

Microgreens: An ultimate superfood

Microgreens are new generation smart food products whose popularity is increasing with time. Microgreens are tiny edible greens obtained from different kinds of vegetables, herbs, and plants. Microgreens are popularizing as new culinary ingredients. Microgreens have a higher content of vitamins, minerals, and many bioactive compounds and more nutritious than their mature plant parts. Microgreens do not require specific nutrients for growth and can be grown throughout the year.

THE lifestyle changes associated with the improved standard of living in terms of social, economic, and cultural standards have led to the major lifestyle associated problems including diseases and nutritional deficiencies. The non-availability of fresh and pesticide residue-free vegetables for consumption is a big problem in the future. The urban populations are mainly dependent on long food chains that begin in distant rural areas limits the availability of produce that has short shelf-life and poor shipping ability. As a result of that, many urban populations reside in areas classified as ‘food deserts’, where people do not have ready access to fresh agricultural products like fruits and vegetables and also lacking complete package of essential nutrients and depend mainly on processed and packaged foods. Increased health consciousness associated with lifestyle changes has created a vast demand for functional food globally. Microgreens are considered ‘practical nourishments’ which are food items that have explicit wellbeing advancing and infection forestalling properties, that are extra to their typical healthy benefits. These are additionally named a decent wellspring of minerals in the human eating regimen. Microgreens are an arising class that can tackle practically all the medical conditions identified with wholesome lack. The culinary value of microgreens rose high in the past decades owing to its high nutrient content, versatility, flavor profile, and crisp texture imparted to the dish.

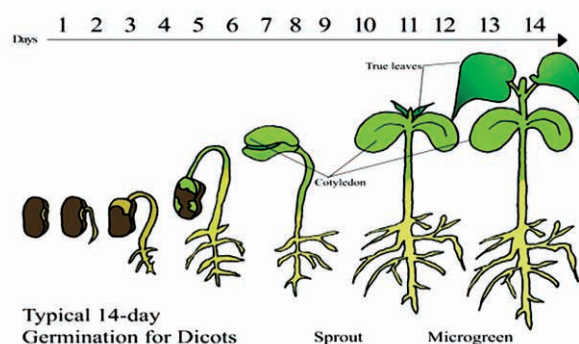
What are microgreens?

Microgreens are young and tiny seedlings of vegetables and herbs, harvested when cotyledons (seed leaves) are fully expanded and the first pair of true leaves are emerging or partially expanded. The size of these microgreens is ranges from 1-3 inches (2.5–7.6 cm) in height which usually occurs within 7–14 days after germination, which varies from crop to crop and variety to variety and other environmental conditions. It has three basic parts; a central stem, two cotyledon leaves, and typically the first pair of very young true leaves.

The commonly cultivated microgreens are spinach,

mustard, buckwheat, arugula, bull’s blood beet, celery, cilantro, amaranth, golden pea, basil, spinach, mizuna, pepper cress, popcorn shoots, red mustard, red beet, red cabbage, red orach, sorrel, red sorrel, wasabi, cabbage, broccoli, radish, lettuce, kale, rapini, etc. Microgreens are cut along with the stem and attached cotyledons/seed leaves with the help of scissors. If left for a longer time, they will begin to rapidly elongate and lose color and flavor.

It is different from sprouts in the sense that sprouts are the germinated seeds that are consumed with the embryonic root and the seeds. Microgreens are different from baby greens in their size and much smaller than baby greens. Their status remains in between sprouting and baby greens. It is also known as vegetable confetti.



Older than “Sprouts” and younger than “Babygreens”

Nutritional composition

Microgreens are richer sources of several micronutrients particularly vitamins and minerals. Microgreens are higher in nutritional content than their mature parts. The composition of vitamin A, C, E, K, enzymes, and carotenoid differs according to types of microgreens, growing medium, amount of sunlight and temperature, and the time of harvesting. Bright colored microgreens are found to be more nourishing than light ones. Microgreens have a higher content of α -carotene,

β -carotene, violaxanthin, lutein, and neoxanthin in comparison to sprouts. They have more protein, iron, and Zn content than sprouts. It is interesting to know that antinutritional factors like nitrate (NO_3^-) and nitrite (NO_2^-) content are also very low in microgreens.

Growing microgreens: Indoors vs outdoors

The absolute first choice a microgreens farmer should make is to decide, regardless of whether to develop their harvest inside or outside. As indicated by my developing experiences with microgreens, an indoor arrangement is a superior alternative since it permits more prominent command over the developing climate. Microgreens are most flourishing in the same temperature range, so a farmer can use any spare room in their home or garage and by creating a perfect and controlled environment, they can grow their greens very easily. Outdoor setups have their own pros and cons. One advantage of growing microgreens outdoors is that it does not need any artificial light source, but outdoor farming requires the appropriate environmental conditions. There are many drawbacks to growing microgreens outdoors. Apart from this time frame, it is not possible to grow microgreens without supplemental heat due to the threat of extreme temperature fluctuations and frost. A greenhouse can be a better option for the outdoor cultivation of microgreens, but it can be very expensive for a farmer.

How to grow microgreens?

Microgreens can be grown in different mediums like soil, tissue paper, hydroponics, etc. But generally, a mixture of Coco-peat, vermiculite, and perlite can be used for growing microgreens in a 5:2:1 ratio respectively. The release of macro-and micronutrients present in this medium is very slow; hence, a farmer can reuse the same media several times for the growth of their young greens. Microgreens seeds generally do not require extra nutrition for germination but require only ideal conditions (environmental and proper water moisture conditions for imbibition) for germination up to the microgreen stage which makes the production of microgreens easy and cost-effective. Treatment of seeds by various chemicals is also not suitable for farming of microgreens and the use of hybrid seeds may not be economical for you.



Sowing time

Seeds can be sown around the year as per the consumer's requirement. During the reuse of previous sowing media, roots and other remaining parts of preceding crops should be completely removed from the trays/container. Dry the media properly by exposing it to sunlight and then fill the trays/container. Any living place like rooms or any type of mini-greenhouse can be used to keep your greens to maintain optimum temperature, humidity, and light intensity. Microgreens grown in an environment with high light conditions, low humidity and good air circulation will result in a better harvest.

Harvesting and packaging

Microgreens can be harvested at 7–14 days after germination (tropical climate) and somewhat longer (14-28 days) in cold weather (temperate climate) that depends on the crop, and other environmental conditions. Microgreens along with the stem and attached seed leaves can be cut with the help of scissors. Microgreens have a short time span of usability and require better strategies for storage and transport. Business microgreens are frequently put away in plastic clamshell containers. Biodegradable clamshell containers are also available in the markets.



Benefits of growing microgreens as a business

The benefits of integrating leafy greens and microgreens into their diet are gradually being understood by people worldwide, ensuring that demand continues to grow. And we are also seeing more and more problems and crop failure of vegetables grown outdoors, so there is an indoor future for agriculture.

Low start-up costs - Farmers may start their business with very low investment by simply supplying one restaurant with their greens or producing enough microgreens to sell at a farmer's market once a week and rising production according to customer demand.

Quick turnaround time - Microgreens from seed to harvest take around 7-14 days. A farmer doesn't have to wait for a whole season or more to harvest.

Year-round growing - Microgreens can be grown round the year and a farmer can use microgreens to earn extra money and diversify their business for more profit.

Higher nutrition - Microgreens are 'functional foods'. They are a complete pack of different vitamins and nutrients.

High-value crop - A farmer can sell their microgreens to top restaurants and food stores to get higher prices and as a local producer they can also charge a premium for their microgreens.

SUMMARY

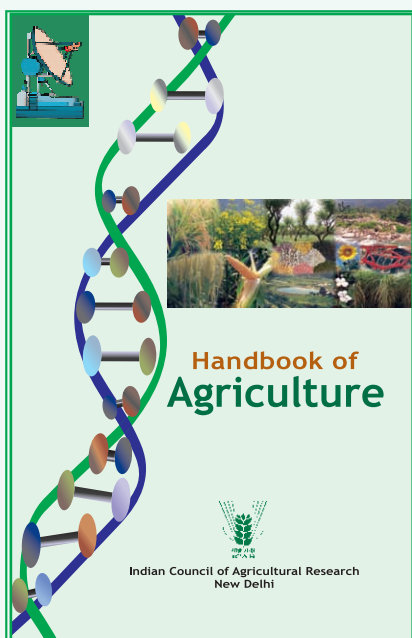
Microgreens are the immature form of green leafy vegetables and can be harvested within 7-14 days including stem and leaves. They have an appealing appearance, soft texture, and powerful flavor, and supply a full pack of essential nutrients. Microgreens are usually more

nutrient-rich than their mature counterparts. Concerning flavor acceptability, microgreens also have strong market acceptability. By exposing them to low temperatures with modified atmospheric packaging, consistency and quality can be preserved.

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