The influence of different tree species on outdoor thermal comfort in the tropical urban environment

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Abstract

Urbanization has become a global trend and transformed our life enormously. While urbanization generated many benefits to citizens and also contributed to economical developments, the impact on local environment has been mostly detrimental. For example, one of the most-documented phenomenon is called urban heat island (UHI) effect, which has been shown to influence both local and global climate change. In residential areas, UHI effect can greatly affect people's sensation of thermal comfort. One way to mitigate the UHI effect is urban greening as plants can provide evaporative cooling effects as well as shading benefits.

Despite the advances made on the thermal benefits and energy saving of urban greenery, including green roofs and green walls, little is known about the thermal performance of different tree species. Furthermore, little is known on the impact of diverse tree species on UHI effect and also thermal comfort. In this study, we propose to investigate the thermal performance of different urban tree species, in terms of their shading benefits and transpiration. We anticipate that our study could provide the necessary information on tree selection in urban greening, which would better inform the modern urban planning and design.

Key words: urban greening, tree, urban heat island (UHI) effect, outdoor thermal comfort