

A cooler home is right in your own back yard

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Credit: Makalu from Pixabay

Urban trees are an effective tool for reducing land surface temperatures for entire suburbs, and even cities. But as yet we don't know much about their localized effects, particularly in the places where cooling is most important—our residential neighborhoods.

The Centre for Smart Green Cities, together with the AdaptWest Consortium, set out to measure how much trees and other home garden

vegetation reduced day and night heat. And we did it at the time when a [cooling effect](#) was most needed—during an extreme heatwave in western Adelaide.

We found that the humble home garden is more than pulling its weight. Although they only cover about 20 percent of [urban land](#), domestic yards account for more than 40 percent of [tree cover](#) and 30 percent of herbaceous cover, in the form of grass. This is a considerably higher tree canopy cover than for a typical park or other urban green area, which tend to have more grass.

The density of greenery in household yards kept land surface temperatures up to five and six degrees Celsius below similar non-vegetated areas, particularly in neighborhoods away from the cooling effects of the sea breeze.

The study location included industrial areas, infrastructures and high-density residential areas that lacked green yard and garden space. These were the hottest areas.

Conversely, the coolest areas, both by day and night, included residential yards, such as backyards, and front yards. Open green space was the coolest land use during the day, but likely failed to extend its [temperature](#)-lowering effects far enough to benefit residential areas, particularly at night. Instead, the most reliable cooling for homes was literally right at their door.

The study concentrated on land surface temperatures, but these affect air temperatures too, because of microclimatic interplay between urban land and atmosphere.

This pronounced and localized cooling benefit has important implications for urban policy. We estimate that increasing green cover in

non-vegetated areas could reduce local heat by several degree Celsius, as found in existing green yards. On the other hand, we also estimate that removing existing vegetation, through urbanization, infill and densification could significantly increase local land surface temperatures, particularly during the day.

Urban planning is increasingly taking extreme urban temperature into account. Our results clearly indicate that encouraging urban greening is a simple, effective means of mitigating the negative effects of a warming climate on cities and people. It's a strategy that needs to begin now: urban forests don't grow quickly, and we need to be encouraging low-water use herbaceous cover as a stopgap until a large array of shade [trees](#) can take over the job of green [cooling](#).

More information: Ossola, A., et al. (2020). Urban trees and people's yards mitigate extreme heat in western Adelaide: final summary report. North Ryde, Sydney: Macquarie University.
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