Research Phase 1 - A guide to Contemporary Farming

Smart-Agro

IoT Agricultural Solutions

Digital Labs - Sri Lanka Telecom PLC

Table of Contents

CONTEMPORARY FARMING

A beginner guide to modern day urban agriculture

Introduction

Modern urban agriculture grows food inside city borders to provide food production to densely populated regions. Community and household engagement, effective utilization of resources, ease of product access, and increased food security are further advantages of this kind of agriculture. With more individuals becoming interested in the idea of "going green" within city limits, urban farming has undergone an unexpected twist of positive improvements. This has caused an increasing number of urban dwellers to switch to urban farming as a sustainable option with the use of modern agricultural techniques. People are educated about their food and agricultural practices now, more than ever before.

Classification under the umbrella term

Even under the broader term "urban contemporary farming," other classifications are possible:

1. Urban farming
    - Urban agriculture involves the production, distribution, and selling of food and other items inside city limits. This farming is profit-driven and is generally done as a business venture.
    - Demand for locally produced organic indicates significant business prospects.

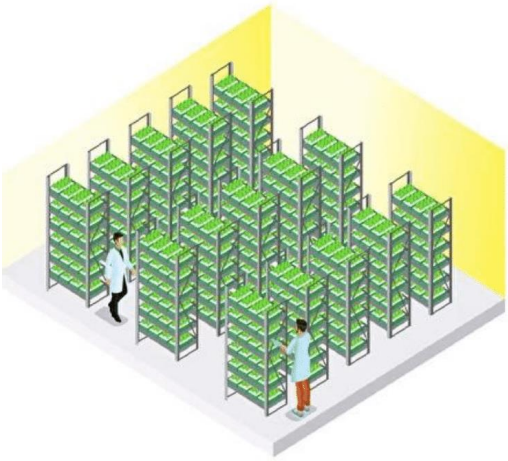
2. Community gardening
    - The practice of cultivating crops by renting pieces of land for private gardens, mainly in urban settings, by individuals or groups in a community.

3. Subsistence farming
    - The practice of cultivating food for one's personal consumption solely, with no surplus for commerce. The category comes under homesteading.

In any case, a significant amount of land is not essential in order to engage in contemporary farming. One may get a start in their own garden, a public space, in a backyard, on the rooftop of a residential building, in an apartment balcony, or even inside a left-out shipping container! All that is need is imagination.

Common approaches

Vertical farming



Vertical farming stacks crops vertically. This may be achieved by growing on shelves or on specially adapted pallets against walls or fences.

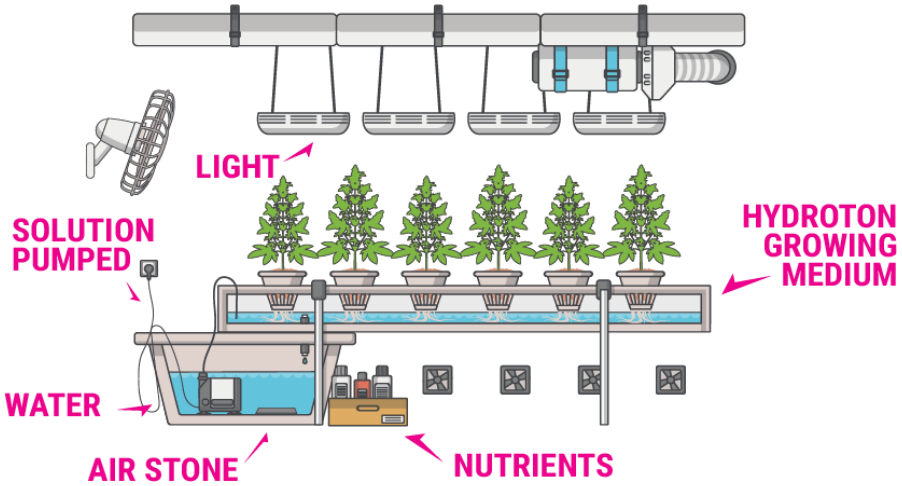
In a climate-controlled setting, it can also be paired with soilless farming techniques such as hydroponics, aeroponics or aquaponics to optimize plant growth.

Many plants don't require much vertical room to thrive, therefore vertical farming may make a square foot of area much more productive. If you stack three or four shelves of plants, you may grow 300 to 400% more in the same area.

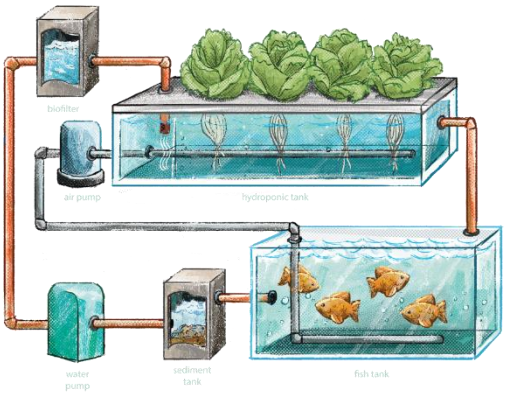
Hydroponics

In hydroponics, plants are grown without soil. Alternatively, nutrients are added to the water used to submerge the plants, or their roots are routinely cleansed with this water. Because water in hydroponics systems is recycled and reused, the approach utilizes less water than conventional soil-based systems.

Various hydroponic methods include wicking, deep water culture (DWC), nutrient film technique (NFT), ebb and flow, aeroponics, and drip systems. Nevertheless, hydroponics is often practiced within climate-controlled environments. Gravel, perlite, or other materials can also be used to provide the plants with additional physical support. Hydroponics can be used to grow plants where the conditions are too harsh to grow them in soil.



Aquaponics



Aquaponics is a hybrid of hydroponics and aquaculture. This creates a symbiotic environment between fish and plants. The fish in water produce ammonia and the bacteria in water converts ammonia to nitrates. This nutrient-rich aquaculture water is used to feed hydroponically grown plants. As water is recirculated and the cycle continues.

Tilapia is popular in aquaponics. Another source of revenue is generated as the fish mature. Leafy greens are the easiest to produce in an aquaponic system, although cucumbers, peppers, and tomatoes may also be cultivated.

Rooftop farms

Rooftops of skyscrapers and apartment buildings represent a largely underused resource. These rooftops can be effectively used to produce fresh vegetables, herbs, fruits, edible flowers, and microgreens in controlled setups.

Rooftop farming is usually done using green roof, hydroponics, aeroponics systems or container gardens. Before establishing a rooftop farm, enough care must be taken to make sure that there's enough support for the soil weight.

Shipping container farms

Shipping containers are an excellent choice when space and structure are limited. They take up minimal space and may be mounted practically anywhere, even an underused part of a parking lot.

Container farms may be built to supply plants with the ideal climate and light controlled settings. They are a perfect alternative if the weather outdoors isn't favorable for growth or if there's a possibility of insect infestation. This ensures that shipping container farms may be used to raise food all year long, protecting crops from the effects of harsh weather and poor growth conditions.

Shelving racks may be fitted to optimize vertical space within the shipping container. Therefore, a container farm is far more cost and resource efficient than other conventional indoor farming technologies, such as large-scale greenhouses or warehouses.

Backyard farms

If any homeowner has the luxury to separate a small space in their backyard, a heavenly organic garden could be cultivated in their own land. This doesn't require acres of land. Just the right space and the right technique is more than enough for an ideal income generating source. Gardens could be subdivided, and all the techniques discussed previously in other approaches could be practiced all around. Even tiny greenhouses could be installed to provide additional care and protection for certain plants and crops.

What to grow?

Mushrooms, microgreens, and leafy greens are the most often produced crops in urban locations since they take up little space and sell well. Plants like pepper and tomato are also strong contenders, while root vegetables like radish, turnip, and carrots may be grown even in a one-gallon container pot. Several types of legumes may be grown in tiny pots with ease. Either way, these different types of plants required different light, soil and water conditions to thrive. For example, most vegetables grow in soil which is slightly acidic with pH around 5.8 – 6.8 while berries need even more acidity in soil with a pH value of around 4.0 – 5.5. several ornamental plants like orchids do not need to be watered as much as cauliflower, spinach and other leafy greens. Therefore, it is best to do some background study of the plant chosen before cultivation.

Smart-Agro solution makes effort to ensure that ambient conditions for these plants are met to produce optimal yield. Different soil, light and environmental parameters of the plots could be measured through in field sensors placed within. Farmers and Gardeners are given the luxury to regularly monitor their fields and always stay connected through the Smart-Agro dashboard.

Reference: https://grocycle.com/