NEWS BULLETIN

Plants and Pollution

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Bio-indicators of Environmental Change

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Cherry Blossoms' Peak Bloom Is an Indicator of Climate Change

Earth & Space Science News, 07 March 2019

The cherry blossoms will be blooming again soon around the Tidal Basin in Washington, D.C., as they have every year since Japan shipped its arboreal gift of more than 3,000 cherry trees to the United States in 1912.

And for this year, anyway, climate change won't have much effect on the timing.

This year's peak bloom, when 70% of the Yoshino cherry blossoms are open, will be 3–6 April, the National Park Service (NPS) projected on Wednesday at a ceremony at the Newseum in Washington, D.C. More than 1.5 million people are expected to visit the city during the cherry blossom frenzy and pour about $100 million in economic activity into the city.

The projected peak days for 2019 are right around the historic average of the past several decades, according to the park service. The agency determined the projected dates after analyzing a variety of data, including winter temperatures and the forecast for March, according to NPS acting superintendent Jeffrey Reinbold. He said that the development of the blossoms will depend on variable weather conditions.

Experts at the park service and elsewhere say that local conditions of daylight and heat are the main factors that determine the blooming time in temperate ecosystems. However, they say that although bloom times can vary from year to year because of those local conditions, the long-term trends clearly show the impact of **Read More...**

Honey as a biomarker for pollution

DownToEarth, 13 March 2019

Honey from urban areas can be used as biomarker to identify polluted localities, according to a study conducted by Pacific Centre for Isotopic and Geochemical research (PCIGR). The study was conducted in Vancouver, Canada, and has been published in the journal Nature Sustainability, March 12, 2019. The honey samples, analysed for the study, were collected from six geographical areas within Vancouver, including urban, industrial, residential and agricultural. From these samples, the scientists tested for three major elements — Lead, Zinc, Copper.

The results showed that areas with heavy vehicle movement and industrial activity had increased concentration of lead in honey. On the other hand, samples from agricultural land indicated high levels of manganese, which researchers suspect could be because of pesticide use.

The trace elements levels in honey is well below the worldwide average for heavy metals, says the study. This means that an adult would have to consume more than 600 grams, or two cups, of honey every day to exceed tolerable levels.“The good news is that the chemical composition of honey in Vancouver reflects its environment and is extremely clean. We also found that the concentration of elements increased the closer you got to downtown **Read More…**

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Microbes : Environment Cleaner

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Natural Bacteria Could Soon Replace Pesticides

EDGY, 11 March 2019

Like fertilizers, pesticides have significantly contributed to the agricultural revolution by protecting crops from pest infestations. However, they are not without their downsides. From treated areas, toxic chemical agents in pesticides can transport to other lands, air, and water. From there, they can pose major environmental and health risks to people, animals, and plants. The intensive use of synthetic pesticides is partly responsible for the global demise of bees and all other insect species.

Bacteria as a Natural, Safe, and Sustainable Biopesticide

There are what's called biopesticides that are derived from bacteria, and from other animals and plants. Bacteria, whose antibiotic resistance can be spread by fertilizers, can act as natural pesticides, or biopesticides. Now, scientists at Cardiff University in the UK have repurposed a strain of bacteria — called Burkholderia ambifaria — to work as a safe biopesticide. This bacterial species, Burkholderia, was used as biopesticides up until the 1990s when they were linked to lung infections in people with cystic fibrosis, so they were no longer used as biopesticides.

Cardiff researchers, who have been studying this strain of bacteria for years, found a genomic way around Burkholderia's adverse health effects while preserving their biopesticide qualities. In addition to boosting Burkholderia's viability as an effective biopesticide, the team's **Read More…**

Climate change limits forest recovery after wildfires

Science Daily, 12 March 2019

Kimberley Davis, a postdoctoral research associate in the W.A. Franke College of Forestry and Conservation at UM, and her co-authors examined the relationship between annual climate and post-fire regeneration of ponderosa pine and Douglas fir in low-elevation forests of western North America. "Forests in the western U.S. are increasingly affected by both climate change and wildfires," said Davis, the study's lead author. "The ability of forests to recover following wildfire depends on annual climate conditions, because tree seedlings are particularly vulnerable to hot and dry weather. We wanted to identify the specific conditions necessary for post-fire tree regeneration to better understand how climate change has been affecting forests through time."

The authors used tree rings to determine establishment dates of more than 2,800 trees that regenerated after fires in Arizona, California, Colorado, Idaho, Montana and New Mexico between 1988 and 2015. Annual tree regeneration rates were much lower when seasonal climate conditions, including temperature, humidity and soil moisture, crossed specific threshold values. Over the past 20 years, climate conditions have crossed these thresholds at the majority of study sites, leading to abrupt declines in how often annual conditions are suitable for tree regeneration. The study results highlight **Read More...**

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Affect on Crop

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Seawater is coming into our farms and killing the plants

UN Environment, 12 March 2019

The water from the wells in Kisakasaka used to be so salty that it would turn people's teeth yellow. Children, no matter how thirsty, would often refuse to drink. But with no other water source in this farming village near Zanzibar's capital Stone Town, around 1,000 residents were forced to drink increasingly salty water that gave them headaches and nausea. "It was very difficult at the time and the children complained a lot about the water, but they had to drink it because there was no other option," said Pili Issa Moussa, a mother-of-five and local resident.

People's problems were compounded when more and more crops started failing and animals started getting diseases as the seawater crept further inland and spoiled or washed away fertile soil. "There are some areas where even the coconut trees started to die," said community leader Khatib Ali. The villagers formed a non-governmental organization to fight the effects of climate change and save their village from being battered by the winds and seawater advancing unimpeded due to the lack of tree barriers.

To adapt to the rising sea levels, more erratic rains and deforestation causing land degradation and erosion, the group decided to reforest and restore the mangroves, which act as a barrier against floods and storm surges. The villagers have to cut down some trees to live and make a small living, whether it be for firewood, timber, or charcoal.But they also know that **Read More...**

Rainfall changes for key crops predicted even with reduced greenhouse gas emissions

Science Daily, 11 March 2019

The study uses four emissions scenarios from low to high to predict time of emergence (TOE) of permanent precipitation changes, meaning the year by which precipitation changes remain permanently outside their historical variation in a specific location. The research shows that quick action on emissions -- in line with 2015's Paris Agreement -- would push TOE projections deeper into the future or reduce the size of affected areas. Drier regions include Southwestern Australia, Southern Africa, southwestern South America, and the Mediterranean, according to the study.

Wheat cropland in Central Mexico is also headed for a drier future. Wetter areas include Canada, Russia, India and the Eastern United States.

The four crops in the study represent about 40 percent of global caloric intake and the authors say that, regardless of how much mitigation is achieved, all regions -- both wetter and drier -- need to invest in adaptation, and do so urgently in areas expected to see major changes in the next couple of decades.

However, in the scenarios with low greenhouse gas emissions, most regions have two-three decades more to adapt than under high-emission scenarios.

Low-emission scenarios, the authors stressed, likely imply less need for potentially costly adaptation to new rainfall regimes. **Read More...**

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Climate Change: Forest
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Call for urban forestry, mini dams to mitigate climate change impact

DAWN, 25 March 2019

With the reduced water flow in the once roaring Neelum River hardly able to contribute to containing the temperature in Muzaffarabad in the coming summer, a conservationist has come up with some 'affordable and practicable' remedies to the consequences of climate change. "We are not far away from the remedy, if we think and work together, without further loss of time, to combat climate change," said conservationist Ghulam Muhammad Butt, who has been serving in the Azad Jammu and Kashmir (AJK) Forests Department at senior positions since 1997.

He pointed out that the increased concentration of carbon dioxide, emitted by multiple sources, created a crust some 100-150 feet above, which prevented hot air from going beyond. Trees act as air purifiers by absorbing carbon dioxide but sadly very few people realised to the core the importance of plantation of trees in as high a number as possible, he said.

Mr Butt said plantation of trees required soft soil surface which was rapidly decreasing in urban areas due to the construction of concrete buildings and roads.

"In such a scenario, we have to promote urban forestry by covering the concrete surface with lush green potted plants, as well as by doing plantation along both sides of roads, canals and riverbanks running through the cities and towns," he said.

In this regard, he said every household in urban areas should place potted plants on their rooftop and lintels, "for dramatically positive **Read More...**

As Climate Change Depletes Forests, One of India's Greenest States Turns to Its People

Pulitzer Center, 24 March 2019

As he walked around the sacred forest grove, government pump operator and village council member Borhlang Blah, 27, recalled a time when it rained at least once during the summer monsoons for nine days and nine nights without a break.

Everything came to a standstill: adults skipped work, children skipped school, and markets stayed shut in Blah's home village of Mawphlang, an hour's drive from Shillong, capital of the northeastern state of Meghalaya.

The rain of nine days and nine nights is now a childhood memory, reduced to no more than two or three days at a stretch.

"The changes in rainfall affects our crops," said Blah, who gets his last name from the local Blah tribe, traditional protectors of the 200-acre sacred grove, which is the size of 150 football fields and offers a cornucopia of medicinal plants, pink rhododendrons and towering oaks.

"The orange is no longer as sweet as it was once, and the size of the fruits that we grow is much smaller."At first glance, the data do not appear to record Mawphlang's decreasing rain: The monsoon rainfall over Meghalaya—literally, abode of the clouds—was unchanged for 32 years to 2012, and the annual rainfall increased 11.5 mm per year, according to a 2017 Indian Institute of Technology - Gandhinagar (IIT) study. The average temperature rose 0.031 deg C every year over **Read More…**