

Simulation of the impact of street tree Species on the Urban Microclimate: A Case Study of El-Houria Neighborhood in Mostaganem, Algeria

Authors : Bachir Nora

Abstract : Integrating vegetation into urban environments is crucial for enhancing quality of life, particularly through microclimate regulation and the reduction of urban heat islands. This research investigates the impact of street tree species on the urban microclimate in the El-Houria neighborhood of Mostaganem, in Algeria, using advanced environmental simulations. We analyzed three tree species—Robinia pseudo-acacia, Populus alba, and Jacaranda—to assess their effectiveness in lowering air and surface temperatures, which are key factors in managing urban heat islands. The results indicate that Robinia pseudo-acacia is the most effective species, capable of reducing air temperature by 1°C and surface temperature by 12°C. These findings highlight the importance of strategically selecting tree species to mitigate the effects of climate change in urban areas, improve thermal comfort, and reduce energy consumption. The study provides valuable insights for urban planners and policymakers seeking sustainable urban design practices tailored to the Algerian context.

Keywords : heat islands, microclimate simulation, street tree alignment, sustainable urban design, thermal comfort.

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