

Microgreen

use as nutritive vegetable

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Microgreens are the seedlings of vegetables and herbs. They are an emerging type of specialty vegetable that people can buy from shops or grow at home from the seeds of vegetables, herbs, or grains. They include some wild species. Scientists see microgreens as a functional food, which means that they can provide key nutrients in a practical way. Some people call them a superfood. People have long grown mustard and cress on their kitchen window ledges and in classrooms. They are fun to grow, tasty to eat, and healthful. However, other types of sprout and microgreen have recently become popular as health foods. Microgreens can play a role in both sweet and savory dishes. In addition to their nutritional value, they can add flavor, texture, and color to salads and sandwiches. People can also add them to smoothies or use them as a garnish. They are suitable for eating raw, which means that they retain their vitamin and mineral content.

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What are microgreens?

Sprouts are newly germinated seeds that people harvest just as the seed begins to grow and before their leaves develop. Conversely, microgreens grow from sprouts and they have leaves. Like sprouts, microgreens are a young vegetable. However, sprouts and microgreens are not the same. When the cotyledon leaves — the embryonic leaves — have fully developed, and the first true leaves have emerged, the plant becomes a microgreen. People usually

grow sprouts in water and harvest them within 2–3 days. Microgreens can grow either in soil or hydroponically but they need sunlight. People harvest them after 1–3 weeks, depending on the type. People can grow microgreens from any herb or vegetable (Fig. 1). The flavor will depend on the plant.

Kinds of Microgreens

Microgreens can be grown from many different types of seeds.

The most popular varieties are

produced using seeds from the following plant families:

- **Asteraceae family:** Lettuce, endive, chicory and radicchio
- **Apiaceae family:** Dill, carrot, fennel and celery
- **Amaryllidaceae family:** Garlic, onion, leek
- **Amaranthaceae family:** Amaranth, quinoa swiss chard, beet and spinach
- **Brassicaceae family:** Cauliflower, broccoli, cabbage, watercress, radish and arugula



Fig. 1. Microgreen from herbs and vegetable seeds which is harvested in 1-2 weeks

- **Cucurbitaceae family:** Melon, cucumber and squash

Microgreens might offer several benefits as an addition to the diet. It is rich in nutrients. Many fresh plant products provide vitamins, minerals and fiber.

These nutrients can help with

- Preventing a range of diseases.
- Managing weightboosting both mental and physical health and well-being.

Health Benefits of Microgreens

Eating vegetables is linked to a lower risk of many diseases. This is likely thanks to the high amounts of vitamins, minerals and beneficial plant compounds they contain. Microgreens contain similar and often greater amounts of these nutrients than mature greens. As such, they may similarly reduce the risk of the following diseases:

- **Heart disease:** Microgreens are a rich source of polyphenols, a class of antioxidants linked to a lower risk of heart disease. Animal studies show that microgreens may lower triglyceride and ‘bad’ LDL cholesterol levels.
- **Alzheimer’s disease:** Antioxidant-rich foods, including those containing high amounts of polyphenols, may be linked to a lower risk of Alzheimer’s disease.
- **Diabetes:** Antioxidants may help

reduce the type of stress that can prevent sugar from properly entering cells. In lab studies, fenugreek microgreens appeared to enhance cellular sugar uptake by 25–44%.

- **Certain cancers:** Antioxidant-rich fruits and vegetables, especially those rich in polyphenols, may lower the risk of various types of cancer. Polyphenol-rich microgreens may be expected to have similar effects. While this seems promising, note that the number of studies directly measuring the effect of microgreens on these medical conditions is limited, and none could be found in humans.

How to grow microgreens

Microgreens are seeds grown in a soil mix or a fiber mat that grow under indirect sunlight with adequate moisture. They do not require a lot of maintenance, but it should keep tabs and give seedlings about 8 hours of daily sunlight to thrive. Grow lights or window sills are an excellent way to help the plant thrive throughout the day. In warm climates, microgreens can be grown outdoors all year round.

Sowing seeds

Sprinkle the seeds over the seed starting mix and potting soil according to the recommended density for that specific seed. After sowing, sprinkle a thin layer of soil

on top, and press the soil in lightly and then carefully mist seeds or sprouts with water from a spray bottle. Cover the tray with a clear plastic vented humidity dome. Alternatively, it can also use a second 1020 tray to create a blackout dome. If blackout dome is use, remove the cover after seeds have germinated. If microgreens are growing indoors, place the tray in an area with indirect light, a well-lit window or under grow lights.

Presoak seeds

Soaking some types of seed will speed up the germination process. Check the package of the particular seed on requirements for specific pre-soaking instructions, usually a few hours to overnight. If it does not mention, it is safer to assume that it is not needed. After pre-soaking is complete, rinse and drain the seeds in a colander

Grow medium choices for microgreens

The next step in the microgreen growing process is to fill clean microgreen tray with a chosen grow medium. Grow medium can be compost, a soil mix or even just a 50/50 blend of perlite and vermiculite. Larger seeds usually require soil.

Smaller seeds, like lettuce or kale work great with grow mats or soil. If using microgreen tray, fill 0.75 inch deep with soil and spread evenly.

People wishing to grow their own microgreens can follow these steps:

1. **Scatter seeds** over an inch of potting soil in a planter dish or tray and cover with another thin layer of soil.
2. **Mist the soil** with water and place near a source of sunlight or a grow light.
3. **Continue to mist** the seeds daily to keep the soil moist.

Harvesting of microgreens

- Nutritious microgreens are usually ready to harvest anywhere from 7–28 days after planting. Most are ready to be harvested when they reach 1–3 inches tall in length. To harvest, simply snip just above soil level using clean kitchen shears (Fig. 2).
- Give your harvested microgreens a



Fig. 2. Harvesting microgreen as it reach 1-3 inches by snipping off with clean kitchen shears



Fig. 3. Microgreen in our daily diet

rinse and lay them down on paper towels or a clean dish towel to dry. You can store your harvested microgreens in the refrigerator in a semi-sealed container or bag (allow a tiny bit of airflow).

- To reap the maximum health benefits from microgreens, consume them right after harvesting.
- For more information on growing specific varieties of microgreens read our ultimate microgreen cheat sheet.

How to Include Microgreens in Your Diet

There are many ways to include microgreens in your diet (Fig. 3).

- They can be incorporated into a variety of dishes, including sandwiches, wraps and salads.
- Microgreens may also be blended into smoothies or juiced. Wheat grass juice is a popular example of a juiced microgreen.
- Another option is to use them as garnishes on pizzas, soups, omelets, curries and other warm dishes.

Is eating them risky?

- Eating microgreens is generally considered safe.
- Nevertheless, one concern is the risk of food poisoning. However, the potential for bacteria growth is much smaller in microgreens than in sprouts.
- Microgreens require slightly less warm and humid conditions than sprouts do, and only the leaf and stem, rather than the root and seed are consumed.
- That said, if you're planning on growing microgreens at home, it's important to buy seeds from a reputable company and choose growing mediums that are free of contamination with harmful bacteria such as *Salmonella* and *E. coli*.
- The most common growing mediums are peat, perlite and vermiculite. Single-use growing mats produced specifically for growing microgreens are considered very sanitary.

Conclusion

Microgreens production to fill the consumer's plate with nutrition is an excellent adaptive approach under

changing climate and reducing agrarian resources. Although there are several hi-tech farms in North American and European countries, which are serving people with nutritious fresh vegetables yet there are very few hi-tech private farms producing microgreens in India. Being a developing nation, it is impractical to develop hi-tech farms all around the nation and that too in remote areas. Therefore, by utilizing the low cost microgreens units developed by DIHAR-DRDO, it would be easy to add nutrition to the diet in remote areas. DIHAR-DRDO is the first public institution to provide the agro techniques for different microgreen vegetables under harsh areas to strengthen the availability of fresh nutrient-rich food to army personals deployed and local inhabitants of the area. Double-wall polytunnel-polyhouses which are famous in the region could be utilized to produce microgreen vegetables under sub-zero temperature conditions. Monotonous state of mind in remote areas causes fatigue and social sickness; therefore, by engaging minds in the growing of microgreens could be helpful for minimizing lassitude among them. Limited studies have been carried out to prove the health benefits of microgreen vegetables all around the world so there is an immense potential for the study of different vegetables at the microgreen stage for the identification of functional phytonutrients from them.

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