



NEWS BULLETIN

Plants and Pollution

ENVIS RP-NBRI

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Vol. 06, June 2019

Vertical Garden: Improve Air Quality

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Green Walls in Cairo: Elevating Quality of Life and Promoting Urban Sustainability

Egyptian Streets, 01 June 2019

Cities all across the world are constantly growing, evolving and diversifying, and many face common urban challenges, such as pollution, overcrowding and traffic.

At the same time, many cities – and Cairo forms a prime example – have recognized and increasingly come to emphasize the need for green spaces. The latter are not simply aesthetically appealing, with a great deal of research proving that plants are vital for the physical and psychological well-being of humans, they are also important for fostering a healthy and sustainable city.

Thanks to advancements in technology, it has become increasingly possible to bring innovative and green infrastructures to cities across the region, for instance by installing so-called green walls and more generally, by making green spaces an essential component of urban planning.

Cairo is one of many cities “embracing green technologies to combat condensed pollution,” says Malik Tag, Business Manager of Cairo-based company Schaduf, which has actively been involved in the development of green wall projects across the capital and beyond.

Given their many benefits such as low maintenance costs and energy efficiency, installing green walls has become a popular investment for a growing number of businesses. Curious to know more about these benefits and the processes involved in developing green walls, Egyptian..... [Read More...](#)

Mexico City Turns Highways Into Stunning Vertical Gardens to Improve Air Pollution

The Epoch Times, 06 June 2019

It is heartening to hear of private citizens initiating green projects, not depending on government initiatives, to improve the quality of life for citizens of a highly polluted city.

One such project in Mexico City used a Change.org petition to gauge public support, then with private funding went ahead and gained government approval to begin greening a 27-kilometer (17-mile) section of a highly transited highway in the city.

An architect, Fernando Ortiz Monasterio of the firm “Verde Vertical,” initiated this greening project, which was co-signed by the Mexican government in July of 2016.

Monasterio intended to build vertical gardens throughout nearly 1,000 pillars along the highly transited highway called “Periferico.”

A group of eligible corporations invested the 300 million pesos (US\$15.1 million) needed. It would seem that an iconic highway with bumper-to-bumper traffic and off-the-charts bad air would be the ideal place to launch an initiative that pairs smog mitigation with beautification—improving air quality and somehow making a concrete highway infrastructure more aesthetically appealing. But not everyone agreed.

“In Mexico City, almost all of our local pollution and mobility problems can be attributed to the excessive use..... [Read More...](#)



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Plant : Air Dust Remover

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Green fix for dust: 1,200km of Delhi roads to get tree cover

[The Times of India, 06 June 2019](#)

NEW DELHI: To combat dust pollution and beautify the city, the Public Works Department has begun planting trees and shrubs along the 1,260 km of roads under its jurisdiction. Scheduled to be finished before the rainy season, the increased greenery, PWD officials hoped, would arrest the roadside soil from becoming airborne and adding to the pollutant load. At the same time, the ornamental creepers and shrubs and seasonal flowering plants, they expected, would impart natural beauty to the environs.

“It is an attempt to make Delhi cleaner and greener,” a PWD official iterated. “This is just the first step and once the plants are growing on the selected stretches, we will try to ensure that every road under our jurisdiction is covered under the initiative.” According to other officials, the main purpose of the planting drive is to keep a check on dust particulate matter with the expectation that the grass and plants will cover all dry and open soil areas and prevent dust from flying into the air.

Plants like Cascabela (kaner), hibiscus, bougainvillea, Livistona palm and calliandra, to name a few, will be planted. Roads in Lutyens’ Delhi, with a specific plant adorning a particular stretch, serve as an inspiration for this project. PWD has scheduled the completion of the project before the monsoons because the newly planted saplings will not lack for water then. Following that, the agency will only plant trees. PWD has set aside Rs 176 crore for the purpose,.....[Read More...](#)

Some types of trees excel at removing particles from polluted air

[C&EN, 06 June 2019](#)

Barbara A. Maher of the University of Lancaster and her colleagues have been looking at whether trees might help mitigate the influence of ultrafine particles on health. Earlier research from her lab had shown that silver birch trees were good at capturing particles larger than 1 μm . Now they wanted to know whether it would also nab ultrafine particles and whether other tree species could do the same job.

The researchers created their own controlled, artificial roadway by attaching the tailpipe of a diesel vehicle to a small wind tunnel. They collected branches from nine tree species—silver birch, yew, elder, maple, ash, cherry, beach, hawthorn, and nettle—and washed the leaves to rid them of existing particles. Then they placed the branches inside the wind tunnel and exposed them to diesel exhaust for a total of 35 min, measuring air quality on either side of the branches every 7 min.

There was a huge range in particle-removal efficiency among the different species, with the best performing ones removing 70.5% (elder), 71.5% (yew), and 79% (silver birch) of the ultrafine particles. “At the microscale, the type of leaf—its structures and hairiness and leaflet size and topography—controls how efficient that leaf is in getting particles to deposit on the leaf’s surface,” Maher says. The furry leaves of a silver birch or the many small leaves of a yew..... [Read More...](#)



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Plant: Water Pollution

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Water quality in rivers poor, pollution board launches plantation campaign

[The Tribune India, 22 June 2019](#)

In a bid to improve the water quality of the Sukhana, Markanda and Sirsa river stretches, which figure in the 351 polluted stretches in the country, the State Pollution Control Board (SPCB) today kickstarted a plantation drive at Baddi.

Dr RK Pruthi, member secretary, SPCB, while elaborating on their endeavour, said they would adopt the phytoremediation technique to reduce pollution in these rivers. He said plantation was initiated today from the common effluent treatment plant at Baddi.

In Himachal, seven river stretches have been identified as “critically polluted”, where biological oxygen demand (BoD), which is the dissolved oxygen needed by organisms to break down organic material, was found to be above the permissible limit. These rivers were Sukhana, Markanda, Sirsa and Ashwani, stretches of the Beas, Giri and Pabbar.

In the Sukhana river stretch in Parwanoo, the BoD was as high as 54 mg per litre as against the safe limit of 3 mg per litre and it was placed under the High Priority-I criteria, which warranted immediate action. The Markanda river stretch in Kala Amb was categorised under Priority-II, as its BoD is between 32-24 mg per litre. The Sirsa river stretch in Baddi was rated under the Priority-III criteria, as its BoD was found to be between 8 to 16 mg per litre. The phytoremediation technique involves plantation..... [Read More...](#)

Gomti breathes uneasy, loses flora & fauna

[The Times of India, 26 June 2019](#)

LUCKNOW: Dissolved oxygen (DO) in the Gomti river has plummeted to a perilous level where it can no longer sustain aquatic life, a survey carried out by environmentalists have revealed.

The DO level should be at least 8.5mg/litre to make river water fit for human consumption while a drop below 5mg/litre makes it unfit for flora and fauna. But, along some stretches of Gomti, the water is so toxic that the DO is down to 0.5mg/litre, the study conducted by professor Venkatesh Dutta and his team shows to explain why only eight species of fish out of 51 are left in the river. Also, barring water hyacinth, no other plant species have survived the onslaught of pollution.

The findings are similar to those of the Uttar Pradesh Solid Waste Management and Monitoring Committee, a panel constituted by the National Green Tribunal (NGT), which on Monday advised people against bathing or even boating in Gomti.

“The DO level was 5mg/litre only between Ghaila and Gaughat in the upstream. Thereafter, the water was found to be increasingly poor (in quality) owing to (untreated) discharge from sewers and drains. The stretch near Shaheed Smarak, Shani Mandir Ghat and Kudiya Ghat were among the most polluted, with the DO level being as low..... [Read More...](#)



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Effect of Pollution on Agriculture

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Ammonia pollution damaging more than 60% of UK land – report

[The Guardian, 18 June 2019](#)

Ammonia and nitrogen pollution, mostly from farms, is harming more than 60% of the UK's land area and hitting the most sensitive habitats for plants and wildlife hardest, a government report has found, despite there being no clear plans to monitor or reduce its impact.

More than 85% of England's total land area receives ammonia concentrations above the critical level set to protect lichens, mosses, liverworts and similar plants – keystone species that are vital to ecosystems – while Northern Ireland is even worse, at 88%. Just over half the land in Wales is affected, and less than a fifth of Scotland.

When sites that are particularly sensitive are considered, including special areas of conservation, special protected areas, and sites of special scientific interest, England is worst hit, according to a study from the Department for Environment, Food and Rural Affairs (Defra), with 95% of sites overloaded with the pollutants. In Wales and Northern Ireland 89% and 85% respectively of sensitive sites suffered excess levels of nitrogen. Only Scotland had lower levels, with nitrogen above "critical load" at only 40% of sites in 2014-16.

The pollution, which flows into waterways and is deposited into the air, can have a devastating effect on plants and animal life. Lichen, for example, may be killed off by excess ammonia gas, leading to knock-on effects for the wildlife that depend on it for food. Studies have shown grasslands losing species – which affects..... [Read More...](#)

How climate change affects crops in India

[Science Daily, 17 June 2019](#)

Since joining the Data Science Institute as a postdoctoral fellow in September 2018, Davis has co-authored four papers, all of which detail how developing countries can sustainably improve their crop production. For his latest study, he focuses on India, home to 1.3 billion people, where he led a team that studied the effects of climate on five major crops: finger millet, maize, pearl millet, sorghum and rice. These crops make up the vast majority of grain production during the June-to-September monsoon season -- India's main growing period -- with rice contributing three-quarters of the grain supply for the season. Taken together, the five grains are essential for meeting India's nutritional needs.

And in a paper published in Environmental Research Letters, Davis found that the yields from grains such as millet, sorghum, and maize are more resilient to extreme weather; their yields vary significantly less due to year-to-year changes in climate and generally experience smaller declines during droughts. But yields from rice, India's main crop, experience larger declines during extreme weather conditions. "By relying more and more on a single crop -- rice -- India's food supply is potentially vulnerable to the effects of varying climate," said Davis, the lead author on the paper, "Sensitivity of Grain Yields to Historical Climate Sensitivity in India," [Read More...](#)