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Indian Navy develops Mumbai's largest Miyawaki urban forest

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INS Hamla site in Mumbai, Malad, after the makeover.(Green Yatra/Indian Navy)

A 2,500 square (sq) metres (m), or 0.6-acre, of barren patch in Malad in Mumbai has transformed into a mini urban forest with seven to nine feet (ft) trees in less than nine months.

Between January and September, the Indian Navy, along with environment group Green Yatra, developed Mumbai's largest dense plantation to date by using the Miyawaki technique (see box) on a plot in front of the main campus of Indian Navy Station (INS) at Hamla in Marve-Malad.

Forests grown under the Miyawaki method – developed by Japanese botanist and plant ecology expert Dr. Akira Miyawaki – have improved carbon-dioxide absorption, have reduced noise and dust , and added more green surface area, as compared to monoculture plantation.

Plants grow 10 times faster and 30 times denser than traditional techniques, with any average plantation area supporting 45 saplings across 150 square ft.

At INS Hamla, 10,500 saplings of 40 different native species were planted in phases between January 18 and February 27.

"The forest is flourishing under our care, and the plants have grown nine-ft tall with almost 100% survival rate. The location of the forest within the boundaries of the base provides protection to the plants, which are expected to become self-sustaining within a year," said Captain Sridhar Warrier, chief public relations officer (CPRO), Southern Naval Command.

According to Green Yatra, the entire plantation process – prior to January – took 2,400 labour hours and 440 machines, including excavators and dumpers, and involved excavating the bed area for the three-ft-deep plantations.

The process included laying 200 dumpers worth of soil such as 165 tonnes of black soil and biomass, manual stone removal, levelling the land, developing a one-ft-high bed mount, making pathways and channels to supply six litres of water per metre square, and planting 10,500 saplings in two phases with each at least two-years-old.

The plantation method using this technique focuses on density, said Pradeep Tripathi, founder, Green Yatra.

“This is against the average plantation density of three to five plants per sq m depending on the site. Plantations at INS Hamla were four plants per sq m since the site is very close to the coast and there is high wind speed. Also, saplings support each other’s growth and prevent sunlight from reaching the ground halting the growth of unnecessary weeds,” he said.

Fixing support sticks to each plant, remulching, and sprinkling microbes and boosters for proper plant development are an integral part of post-plantation maintenance.

“Whenever there was any water shortage, the navy supported us with their own resources. We have had an overall survival rate of 98.5%,” said Tripathi.

Native trees included a combination of deciduous and evergreen fruiting tree species such as amla, neem, mahua, kokam, mango, silk cotton, banyan, and pride of India.

Around 40 species were divided into four layers, including 18 tree species, 12 sub-trees, four canopy species, and six shrubs up to three ft in size.

Captain Warrier said a similar plantation drive – of 15,000 more saplings by next February -- was in the works known as the Miyawaki phase II, which would be located near the same site. “The first phase was funded by DCB Bank. This method of indigenous forest by native trees produces rich, dense and efficient protective forest in 20 to 30 years, while natural succession will need 200 years,” he said.

Experts said such plantations were welcome for urban environments that are fast losing green cover but do not match the complex forest ecosystem. “These techniques cannot be substituted for natural forest, which represent the non-artificial cycle of carbon, oxygen, minerals and biodiversity, and cannot be replicated by artificial means. For urban spaces, these small green zones may have limited benefits such as reduction of particulate matter, improved oxygen supply, and minimal micro-climatic changes. However, these urban greening concepts cannot be undermined as there is hardly any land available amid the concrete expanse in major cities in the country,” said Dr. Subhash Ashutosh, director-general (D-G), Forest Survey of India (FSI), Dehradun.

STATUS OF MIYAWAKI PLANTATIONS IN MUMBAI

Praveen Pardeshi, former commissioner of the Brihanmumbai Municipal Corporation (BMC), had last year proposed to plant 377,416 trees under the Miyawaki project at a cost of Rs 35 crore across 100 locations spread over 31 acres in Mumbai. “Our intention was to have half of the recreational areas of every layout should be a Miyawaki forest. Among the 100 locations, plots in Malad, Colaba, Worli and Priyadarshini Park have yielded good results. The idea is to transfer the cost of greening not just to the public exchequer but also the Mumbaikars gaining the most. The security of these plantations is also automatically protected,” said Pardeshi.

Besides BMC’s efforts, five major plantations across the Mumbai Metropolitan Region (MMR) have been completed by Green Yatra. The following are the projects:

Central Railside Warehouse Company Ltd, Jogeshwari, area 2,300 sq. m, ,7000 plants, 40 species completed in three phases

Bhandup Complex, area: 1,200 sq. m, 3,500 plants with 46 species

State Reserve Police Force Premises in Taloja, Navi Mumbai, area: 700 sq m, 2,000 plants with 40 species

Ambernath, area: 100 sq. m, 320 plants with 40 species

INS Hamla, area: 2,500 sq. m, 10,500 plants in phase I with 40 species and another 15,000 plants proposed in phase II in February, 2021.

100 YEAR OLD FORESTS IN 10 YEARS

With over 3,000-odd urban mini-forests created using the Miyawaki plantation technique, which can accommodate 12,000 saplings in one-acre land, can increase the number of trees per person within Mumbai through native tree plantation within a brief span of time.

The features of this technique include:

- 10 times faster growth
- 30 times denser than traditional plantations
- More biodiverse
- Better noise and dust reduction
- 30 times better carbon dioxide absorption
- Native and organic

(Source: Green Yatra)

Source: https://www.hindustantimes.com/mumbai-news/indian-navy-develops-mumbai-s-largest-miyawaki-urban-forest/story-Gy70kJ0bDToRRVMkBqVWNO.html