SRM URBAN FARM CENTRE

Demonstration cum Training in Urban Farming

Urban farming is the practice of cultivating, processing and distributing food in or around urban areas. It can also involve animal husbandry, aquaculture, agroforestry, urban beekeeping, and horticulture. Food security, nutrition, and income generation are key motivations for the practice. More direct access to fresh vegetables, fruits, and meat products through urban farming can improve food security and food safety. Urban farming includes recreation and leisure; economic vitality and business entrepreneurship, individual health and well-being; community health and well being; landscape beautification; and environmental restoration and remediation.

The energy used to transport food is decreased when urban farming can provide cities with locally grown food. The energy-efficient nature of urban farming can reduce each city's carbon footprint by reducing the amount of transport that occurs to deliver goods to the consumer. Also, these areas can act as carbon sinks offsetting some of the carbon accumulation that is innate to urban areas, where pavement and buildings outnumber plants. Choosing plants that do not lose their leaves and remain green all year can increase the farm's ability to sequester carbon. A rooftop containing 2000 m^2 of uncut grass has the potential to remove up to 4000 kg of particulate matter. Only one square meter of green roof is needed to offset the annual particulate matter emissions of a car.

Urban agriculture is associated with increased consumption of fruits and vegetables which decreases risk for disease and can be a cost-effective way to provide citizens with quality, fresh produce in urban settings. Produce from urban gardens can be perceived to be more flavourful and desirable than store bought produce. Urban agriculture also provides quality nutrition for low-income households. (https://en.wikipedia.org/wiki/Urban_agriculture)

Vacant urban lots are often victim to illegal dumping of hazardous chemicals and other wastes. They are also liable to accumulate standing water and “grey water”, which can be dangerous to public health, especially left stagnant for long periods. The implementation of urban agriculture in these vacant lots can be a cost-effective method for removing these chemicals.

Soil-less cultivation with hydroponics, aquaponics and limited-space cultivation with vertical garden are possible under urban farming.

SRM Urban Farm Centre (SRM-UFC) established in SRM-IST, Kaatankulathur will provide urban extension service.

Location

The Urban Farm Centre under the Faculty of Agricultural Sciences, SRM IST, Kattankulathur, is located at 12°49'34.6"N 80°02'55.1"E, behind the Dental Canteen in an area of 1400 sq.m, and is functioning from 23 November 2018.


Estancia Tower 1
Estancia Tower 3
எஸ்டேன்ஸியா
டவர் 3
Urban Farm Centre
SRM
KATTANKULATHUR...
எஸ்.ஆர்.எம்...
Dental Ground
College
Dr. TP Ganesan
Auditorium
SRM College of Nursing
SRM Hospital
Nurses Hostels
ng Park
tra College Road
SRM Institute
of Science &
Technology
திரு. இராமசாமி
SRM General Hospital
எஸ் ஆர்
Google
Gandhi Rd
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SRM
URBAN FARM CENTRE
Faculty of Agricultural Sciences

Objectives

1. To impart training programmes on hi-tech horticulture and allied subjects to urban entrepreneurs, unemployed graduates, students, IT graduates, house wives etc.
2. Provide training and consultancy on Roof garden, Kitchen gardening, Landscape gardening, Bee Keeping, Indoor plants care and maintenance, Flower arrangement and Bouquet making, production of Composting and Vermicomposting.
3. Provide the kitchen garden vegetable seeds, and saplings at low cost.
4. Sale of Organic products from the SRM FARMS- Gudalur, Polambakkam and Achirupakkam.
5. Quality planting materials of ornamental plants, vegetables, fruits, medicinal plants are produced in the UFC for the distribution of plants and also for teaching the B.Sc. (Honours) Horticulture students.
6. It also serves as Model Demonstration centre to the students, local growers and the Urbanites.
7. The Medicinal Garden and the Kitchen Garden serves as study centres for the students and Urbanites, besides attracting visitors.

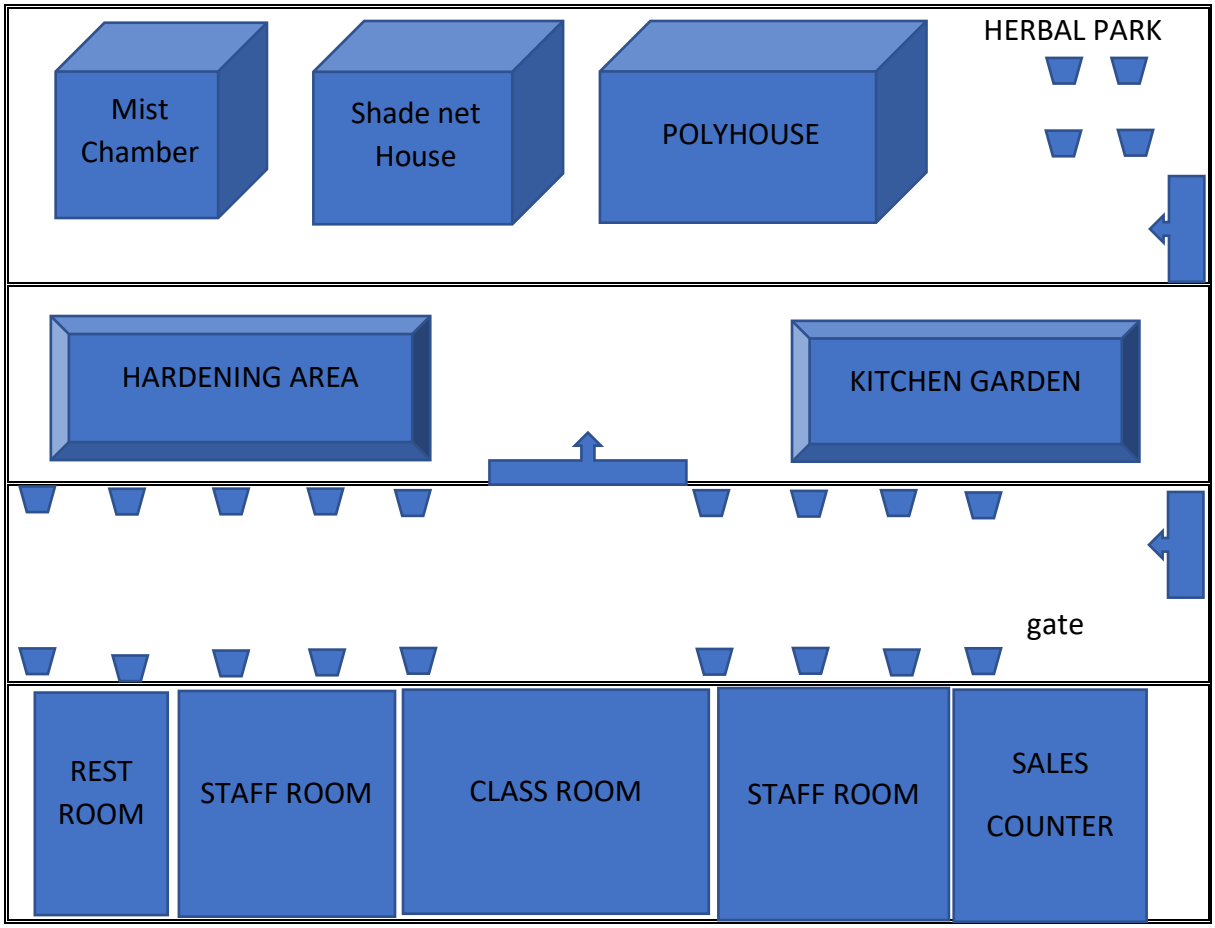
The site at the time taking over by the Faculty of Agricultural Sciences was like store house with construction materials. The area was cleared to establish UFC.

The site before UFC came up

Creating the Facilities

After the site was allotted to the Faculty of Agricultural Sciences, a master plan was prepared and being executed to serve the objectives.

Lay out of the Urban Farm Centre










The following structures have been created for protected cultivation.

POLYHOUSE (150 sq.m)	SHADENET (78 sq.m)	MISTCHAMBER (72 sq.m)	OTHERS (Irrigation and climate control)	TOTAL (Lakh. Rs)
2.74 Lakhs	1.22 Lakhs	1.39 Lakhs	87,600	6.23 Lakhs

Why Protected Structures at UFC?

In conventional agronomical practices, the crops are grown / cultivated in the open field under natural conditions where the crops are more susceptible to sudden changes in climate i.e. temperature, humidity, light intensity, photo period and other conditions due to which the quality, yield of a particular crop gets affected and may be decreased. Plants grown under protected structures are generally free from pests and diseases and biotic / abiotic stresses and thus good quality produces are obtained.

Elite horticultural plant materials have been planned to be produced from the protected structures like mist chamber, shade net house and poly house at the UFC.

Mist Chamber

The Tunnel type mist chamber (dome shaped) is constructed in an area of 72 sq.m with 200 microns thick UV treated polyethylene sheets with exhaust fan. The mist chamber is planned for producing elite indoor and outdoor ornamental plants like Aglonema, Diffenbachia, Philodendron, Rose, Bougainvillae etc.,

What is a mist chamber?

Enclosed structure in which mist is artificially generated for the propagation of plants or seedlings. In mist chamber, relative humidity is maintained at high level (95 %) with the help of misters, which spray water under high pressure. High relative humidity facilitates better root initiation and cooling effect prevents the cutting from drying out.

Advantages of mist chamber

- Results in faster rooting of the cuttings.
- creates optimum microclimate for better root initiation and development.
- Higher success rate found in propagation of hard wood cuttings.

Net House

A net house is a structure enclosed by agro nets or any other woven material to allow required sunlight, moisture and air to pass through the gaps. It creates an appropriate micro climate conducive to the plant growth. It is also referred as shade net house or net house

The net house in UFC is constructed in an area of 72 sq.m with 50% shade net , drip lines and foggers. The net house is specially designed for protecting plants from excess sunlight and provides the required quantity of sunlight to stimulate the optimum plant growth. Crops in net houses are also protected against damage from birds, insects etc. In our UFC, 50% shadenet is laid for meeting out the requirements of orchids, roses and ornamental plants. Net house is ideal for:

- producing nurseries for vegetables, fruits and flowering/foliage plants
- cultivation of flowering plants, foliage plants, medicinal/aromatic plants, vegetables & spices
- enhancing yield during summer season
- protection against pest attack
- protecting crops from natural weather disturbances such as wind, rain, hail, frost, snow, bird, animals (dogs, monkey etc) and insects
- production of graft saplings and reducing its mortality during hot summer days

Orchids

The beauty, complexity and incredible diversity of orchid flowers are unrivalled in the plant world. These exotic beauties comprise the largest family of flowering plants on earth, with over 30,000 different species, and at least 200,000 hybrids. Orchids can be found in the equatorial tropics, the arctic tundra, and everywhere in between. The reason for this diversity lies in the orchid's amazing ability to adapt to its given environment. With so many different orchid varieties that thrive in so many different growing conditions, it is relatively easy to find an orchid that is well suited to the conditions that you can provide — whether it is a kitchen window or a full-size greenhouse.

Most cultivated orchids are native to the tropics. In their natural habitat, they attach themselves to the bark of trees, or the surface of other plants. Their thick, white roots are specially adapted to absorb moisture and dissolved nutrients. Because these tropical orchids usually grow high in the trees, rather than on the forest floor, they are accustomed to good air circulation and plenty of light. They prefer a 12-hour day, all year-round, and require a high intensity of light — about the same as midsummer conditions in temperate regions.

Are orchids difficult to grow? Many of them are. In fact, some are almost impossible to keep alive, much less bring into bloom—even for professional growers. But there are dozens of varieties of orchids, and hundreds of hybrids, that are perfectly happy growing on a sunny windowsill or under lights.

Polyhouse

Poly houses are basically naturally ventilated climate controlled. Poly houses have a variety of applications, the majority being, growing of vegetables, floriculture, planting material acclimatization, fruit crop growing for export market.

The polyhouse in UFC is constructed in an area of 150 sq.m, which is a naturally ventilated with climate control (tropical areas), with 200 microns polyethylene sheet with automated drip and fogger systems, wherein crops are grown under a favourable controlled environment and other conditions viz. temperature, humidity, light intensity, ventilation, soil media, disease control, irrigation, Fertigation and other agronomical practices throughout the season irrespective of the natural conditions outside. The crops planned to be grown at UFC are coloured capsicums, cucumber and cherry tomato.

Features

- Yield increases by 5 - 10 times or even more.
- Uniform and better quality
- Reduction in labour cost
- Less fertilizer requirement, thus reduction in fertilizer cost.
- Low water requirement thus saving in water.
- Less chances of disease attack, thus reduction in disease control cost.
- Higher efficiency of Water & Fertilizer Use.
- Requires less area to get maximum yield and benefits.
- UV stabilized covering materials of Polyethylene film.
- CO_2 Generator.
- Trellising system for vegetable.
- Irrigation can be operated on sensor base.
- Opening and closing of ventilators and side wall roll up curtains as needed.

- Operation of shading net
- Operation of air circulation fan
- Easy to operate, maintain & control.
- Designed to withstand wind speed of 140 kmph
- Natural roof and side wall ventilation system.

Kitchen Garden

A kitchen garden produces fresh fruits, vegetables and herbs for delicious, healthy meals. A kitchen garden doesn't have to be right outside the kitchen door, but the closer it is, the better.

An inexpensive model kitchen garden set up on wooden pallets with grow bags in the urban farm centre is established for the forth coming trainings to the participants of terrace gardening. These can be placed anywhere and also can be repositioned with the changing light. The plants grown at UFC are: tomato, chilli, brinjal, lablab, greens, sweet potatoes, snake gourd, watermelon, ribbed gourd, chekkurmanis, cabbage, bhendi, banana, pomegranate, guava, acid lime, curry leaf.

What is a plant grow bag?
Plants grow bags are a growing container where plants can be grown instead of pots and planter boxes. These types of Plant Grow Bag are ideal for cultivation of vegetables on the terrace and balconies and it's easily transportable because of its lightweight.

There are many advantages of the UV treated multi-layered plant grow bag: spacious, unbreakable, highly durable, easy transportation, cost-effective, environment-friendly and provides sufficient aeration for the roots.

Spraying of 3G extract as plant booster

Banana

Sweet potato

miracle tree- moringa

Trees

Trees in India known for their grandeur and majesty are like the green pearl in the Indian crown. Trees occupy the important place in the history of India. Trees have always been associated with wisdom and immorality in India. Hindu literature describes a celestial tree as having its roots in the heaven and its branches in the underworld that unites and connects beings of every kind.

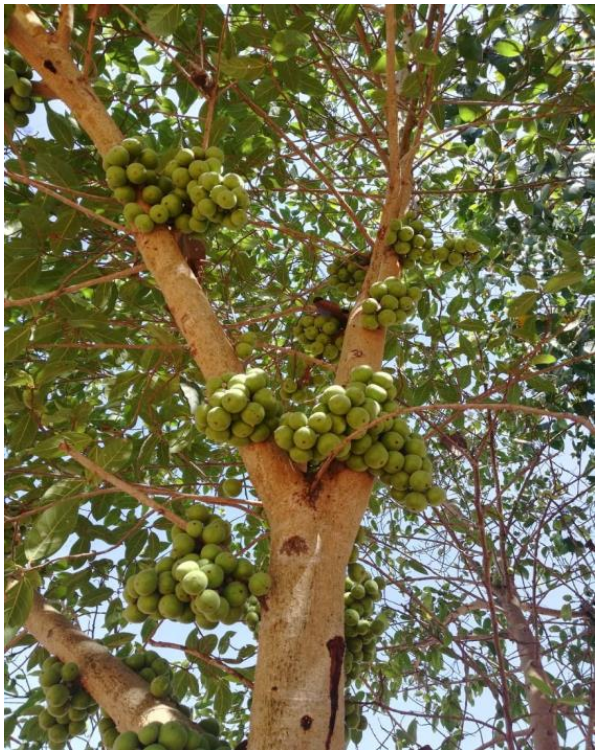
Indians have been worshipping trees since time immemorial and this is done as a matter of gratitude because we know that life cannot exists without trees. In Indian culture trees are believed to have conscious like humans so they can feel pain as well as happiness like us. So trees and their products are part of our rituals and ceremonies. With passage of time different trees like neem (*Azadirachta indica*), banyan (*Ficus bengalensis*), bel (*Aegle marmelos*) and many more have been added to the religious sanctity. Even various Gods and Goddess have been associated with different trees like bel, rudraksha (seeds of Elaeccarpus) are close to Lord Shiva, peepal to Lord Vishnu, mango *(Mangifera indica*) to Lord Hanuman, asoka to Kamadeva, etc. Banyan is the National Tree of India. India's medicinal trees are no less diverse.

The trees exclusively collected and planted in UFC are:

1. Vanni maram: *Prosopis cineraria*, Fabaceae, the plant has religious significance, which will fulfill your all wish
2. Purasa maram: *Butea frondosa*, Papilionaceae, one of the sacred tree, with all parts of the plant having medicinal propeties treating piles, cyst, etc,
3. Peepal tree: It is popularly known as the Bodhi Tree in India, under which Lord Buddha attained enlightenment. It is the sacred tree of India.

4. Fig tree: the fig fruit is used as a laxative to relieve constipation, skin conditions like eczema
5. Eucalyptus: The essential oil is used to cure arthritis, bladder diseases, Ulcers, etc.
6. Neem tree: a medicinal tree having use for protecting other plants and human beings. It is a useful tree in rehabilitating the waste land areas. Even today neem tree is the focal point of village life and the village council meetings under the shade of this huge tree.
7. Indian Tulip Tree: Indian tulip or the Portia tree is a very large tree with heart shaped leaves and the cup shaped flowers. The fruits, flowers and young leaves of the Indian tulip tree are edible. It is also known as the Scarlet Bell tree and the Fountain tree.
8. Amla: Amla is a wonder plant, a unique gift of the mother nature to the mankind. Its fruit is the richest source of Vitamin C. It holds the special reputation of being the most powerful rejuvenating herb. It is popularly known as Indian Gooseberry.
9. Bheema bamboo: Thornless , high biomass, fast growing superior plant. The plant absorbs carbon dioxide (200 tons /ha/year)

Bheema bamboo



Fig

Medicinal Cafetaria

India is one of 17 mega biodiversity countries and contribute about 7% of world biodiversity. More than 7000 plants species are known to be used as medicinal plants out of 17000-18000 flowering plants species in India. Largest share of the world population, about 80%, rely on traditional medicines for their primary health care needs which are herbal and healer based. The inclination toward the herbal remedy is also increasing worldwide due to the harmful effects of synthetic chemicals.

A medicinal cafetaria with the following plants has been created in SRM-UFC

Periwinkle	Tulsi	Thiruneetrupatchai	Karuntulasi	Menthol
Erukku	Keelanelli	Aavarai	Adathoda	Sirianangai
Thumbai	Omavalli	Maruthani	Hibiscus	Manathakalli
Thothuvellai	Insulin Plant	Katrazhai	Nilavembu	Vetrilai
Thippili	Pirandai	Poonai Meesai	Thavasikeerai	Lemongrass
Kesavardini	Sitharathai	Ranakalli	Kandankathiri	Mulkathiri

Ornamentals

Ornamental plants are plants that are grown for decorative purposes in gardens and landscape design projects, as houseplants, cut flowers and specimen display. The cultivation of ornamental plants is called floriculture, which forms a major branch of horticulture.

Ornamental plants like china aster, rose, ornamental sunflower, and indoor plants like snake plants, lillies etc., are also maintained in the Urban Farm Centre. A lawn is established in front of the protected structure improving the aesthetic appaeal of the protected structure.

Sunflower

Rose

Bee Keeping

Honey bees are flying insects, and close relatives of wasps and ants. They are found on every continent on earth except for Antarctica. A world without honeybees would also mean a world without fruits, vegetables, nuts, and seeds. Nearly one-third of the world's crops are dependent on honeybees for pollination, but over the last decade the black-and-yellow insects have been dying at unprecedented rates

Bees of all varieties live on nector and pollen. Without bees, pollination would be difficult and time consuming. Bees have a long, straw-like tongue called probiscus that allows them to drink the nectar from the blossoms. Honey bees are social insects that live in colonies. The hive population consists of a single queen, a few hundred drones and thousands of workers.

Raising bees is becoming increasingly popular in backyards and on farms, large and small- and it's easy to see why. These resourceful insects produce organic honey and beeswax, all while constantly providing natural aid to the health of the yard and garden.

Honey bees were raised to maintain ecological balance in the Urban Farm Centre.

Sale of Farm Produces

Organic farm produces (coconut, mango, papaya, tender coconut etc) from SRM Farms located in Gudalur, Polambakkam and Achirupakkam are sold in UFC for the benefit of SRMIST staff and students and are also supplied to the SRMIST hostel and SRM Hotel.

Visitors

Being an educational facility, Urban Farm Centre has been visited by University authorities, guestvisitors to the Faculty, scholars from SRMIST and school students.

Honourable Vice Chancellor, Prof Sandeep Sancheti

Vice Chancellor, SRMIST visited UFC on 26 August 2019 and expressed keen interest to know about the protected cultivation and kitchen garden.

Ajay Shreda (Kansas State University) and Executives from Mahindra Research Valley

Dr. Ajay Shrada, Assistant Professor and an expert in precision farming visited UFC on 24 December 2018 along with officials of Mahindra Research Valley, Maraimalai Nagar.

Prof. Mohamed Mujithaba Mohamed Najim, Vice Chancellor, South Eastern University of Srilanka, Oluvil, Srilanka

Prof. Najim an agricultural scientist visited UFC on 20 February 2019 and delivered a special lecture to the horticulture students on Srilankan agriculture.

Controller of Examinations, SRMIST

Dr. Ponnusamy, Controller of Examinations visited UFC on 23 August 2018 and evinced keen interest in grow bag cultivation.

SRMIST Students

Students of SRMIST, studying in Cardio Fusion Technology, Medical Imaging Technology, Medical Laboratory Technology, Clinical Nutrition and Dietetics, Critical Care Technology, Operation and Anaesthesia Technology visited UFC.

Visit of School Students

Students (8th and 10th) of Prime Rose School, ECR, Chennai visited UFC on 13 August 2019 and were explained about biofertilizers, protected cultivation and organic farming.

Training programmes scheduled

It is planned to offer several one-day training programmes as listed below:

1	Kitchen gardening
2	Roof gardening
3	Landscape gardening
4	Indoor plants care and maintenance
5	Medicinal plants production
6	Organic production of fruits and vegetables
7	Vermicomposting
8	Composting
9	Hydroponics
10	Aquaponics
11	Vertical gardening
12	Net house gardening

Training duration

One day between 9.30 am to 4.30 pm. Working lunch will be provided. Also, refreshments, scribbling pads and pens will be given to the participants. On completion of the training, a certificate and manuals will be provided.