

## **HYDROPONICS**

### **A Method of Growing Plants without Soil**

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Bombay Times: 1 February 2020

#### **ABSTRACT**

Modern day families are increasingly becoming environmentally health conscious. It is, therefore, no surprise that organically grown vegetables are fast replacing the flower pots in balconies and terrace gardens. Taking a step forward, city dwellers are now adopting Hydroponics the art of growing plants without soil. Although clean eating caught the fancy of people a few years ago, this subset of Hydroculture is relatively a new practice that is finding prominence across India. Soil-less farming has picked up because people have become aware about saving water and eating chemical-free food.

**Keywords:** Hydroponics, soil-less farming, organic, Aeroponics, urban farming

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With water scarcity and lack of space faced by people the method of hydroponics comes in handy for those keen on growing their own vegetables at home. Hydroponics is a subset of hydroculture, which is a method of growing plants without soil by using mineral nutrient solutions in a water solvent instead. “Only certain plants can naturally grow in water. We dissolve nutrients in water and then attach a pump that allows this water to rotate throughout the system.”

Experts say that while the no-soil farming trend has gained momentum in recent times, people are experimenting with various greens and plants. “Hydroponics is on the rise in India as there is more awareness now, thanks to social media. We get orders from across the country. We have worked with nearly 300 homes in Hyderabad alone in the past one year and the numbers are increasing. The set-up we have is uniform across the country. However, in places like Jaipur where the temperature can get really high like during summer, people won't be able to do much,” says Vihari Kanukollu, CEO of a vertical urban farming company in Hyderabad.

According to Atrei Chatterjee, who runs a restaurant in Kolkata, this method has worked wonders for him. “I am able to use fresh supplies of greens from my home. I have grown lettuce, and now I'm looking at

growing herbs, tomatoes and other leafy greens. The only challenge I faced initially was in controlling the light conditions, but once I got the hang of it, it became easy. In Kolkata, one can grow greens throughout the year. There are a variety of easy-to grow spinach varieties,” he explains.

Bengaluru-based Patanjali Bhat says, “Hydroponics is easier to follow and yields superior quality greens that are way better than the ones in the market. My intention was to provide my family fresh and chemical-free greens. We set up the arrangement on the terrace of our house. This method worked better for us, as we do not have regular water supply in our house. Hydroponics helped me save up to 70% of water.”

Laasya Samhita, a biologist, adds that hydroponics works for people who love gardening, but do not have the space for it. “I used to struggle to find good-quality greens in the market, and even if I did, they would always be sprayed with pesticides. I love gardening, but have no space. With hydroponics, I grow my own greens and save water now,” says Laasya adding that greens like Amaranth grow well in cities, too.

Divith Savarkar, an urban farmer who works at a corporate office, says, “Our office was on the look-out to support green initiatives when we chanced upon hydroponics. We installed this structure at our workplace as well and currently we have a variety of lettuces and spinaches growing within our office premises.” Instead of having ornamental plants, offices can grow greens and other vegetables, he explains, adding, “If we have more such arrangements in place at offices, employees too tend to become curious. A lot of our employees have also adopted the technique to grow their own vegetables at home.”

Agencies (2016) reported that in the basement of a 27 store skyscraper downtown Tokyo, 100 different crops are grown using Hydroponics Systems. In this 1000 square metre farm, different types of plants including flowers, vegetables such as tomatoes and lettuce and even rice are grown. Environment is electronically controlled to provide the best conditions for organic cultivation.

AP (2016) says that a research company of Bioengineers named as “PlantLab” situated in Den Bosch, the Netherlands, has taken the concept of Greenhouse a step further growing vegetables, herbs, strawberries, yellow peppers, basil and banana plants inside of windowless building with meticulously controlled light, temperature, humidity, air quality and nutrition. In this enclosed and regulated environment where Sun never shines and rainfall is irrelevant, plants are taken on an eerie pink glow under red and blue LED bulbs. Water trickles into the pan when needed

and the temperature kept constant, lights go ON and OFF simultaneously day and night. This system is called “Perfect Crop Field” similar to Hydroponics. Researchers have claimed that this system of crop farming termed as “Future Farm” is an answer to the world's food problems.

## **REFERENCES**

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# Urban farmers are exploring the art of growing plants with no soil, less water

Photo: Kaimasari Sulidraman



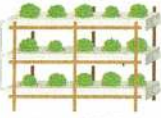
HYDROPONICS FINDS TAKERS ACROSS THE COUNTRY

## TRYING HYDROPONICS FOR THE FIRST TIME? KEEP THESE IN MIND

- Grow local greens instead of exotic varieties
- Learn the nitty-gritties of the system to make use of it optimally
- It is important to keep a check on the water level



A hydroponics raft planter with 12 planters is approximately **₹2,500**



Hydroponics kit with 30 planters costs approximately **₹10,500**



### BENEFITS OF HYDROPONICS FARMING

#### NO SOIL REQUIRED

- With no soil requirement, one need not worry about how porous the soil has to be for the roots of the plant. Seeds are initially grown in a porous medium like cocopeat.



#### FAST GROWTH

- The yield in a hydroponics set-up is faster. Growth from seed to saplings takes about three weeks, and for a sapling to produce takes 2-3 weeks.



#### NO CHEMICAL PESTICIDES

- Since plants are grown right at home, one need not spray the plant with any form of chemical pesticide. Organic ones will do.



#### SAVES WATER

- Unlike traditional farming, this method saves water as it is continuously circulated throughout the set-up.



#### HIGHER YIELD

- Once the produce is harvested, the continuous rotation of nutrients in the water ensures that the next cycle of growth and harvest, too, takes place faster.



### DID YOU KNOW?

To grow 1 kilogram of tomatoes through traditional methods of farming requires 400 litres of water. With hydroponics, this comes down to 70 litres of water, and only 20 litres for aeroponics (the process of growing plants in an air or mist environment). Aeroponics, however, requires high initial investment for temperature controlled spaces, which may not be feasible for the common man, leave alone urban farmers.

### WHAT CAN BE GROWN USING HYDROPONICS

- Salad greens like lettuce
- Basil
- Spinach
- Coriander
- Amaranth
- Methi



### THE CHALLENGES

**INITIAL SET-UP:** The initial cost of setting up pumps and connecting the plants in your space is on the higher side.

**REQUIRES CONTROLLED LIGHTING:** While this can be set up as part of the initial investment, it is necessary to create a glass house effect with various materials to avoid harsh and direct sunlight on plants.

**NOT FEASIBLE IN NATURALLY HIGH**

**TEMPERATURE ZONES:** It is not practical to practice hydroponics in places like Chennai and Jaipur, where the temperature can get really high during summer.

### CORPORATES ARE ALSO JOINING THE BANDWAGON



**EVER SINCE WE TOOK UP HYDROPONICS AT OUR OFFICE, THERE HAS BEEN QUITE A DEMAND FOR THE PRODUCE. CLOSE TO 80 EMPLOYEES, INCLUDING HOUSEKEEPING STAFF, REGULARLY TAKE THE PRODUCE HOME**

— Divith Savarkar, an urban farmer who works at a corporate office



**IT'S EASY TO SET UP AND SAVES WATER, TOO**



Laasya Samhita says she is able to grow a variety of salad greens together

**I USED TO STRUGGLE TO FIND GOOD-QUALITY GREENS IN THE MARKET TO PREPARE SALADS, AND EVEN IF I DID, THEY WOULD ALWAYS BE SPRAYED WITH PESTICIDES. I LOVE GARDENING, BUT COULDN'T DO MUCH BECAUSE OF A LACK OF SPACE**

— Laasya Samhita, biologist

**THE GROWTH IN HYDROPONICS IS RECENT IN INDIA, AS THERE IS MORE AWARENESS NOW, THANKS TO SOCIAL MEDIA. WE GET ORDERS FROM ACROSS THE COUNTRY. WE HAVE WORKED WITH NEARLY 300 HOMES IN HYDERABAD IN THE PAST ONE YEAR**



— Vihari Kanukollu, CEO of a vertical urban farming company



Patanjali Bhat says that now even his neighbours visit his home to take organic and fresh produce that he grows on the terrace