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Identification of Most Suitable Tree Species for Temperature Reduction in Colombo, Sri Lanka

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Abstract

Urban areas are currently experiencing a scarcity of green spaces due to growing urbanisation, which has a significant impact on increasing air temperatures and reducing the quality of life. In the Colombo Municipal Council (CMC) area, 34 Grama Niladrari (GN) divisions out of 55 do not have the required amount of green space per person which is 9.5 m² recommended by the World Health Organization. Lands are limited in the CMC area, and it is hard to find land for a park or urban forest. Therefore, the existing trees' performance to reduce the air temperature has to be identified. This study was planned to identify the most suitable tree species for temperature reduction and was performed at the five selected GN divisions of the CMC area. The focus of the study was to evaluate the contribution of the species type in reducing the air temperature. A total of ten tree species with five replicates were used for the assessment. Air temperature was measured under the tree canopy and away from the tree canopy at three intervals (08.00 am, 12.00 pm, and 4.00 pm) over six months. ANOVA was performed to determine if there is a significant difference between the temperature reduction values and tree species type. It was identified *Terminalia catappa* (Indian Almond), *Mangifera indica* (Mango), *Terminalia arjuna* (Arjun Tree), *Albizia saman* (Rain Tree), and *Humboldtia laurifolia* (Little Amherstia) as the most suitable tree species for temperature reduction in Colombo, Sri Lanka. These tree species offer valuable insights for urban planners and policymakers seeking effective strategies to combat increasing temperatures in densely populated cities with limited green spaces. Further, it is recommended to conduct more studies to identify the contribution of tree morphology in mitigating the microclimatic variation in urban cities.

Keywords: Increasing air temperature, Urbanization, Urban tree species