

The background of the image shows several dark, oval-shaped seeds and yellowish, curved seedlings on a light-colored, textured surface. The text is overlaid on this image.

Growing Plants from Seed

Costas Lymbouris

Feb 2022

Agenda

- Intro – about seeds
- Pre-germinating seed in bags
- Traditional sowing in pots
- Wintersown
 - Lets nature take care of it
 - Saves time and indoor/greenhouse space

Why grow plants from seed ?

- Access to a much wider range of plants
- Avoids introducing plant pests and diseases to your garden
- My need is maybe a dozen or so plants from each sowing with excess going to friends
- Cheap for mass planting schemes
- Seed starting is fun and easy And you don't need a lot of fancy supplies to get started
- For me its "keep it simple" and reuse readily available household items

The Seed

- A seed is an embryonic plant enclosed in a protective outer covering
- The embryo is surrounded by storage tissue which provides nutrition – called the endosperm
- The seed embryo in its shell is hibernating, and during its hibernation it is slowly using up that nutrition

Seed

- If kept for too long, all the nutrition is used up and none is left for the seed to germinate
- Is why seeds stop being viable
- Check use-by date although some latitude
- Seeds will last longer kept chilled (fridge)

Seeds

- Some seed remain dormant for years and need stratification to break that dormancy
 - These require repeated exposure to periods of cold and less cold (ie autumn/winter sowing)
 - Some seeds need 2 or 3 winters (eg clematis, tree peony, many alpines) (*NB: seeds sown green often do not*)
 - *Do not place seeds in a freezer – likely to kill them*

Germination

- Germination only starts when moisture has penetrated the seed coating and reached the seed embryo
- Seeds with a thick coat, example canna lilies may need the seed coating to be cut or filed to allow water and air to penetrate
- Pre-soaking seeds ensures moisture penetrates the seed coating quickly so speeds up germination

Pre-Soak Hard Shelled Seeds



These sunflower seeds were left for 2-3 hours
(same for sweet peas for example)

Timing

- Timing is important for a number of reasons
 1. Many seeds will not germinate or thrive in cold, “boggy” conditions
 2. Use a radiator for heat
 3. Once seeds have germinated, seedlings are best grown-on at room temperature, use a warm south facing windowsill
 4. Sowing later eg March can produce stronger healthier plants if you do not have artificial lights or a suitable “sun” facing window

Timing – indoor sowing

1. Seedlings need a minimum of 10 hours light to grow well. Happens mid Feb to mid October so factor time to germination
2. Can use domestic LED bulbs for seedlings only or time sowing so germination occurs after mid Feb



Temperature

- **Important** to be aware of temperature requirements for germination
 - Minimum temperature is important, many seeds only germinate at 20C and above
 - Many seeds like cooler conditions and only germinate at lower temperatures for eg below 20C
 - Check your seed packet for temperature guidance as well as planting depth

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 - **Will talk later how to let nature deal with this “Winter Sowing”**

Pre-germinating seed

Baggy Method


- Pre-germinating seeds identifies viable seeds, is easy and saves you potting space and time
- Best method for difficult to germinate seeds, can keep bag for months or even years without them drying out (moisten as often as required)
- No need to plant multiple seeds in a pot or tray in the hope one will germinate
- Good for small or large numbers of seeds
- Easy to see when seeds have germinated and ready for potting or maybe attention – cold spell

Baggy Method (Cosmos)

- Cut some kitchen paper towel in half
- Scatter seed (pre-soaked if hard coating)
(washes seed to remove contaminants)
- Place in bag and moisten with sprayer
- Seal and hang near a window or put on table
- If a cold treatment is required, put the sealed bag in the fridge
- If “dark” required put in drawer or a cupboard

Place bag paper up

- The plant roots grow downwards, so to prevent them growing into the paper towel, place bag with paper upper most



Germinating Sunflower Seeds
Costas Lymbouris

B in 8/11/22

This 17th January

B 11/2/22

Cold & Light Exposure



Moving on

- If any seeds rotting, then remove immediately
- There is no nourishment for them in the bag so when roots appear, move seedlings to a pot

Sowing seed in pots and Potting-Up

Frost tolerant plants

- Possible to sow these in October where they are to grow – but risk of seeds rotting, birds eating them
- For small seeds like annual poppies needing light and stratification, sow January to February
 - fill pot/tray with damp compost
 - cover with gravel, and sow seed into the gravel
 - Water/spray gently to wash seeds onto compost and **place outside** in a sheltered spot, gravel protects seeds whilst allowing light exposure
- If seeds not sprouting by early spring (eg poppies) cover tray/pot to exclude light for 24 to 48 hours, then expose to light again. May need to repeat this

Germinating Seeds in Pots

- It's easier to maintain a warm /constant germination temperature using a shallow pot if you don't supply bottom heat

Light Requirements

- Some seeds need 'light' to germinate, if your not sure, surface sow seeds (as in nature) and water in with a sprayer
- Cover the pots to ensure surface remains moist until seeds germinate, eg plastic top
- can also cover with perlite to keep seeds moist plus reduces algae and fungal growth
- Other seeds need to be covered / kept dark

Vermiculite and Perlite

- Vermiculite will soak up / absorb water like a sponge. This is good for plants that need very moist soil.
- Perlite stores water by holding it on its surface. It does not absorb water like Vermiculite. So Perlite allows water to drain away faster
- Either works equally when used for covering seeds to keep them moist whilst germinating
- Perlite mixed in compost will produce a better draining mix than Vermiculite, sand is cheaper

Compost for Seeds

- For seed sowing, I have not found the type of compost to be an issue other than “John Innes”
- I use a general purpose compost (add garden soil!! 82C)



Compost Mix

- Can buy seed composts – not needed
- The multipurpose compost is amended (this one already has some sand included)
 - 3 parts compost (best if sifted / turned to **aerate**)
 - 1 part sharp sand (for concrete making) or perlite
- **Do not** compress the compost, that takes the air out of your compost which is needed by roots
- **Do not** soak compost; saturation rots slow to germinate seeds, keeps air from roots and encourages fungal diseases eg damping off

Compost for Small Seeds

- and for very small seeds, use a sieve to sprinkle fine compost onto the surface before sowing, then spray seeds with water
- Seedlings need food to grow
- If using a “**seed compost**” for seeding, remember its NO or **LOW nutrient**, so seedlings should be pricked out as quickly as possible

Watering

- compost on the 'dry-side' reduces problems including fungus gnats
- If you have previously suffered from damping-off diseases
 - sprinkle a little perlite or vermiculite on the surface to absorb surface water
 - or sprinkle a mild fungicide like ground cinnamon on the soil surface after sowing

Potting-On

The potting medium is simply there to hold the plant. Seedlings needs air, water and **food** to grow

At this stage, must use a compost with fertiliser or water with liquid fertiliser

Putting it into Practice

Tomato Seedlings



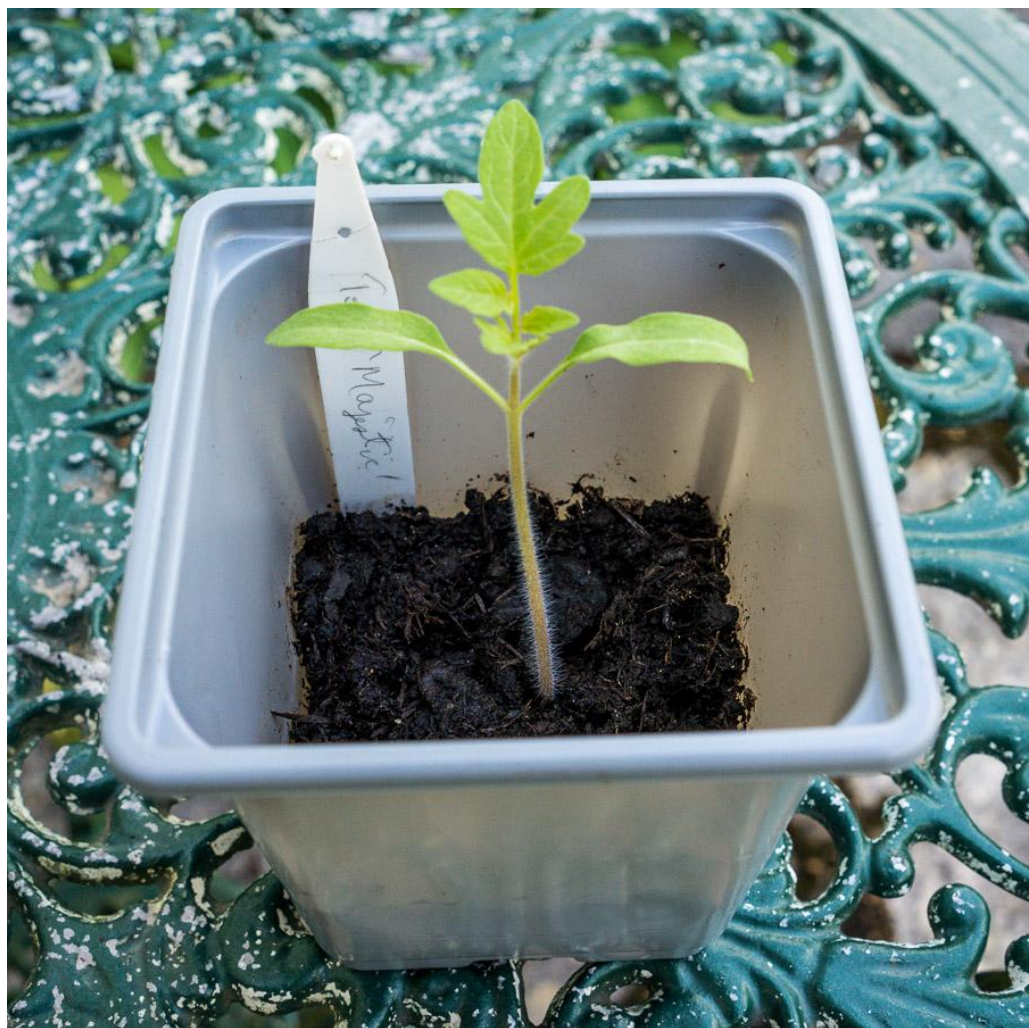
- Many vine plants like tomatoes will grow roots wherever the stem touches the soil
- You can use this habit to grow plants with a large root system

Potting-On



Pot-on into a taller pot with only a little compost
Could also have sowed the seed into this 1/3 filled pot

Growing-On



- 10-days later
- Has become “leggy” because pot not fully transparent
- The stem will however be turned into root

Growing-On



Growing-On

1-week later



Planting out



- When planting out, strip off lower leaves
- Can then plant stem 15 to 20cm deep providing greater root growth
- Later remove lower leaves upto 1st truss, to avoid soil born diseases such as blight being splashed onto the leaves when watering

Wintersown

Let Nature Deal With It

For Hardy Annuals and Perennials

- Suitable for most UK native plants
- All cold weather plants and crops
- Stratification by putting a seed packet in the fridge will not give the highest germination rate, the seeds will be too dry
- This “winter sowing” technique incorporates stratification by default
- For Hardy Annuals or Hardy Perennials sow from January to April

Advantages

- Low maintenance
- Produces strong seedlings with no need to harden them off
- Does not need artificial lights or heat
- Suitable for producing both small and large numbers of seedlings
- Does not take up greenhouse / indoor space
- Reduces seedling damping-off

Prepare Bottle

- The number of plants raised depends on the width of the container, these bottles good for 5 to 10 plants depending on time they are left in bottle
- **Important:** First make holes in the bottom to allow drainage
- I use scissors to make 5-6 cuts bottom sides
- Then cut round part of the bottle leaving the 2 parts attached (will see why later)

Use a transparent bottle
To create a mini-propagator



Cut from a third to half the bottle length

Compost

- Because the seedlings will spend a long time in the container (months), **do not** use a seed compost
- The seedlings will need nourishment to develop. Use a multi-purpose compost which has been amended for drainage and contains nutrients / fertiliser
- or water with a liquid fertiliser

Add damp compost then seeds, cover if required and moisten, I use a small spray bottle



Many seeds need light exposure

Discard the bottle tops and use tape to seal the cut, making mini greenhouses



Always label

Place outside where they will be
exposed to sun and rain





Sunflowers - after 3-weeks

Can be moved to pots or left until ready to plant

Tender Annuals & Perennials

- The bottle method also works for tender plants, such as cosmos, tomato, salad crops
- You generally start your tender seeds about 6-8 weeks before the last frost date, see packet
 - For Farnham frost free from 3rd week May “most years”
 - 2°C 7th May 2021, 0°C 12th May 2020
 - 0°C 13th May 2019, 2°C 7th May 2018
- Sow seeds from late March into April, to avoid the coldest days
- If very cold weather expected (< -5C) cover bottles with fleece, old compost bags

Hardening Off

- Plants grown in bottles and left to become plants do not need hardening off
- Can be planted directly from bottle to where they are to grow
- Those grown indoors in pots will need hardening off

Protecting & Hardening off plants

“Instant cold frame”



- Can wrap the box in bubble wrap
- If freezing temperatures forecast, can pick-up the box and move it indoors or garage or shed for extra protection if required

End