A
PROJECT REPORT
ON

Miyawaki Forest Project

A project runs Jointly By

Satyaniketan's

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The Miyawaki Method for Creating Forests

This method of afforestation was developed by the Japanese botanist and plant ecology expert Professor **Akira Miyawaki**, and draws inspiration from nature's ecosystems to create 100% organic, dense and diverse pioneer forests in as little as 20-30 years. Miyawaki forests grow 10x faster, are 30 x denser and contain 100x more biodiversity. Since they're quick to establish, maintenance-free after the first two-to-three years, and can be created on sites as small as 3 sq m, Miyawaki forests are viable solutions for cities looking to rapidly build climate resilience.

The Miyawaki method mimics the way a forest would recolonize itself if humans stepped away. Only native species that would occur naturally in that area without humans, given the specific climate condition, are planted. Indigenous plant species have spent thousands of years adapting to their local environment to create a supporting ecosystem, so planting them doesn't just reinstate this biodiversity – it builds a site that's more responsive to climate change.

The Miyawaki method isn't just unique because it restores native habitats using native trees; the afforestation principles are based on an understanding of how these species would interact in a natural forest. You plant a diverse mixture of trees close together to maximise density and create balance. Nature doesn't thrive in grids of 1.5m; seeds drop from trees randomly to stimulate growth, or fallen trees open up clearings to the sun. As the closely planted saplings have to compete for light, which only shines on them from above, they shoot upwards very fast instead of sideways.

Sometimes less is more, but in this instance, planting a huge variety of native trees close together means an increase in biodiversity. The denseness of growth provides a greater

amount of forage for pollinators and refuge for birds. More canopy cover shades out weeds and creates a cool home for insects, plus the increased leaf litter builds fertility and life in the soil. Also, if you have a variety of tree species, you have others to step in if one succumbs to disease.

1) Identifying Potential Natural Vegetation:

When planting a Miyawaki forest, the first step is to identify the native vegetation best suited to the area being planted, termed Potential Natural Vegetation. To establish this, our forest makers do intensive research, often involving the indigenous community. They look to see what is growing locally, in protected areas or ancient old-growth forests.Forests are multi-layered, and as the Miyawaki method mirrors nature, we identify and plant four layers of vegetation, building a resilient green wall of canopy trees, trees, sub-trees and shrubs. We select up to 40 different species to create balance and maximise density.

2) Preparing the soil:

The second step when planting a Miyawaki forest is soil preparation. Since Adv. M. N. Deshmukh College focuses on rewilding nature-deprived areas, the soil is often degraded, compacted, waterlogged or bacteria-dominant. However, trees need fungi-dominant, soft and crumbly soil, so their roots can establish faster and have better access to nutrients.

Our forest makers work the soil once to restore the missing biology and put it on the path to becoming oxygenated, fertile and self-sustaining. Compost tea is also added to the earth as it’s turned; this contains strains of beneficial fungi (known to interact with the specific tree species) and a stimulant, such as molasses or liquid seaweed, to give the fungi fuel to grow.

3) Planting the saplings:

Once the soil is prepared, Adv. M. N. Deshmukh College Pocket Forests are planted with the help of the community. We plant three to four saplings per square metre in a random manner that mirrors how natural forests grow. We choose to plant young saplings, as they're more adaptable and can form symbiotic relationships with mycorrhizal fungi in the soil far quicker than an older tree.

The denseness of a Miyawaki forest isn't just great for creating biodiversity; it also increases carbon capture, pollution filtration and produces an area more resilient to flooding and landslides. Increased canopy cover reduces the amount of rainfall that hits the ground, increases shade and promotes cooling. Not to mention the green-wall effect of the multi-layered trees, which acts as a shield if there's ever a storm surge.

4) Mulching the forest:

Once you've planted the saplings, the final step is to apply a compost tea and mulch heavily using straw. The mulch protects the soil and retains moisture. Species such as earthworms, beetles and other insects feed from the top-down, building soil fertility by pulling the mulch into the ground for it to be broken down by microbes.

As mulching helps the soil retain moisture, you do not have to do as much watering. The more fertile the soil, the more water it holds. Miyawaki forests only need to be maintained for the first two-to-three years. After that, you can stop weeding and mulching and let the forest get on with it.

5) How we plan a Miyawaki forest:

Miyawaki forests do not require a huge amount of space; you can plant them almost anywhere in sites as small as three square meters. Even at this size, they fast become a habitat

for countless species and offer multiple ecosystem services all at once. These pocket forests are perfect for the fast regeneration of urban areas, and Dwarf Cattle Pvt Ltd. forest makers have transformed College empty area into green area.

We need the forest around us wherever we are, and instead of going out into the wilderness, the Miyawaki method brings the wild to you. Dwarf Cattle Pvt Ltd. Pocket Forests can be created at the front door of a community, and the social benefits of this to mental and physical health are as important as the ecological and environmental. The Miyawaki method is community-based and people-centred and can be used to reclaim and reimagine public space for the benefit of people and the planet. For Dwarf Cattle Pvt Ltd. And college jointly founder Elise Van Middelem, it's all about creating "pockets of hope."

Benefits of Miyawaki Forest:

- Trees in a Miyawaki forest grow up to ten times faster at around a metre per year, reaching a stable multi-layered forest community in 20 to 30 years instead of hundreds of years.
- The growing trees absorb more carbon in a Miyawaki forest than in a plantation or in standard afforestation projects because they grow more quickly and there are thirty times as many.
- The Miyawaki method has been successful where other planting projects have failed, such as in arid Mediterranean habitats, due to high survival rates.
- Native trees thrive in the conditions to which they are adapted and are more resilient to environmental changes.
- Miyawaki forests have been found to have far higher biodiversity than neighbouring woodland, on average 18 times higher.

Applications of the Miyawaki Method :

- The Miyawaki Method has been used successfully around the world in over 3000 projects and the numbers are now also rising in Europe.
- The ability to create a dense native forest quickly has made the technique useful for creating urban micro forests, for restoring rainforest and Japanese evergreen broadleaf forests and for planting in arid Mediterranean habitat where other forestry techniques have not been successful.
- Miyawaki forests have also proven effective when used for a specific purpose, such as providing tsunami protection, stabilising mine dump slopes, as typhoon protection and for carbon sequestration.
- There has been particular focus on planting Miyawaki forests in urban environments as there are significant benefits to tree planting in towns and cities, and this method maximises the space available.
- Urban forests reduce local temperatures (-1.3°C in one study), improve air quality by reducing pollutants, sequester carbon, and improve the wellbeing of residents, as well as creating a natural oasis for invertebrates and birds.
- There remains, however, much scope for research on the Miyawaki method. In particular the carbon sequestration rates could be significantly higher than on forest plantations because of the density both at planting and at the final forest stage.

PHOTO PLATE:


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