



NEWS BULLETIN

Plants and Pollution

ENVIS RP-NBRI

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Vol. 03, March 2020

Tree to Combat Pollution

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Scientists identify best trees for fighting roadside pollution

UPI News, 26 March 2020

A pair of scientists in Britain have developed a new framework for selecting the best trees for fighting roadside air pollution.

To build their framework, Yendle Barwise and Prashant Kumar, scientists at the University of Surrey's Global Center for Clean Air Research, surveyed the scientific literature on the impacts of green infrastructure on air pollution.

Their research showed some plants are best at diverting and diluting plumes of toxic air, while others directly capture pollutants. Barwise and Kumar also identified plants that are more likely to end up with pollutants on their leaves.

The pair of air pollution experts hope their work -- published this week in the journal *Climate and Atmospheric Science* -- will guide the decision making of urban planners, landscape architects and garden designers.

Air pollution is one of the world's most significant environmental health problems. Earlier this year, scientists found air pollution is responsible for shortening the human lifespan by an average of three years.

"Vegetation can form a barrier between traffic emissions and adjacent areas, but the optimal configuration and plant composition of such green infrastructure are currently unclear," researchers wrote in their paper.

"We found that if the scale of the intervention, the context and conditions of the site and the target air pollutant type are.....

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Researchers compare cadmium phytoextraction ability of several plants

Eurek Alert, 05 February 2020

Remediation of soil contaminated by heavy metals has become a hot topic in the world, and phytoremediation technology is the most widely used. Compared with physical and chemical remediation, phytoremediation technology has the advantages of high cost-effectiveness, in-situ application, less invasive, less destructive and so on.

In order to screen more hyperaccumulators and explore their adaptive mechanism to different soils, under the guidance of Prof. LI Zhian, HUANG Rong, a doctoral student from South China Botanical Garden of the Chinese Academy of Sciences, has conducted a phytoextraction experiment with five cadmium (Cd) hyperaccumulators (*Amaranthus hypochondriacus*, *Celosia argentea*, *Solanum nigrum*, *Phytolacca acinosa* and *Sedum plumbizincicola*) in two soils with different pH value.

Results showed that most accumulator plants grew better in the acidic soil, with 19.59–39.63% higher biomass than in the alkaline soil, except for *S. plumbizincicola*. In the acidic soil, *C. argentea* and *A. hypochondriacus* extracted the highest amount of Cd. In the alkaline soil, *S. plumbizincicola* performed best, mainly as a result of high Cd accumulation in plant tissue. Most plants achieved leaf Cd bioconcentration factor (BCF)

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Ecological Devastation due to COVID19

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

COVID-19 is another proof of ecological devastation

The Jakarta Post, 31 March 2020

Today we are facing COVID- 19, which is spreading faster than any other pandemic. While new diseases keep emerging, the previous ones that were thought to be controlled have returned, usually with new and more deadly strains.

Cholera and other old threats, such as influenza, malaria and tuberculosis, have become more deadly through mutation and growing resistance to antibiotics. Severe Acute Respiratory Syndrome (SARS) and avian influenza have caused major human suffering and devastated the world's economy.

We realize now that those infectious diseases are not only spreading faster, but they appear to be emerging more quickly than ever before. The main reason is that unprecedented numbers of people are on the move and a highly mobile world provides numerous opportunities for the rapid spread of infectious diseases.

According to the World Health Organization, since 2001, more than 118,000 epidemic cases around the world have emerged and now can develop in a matter of days into a pandemic.

Due to the rapid spread of COVID-19, some countries have imposed a community quarantine or even nationwide lockdown to break the chain of virus transmission. In the Philippines, President Rodrigo Duterte announced strict immigration curbs and a halt on domestic land, sea and air travel to and from Manila. In the Middle East, Saudi Arabia has suspended pilgrimages to Mecca, while in Jerusalem,.... [Read More...](#)

COVID-19: MoEF&CC extends validity of environmental clearances till June 30

Down To Earth, 30 March 2020

The validity of environmental clearances (EC) across the country were extended till June 30, 2020 by the Union Ministry of Environment, Forest and Climate Change (MoEF&CC), after the 21-day nationwide lockdown to control the spread of the novel coronavirus disease (COVID-19) came into effect.

The projects are supposed to function under the terms and conditions, “notwithstanding any condition imposed in the respective Prior Environment Clearance”, according to a memorandum issued by the ministry, dated March 25.

The ministry had earlier issued a draft environment impact assessment (EIA) notification on March 12. The draft proposed to bring the projects that violated laws under regulations. Experts said the ministry should reconsider reissuing the draft notification after the lockdown is lifted.

The EIA is a study conducted through which an EC is granted. All projects that fall under the purview of the Environment Protection Act, 1986, require an environmental clearance for running its operations. They are usually given before a project commences.

The MoEF&CC, however, in recent years since 2017 has issued ex-post facto clearances to projects in violation of the law.

“We are deeply concerned that this draft notification has been... [Read More...](#)



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Regreening of Environment

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

How Miss Environment is regreening her town in Kenya

Modern Diplomacy, 20 March 2020

Ahead of International Women's Day, UN Women is celebrating people of every gender, age, ethnicity, race, religion and country, who are driving actions that will create the gender-equal world we all deserve. Meet one example in Kenya.

Joan Tonui was just 22 years old when she won the Miss Environment championship title in Bomet. She told the jury she wanted to work with women and children to raise their awareness about living in a clean environment and teach them about waste management in urban areas. With a background in public health, with a focus on water and sanitation, she had learned how some countries separate waste into different categories, such as glass, plastic and paper, and she wanted to introduce that concept to local primary schools.

She started visiting schools to introduce them to her initiative and taking it beyond waste management, to mobilize them to set up tree nurseries to raise fruit tree and indigenous tree seedlings that the community could later plant on school grounds. This turned into the Green Champions Programme where she sets up competitions, and the students who are most eloquent on environmental issues in their poetry, essays, drawings or school plays win the title of Green Champion.

The idea is that these champions will, in turn, encourage other pupils to join the Green Champions Club. The club members take care of the nursery and organize green days at their schools with activities such as collecting..... [Read More...](#)

Surrey MPs support ambitious tree planting initiative to combat climate change

Surrey News, 22 March 2020

Last week, MPs from across Surrey took time out to mark Surrey Tree Week by planting trees in their local constituencies. This was organised in support of Surrey County Council's commitment to facilitate planting 1.2 million trees in Surrey within the county by 2030.

Planting trees is an effective way to improve air quality, reduce noise and reduce flooding. Trees absorb carbon dioxide from the atmosphere and each tree will have absorbed approximately one tonne of CO₂ by the time it is 40 years old. By the end of March, almost 50,000 trees will have been planted in Surrey.

All 11 MPs who represent constituencies across Surrey, including the Foreign Secretary and MP for Esher and Walton, Dominic Raab, and the Chancellor for the Duchy of Lancaster and MP for Surrey Heath, Michael Gove, have agreed to plant a tree to show their support for the county's initiative, which also aligns with central government's aim to plant 11 million trees by 2022.

Mike Goodman, Surrey County Council's Cabinet Member for Environment and Waste, said: "We are delighted to have the support of all our local MPs for Surrey's Tree Week. Increasing the number of trees in the county will help us achieve our aims of improving air quality and becoming net carbon zero by 2030.

"We would also encourage residents to plant their own trees in their garden if they can, or identify local areas..... [Read More...](#)



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Microbes to Tackle Environmental Pollution

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Fuel munching microbes clean up Antarctica

Antarctica, 01 March 2020

Australian scientists have designed and built a luxury dirt 'hotel' in Antarctica to boost the appetite of tiny pollution-munching microbes.

The 'mega-pile' is the largest bioremediation construction in Antarctica, measuring 20 metres wide by 40 metres long, and holding around 750 cubic metres of contaminated soil.

Australian Antarctic Division's Remediation Manager, Tim Spedding, said it will be home to billions of natural native microorganisms.

"Over the past decade we have shown one of the best ways to clean up soil contaminated with fuel in Antarctica is by encouraging the native bugs that live there to eat the fuel," Mr Spedding said.

"The mega-pile allows us to create the best environment for these microbes to thrive, ultimately breaking down the contaminant and cleaning it up."

The soil is remediated through constantly tweaking the conditions of the mega-pile.

"We try and keep the pile a few degrees above zero, with higher moisture content at about 10–12% water, some nutrients and a lot more oxygen, to get the microbial community as happy and active as possible."

It took the team working at Australia's Casey research station six weeks to construct the mega-pile. Remediation engineer, Dr Rebecca McWatters, said they welded together a 'sandwich' of plastic and material layers to contain the soil while it's undergoing remediation.

"The first layer is a geosynthetic clay liner, which absorbs water from.....

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Harnessing plants and microbes to tackle environmental pollution

Chemistry World, 29 March 2020

Eucharia Nwaichi is an environmental biochemist at the University of Port Harcourt in Nigeria. She experiments with plants, microorganisms and enzymes to uncover ways to control and ultimately reduce pollution in a place that has been devastated by oil exploration, industry and conflict.

The Niger Delta is an area known for its bountiful supply of petroleum and has been an established hotspot for oil and gas production since the 1950s. But this comes at a destructive price: it's also one of the most polluted places on the planet. Land once fertile for crops is now barren, while polluted water erodes fish supplies, restricts available drinking water and can cause serious health problems.

Paving the way in tackling these issues is Eucharia Nwaichi whose work uses decidedly greener means of cleaning up these polluted environments. Plants are at the centre of Nwaichi's research into sustainable methods of degrading or removing the contaminants present in the Niger Delta in an effort to salvage the land, restore biodiversity and help local communities.

The process, called phytoremediation, uses legumes and grasses' natural ability to directly take up hydrocarbons that can't be broken down. Alternatively, the plants may secrete enzymes that help carry out this removal. Nwaichi also makes use of associated microorganisms contained.....

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