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BMC going the Miyawaki way to develop greener city with 14 new urban forests

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As the city grapples with extreme heat and polluted air, the Brihanmumbai Municipal Corporation (BMC) is on an afforestation spree to develop urban Miyawaki forests across the city.

The civic body is developing 14 new urban forests across various pockets of Mumbai using the Japanese Miyawaki technique, where 80,400 trees will be planted. Nearly 64 mini forests have already been developed under the Urban Forest project launched by the BMC on January 26, 2020, where civic officials claim that over four lakh plants, including indigenous varieties such as Anjan, Bel, Amala, Gunj, Arjun and Sonchafa, have been planted.

Jeetendra Pardeshi, superintendent of Gardens and Tree Officer for BMC, said, "The BMC has identified 1,100 open spaces across Mumbai, of which 64 plots were earmarked in 2020 where urban forests were developed using the Miyawaki methodology, the first being in Chembur's Bhakti park."

In collaboration with NGOs and CSR fundings, the biggest Miyawaki plantation drive under the 2020 project was carried out at Chandivali's Nahar Amrut Shakti Udyan, where over 41,000 plants were planted on 13 acres.

"This year, the CM gave us a target of 1,00,000 trees of which 55,000 have been planted already… the remaining will be done in the next couple of months," said Pardeshi.

Mumbai's Miyawaki project has been lauded globally with Pardeshi spreading the word in an article published in the UK's renowned ARB Magazine. BMC's efforts have also been recognised by the Consul General of Japan in Mumbai.

Some of the large Miyawaki forests are expected to be developed close to the BEST Colony, Chandivali's Swami Vivekanand Udyan and a plot at Jogeshwari's Mahakali caves road, where a plot with 30,000 plants is planned.

According to BMC's tree census in 2018, Mumbai has 29,75,238 trees at present. A fresh census is scheduled this year.

What is the Miyawaki methodology?

Conceptualised by Japanese botanist Akira Miyawaki in the early 1970s, this methodology was developed to restore indigenous ecosystems under which native trees are densely planted within small patches. With tree density 30 times than that of other plantation techniques, Miyawaki method helps beat the challenge of developing green cover within a space-crunched city such as Mumbai.

Annuja Sanghvi, director at Emerald Sustainable Foundation, which carried out Miyawaki plantations at Cuffe Parade, told The Indian Express that the secret lies in its plantation technique for which the first step is conducting a soil test.

"Next, you enhance the carrying capacity of the soil… On the basis of our tests, we do the addition and subtraction of nutrients," she said, adding, "The selection of appropriate species is done by an expert in conjunction with the Centre for Environmental Research and Education (CERE). Then saplings are planted within a gap of one-and-half or 2 feet." The plants, often younger than six months, are supported with bamboo sticks.

"Under the Miyawaki technique, plants are placed vertically, close to each other… they engage in a competition for resources such as sunlight and water. Therefore, they grow up faster and their roots expand quickly… Each sapling has to be watered twice daily with two litres of water, for the first three years," said Sanghvi, adding that after three years, these plants become extremely self-sufficient.

Low maintenance Miyawaki offers effective solutions for the Maximum City as it plays a key role in cooling down the atmosphere and improving the air quality because of its capacity to absorb maximum carbon and purify oxygen.

RK Nair, co-founder of Forest Creators, said, “Instead of building ornamental gardens, we need to invest more in Miyawaki gardens. They absorb dust, minimise carbon pollution, noise pollution and protect biodiversity.”

Hailed as a green hero, Nair has been instrumental in developing the world’s largest Miyawaki forest at Kutch’s Smritivan memorial that was inaugurated by Prime Minister Narendra Modi in August 2022. Built as a tribute to the victims of the 2001 Bhuj earthquake, the Smritivan is home to 4,00,000 trees planted using the Miyawaki methodology. “Within a year, we observed that Smritivan was populated with countless bee combs. They’re great for protecting all kinds of biodiversity,” added Nair.

Mumbai’s earliest Miyawaki garden

Spearheaded by Harshita Narwekar, former corporator of BMC’s Ward A, Mumbai’s first Miyawaki Garden came up in Colaba Woods in September 2019. Speaking to The Indian Express, Harshita Narwekar said, “Funded by crowdsourcing, 5,000 saplings were planted by children on the Colaba Woods premises in 2019. The growth rate of Miyawaki plantations is 30 times faster than that of normal plantations, so when these kids returned the next year, they couldn’t believe that the plants had grown so much.”

Ever since, Narwekar worked with NGO Emerald Sustainable Foundation and CERE to develop new Miyawaki forests at Cuffe Parade’s CPRA greens as well as Deepak Jog Chowk garden. These three gardens are collectively home to 40,000 plants. “At a time when AQI levels are high, we should develop Miyawaki plantations wherever possible. Getting land within a space-crunched city like Mumbai is a huge challenge. We cannot replicate a natural forest within a city space but with their high growth rate and survival rate of 98 per cent, I believe, Miyawaki methodology is ideal for urban environments,” said Narwekar.

Is Miyawaki enough?

Ecologists say that the Miyawaki technique is not the silver bullet solution to Mumbai’s rising environmental concerns. Dr Rashneh Pardiwala, founder and director at Centre for Environmental Research and Education (CERE), said, “We need to start greening our concrete jungles but it cannot simply happen through Miyawaki, which is merely one technique of afforestation. Our cities have become hotspots for so many ecological issues that a few Miyawaki plantations, which is an unnatural forest, will not suffice.”

Adding that preventing cutting down of large and old trees is key, the ecologist says, “They cannot be equated with even 20 young saplings… a tree has the ability to absorb carbon from the environment, and reduce temperatures by offering shade… young plants cannot offer a wide canopy.”

According to Pardiwala, planting in fewer numbers is fine but by ensuring high survival rates. “It is also important that we plant native species which will survive their natural climate. Unfortunately, at some places Miyawaki plantations are only being done for ornamental value.”

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