

GARDEN *Secrets*

VOL I. GROWING
FROM SEED



 Magic
Garden
Seeds



Seeds need water, warmth and air to germinate. Some also need specific conditions such as frost, light or darkness to trigger germination. This compact guide tells you everything you need to know to successfully grow your plants from seed.

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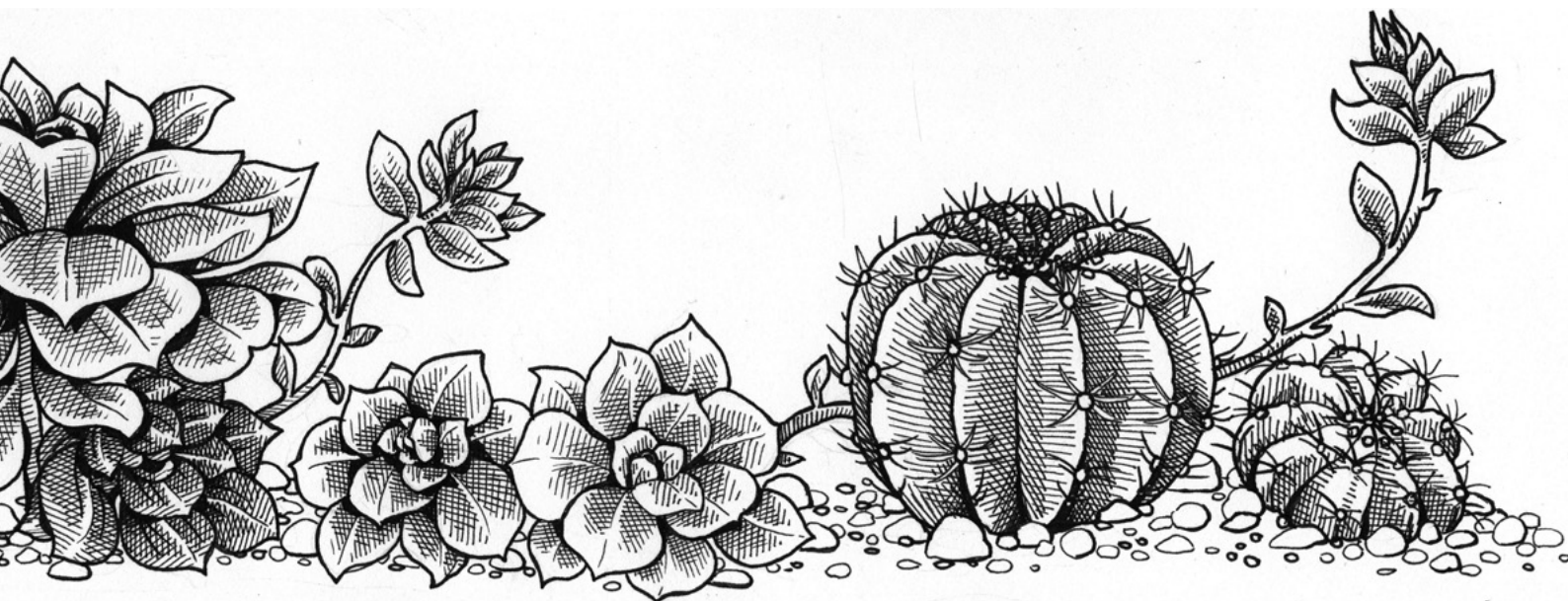
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1. Sowing

The basics

Seeds can be sown in one of two ways: they can either be started indoors, in containers, or sown directly outdoors in the garden

The first method is used to grow tender, frost-sensitive plants and to start plants which will later be transplanted outdoors when conditions are warm enough.

Starting seeds indoors or in a greenhouse

Scatter the seeds on the sowing compost, cover with more compost, press down lightly and keep the compost moist.

When to sow

The best time to start seeds indoors depends on the plant variety and your local climate. There's no point sowing your seeds more than two months before they could potentially be transplanted outdoors. In Germany, for example, even keen gardeners avoid moving their young plants outdoors until after the 'Frost Saints' in mid-May – a cluster of saints' days which often coincides with the last frosts. This makes March the best time to start seeds indoors in Germany and comparable climate zones.

March is the right time to start seeds indoors.

Seed compost

Commercially available seed sowing compost or good-quality garden compost make the best potting soil for growing your plants. We've also found coir compost, made from coconut fibre, to be an excellent seed compost. It has very good water retention and naturally contains trichoderma – micro-organisms that inhibit the development of fungi cultures. You can either fill small seedling pots with coir compost yourself or, for convenience, use coir plug pellets which expand to their full size after soaking in a little water. We advise buying coir pellets made from 100% coconut, to avoid disappointment.

Coir compost contains key micro-organisms and it's great for sowing seeds in.



Watering

Moisture plays a key role in germinating seeds successfully. Unless otherwise stated, the seed compost should be moist at all times but never soaking wet. A quick and easy way to check your moisture level is to take some of the compost in your hand and squeeze it – if water comes out, it's too wet.

How deep to sow

Seeds of different sizes need to be sown at different depths. The layer of earth above the seed should be around 2–3 times the seed's diameter – though this is just a rough guide. Very tiny seeds don't need covering at all.

Sowing depth =
2–3 × seed's diameter

Seeds that need light to germinate

Many very small seeds need direct exposure to light in order to germinate and so these should only be very thinly covered – we like to use a scattering of fine sand, which helps to protect the seeds against drying out while also letting light rays through.

The next stage is to place the containers with your seeds inside an indoor mini-greenhouse or propagator, with the lid closed. This should be placed in a bright, warm location. The compost should be kept moist but not too wet throughout the germination process. Mould caused by standing water is one of the most common problems when growing from seed. Remove the lid for a short time every day to aid ventilation. Once the seedlings have emerged the lid can be taken away entirely. The seedlings may develop more slowly without the lid but they will grow into stronger, more resilient young plants.

Prick out – or sow in separate pots from the start?

Traditionally seeds are sown in seed trays and then pricked out – the process of carefully transferring the young seedlings into individual pots. Your seedlings are ready for pricking out as soon as the first pair of ‘true leaves’ is fully formed – these leaves appear above the earlier seed leaves and are ‘true’ because they show the leaf characteristics typical of that specific plant variety. Alternatively you can sow your seeds straight into small individual pots or coir pellets. If you do this it’s best to sow only one or two seeds per pot, even with very small seeds. This method is certainly simpler – though it’s worth bearing in mind that some plant varieties (celeriac, for example) develop a stronger root system after being pricked out. Many gardeners also use the pricking-out process as a means of quality control, selecting only the strongest, most promising seedlings.

Pricking out: the process of transferring young seedlings into small pots

Hardening off

Before being transplanted outdoors, young plants will need a period of hardening off: stand them outside during the day when temperatures are above freezing, and move them back under cover overnight. This allows the plants to build the strength and resilience to cope with outdoor conditions when they are transplanted.

Transplanting seedlings outdoors

Make holes of the appropriate size in the planting location and carefully place your seedlings in them. Lightly pat the young plants into the ground with some extra soil and then water them in. How far apart the plants should be spaced will vary with different varieties – though 30 cm is a good rule of thumb. If your seedlings were grown in coir plugs these can simply be planted straight into the ground – don't try to remove the fibre netting around the root system as this might damage the roots. This netting will decompose naturally in the soil.

Sowing outdoors

Many plants – including most vegetable varieties - can be 'direct sown', i.e. sown directly where you want them to grow outdoors.

Seedbed

The soil should be loose, with a fine, crumbly texture, and as far as possible free of weeds.

When to sow

How early you can start direct sowing will depend on your climate and the specific plant variety. Some vegetables, broad beans for example, can be direct sown outside as early as February. For most plants though you will need to wait until after the last frosts in mid-May. Using a cold frame, or covering your crops with a protective fleece, can be ways of making earlier sowings possible.

You can sow earlier by using a cold frame or garden fleece.

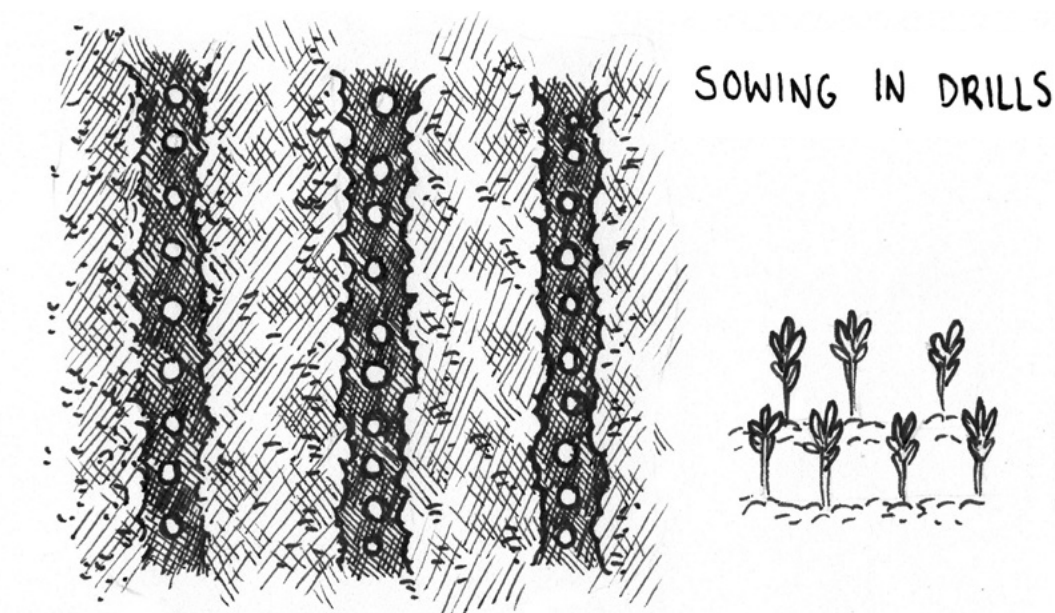
How deep to sow

As with sowing indoors, the sowing depth depends on the seed size – in general the layer of earth above the seed will be somewhere between 0.5 cm and 2 cm thick. Very tiny seeds are either not covered at all or given a thin scattering of sand.

Sowing techniques

There are three common methods used for sowing seeds directly in the garden: broadcast sowing, station sowing and sowing in drills.

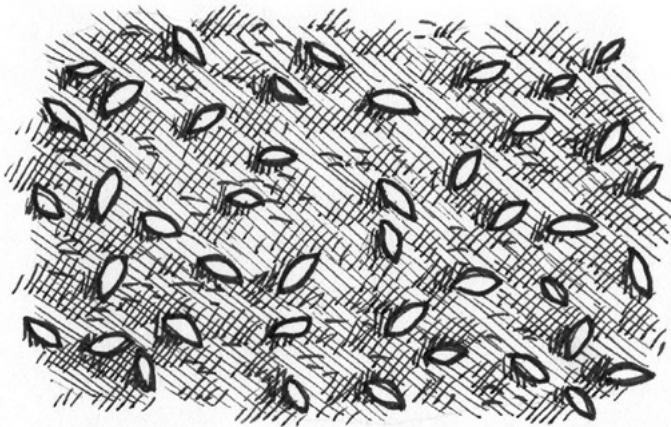
For *sowing in drills*, make a shallow channel in the soil (as deep as the recommended sowing depth), then sow the seeds in a line along the channel, following the recommended spacing for the plant variety. Cover the seeds with soil and pat it down gently. If good-quality compost is available you could use this to line the channel and/or cover the seeds.



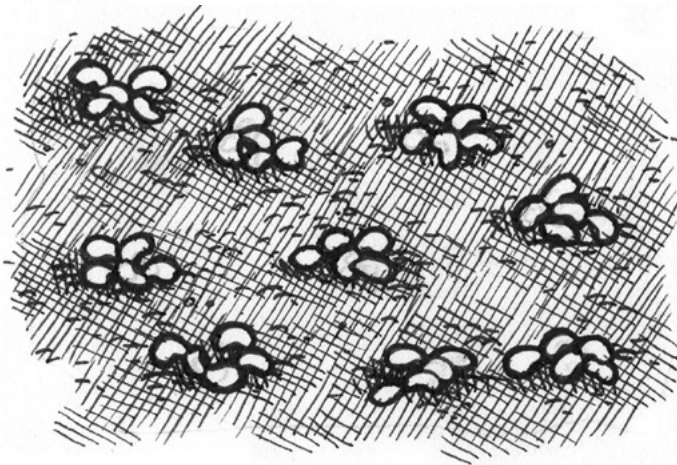
With *broadcast sowing*, seeds are scattered over the soil surface and raked in gently to cover them. When broadcasting seed you can mix different varieties and sow them together – though it’s a good idea to check that your chosen plant combination will work as some plants don’t get on well together.

When broadcasting you can also mix different plants together.

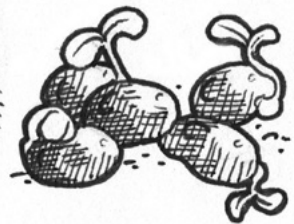
For *station sowing*, several seeds (mostly around five) are sown together in a cluster at their final spacing. This method is commonly used for growing beans which develop better with their ‘brothers and sisters’ close by.



BROADCAST SOWING



STATION SOWING



With all three methods you can either give the area a light watering after sowing or wait for the next rain shower. In very dry conditions it's a good idea to keep the seedbed area moist by watering regularly. Some gardeners use garden fleeces to create a moist microclimate and protect the emerging seedlings from light frosts.

Once the seedlings emerge, they may need to be thinned to their proper spacing. It's a good idea to think about spacing in advance, when you are sowing, and not sow too thickly. Every one of those seeds has the potential to develop into a fully-grown plant!

When sowing, think about the space the plants will need.

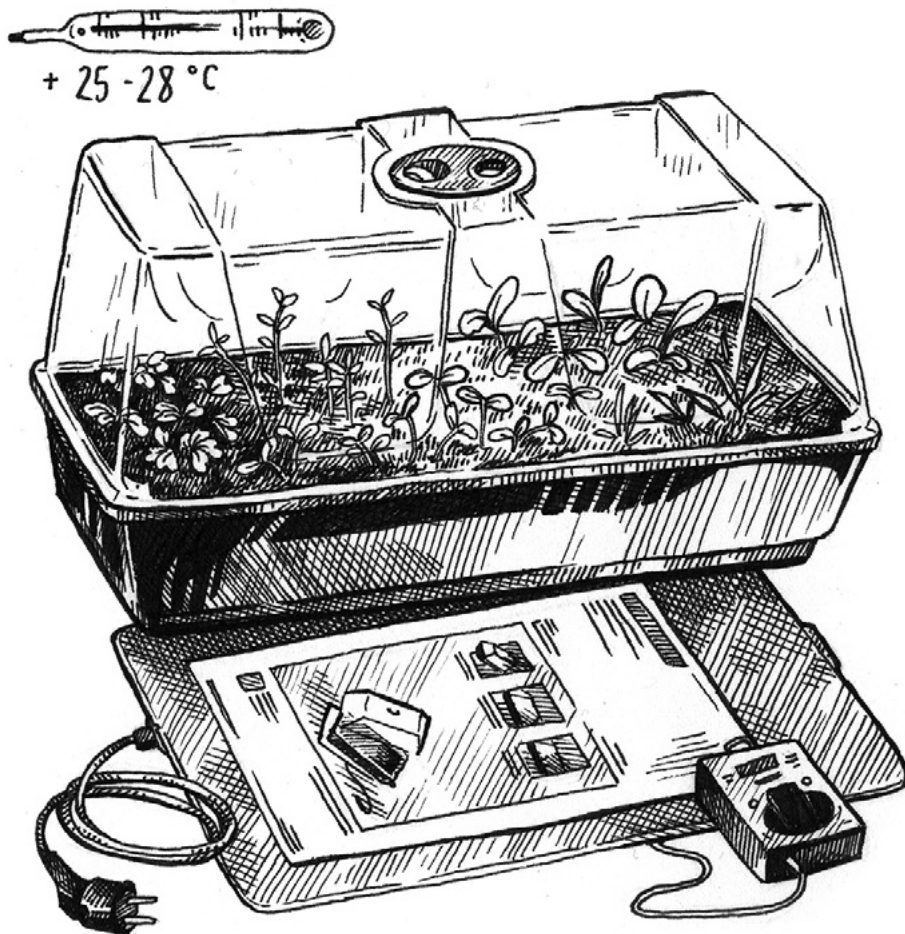
2. Germination

Seeds with special germination needs

Now it's time to take a closer look at some of those plants we mentioned that need special conditions to trigger germination.

Seeds that need warmth

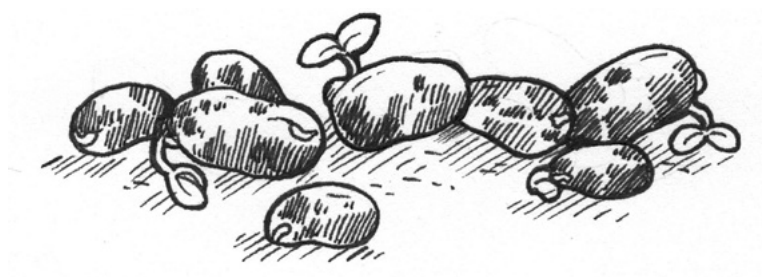
Many tropical plants need ground temperatures averaging 25-28°C to trigger germination. A heated mat placed under a mini-greenhouse – or a heated indoor propagator – can be helpful here.



Seeds that need cold

Many central European plant seeds need exposure to cold temperatures to trigger germination. This is nature's ingenious mechanism to ensure that seeds will only start germinating after winter is over. These plants are normally sown outdoors in autumn. However, we've found that artificially cold treating (or 'stratifying') these seeds in a refrigerator can produce even higher germination rates. To do this, mix the seeds with a small quantity of slightly damp sowing compost (coir compost again works very well here) and place them in a plastic bag. As plastic bags are watertight there isn't usually any need for further watering. Keep the seed bag in a warm location at first – at 20°C, for 2–4 weeks. Then move it to the fridge – which should be set as low as possible, at 5°C or even lower is ideal. The coldest spot in the fridge is usually at the bottom. Check your seeds weekly and when they start to germinate sow them in pots as usual. Some seeds might keep you waiting for up to six months before starting to germinate, but your patience be rewarded in the end.

With bag germination, the seeds are mixed with a little moist sowing compost in a plastic bag and left in a warm or cold place, depending on the plant's specific needs.



Slow germinators

Some varieties, palm trees for example, take many months to germinate. Mould formation and rotting are the biggest dangers here. The bag germination method has proved successful for these slow germinators. As with seeds that need cold to germinate, mix the seeds with a small amount of moist coir compost and place them in a watertight plastic bag. The compost absolutely mustn't be completely wet – the moisture level should be roughly similar to that of a newly-opened bag of potting compost. Seal the bag, keep it in a consistently warm location, and check the seeds regularly.

Seed soaking

To pre-soak seeds leave them in liquid for a short time (12 hours at most). Organic gardeners have all kinds of favourite recipes here – including hot water, milk, chamomile, garlic, sticky catch-fly and horsetail tea. Various seed pre-treatments are available commercially. We find a dilution of valerian flower essence especially effective.

The pre-treatment speeds up germination and produces stronger plants. Especially for seeds that take several months to germinate – as is often the case with seeds that need cold to germinate, or slow germinators – a pre-soaking to disinfect the seeds can have benefits, reducing the likelihood of mould and rot. Before soaking, any fruit flesh residues (often present on the seeds of fruit trees) should be removed. To disinfect the seeds you can safely use either a 5% hydrogen peroxide solution or, simplest of all, ordinary methylated spirits, washing the seeds around in it for a few seconds and then rinsing them off thoroughly with water in a fine sieve.

To pre-soak seeds leave them in liquid for a short time.

3. Special Plants

Special sowing information for specific plants

Chillies

Heat-loving chilli plants need to be started indoors and then grown in pots – on a balcony, perhaps, or they can also be grown as indoor pot plants on a bright windowsill. In warmer regions chillies can also be transplanted into the garden. Chillies are often grown as annual plants, but we recommend overwintering them and cultivating them as biennials as they generally produce an abundant crop in the second year. A bright but unheated indoor spot would be a good place for overwintering your chillies. Water them sparingly during the winter months and keep an eye out for pests. Prune the plants, and pot them on if necessary, in February before the new shoots emerge.



Tomatoes

Tomato plants are started indoors, then moved outside after the last spring frosts – either transplanted directly into the garden or kept in pots on a balcony or patio.

Tomato plants can grow outdoors without protection but many varieties will benefit from some simple rain protection. Just a plain clear tarpaulin sheet, stretched out and secured above the plant will create a perfect ‘tomato roof’. The sides should remain open to ensure that air can flow freely at all times.

These simple measures can make tomatoes less susceptible to the dreaded disease of blight. Some tomato varieties grow into impressively tall plants and will need supporting. Simply tie the shoots to some canes or a trellis.

Tomato plants are heavy feeders, requiring high levels of nutrients. We recommend feeding them regularly, especially when growing them in pots. For optimum flavour, stop feeding the plants and water with plain water only for about a week before harvesting.

‘Pinching out’ tomato plants refers to the recommended practice of regularly removing the side shoots from the main stems. Side shoots form in the axils where the leaves grow from the main stem. As soon as possible, take the side shoot between your thumb and index finger and pinch it off. Take care not to damage the stem surface as this could encourage blight. If you don’t pinch out your tomato plants they will produce bushier growth, putting their energy into leaves and shoots rather than fruit. For most tomato varieties this may not be a problem – but with the larger-fruited beefsteak varieties that often grow very tall, the fruits might fail to reach their full potential without pinching out. A tomato plant that’s not pinched out can also produce heavy side shoots that bend and buckle under their own weight.

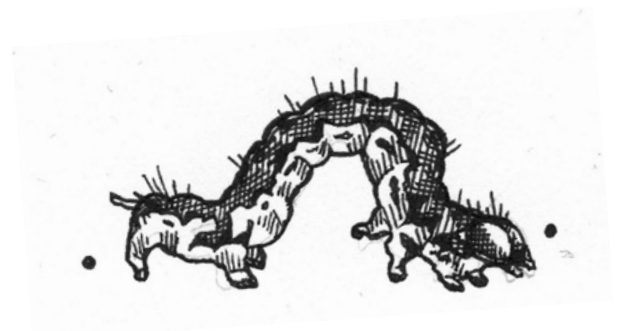
‘Pinching out’ means removing the side shoots from the main stem.

Tobacco

Tobacco plants are started indoors, then moved outside after the last spring frosts – either transplanted directly into the garden or kept in pots on a balcony or patio. With plenty of sunlight and moisture tobacco plants can speed ahead, growing as much as 2 m high in just a few weeks. We recommend feeding them regularly, especially if growing them in pots. To get the best flavour from the leaves, stop feeding the plants and water with plain water only for at least a week before harvesting.

In the summer, your tobacco plants will start to form beautiful pale pink flowers. If you intend to harvest the leaves to make your own smoking tobacco, we recommend that you pinch out the flower buds regularly, which will improve the quality and taste of your tobacco. Choosing the right moment for harvesting tobacco leaves will determine the flavour of your smoking tobacco. The point where the leaves start turning yellow in colour is a good reference guide here. Cigar tobacco is harvested before this point, when the leaves are still green, while cigarette tobacco is harvested later. Don't harvest the whole plant at once but pick the leaves one by one over several days as they mature. After harvesting, the plants can be overwintered indoors and kept in pots as perennials – and with a bit of luck, depending on your tobacco species, the plant might grow a large crop of smaller leaves in the second year. It's certainly worth a try!

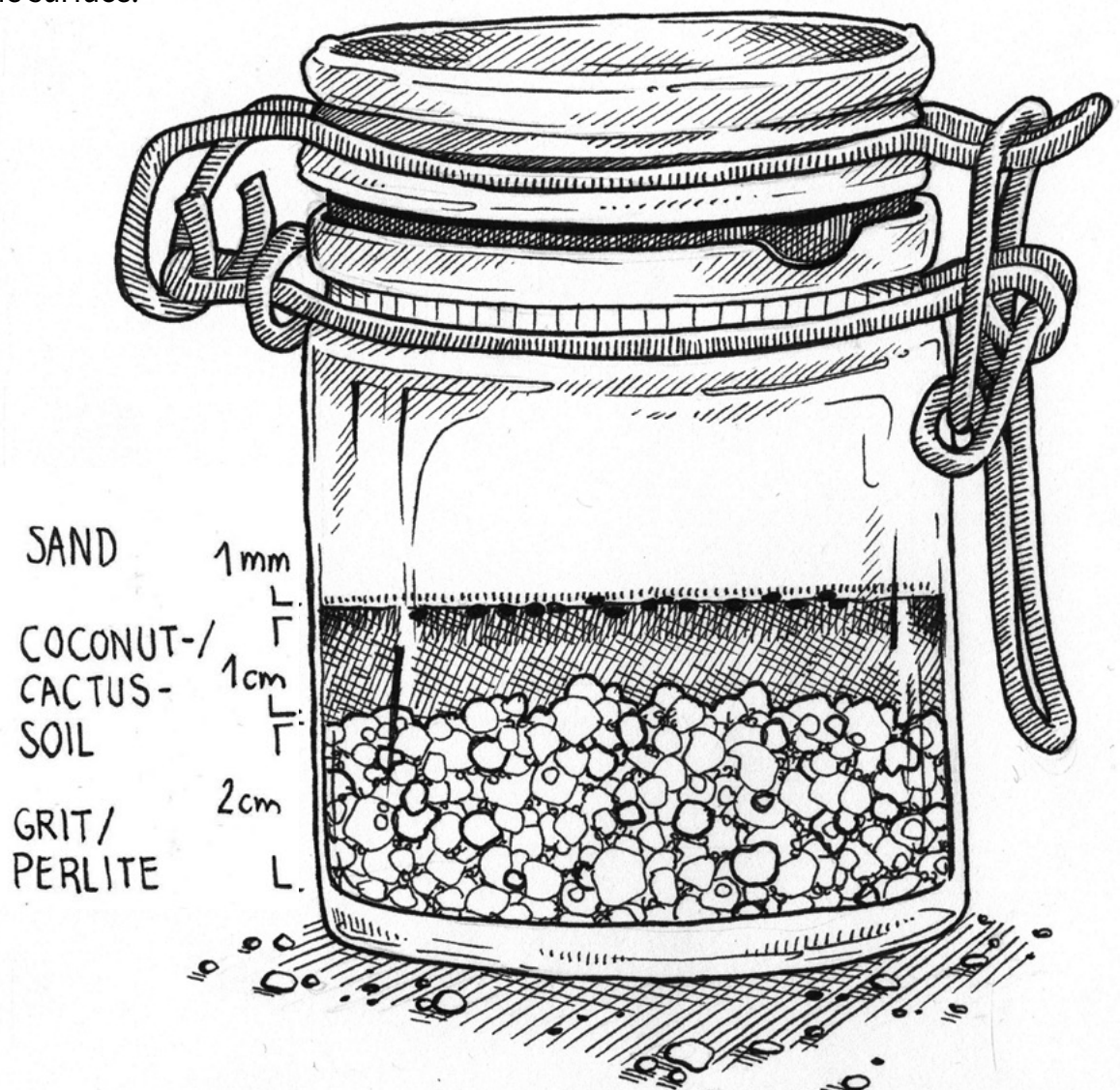
Pinch out the flower buds regularly, which will improve the quality and taste of your tobacco.



Cacti and succulents

Cacti come from arid habitats, so it may surprise you that their seeds need relatively large amounts of moisture and light – a “tropical” climate – to germinate successfully.

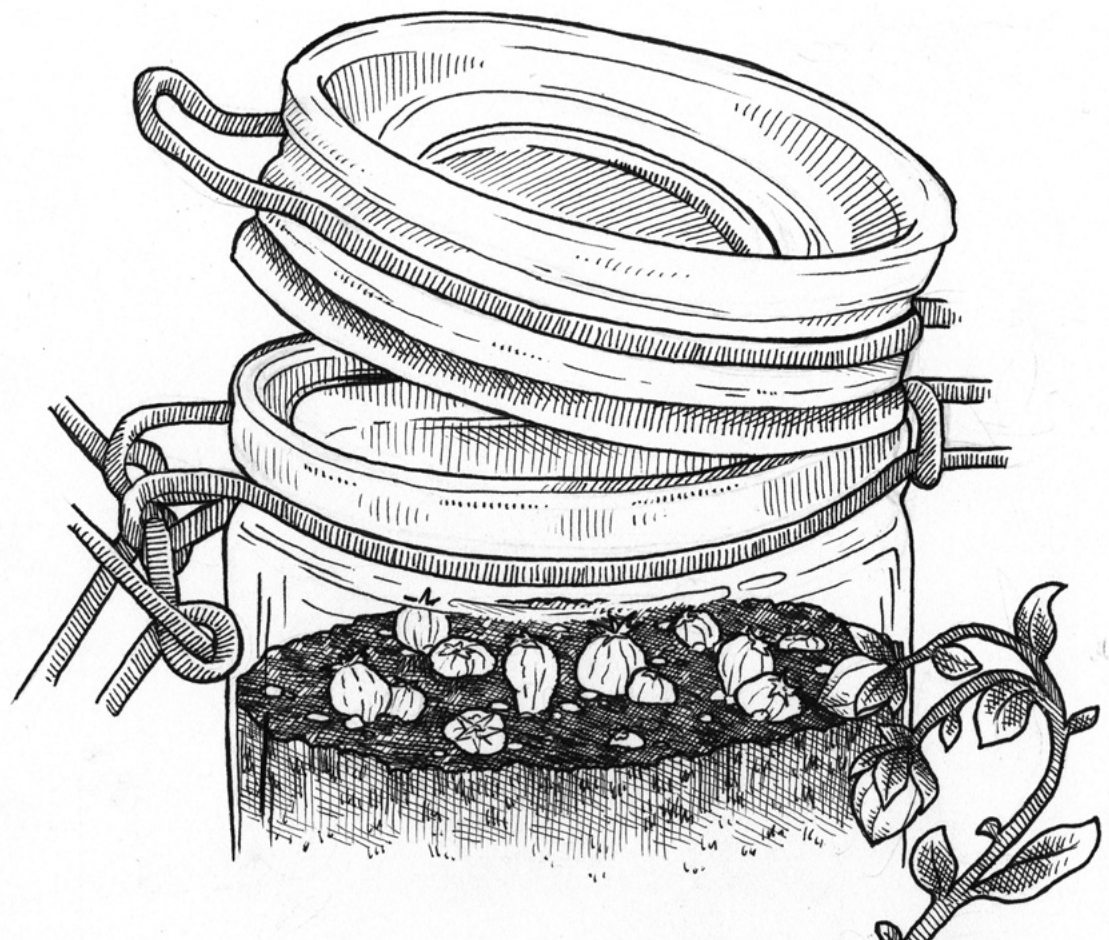
A good method for growing your own cacti is to sow the seeds in a clip-top preserve jar. The rubber seal in the lid creates an airtight environment so that all moisture remains inside the jar, which should be kept in a warm location. Your emerging seedlings can stay in the jar for their first year of growth, and might not need any additional care during that time. Start by pouring perlite or fine grit into your jar, to create a base layer about 2 cm deep. Then add another 1 cm thickness of coir compost or specialist cactus potting mix on top, and pat it down lightly to smooth out the surface.



Spread the seeds out thinly and cover them with a very thin layer of fine sand - no thicker than 1 mm. The thinness of the layer is crucial, because cactus seeds need light to trigger germination. Add labels – especially if you’re sowing different cacti species at the same time – and then tightly close the lids of the jars and stand them on a heated mat, in a warm and well-lit location, e.g. a windowsill. Plenty of natural light is very important but direct midday sun should be avoided if possible.

In these conditions seedlings should start to emerge after about 14 days. The air, moisture and nutrients contained inside the jar should be sufficient to keep the seedlings happy for at least six months. After this time, they need to be slowly acclimatised to direct sunlight and drier conditions. To do this, start to open the jar for increasing periods of time, over several days, starting with just a narrow gap between lid and jar and gradually widening it until you can open the lid completely. Get the seedlings used to direct sunlight in the same way, moving them into the light slowly and for increasing periods of time.

After six months slowly acclimatise seedlings to sunlight and dry conditions.



Once the lid has been fully opened you will need to start watering your cacti. Keep watering to a minimum, ideally not soaking the soil completely at any stage. Again, the plants need to adapt slowly to a drier habitat. To start with allow only the surface to dry out between waterings. Soon the plants will be able to manage without watering for a few days. During the winter period, cacti need hardly any water and larger plants may not need any at all. This period of winter dormancy is particularly important for flowering cacti. They should be kept in a cool but frost-free location. During the growth phase in the summer you can add plant feed to the water – use an algae extract, which is low in nitrogen but rich in enzymes, minerals and other nutrients. The small and slow-growing young cacti could easily stay in the jar for several years, but to stimulate their growth it's a good idea to transplant them carefully into small pots after their first year. As a guide, the plants should have reached a diameter of at least 5 mm before repotting. Use a specialist cactus potting mix and start adding add nutrient-rich cactus feed to the water. As an alternative to clip-top jars, you can also sow cacti in a mini indoor greenhouse. If you do you will need to check the moisture levels regularly and use only a gentle hand-held spray for watering to avoid disturbing the delicate seedlings.

After a year it's a good idea to move your seedlings into small pots.

Marsh and aquatic plants

Scatter the seeds over the moist seed compost and pat them down lightly but don't cover with additional soil. Keeping the compost consistently moist is vital. 'Bottom watering' is the best way to do this – place your seedling container in another container filled with water to a depth of about 3 cm. Some aquatic plants, like water lilies, can even be entirely submerged in water. When the seedlings are big enough, prick them out into larger pots and continue bottom watering indoors. Winter-hardy plants can then be transplanted outdoors.



Carrots and root vegetables

Carrots, parsley roots and parsnips are grown from seed in very similar ways. They are all biennial plants which develop their edible roots during the first year, ready for harvesting through into the second year, which is also when they flower.

They can be sown from mid-January onwards, as soon as the ground is dry enough and further direct sowings can be carried out through into June. These root vegetables are best direct sown in drills at a depth of around 2 cm. Carrots need a light, sandy, humus-rich soil, ideally carefully prepared and sieved to remove any stones. If these conditions are met the roots will thrive, expanding widthways and lengthways.

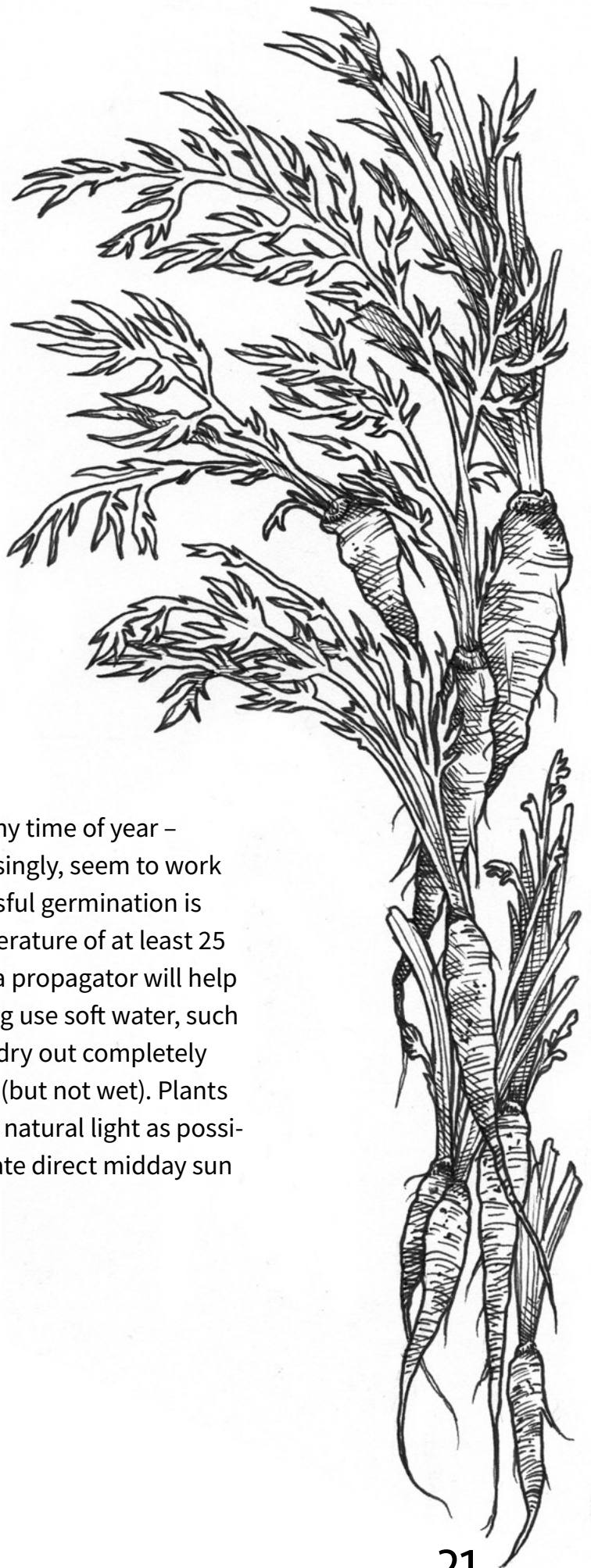
Root vegetable seeds can be direct sown outdoors in rows.

Regular weeding is really important for carrots.

If not there is the risk that the roots may split. Only a handful of carrot varieties can cope with heavier or clay soils – varieties such as Oxheart or Paris Market. Carrots need plenty of space so your rows will need to be well thinned. But take care when pulling out the carrot seedlings as their scent will magically attract carrot fly. The young plants are weak competitors so regular weeding is vital, while mulching can help to keep the weeds at bay.

Tropical plants – including coffee

Tropical plants can be sown indoors at any time of year – although winter sowings, perhaps surprisingly, seem to work especially well. The key factor for successful germination is warmth – maintaining a consistent temperature of at least 25 °C. An electric plant mat combined with a propagator will help to create the perfect climate. For watering use soft water, such as rainwater. The compost should never dry out completely and should always be kept slightly moist (but not wet). Plants should be placed where there is as much natural light as possible – although they generally don't tolerate direct midday sun very well.



4. Plant Care

Feeding

Seeds contain everything the young plants need for their first weeks of life so sowing compost doesn't generally contain any extra nutrients. We've found that young plants will benefit from feeding after a few weeks, once their 'true leaves' have fully formed. We recommend using an organic algae extract such as Alg-A-Mic (approx. 1 ml feed to 1 l water). Algae extract is low in nitrogen but contains many useful enzymes, minerals and other nutrients. Mature plants have different nutrient requirements, depending on their variety. In a domestic garden, compost or mulch will often provide all the nutrients they need.

Mulching

Mulching is a key natural gardening technique – the principle behind it being that leaving the soil bare encourages weeds, erosion and drying out (so that you have to water more often). Mulching prevents this by adding a layer of organic material over the soil surface and between your plants. Materials you can use as mulch include green garden waste, compost, leaves, straw, shredded cardboard, non-resinous bark mulch and shredded prunings. Adding beneficial herbs such as comfrey or nettle to the mix will also give your soil a boost. The mulch will rot down over time, releasing nutrients into the soil. It encourages beneficial micro-organisms and promotes humus formation, keeps the soil moist and suppresses weeds. It can also attract slugs and snails, though, depending on the material you use.

'Mulching' means adding a layer of organic material over the soil surface.

5. Troubleshooting

Seeds won't germinate

It is possible that the temperature might be too low. Tropical plant species and chillies in particular, but many vegetables, too, need a minimum level of warmth to trigger germination. Below this temperature the seeds remain dormant. A heated mat may help. Or it might be that the seeds are rotting because the compost is too wet. Your moisture level is just right if you can squeeze some of the compost in your hand without releasing any water.

The compost is perfectly moist if you can't squeeze any water droplets out of it.

Seedlings keel over and die

Damping-off is a soil-borne fungal disease and a common cause for seedlings dying prematurely. Excessively moist compost may be the culprit, creating a humid microclimate in which fungi can thrive. We recommend using a sterile potting compost, which shouldn't be too damp or too warm.

Insects, birds or small mammals are eating my plants

The only ecosystem-friendly choice here is to use plant protection nets to physically keep predators away from your plants. These are made from a fine, lightweight mesh, which covers the plants without impeding their growth. The net can be weighted down around the plant with some stones or soil, creating a mechanical barrier. Rainwater and air can still pass through the mesh.



Seedlings in my garden have disappeared

In almost all cases, slugs and snails will have eaten your delicious fresh seedlings. Mixed and balanced planting might help – mixing different varieties together and avoiding neat rows can often prevent total devastation. Where the slug and snail population is very high mulching may make things worse by attracting them to the organic matter contained in the mulch layer. Protective barriers may be the best remedy – or encouraging frogs, toads or hedgehogs, or even birds like thrushes, which will eat slugs and snails.

Barriers can be the best way of stopping slugs and snails – or encouraging natural predators, which will eat them.

My young plants fail to grow after transplanting

They might be in the wrong location, or in the wrong kind of soil – or it might be that they had outgrown their container: when young plants are kept in small pots for too long their growth can stagnate and they don't always recover.

Storing your seeds – and how long they will keep for

The seeds of most cultivated plant species remain viable for around 3 to 5 years. Wild plant seeds often keep for much longer, sometimes even for decades. Tropical plant seeds, by contrast, have a much shorter lifespan – only a few months in some cases.

Ideally store seeds for later use in a cool, dry and dark location. Temperature fluctuations should be avoided if possible. If you have an airtight glass jar, you can even keep your seeds in the fridge over a longer time period.

About us & Service

At Magic Garden Seeds we specialise in unique heirloom seeds – including almost-forgotten cultivars of traditional domestic crops and old vegetable varieties. As our contribution to preserving biodiversity we only sell open-pollinated, true-to-type seeds – no hybrid, patented or genetically manipulated varieties. This means that you can save your own seeds, re-sowing them year after year and sharing the joy of sustainable gardening with your loved ones.

www.magicgardenseeds.com

We always try to offer only fresh, viable and high quality seeds. Please note, however, that plant seeds are a natural product and their germination depends on many factors (seed age, proper storage, temperature, irrigation, sowing depth, etc.).

We love to get positive reviews, but if you are not satisfied, please contact us!

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