Mónica Ballinas and Victor L. Barradas. 2016. Transpiration and stomatal conductance as potential mechanisms to mitigate the heat load in Mexico City. Urban Forestry & Urban Greening 20:152–159

Abstract

Transpiration rates and stomatal and canopy conductances were monitored in Eucaliptus camaldulensis, Fraxinus uhdei, Liquidambar styraciflua and Ligustrum lucidum in México City, to explore the potential of trees to reduce the urban heat load. The experiment was carried out over a 2-week period between 11 and 27 April 2013. Four trees of each species were used. Total conductance was obtained from daily measurements of transpiration and vapor pressure deficit between 22 and 27 April, and canopy conductance from stomatal conductance and leaf area index measurements. L. styraciflua registered the highest average (4.35 L d-1) transpiration rate, whereas F. uhdei registered the minima (3.64 L d-1). Averaged canopy conductance registered values between 40 mm s-1 (E. camaldulensis) and 50 mm

s-1 (L. lucidum). These results show that transpiration was strongly dominated by vapor pressure deficit (VPD) and controlled by stomatal conductance. According to the envelope function model, stomata were more sensitive to VPD than irradiance or air temperature. Finally, the presented transpiration rates are capable to reduce up to 20% of net radiation in Mexico City. With these results, it is possible to build tree arrangements to dissipate the greatest possible amount of heat produced in the city.

Muchas gracias

Un fuerte abrazo

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