

Name of Facility or centre	Hydroponics
Academic year of establishment	2022-23
School Name	SOAg
In charge Name	Dr. Savankumar Patel

Introduction

Hydroponics is a method of growing plants without soil, using nutrient-rich water solutions to deliver essential minerals directly to the plant roots. This method provides an efficient and controlled environment for plant growth. The history and background of hydroponics can be traced back to ancient civilizations, but the modern concept began to take shape in the 19th and 20th centuries.

Vision and Impact

An environmentally friendly agricultural system focuses on reducing reliance on chemical fertilizers, opting for organic alternatives to produce healthier agricultural products. Organic hydroponics aligns with the principles of organic agriculture, emphasizing sustainability and reduced environmental impact. This system utilizes liquid organic fertilizers derived from agricultural residues and industrial wastes, contributing to the recycling of organic matter. The popularity of this approach stems from its ability to enhance plant growth while minimizing synthetic inputs. By adopting liquid organic fertilizers, organic hydroponics aims to maintain soil health and biodiversity, promoting a balanced ecosystem within the cultivation environment. This method not only produces high-quality crops for consumption but also supports the broader goals of sustainable and ecologically responsible farming practices.

Infrastructure and Facilities

Following Infrastructure is available at the hydroponics unit:

Growing System: There are several types of hydroponic systems to choose from, including Deep Water Culture (DWC), Nutrient Film Technique (NFT), Ebb and Flow (Flood and Drain), Aeroponics, and more. Each has its own requirements and advantages. Select the one that suits your needs and space availability.

Growing Medium: Hydroponic systems use inert growing mediums such as perlite, vermiculite, rockwool, coco coir, or clay pellets to support plant roots. Choose a medium based on the type of system you're using and the crop you intend to grow.

Nutrient Solution: Hydroponic plants derive all their nutrients from the nutrient solution in which their roots are submerged. You'll need to invest in a quality hydroponic nutrient solution that contains all the essential macro and micronutrients required for plant growth.

Water Supply: Access to a clean and reliable water supply is crucial for hydroponic systems. You may need to install a water filtration system to remove impurities and maintain optimal water quality.

pH and EC/PPM Meters: Monitoring and adjusting the pH level and electrical conductivity (EC) or parts per million (PPM) of the nutrient solution is essential for healthy plant growth. Invest in high-quality pH and EC meters to ensure accurate readings.

Lighting: If you're setting up an indoor hydroponic system or operating in a location with limited sunlight, you'll need artificial lighting. LED grow lights are energy-efficient and provide the full spectrum of light necessary for plant growth.

Climate Control: Maintain optimal temperature and humidity levels within your hydroponic facility. Depending on your location and the type of plants you're growing, you may need heating, cooling, ventilation, and dehumidification systems.

Containers and Support Structures: Choose appropriate containers or growing channels to hold the growing medium and support plant roots. You may also need support structures such as trellises or stakes for vining crops.

Pumps and Irrigation Systems: Hydroponic systems require pumps to circulate the nutrient solution and deliver it to the plants' roots. Depending on the system type, you may also need irrigation components such as drip emitters, spray nozzles, or misters.

Monitoring and Automation Systems: Consider investing in monitoring and automation systems to streamline operations and ensure optimal growing conditions. This could include timers, environmental sensors, and automated nutrient dosing systems.

Workspace and Storage: Designate an area for preparing nutrient solutions, maintaining equipment, and storing supplies. Ensure adequate workspace and storage facilities to keep your hydroponic operation organized and efficient.

Safety Equipment: Implement safety measures to protect yourself and your plants. This may include gloves, eye protection, and appropriate handling procedures for chemicals and equipment.

Training and Education: Familiarize yourself with hydroponic principles and best practices through research, online resources, and training programs. Continuous learning will help you optimize your hydroponic operation and maximize yields.

Maintenance Tools and Supplies: Keep essential maintenance tools and supplies on hand to troubleshoot issues and keep your hydroponic system running smoothly. This may include pH adjustment solutions, cleaning brushes, and replacement parts. The center boasts an array of sophisticated equipment and facilities designed to support the intricate processes involved in nanomaterial synthesis and manipulation.

Photos:

NH 8, GETCO, Near Biltech, Village: Dhamdod, Kosamba, Dist.: Surat - 394125.





Research and Development Focus

Organic hydroponics systems yield crops with reduced environmental impact, relying on natural inputs like compost extracts and fish emulsion. The outcome is nutrient-rich produce, free from synthetic residues, supporting sustainable farming practices. Enhanced plant health and minimized ecological footprint make organic hydroponics a viable and eco-friendly approach to high-quality crop production. The system aligns with the growing consumer demand for organically grown, safe, and nutritious food.


Incharge


Principal


Registrar

Registrar
P P Savani University

