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Microgreen growing guide.

What are microgreens?

Microgreens are used to describe smaller, young, edible greens that germinate in soil or a soil substitute, from the seeds of vegetables and herbs. They are harvested at an earlier stage than traditional greens (when the first cotyledons appear). They have grown in popularity due to their nutritional value, flavour and texture enhancement to many dishes.



Tips to growing your microgreens:

- The first step in setting up your microgreen station is to wash and sterilise your trays and seeds
- Using a brush or pressure washer, remove organic residue on trays
- Sterilise them using a bleach/water solution (1/100) for 5-10 seconds. (3/100 ratio for food grade hydrogen peroxide)
- Sterilise your seed (only necessary for pea and sun shoots)
- This is done to reduce the risk of fungus issues on the shoots
- Use a mesh cloth bag to soak seeds
- Sterilise seeds in the bag by filling a bucket with 2L of water, adding 20ml of white vinegar and 20ml of food grade hydrogen peroxide to the bucket
- Allow them to soak for 10 minutes, any more can kill the seed
- After sterilising, rinse the seeds and let them soak in a clean bucket overnight
- Drain, rinse and plant the following day
- Fill trays with peat based soil (a mix of 70% coir peat to 30% perlite) gives a light, fluffy and aerated mix:
- Trays should be around 1 – 2 inches deep
- Fill trays almost to the top
- Flatten the soil firmly
- This can be done using a wooden board or something similar
- Water before spreading seeds (except for micro radish)
- Water soil once evenly over the tray
- Spread seeds across the soil trays evenly
- Seeds should be close to the edges of the tray
- After ensuring they're evenly spread, cover them with an empty tray and add some weight to the top of the tray

Microgreens and mould: How to identify and prevent mould

Mould and fungi can be a common problem among microgreens as they thrive in the right conditions. These occur when there is a lack of proper drainage, air circulation and lighting.

Root hairs can look similar to mould. The distinct differences between them are that root hairs are thinner, featherlike cilia that grow from the roots, aiming to increase surface area of the new seedling, to help with nutrient uptake. They do not have an odour and only appear close to the root of the sprout.

Mould, however, appears in small, stringy strands. They overtake a tray of microgreens quickly when given the right conditions. The key identifiers of mould and fungi are:

- Pungent odour
- Grows above the soil, on the greens
- Slimy texture
- Cannot be removed by rinsing
- Can be black, purple or blue spots on the leaves of greens

Damping-off in microgreens

- Without adequate airflow, soil-based fungi can result in a condition known as damping-off. This occurs when the wet microgreens create an anaerobic environment, leading to the loss of the tray
- The mould then takes the nutrients away from the microgreens, resulting in them falling at the base. The fungi then attack the root and stem.

Mould prevention:

- Ensure the trays you are using have drainage holes
- Use adequate soil with good drainage
- Do not plant the seeds too densely as they will not be able to properly drain because the roots can mat together
- Control the humidity of your growing space
- Allow for proper air circulation (fans can be used for this)
- Ensure good lighting conditions, typically 6-10 hours a day
- Some seed varieties suggest pre-soaking and disinfecting to reduce risk of mould
- Properly disinfect planting trays with hydrogen peroxide
- Implement the bottom watering method

Weights on microgreen trays

Weights are an effective tool to ensure seeds are kept moist, leading to faster germination time and ultimately a higher success rate.

This is because it traps the humidity within the soil, keeps the seeds in contact, loosens the hulls resulting in the plants shedding easier, allowing for quicker rinsing.

Weights are used during the initial germination phases. Following filling the tray with soil, evenly distributing the seeds across its surface and watering (for some), add another tray with a suitable weight. The weight should be used for around 3 – 4 days, until germination.

Once all seeds have germinated, the blackout period ensues. Kale, sunflower and radish have all been tested with weights and it has been proven that adding a weight of 1 – 3 kg improves microgreen production. However, broccoli has been found to not need a weight.

Tips on lighting:

Sunlight

- A windowsill or small green house can be an effective and inexpensive option for home growers.

Fluorescent shop lights

- Similar to LEDs in their light production but will use more power to run while producing more radiant heat. This can be problematic, so they are not recommended for growing.

LED bulb lights

- A good option to begin trialling growing indoors or partnered with a vertical rack, to increase growing capacity with limited space
- They produce minimal heat
- Work with 120V household electrical outlets

LED strip grow lights

- Daisy chain compatible, allowing for multiple lights to be joined together for larger spaces
- Allows for vertical mounting
- Full light spectrum allowing for longer growing periods
- Produces minimal heat
- Most work with 120v household electrical outlets

LED panel lights

- The strongest option for growing indoors
- Generally used in large scale commercial growing that need plants to reach full size
- May be unsuitable for microgreens due to high light intensity

Proximity of lights to microgreens

- This is dependent on the light source as heat generated by lights can differ and too much heat can burn microgreens. Most LED strip lights don't generate substantial heat that results in problems and are typically placed 6-12 inches from the surface of the growing greens.
- Greens placed further away from the light source tend to stretch towards the light and will often become leggy.
- Panel lights prove to be of higher intensity and can therefore be placed further away from the greens growing surface.

Length of time your microgreens should be under light

- A minimum of 6 hours a day is necessary to allow for plant growth.
- If sunlight is the main light source, there is a given limit of sunlight available, therefore you should be aware of shade patterns and light direction when setting up your plants, to ensure maximum light is achieved daily.
- For indoor lighting set-ups, many growers choose to keep their lighting on 24/7, to speed growth.
- However, others suggest a rotation of 12 hours, 12 hours off, to allow for plant resting time.
- It is suggested you find what works best for you in this regard as differing conditions will change the outcome (colours, flavours) of the greens, so find what works for you!



SEED VARIETY	Seeds per gram	Pre-soak	Sow rate in grams (10 x 20" tray)	Blackout days	Days to germination	Growing medium	Days to harvest	Yield in grams	Special instructions
Amaranth red	1000	No	28	Nil	2 - 3 days	Soil or hydroponic	8 - 12 days	185	Add 3-4 cm soil to growing tray. Flatten soil. Sprinkle seeds evenly over soil. Lightly water. Keep in warm spot, with indirect light.
Basil - italian sweet	600 - 650	No	28	4 - 6 days	4 - 6 days	Soil or hydroponic	12 - 16 days	220	Store in well ventilated area away from light until the seeds germinate, once germinated, uncover and place in light. Lightly water 1-2 times daily.
Basil - purple	600 - 650	No	28	4 - 6 days	4 - 6 days	Soil or hydroponic	12 - 16 days	220	Store in well ventilated area away from light until the seeds germinate, once germinated, uncover and place in light. Lightly water 1-2 times daily.
Beetroot - dark red	40 - 60	6 - 8 hours	28 - 40	6 - 8 days	6 - 8 days	Soil	10 - 14 days	220	Prepare soil in tray, after pre-soaking, sow seeds and cover with thin layer of soil.
Beetroot - bull's blood	40 - 60	6 - 8 hours	28 - 40	6 - 8 days	3 - 4 days	Soil	10 - 14 days	220	Prepare soil in tray, after pre-soaking, sow seeds and cover with thin layer of soil.
Broccoli	315	4 - 8 hours	28	2 - 3 days	2 - 3 days	Soil or hydroponic	8 - 14 days	320	Cover for 2-3 days with tray lid. Store in well ventilated area away from light until the seeds germinate. Once they do, uncover and place in light. Lightly water 1-2 times daily.
Cabbage - red		No		2 - 3 days	2 - 3 days		3 - 6 days		Cover for 2-3 days with tray lid. Store in well ventilated area away from light until the seeds germinate. Once they do, uncover and place in light. Lightly water 1-2 times daily.
Chervil	500	No	28	3 - 4 days	3 - 4 days	Soil or hydroponic	12 - 24 days	180	Store in a well ventilated, dark spot to germinate. Once they do, remove top trap and expose to light. Water twice daily.
Coriander	70 - 90	4 - 8 hours	28	7 - 10 days	Varies	Soil	21 - 28 days	180	Splitting or cracking the seed before sowing will help with germination. This can be done by placing seed in zip-lock bag and using a rolling pin to release the individual seeds, rinse these and soak overnight for even germination. Water 1 - 2 times daily.
Cress curled	450	No	28	1 - 2 days	1 - 2 days	Soil	10 - 15 days	220	Spray mist with water three times daily to ensure that the seeds are moist but not soggy.
Dill	550	4 hours	28	3 - 4 days	3 - 4 days	Soil	12 - 15 days	180	Store in a well ventilated, dark spot to germinate. Water 1 - 2 times daily. Once germinated, remove top tray and expose it to indirect light, watering twice daily.
Kale - red russian	250 - 300	No	28	2 - 3 days	2 - 3 days	Soil or hydroponic	8 - 14 days	310	Store in well ventilated area away from light until the seeds germinate Once germinated, uncover and place in light. Water 1-2 times daily.
Kale - black toscana	250 - 300	No	28	1 - 2 days	1 - 2 days	Soil	8 - 14 days	310	Store in well ventilated area away from light until the seeds germinate. Once germinated, uncover and place in light. Water 1-2 times daily.
Kohlrabi purple vienna	250	No	28	2 - 3 days	2 - 3 days	Soil or hydroponic	8 - 12 days	310	Store in well ventilated area away from light until the seeds germinate Once germinated, uncover and place in light. Water 1-2 times daily.
Kohlrabi white vienna	250	No	28	2 - 3 days	2 - 3 days	Soil or hydroponic	8 - 12 days	310	Store in well ventilated area away from light until the seeds germinate. Once germinated, uncover and place in light. Water 1-2 times daily.
Lemon balm	2000	No	30	10 - 14 days	10 - 14 days	Soil	24 - 30 days	180	Cover seeds, store in well ventilated and dark spot to germinate. Once germinated, remove cover and expose to direct, outdoor sunlight, watering 1 - 2 times daily.

SEED VARIETY	Seeds per gram	Pre-soak	Sow rate in grams (10 x 20" tray)	Blackout days	Days to germination	Growing medium	Days to harvest	Yield in grams	Special instructions
Mizuna (green)	300 - 400	No	28	2 days	1 - 2 days	Soil	8 - 12 days	280	Store in well-ventilated, warm area, away from light until germination. Once germinated, uncover and place in light. Watering 1 – 2 times daily throughout growing.
Mizuna (red)	300 - 400	No	28	2 days	1 - 2 days	Soil	8 - 12 days	280	Store in well-ventilated, warm area, away from light until germination. Once germinated, uncover and place in light. Watering 1 – 2 times daily throughout growing.
Mustard (red)	600	No	28	2 days	2.5 - 3 days	Soil or hydroponic	8 - 12 days	270	Cover seeds with a growing tray. Store in a well ventilated, dark spot to germinate. Once germinated, uncover and expose to indirect light. Watering 1 – 2 times daily throughout growing period.
Parsley - italian	500	4 - 8 hours	28	Nil	7 - 20 days	Soil or hydroponic	21+ days	180	Once seeds have been sown, lightly water. Cover with growing tray. Store in well ventilated dark spot to germinate, watering 1 - 2 times daily. Once germinated, expose to indirect light, watering 1 – 2 times daily
Pea - tendrils		4 - 8 hours	120	2 - 3 days	2 - 3 days	Soil or sprouting jar	10 - 14 days	450 - 900	If growing in tray, do not overcrowd seeds as this can cause mould/rot. Cover until germinated then expose plant to direct sunlight. Watering 1 – 2 times daily, throughout growing. Do not over water.
Pea - snow		8 - 12 hours	120	1 - 3 days	2 - 3 days	Soil	2 - 3 days	450 - 900	
Pea - field pea		8 - 12 hours	120	1 - 3 days	8 - 36 hours	Soil	2 - 3 days	450 - 900	
Radish - purple	90 - 150	6 - 8 hours	40	Blackout until plant is 3cm tall	24 - 28 hours	Soil or hydroponic	6 - 12 days	280	Store in a well ventilated, dark spot to germinate. Once plant is around 3cm tall, uncover and expose to indirect light. Watering twice daily throughout growing. Harvest when microgreens are 1 - 2cm above soil
Rocket (cultivated)	500	No	28	1 - 2 days	1 - 2 days	Soil or hydroponic	5 - 7 days	280	
Silverbeet/ chard fordhook	50	6 - 8 hours	50	6 - 8 days	2 - 5 days	Soil	10 - 14 days	270	Cover seeds with a light layer of soil. This step is important as it helps with dehulling and reduces beet microgreen growing issues. Water 1 - 2 times daily throughout growing period.
Silverbeet/ chard ruby red	50	6 - 8 hours	50	6 - 8 days	2 - 5 days	Soil	10 - 14 days	270	Cover seeds with a light layer of soil. This step is important as it helps with dehulling and reduces beet microgreen growing issues. Water 1 - 2 times daily throughout growing period.
Silverbeet/ chard rainbow	50	6 - 8 hours	50	6 - 8 days	2 - 5 days	Soil	10 - 14 days	270	Cover seeds with a light layer of soil. This step is important as it helps with dehulling and reduces beet microgreen growing issues. Water 1 - 2 times daily throughout growing period.
Shiso perilla (red)	840	12 - 24 hours	28	Nil	3 - 5 days	Soil	21 days	180	Ensure that your microgreens have adequate light, air-circulation and moisture.
Sorrel red veined	1150	No	3	Nil	5 - 10 days	Soil	Up to 30 days	180	
Sunflower black oil		8 - 12 hours		4 - 5 days	4 - 5 days	Soil or coir peat	7 - 14 days		Store in a well ventilated, dark spot to germinate. Once germinated, expose to indirect sunlight. Watering 1 – 2 times daily throughout growing.
Tatsoi	500	No	28	2 - 3 days	2 - 3 days	Soil or hydroponic	8 - 12 days	280	Store in well ventilated area away from light until germination. Once germinated, uncover and place in indirect sunlight. Watering 1 - 2 times daily throughout growing.



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