

## The New Initiative Innovative Approaches of Saffron Cultivation in Gujarat

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Saffron, often called the "red gold," holds immense value both culturally and economically. Traditional saffron cultivation is labour-intensive and highly dependent on specific climate conditions, primarily found in regions like Iran, Spain, and Kashmir. However, innovative approaches such as saffron aeroponics and indoor farming are emerging as potential solutions to expand saffron cultivation beyond its traditional regions and mitigate environmental challenges.

By circumventing the constraints imposed by traditional climate requirements, saffron Aeroponics offers the flexibility to cultivate saffron in diverse environments. Complete control over factors like temperature, humidity, and disease management ensures optimal growing conditions, regardless of external weather fluctuations or geographical limitations. The high-density planting enabled by indoor saffron farming or Aeroponics maximizes space utilization, leading to significantly higher saffron production compared to traditional methods. This enhanced efficiency is crucial for meeting the growing demand for saffron while also potentially reducing the strain on natural resources. By breaking the geographical barriers associated with traditional saffron cultivation, saffron Aeroponics opens up new possibilities for farmers worldwide. Regions previously unsuitable for saffron farming due to climate or soil limitations can now participate in saffron production, diversifying the global saffron market and ensuring a more stable supply. The accessibility and ease of learning associated with saffron Aeroponics democratize saffron farming, empowering individuals from diverse backgrounds to engage in cultivation. The simplified techniques and educational resources make it feasible for enthusiasts to practice saffron farming at home, fostering a broader interest in sustainable agriculture and local food production.

### **Aeroponics Colors a Saffron World**

A saffron revolution is unfolding through Aeroponics – a groundbreaking farming technique. Unlike traditional methods, this startup at Swarnim University, founded in



December 2021, employs Aeroponics for cultivating saffron. The innovative minds behind this venture, have turned a 10×10 feet area on the university campus into a saffron haven. They have challenged the notion that saffron can only thrive in specific climates. With the right mindset, the sky's the limit and saffron is their start.

Aeroponics is a cutting-edge farming technique. This has redefined traditional saffron cultivation. Unlike conventional methods, it has eliminated the need for soil. Instead, it utilizes an air-rich environment for plant growth. In Aeroponics Saffron Farming at Swarnim startup and innovation university, Gujarat, saffron bulbs are suspended in a nutrient-rich mist, nurturing optimal nutrient absorption. This revolutionary approach enhances efficiency, allowing year-round cultivation and four harvests annually. The artificial climate created defies geographical limitations and significantly reduces resource requirements. This sustainable and innovative adaptation of Aeroponics is at the forefront of transforming saffron farming – a pioneering model for agricultural advancements.

### **Year-Round Saffron Cultivation**

Saffron is a once-a-year delicacy, primarily grown in regions like Kashmir. With Aeroponics, this startup has achieved extraordinary. They've managed to cultivate saffron four times a year. The method involves creating an artificial climate, eliminating the need for soil and traditional watering. This innovation multiplies the yield and revolutionizes saffron production. It reduces the time and resources required for the cultivation.

The emergence of saffron farming in new regions of India, facilitated by the saffron Aeroponics technique, is indeed a significant development. Here's a summary of its impact:

- ✚ **Expansion of Saffron Cultivation** the adoption of Aeroponics has enabled the cultivation of saffron in regions like Pune, Rajasthan, Karnataka, and Darjeeling, traditionally not conducive to saffron farming due to climate constraints. This expansion diversifies India's saffron production landscape and reduces reliance on traditional saffron-growing areas.
- ✚ **Innovative approaches** the use of containers instead of dedicated rooms showcases innovative adaptation of Aeroponics, making saffron farming feasible even in limited spaces. This flexibility allows farmers to establish saffron cultivation units in urban areas or areas with land constraints, further democratizing saffron production.

- ✚ **Economic opportunities** the establishment of saffron farming units in new regions creates economic opportunities for farmers and local communities. Saffron cultivation can become a profitable venture, contributing to rural livelihoods and agricultural diversification. **Sustainable agriculture** aeroponic techniques promote sustainable agriculture practices by optimizing resource use and minimizing environmental impact. With controlled conditions and efficient water management, saffron farming in new regions can be environmentally friendly and resource-efficient.

### Growing Saffron without Soil

- ✚ **Soilless Cultivation** saffron aeroponics enables saffron cultivation without the need for soil, bypassing soil-related limitations and allowing cultivation in regions where soil quality is unsuitable for traditional methods.
- ✚ **Versatile Growing Environments** by eliminating the reliance on soil, saffron Aeroponics offers flexibility in choosing growing environments. Whether in urban areas, arid regions, or locations with poor soil quality, saffron can thrive under controlled conditions provided by Aeroponics systems. Soilless cultivation reduces resource wastage and environmental impact associated with soil-based farming. It allows for precise control over

### Saffron farming profit per acre

When we do saffron farming on a farmland, we often calculate how much saffron I am going to get every year. One acre of land is equal to 8 kanal (43560 sq. ft). Now depending on the density of saffron corms (*Crocus*) planted, the quantity of saffron varies. For example, if you do high density plantation of saffron corms (*Crocus*) you can get dried marketable saffron between 2 to 3Kgs. Which is roughly 1.5 million rupees. So, this is the reason why saffron farming is profitable.

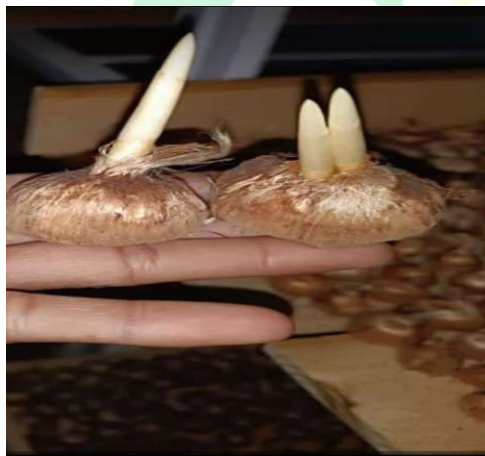
### Maintain Controlled condition under aeroponics saffron

**Materials and Methods:** Plant Material *Crocus sativus* plants were collected the Saffron corms of similar size, 2.5–2.9 cm, with an average weight of 7.60 g, were used as explants for this study under puff panel-controlled condition automatic system, which were collected during their dormancy phase (July–August 2021). For each treatment and the control, 100 corms were used. The treatment and control groups were maintained under controlled environmental

conditions, and light intensity of 500  $\mu\text{mol}/\text{m}^2/\text{s}$  with relative humidity (RH) of 70% at 15 °C for the flowering period (for 3 months) and 28 °C for corm formation.



**Bulb**



**Emerging bulb**



**flowering under controlled condition**



**Collection of saffron**