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Exotic plants fuel urban wildfire risk, UCT study warns

A new study has revealed that certain exotic plant species commonly found in Cape Town's urban spaces may intensify wildfire risks. Conducted in the aftermath of the devastating April 2021 Table Mountain fire, the research highlights how plant leaf traits, particularly in ornamental exotic species, influence how quickly and intensely vegetation can burn.

The study, "Time to extinguish the exotic flame: Lessons from the 2021 Cape Town fire", was conducted by Dr Dunja MacAlister, Associate Professor Samson Chimphango, Dr Dawood Hattas and Professor Muthama Muasya in the [Department of Biological Sciences](#) at the University of Cape Town (UCT). It will be published in the September issue of the [South African Journal of Botany](#).

The study's primary goal was to examine how the functional traits of plant leaves affect their flammability in an urban environment.

"While laboratory tests alone cannot fully predict how plants behave in real-world fires, they offer valuable insight into key characteristics that influence ignition, burn duration and intensity. This information is essential for natural hazard planning, especially in fire-prone regions like the Western Cape," said Professor Muasya, the study's senior author and an internationally-recognised plant taxonomist and evolutionary biologist.

The team analysed 42 plant species – 22 native and 20 exotic – focusing on traits such as leaf thickness, surface area and specific leaf area (a measure of surface area relative to dry mass). The findings showed a clear pattern: plants with thin leaves and larger surface areas per unit mass ignited quicker, and thicker-leaved species burned for longer periods. The biggest concern, however, comes from highly flammable species with large surface areas that give off large amounts of heat energy during the fire, therefore increasing the chances of the fire spreading, which were mostly found to be the exotic species.

"Exotic species that combine large, thin leaves with tall, woody growth and high retention of dry or dead foliage are of particular concern. These characteristics dramatically increase combustibility and the ability to trap burning embers, especially under windy conditions. One example is the Canary Island date palm (*Phoenix canariensis*), a popular ornamental tree planted along Cape Town's boulevards and near iconic buildings. Despite its widespread use, it poses a significant fire hazard," said Muasya.

He added: "Species such as *Cedrus atlantica*, *Cupressus* sp., *Hedera canariensis*, and in particular, *Phoenix canariensis* and *Pinus pinea*, are also a problem in other Mediterranean areas, such as California, with policies warning stakeholders to avoid planting them as they are flammable, invasive, or both."

Muasya emphasised that urban planning and vegetation management must urgently integrate fire risk into their strategies.

"Cape Town, like many cities around the world, is situated in a landscape where natural fires are part of the ecological cycle. As climate change continues to drive more frequent and severe fires, the widespread planting of flammable exotic species could increase both the likelihood and intensity of urban wildfires."

He concluded: "We call for a shift in how cities approach green infrastructure, urging city officials, landscapers and property owners to prioritise native species with lower flammability. We also stress the importance of raising public awareness about the hidden fire risks posed by attractive but hazardous plants."

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