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Impacto del Uso de Vegetación en Ambientes Urbanos: Techos y Muros Verdes

Impact of The Use of Vegetation in Urban Environments: Green Roofs and Walls

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ABSTRACT

Anthropogenic activities have generated multiple negative environmental impacts, placing human health and the environment at risk. Phenomena such as the effect of urban heat islands (UHI), urban air pollution (UPI), excessive energy consumption of buildings, inadequate management of runoff, among others, have been identified. The results of scientific research show that the use of vegetation contributes to the mitigation of these problems. Trees, bushes, grasses, hedges, roofs and green walls stand out.

In this study, the effectiveness of the use of vegetation on extensive green roofs and walls on the mitigation of UHI and UPI, the reduction of energy consumption of buildings and the management of runoff is evidenced. Information is given on the potential for improvement of each aspect for different species adjusted to climatic conditions.

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The performance of *Axonopus compressus* to reduce UHI, *Ixora coccinea* to improve urban air quality, *Ixora coccinea* and *Chlorophytum comosum* to save energy consumption in buildings and *Nephrolepis exaltata* to better manage runoff in a climate is highlighted. tropical. By locating green roofs and walls in a hot dry tropical urban area, the temperature at pedestrian level can be reduced by 0.5°C, the concentrations of particulate matter by 7%, and the energy consumption of a commercial building by up to 15%.

In conclusion, green roofs and walls contribute to improving urban problems, however, the type of vegetation and the way they are configured must be considered. These results will serve as support for the development of public policies to contribute to the reduction of anthropogenic impacts.

Key words: Species of green roofs and walls, UHI urban heat islands, UPI urban pollution islands, air quality, runoff management.

RESUMEN

Las actividades antropogénicas han desencadenado múltiples impactos ambientales negativos colocando en riesgo la salud humana y a su entorno. Fenómenos como el efecto de islas de calor urbano (UHI), la contaminación atmosférica urbana (UPI), excesivo consumo de energía de edificios, manejo inadecuado de escorrentías, entre otros, han sido identificados. Resultados de investigaciones científicas evidencian que el uso de vegetación contribuye a la mitigación de estos problemas. Se destacan árboles, arbustos, pastos, setos, techos y muros verdes.

En este estudio se evidencia la efectividad del uso de vegetación de techos y muros verdes extensivos sobre la mitigación de UHI y UPI, la disminución de consumo de energía de edificios y el manejo de escorrentías. Se da información del potencial

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de mejora de cada aspecto para distintas especies ajustadas a condiciones climáticas.

Se destacan el desempeño de *Axonopus compressus* para la disminución de UHI, *Ixora coccinea* para mejora de calidad del aire urbano, *Ixora coccinea* y *Chlorophytum comosum* para ahorro de consumo de energía en edificios y a la *Nephrolepis exaltata* para un mejor manejo de la escorrentía en un clima tropical. Al ubicar techos y muros verdes en una zona urbana tropical cálida seca se puede disminuir 0.5°C la temperatura a nivel peatón, un 7% las concentraciones de material particulado, y hasta un 15% el consumo de energía de un edificio comercial.

En conclusión, los techos y muros verdes contribuyen a mejorar problemáticas urbanas, sin embargo, debe ser considerado el tipo de vegetación y la forma como se configuren. Estos resultados servirán de soporte para el desarrollo de políticas públicas para la contribución a la disminución de impactos antropogénicos..

Palabras clave: Especies de techos y muros verdes, Islas de calor urbano UHI, Islas de contaminación urbana UPI, calidad del aire, manejo de escorrentías.

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