

ROOFTOP, CARPARK AND INFILL URBAN FARMS: A GREAT STEP FORWARD IN FOOD SECURITY FOR CITIES

Biofilta has developed an urban rooftop food garden design that can transform underutilized spaces in cities, such as rooftops and carparks, into closed loop, water efficient, low maintenance urban farms. The Biofilta urban farm is modular, cost effective, easy and quick to assemble, ergonomic and highly productive. The soil based garden design is able to capture and filter rooftop runoff and divert this resource into food production, as well as re-purposing composted food waste back into food production.

Cities are generating enormous volumes of excess rainwater runoff and food/green waste streams. Biofilta has developed low tech, efficient food producing architecture can help intercept these “waste” streams, and divert them to productive urban agriculture, unlocking this huge potential for helping cities feed themselves.

WATER EFFICIENT GARDENING

The basic Foodcube™ module is a self watering, advanced, aerating wicking bed, which can be assembled in spatially efficient rows. This design allows for water to be delivered to the bottom of the modules via interconnected gravity fed pipes. Water wicks its way up through the soil via capillary action. As plant roots reach down for the water, plants utilise only what they need and water is replaced from the reservoir below by capillary action. The only water loss from the system is through evapotranspiration from plant foliage. Hence the Biofilta Foodcube™ avoids wasted water from sprinklers or top watering systems which is perfect for hot climates. The gardens hold up to one week of water storage during hotter parts of the year, and several weeks worth of water during colder parts of the year. Garden modules include internal aeration which oxygenates the water storage and root zones of the plants to keep the garden healthy, as well as adjustable water level to suit seedlings and established plants.

SMART DESIGN ELIMINATES WEEDING

The bottom watering system results in low moisture levels in the top 20mm of soil, creating a “dry crust” that is hostile to weed germination. Weed seeds can land on the top of the soil layer and due to lack of water, few will germinate. The combination of this feature and the bottom watering design, reduce the requirement for watering and weeding, which are two of the most time consuming activities in food gardening.

GARDENS GO VERTICAL AND PROTECT AGAINST PESTS

The garden incorporates hoops and netting to protect valuable produce from bird and animal grazing, and mosquito proof caps to seal off water storages. In addition, the gardens incorporate latticing that support the vertical growth habits of a wide range of crops such as tomatoes, beans and climbers.

QUICK TO ASSEMBLE

The diagram below illustrates a Biofilta urban farm on the top of an apartment complex. This high quality apartment incorporates a fully functional urban farm alongside recreation facilities, a lap pool and BBQ areas. The urban farm comes complete with seedling hothouses, implement sheds, compost areas, water collection and storage, work benches, and the main productive garden areas. The Biofilta design removes the need to seal or waterproof the roof as it is a sealed system and is very quick to install requiring no special tools or preparation.

This garden includes approximately 380 modules, and each module is 1.4 sq meters in size. Total productive area is 532 sq metres. Expected yield per annum is 8,500 kilograms of food production per annum, which is the equivalent of the annual vegetable input of 65 people. Value of produce from this farm could be around \$85,000AU per annum depending on crop type. This represents a significant potential annual dividend to the urban farmers from this apartment complex. The garden provides additional benefits to fresh produce for residents, water quality and reduced food waste.

Additional benefits include:

- beautification of urban spaces
- exercise
- social contact and health benefits
- reduced food miles
- reduce cost of living

Most cities have large areas of rooftop space, carparks and vacant lots that can easily and quickly be transformed into modular urban farms using the Biofilta design. As electric vehicles, and then autonomous electric vehicles become more common in the next decade, air quality in cities will improve, and spaces previously used for cars - ie - carparks and excess roads - could be repurposed to urban farming. This transformation will provide great opportunities for cities to tackle food security using innovative designs such as Biofilta urban farms.



Biofilta urban farms turn underutilized city spaces into food growing areas

If you are interested in a Biofilta urban farm at your school, community, apartment or home, contact info@biofilta.com.au or www.biofilta.com.au



Biofilta closed loop rooftop farm on a high end apartment complex. The gardens are beautiful and functional in any context