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Title:	A new index to assess the air quality impact of urban tree plantation
Authors:	Datta, Savita (/jspui/browse?type=author&value=Datta%2C+Savita) Sharma, Anita (/jspui/browse?type=author&value=Sharma%2C+Anita) Parker, Vinit (/jspui/browse?type=author&value=Parker%2C+Vinit) Hakim, Haseeb (/jspui/browse?type=author&value=Hakim%2C+Haseeb) Kumar, Ashish (/jspui/browse?type=author&value=Kumar%2C+Ashish) Chauhan, Astha (/jspui/browse?type=author&value=Chauhan%2C+Astha) Tomar, Shubham Singh (/jspui/browse?type=author&value=Tomar%2C+Shubham+Singh) Sinha, Baerbel (/jspui/browse?type=author&value=Sinha%2C+Baerbel)
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Abstract:	At present, urban planners select tree species for urban plantation based on the size, aerodynamic properties, the aesthetic value of trees and the tree's air pollution tolerance and rank choices based on an anticipated performance index (API). The index does not consider whether the chosen species will aggravate the pollution by emitting highly reactive ozone or secondary aerosol precursors or allergenic pollen. In this study, we introduce a new Air Quality Impact Index (AQII) which ranks choices in a more holistic manner, by taking aerodynamic properties, leaf structure, pollution uptake potential, pollution tolerance, ozone and aerosol precursor emissions, and the pollen allergy impact into account. We demonstrate the advantage of the AQII ranking by evaluating the impact of two species with equally high API that rank on the opposite ends of the AQII scale on urban air quality during summer season. We review the literature to compile a list of 149 species out of 280 tree species, which are commonly considered for urban plantation, for which VOC emissions have been reported. We also compile the allergy potential (107) and air pollution tolerance and calculate the AQII for 98 species, for which sufficient data is available.
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