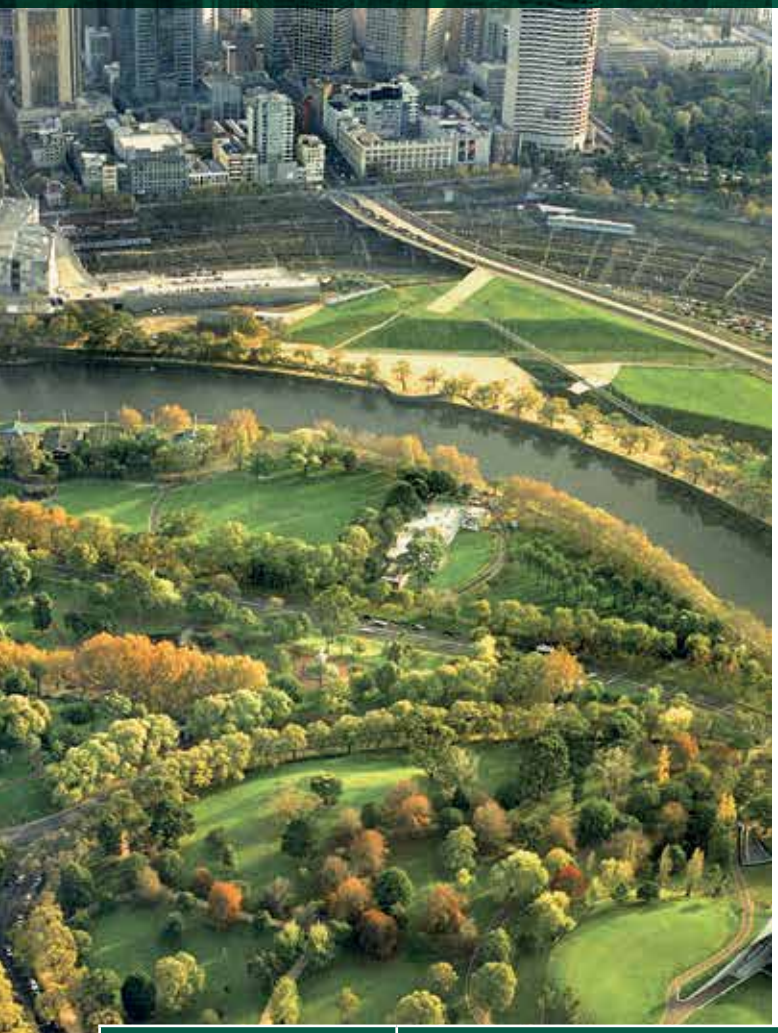
Living turf is cooling our cities: report



Conveying the benefits of living turf - mitigation of the urban heat island effect (TU18000), a levy-funded project conducted by Edge Environment has confirmed that irrigated natural turf can cool surface temperatures by an average of 4.9°C. By comparison, long pile synthetic turf measured, on average, nearly 11°C hotter than surrounding surfaces.

Anyone who has ever hopped, skipped and jumped over asphalt to reach the safe-haven of a nearby lawn could vouch for the cooling properties of turf. Ask any amateur athlete who has played a game of soccer on a synthetic pitch and they will tell you what the heat does to their feet.

As a society, we have long known that turf is one of the best solutions for our rapidly heating cities, but now, with the approval of the final report of *Conveying the benefits of living turf - mitigation of the urban heat island effect* (TU18000), we officially have the science to back that up.

Turf Australia has been following this project closely, and now with the final report delivered, Mark Siebentritt from Edge Environment says it's time to start encouraging decision-makers to come to the party when talking about the future of our cities.

"Decisions are being made today about how our cities are constructed and if need to act now if we want them to be great places to live both now and into the future. Whether you are a town planner, landscape architect or a homeowner, you need to be thinking about the importance of greenspace in your planning.

A look back at the project

In order to determine the influence that different surface areas had on the urban heat island, five surfaces (see table) were selected for analysis across the states of New South Wales, Victoria and South Australia.

Surface type	Description	Examples
Irrigated living turf	Areas of green healthy living turf with visual irrigation patterns	Golf courses, sports fields, reserves, gardens
Non-irrigated living turf	Areas of maintained vegetation with no evidence of irrigation	Reserves, sports fields surrounds, non-irrigated areas of golf courses
Synthetic turf – long pile	Large fields of synthetic turf playing surfaces	Hockey clubs, futsal fields
Synthetic turf – short pile	Thin synthetic turf coverings	Yardscapes, cricket nets
Bitumen	Dark hardscaped driving surfaces	Parking lots, roads

For each feature type, approximately 100 examples were identified within each state. Using relative temperature data provided by councils, measurements specific to each surface were taken resulting in 1,580 individual measurements.

The results

On average the surface temperature of irrigated natural turf measured 4.9°C cooler than the baseline average surface temperature in the areas surveyed. The influence of irrigated turf varied from 3.8°C in New South Wales to 5.7°C in Victoria.

It's believed that apart from the increased soil moisture from irrigation, the three-dimensional structure of living turf provides a broader surface area for evapotranspiration which helps drive the cooling effect of irrigated living turf.

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Through the same analysis, long-pile synthetic turf was one of the hottest surfaces in the landscapes of the three states surveyed measuring nearly 11°C hotter than average, or as much as 12.5°C in Victoria.

The urban heat island effect is driven primarily by the change from natural to built landscapes, replacing light coloured, low density, porous materials with dark, dense, impervious surfaces.

The analysis of the thermal performance of these five landscape coverings reinforce this pattern, as natural materials provide a cooling influence in 84% of the examples investigated, while the assessed built materials provided a warming influence in 82% of the examples.

> *Whilst the human and animal health implications are some of the most alarming, the economic and environmental impacts are just as important to recognise.*

In some instances, the surface temperature of synthetic turf was recorded at over 70°C.

"You don't have to be a scientist to know that a surface temperature of 70°C is a dangerous thing. Temperatures that high can cause injury and to animals and humans alike," Dr Siebentritt said.

Whilst the human and animal health implications are some of the most alarming, the economic and environmental impacts are just as important to recognise.

In residential settings, the analysis found that where surface materials lead to an increase in air temperature by 1.85°C and where residences only have cooling installed, the consistently warmer air temperatures resulting from the urban heat island effect have the potential to raise annual cooling energy use and associated utility costs by 50% for Sydney and Adelaide and up to 72% in Melbourne.

Conclusion

The evidence is clear. Through a scientific analysis of the thermal performance of the five different landscape coverings, the project has reinforced the view that living turf provides a cooling influence compared with selected inorganic materials which provided a warming influence.

According to Jenny Zadro, Market Development Manager, Turf Australia, growers should be screaming these results from the hills.

"It's not just about selling more turf, we are in a privileged position of working in an industry that has the potential to improve the economic, health and environmental outcomes for society. Together, we must rally behind these findings to help support the prioritisation of green space in our cities to keep us cool."

"As lawmakers debate reforms to reduce the impact of climate change on a global scale, we should remind our customers and stakeholders that by choosing lawn over synthetic for their lawn or sporting field, they will already be one step ahead of the game."

More information

Growers looking for more information on this project should visit https://www.horticulture.com.au/growers/turf-fund/ to download the full report.

Turf Australia has developed a fact sheet which can be used in your marketing materials and sales conversations to help explain the urban heat island to your customers. See over the page for the fact sheet or head to our new website at www.turfaustralia.com.au to download.