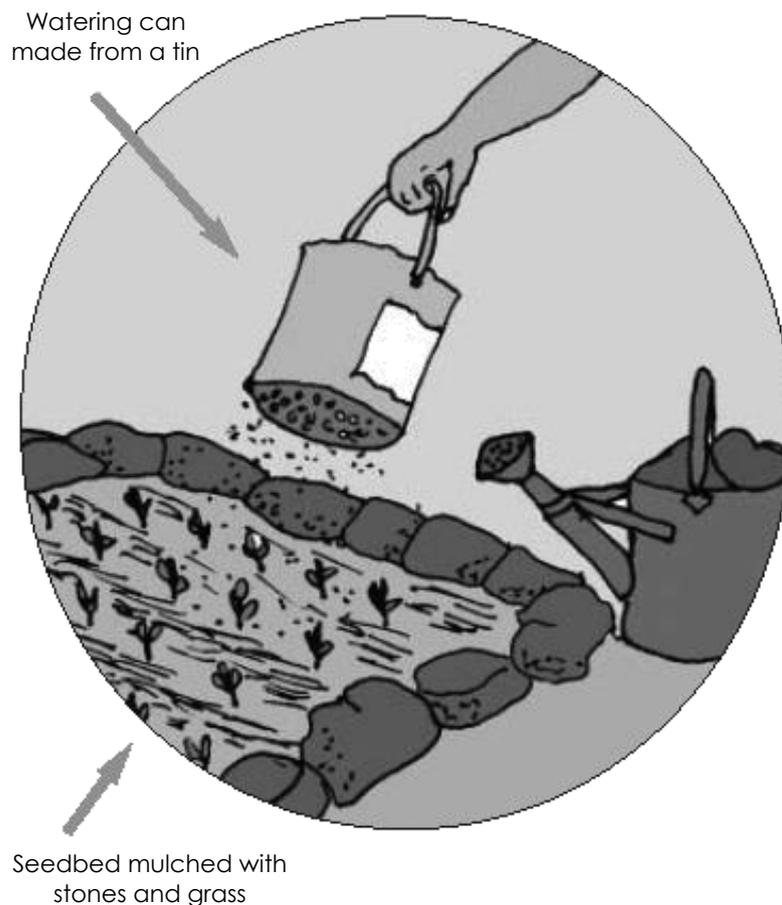
2. Sowing into seedbeds first

Some plants grow a lot better if they are first planted in seedbeds and then transplanted when the seedlings are strong. This includes broccoli, cabbages, cauliflower, chillies, eggplant, green peppers, leeks, lettuce, okra, onions, spinach and tomatoes.

Some plants can be sown directly or in seedbeds and here it is your choice which works best for you. This includes spinach, onions, garlic and potatoes.

3. Caring for seedlings in the seedbed

For small seeded vegetables like cabbages, kale, tomatoes, turnips and onions, do not plant the seed so thickly that they emerge as a dense mass. Seedlings will be weak and diseased. They need to compete for space and light. Sow thinly and evenly. Sow the seeds about one finger width apart.



Once seed has been sown, it is important to keep them moist at all times. It may be necessary to water twice a day in hot weather. It is better to water in the evenings in summer and in the mid-mornings in winter.

Water carefully, with a soft spray. Otherwise you can wash your seed out of the planting furrows, or compact the soil. You can use a home made watering can. You punch very small holes in the bottom of a tin with a nail and a hammer.

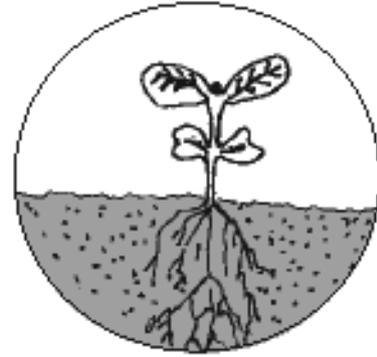
Mulch the seedbed. Here you can mulch between the rows of planted seeds. Or you can cover the whole bed and then remove the mulch as soon as seedlings start to appear. If you do not take the mulch off the seeds it can make it hard for them to grow well. It is also possible to mulch the edges of your seedbed with flat stones. This ensures that the water stays inside the bed and does not evaporate out the sides.

- ❖ It is important to weed well and often in a seedbed.
- ❖ Thinning is taking out some of the plants so that others will grow better. When the plants come up, you will see which ones are stronger and which ones are weaker. Take out the weak plants. Make sure each strong plant has enough space around it, about 3-4 cm (2 fingers wide).

4. Transplanting seedlings

Before transplanting your seedlings it is a good idea to harden them. This will make the shock of being transplanted less. Hardening means that you make the conditions for the seedlings a bit more difficult. The shading is removed and watering is reduced. This is done 3-5 days before transplanting.

The time to transplant a seedling is when it has 2-6 true leaves, a well developed root system and a nice strong stem. The first two leaves that pop out of the ground are usually not true leaves – so wait for the plant to develop.



Seedling with two true leaves



Hold the seedling by the leaves

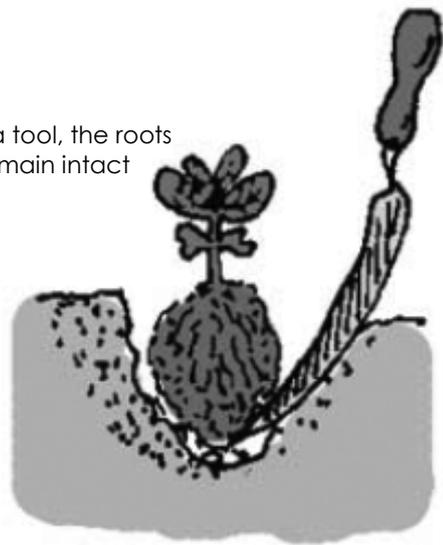
Transplant in the late afternoon or on an overcast day. This gives the seedlings a bit of time to recover before the next warm day. If it is really cold, plant them mid-morning, once the soil has warmed up a little.

- ❖ Prepare and water your planting holes
- ❖ Make sure the soil is soft and contains some organic matter, like manure and ash or compost.
- ❖ Lift the seedlings carefully, using a tool (DO NOT PULL THEM OUT BY HAND) and try to leave as much soil around the roots as possible. Handle the seedlings by their leaves and not their stems.

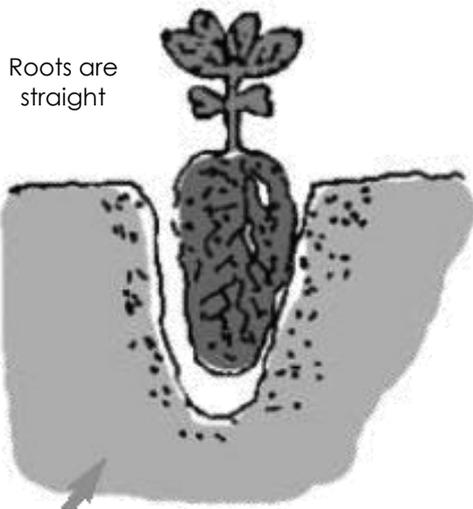


Pulling up seedlings without a tool is not good

With a tool, the roots remain intact



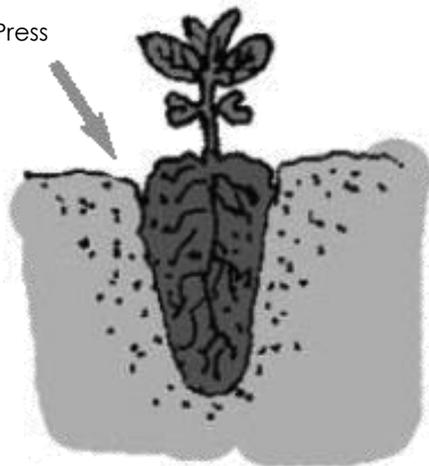
- ❖ When planting, the roots should be kept straight and not be squashed into the hole. The hole must then be filled with soil, which should be packed firmly around the roots. Press the soil down around the seedling, so that there is no air around the roots.



Roots are straight

Moistened soil

Press



No air around the roots

- ❖ Water the seedlings as soon as they are planted.
- ❖ Mulch them in their bed.

- ❖ Provide some shade for the seedling, using a leafy branch or a piece of cardboard. This can be removed after 4-5 days, once the seedling has settled in.

