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Singapore's urban farmers bring new ideas to the table



Stephane Lasserre of B+H Architects designed the modular system to show that innovative approaches to urban spaces can increase food production. ST PHOTO: ARIFFIN JAMAR



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SINGAPORE - If designer Stephane Lasserre of B+H Architects had his way, unused urban spaces under bridges and the void decks of Housing Board blocks would house his Nobo Farm units, contributing to food resiliency in Singapore.

He designed the modular system to show that innovative approaches to urban spaces can increase food production without being limited to dedicated farming areas or soil-based plots.

Its use of various hydroponics systems, such as nutrient culture and vertical towers, enables diversity in what can be harvested.

"We employ automated systems using Internet of Things (IoT) and data collection. The watering is fully automated, with light and ventilation synchronised with heat, humidity and carbon dioxide sensors," he says.

The units are designed to reduce waste, so nutrient solutions are constantly recycled through IoT-enabled automation. Excess water is diverted to a green roof, providing insulation to reduce solar gain inside the unit.

"I come from a rural area where everybody has a small outdoor garden for growing veggies half of the year," says Mr Lasserre, who is in his 50s and was born in Bordeaux, France.

B+H, where he works, is a member of infrastructure and urban development consultancy Surbana Jurong.

"As a child, I spent most of my time gardening with my grandfather. Today, food resiliency and access to quality produce have become a worldwide challenge," adds the designer.

Food resiliency has become a priority in the last two years, after the global supply chain was disrupted by the Covid-19 pandemic.

Singapore is moving towards producing 30 per cent of its nutritional needs locally and sustainably by 2030. Currently, about 220 farms here produce 14 per cent of leafy vegetables, 26 per cent of eggs and 10 per cent of fish, according to the Singapore Food Agency.

And more is being done to contribute to the city-state's long-term food security.

According to Ms Tan Yok Joo, director at SJ architecture, Surbana Jurong Group, the company is focusing on designing solutions for urban farming that are not restricted to just agriculture or aquaculture.

"Surbana Jurong's approach to urban farming puts sustainability and resiliency at the core. Economics and commercial viability guide the design as much as environmental and resource sustainability," says Ms Tan.



The group leverages its expertise in food systems - growing, production, processing, cold storage, retail and waste management - and parlays these experiences into a unique design concept.

It has developed an ecologically conscious fish-farm prototype that adopts a more sustainable closed-loop system in the use of resources.

Called Floating Ponds, the model includes a closed-loop water distribution network to continuously recycle water in vertically stacked fish tanks using a series of bio-treatment processes to sustain a high yield of fish and shrimp, as well as to grow vegetables.

Each fish tank is supported individually by a dedicated water system. The system is designed to be modular and scalable, which means the vertical farm can be set up in spaces which often go unused, such as basements, empty carparks or under viaducts.

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Adds Ms Tan: "It is important that the farming system can be integrated into denser urban settings of various types, and not just be limited to being built on unoccupied peri-urban spaces.

"This will make the farm-to-table concept more viable and create visibility for high-tech farming among the community."

At the 1-Arden Food Forest on the roof of CapitaSpring skyscraper, the farm-to-table concept is on show for visitors, restaurant guests and home farmers who need ideas on what can be grown in high-rise or landed properties here.

CapitaSpring at 88 Market Street is a 51-storey integrated development jointly owned by CapitaLand Development, CapitaLand Integrated Commercial Trust and Mitsubishi Estate Co, which offers spaces for work and play.



The 10,000 sq ft open-air soil-based urban farm is open to the public and boasts stunning city views. It is managed by food and beverage operator 1-Group.

It collaborated with local farming social enterprise Edible Garden City (EGC) to not only create a sky-high edible garden for its restaurants in CapitaSpring, but to also inspire visitors with sustainable farming practices.

Ms Sarah Rodriguez, EGC's head of marketing and public relations, says that while a garden like the 1-Arden Food Forest is difficult to replicate at home, its range of local and foreign varieties of edible greens, herbs and fruit trees shows what can be grown in Singapore's tropical weather.

"As EGC's focus is on soil-based agriculture, most of the farms that we design and build are open-air urban farms that employ natural farming methods," says Ms Rodriguez, 33.

"Some of our other upcoming and recently built farms are located in schools, restaurants and welfare centres. All of these gardens are designed and built with the space, produce and user in mind, and many of the farms are accompanied by programmes where participants learn gardening skills, or where therapeutic horticulture programmes are conducted."



EGC was awarded the President's Award for the Environment in 2021, Singapore's highest environmental accolade which recognises individuals, organisations and educational institutions that have made significant contributions towards environmental sustainability here.

Ms Rodriguez says home farmers can also see how food waste from restaurant kitchens are recycled through fermentation and composting in a closed-loop collaboration between the restaurants and EGC to reduce wastage.

Mr Bjorn Low, EGC's executive director and co-founder, says every individual can play a part in making Singapore more food-resilient.

"These efforts are not limited to buying local produce or having one's own herb garden. It could also be by volunteering, reducing food waste or even patronising eateries that buy from local farmers," he says.

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