

# Thermal performance of an extensive green roof under semi-arid conditions in central Argentina

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## Resumen

Extensive green roofs improve the provision of ecosystem services in urban environments, particularly in semiarid regions. The aim of this paper is to compare their thermal performance during six months between two rooms, one with a green roof and the other with a conventional roof, in Córdoba (Argentina). The room with a green (planting) roof showed a lower inside surface temperature since the beginning of the study than the control room (between 5–6°C of difference). During the selected period, the indicators such as temperature amplitude (the difference between the maximum and the average temperature) and the anti-interference characteristics of the layers to the outdoor air temperature are produced a better performance for the green roof compared to the conventional roof.

The pattern of a better performance was consistent across the study for the green roof, characterized by a higher cooling and warming of the roof surface during the day and night, respectively. The green roof was more effective at blocking an upward heat flux during the day and suppressing heat loss during the night. Evaporation, conductive flux and climatic conditions seem to dominate the thermal performance of green roofs in areas with semiarid climate conditions.

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