How we assessed tree lifespan in Which Plant Where

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The lifespan classifications in Which Plant Where are an estimate of average Useful Life Expectancy (ULE) of tree species for trees in managed landscapes. ULE is the expected number of years a tree can be kept in its current location before its amenity value declines, potentially becoming a safety hazard or no longer serving its intended purpose in the landscape.

ULE can be contrasted to Life Expectancy (LE) which refers to the maximum lifespans of species in natural settings and in ideal habitats (soil and climate) and may be significantly longer than in urban settings, where trees are likely to experience more frequent root zone disturbance (Muscas *et al*, 2024). Note that the classes used in Which Plant Where (<10 years, 10-50 years and >50 years) are deliberately broad.

This is because individual trees will vary significantly in their performance and survival depending on their general health and exposure to pests and pathogens, combined with site conditions such as soil qualities, water availability, micro and macro climate and the space available for them to grow (Penn State extension, 2023; Perez-Harguindeguy & Ray, 2022).

HOW WE CATEGORISED TREE LIFESPAN?

The three categorical classes were chosen to represent short-term, medium-term and long-term planting requirements. No category is better than another, instead this trait is designed to assist in matching species to purpose.

<10 years – these trees are generally fast growing and will provide the ecosystem services of trees in just a few years. Example: *Acacia falcata*, Sickle Wattle <10 years average life expectancy, often used for revegetating disturbed sites.

10-50 years – Slower growing but a longer-term investment with benefits for many decades. Example: *Backhousia citriodora* is a commonly planted tree on streets and in parks or gardens, with a life expectancy estimated at 20-30 years.

>50 years – these are species that are likely to live for the length of human lifespans or longer given good conditions and care. Example: *Corymbia maculata*, a long-lived large tree useful for parks and large gardens across south-east coastal Australia, with a life expectancy of >150 years.

Backhousia citriodora – a moderate lifespan. Photo: Samantha Newton

WHY SHOULD WE CARE ABOUT THE LIFESPAN OF TREES

Considering the expected lifespan of trees helps us to make more informed planting choices for gardens, streetscapes, and public spaces, particularly for long-term planning scenarios. Trees (as opposed to smaller growth forms such as shrubs, herbs and grasses) not only represent a larger monetary investment but also are a long-term asset. They can provide benefits such as cooling, reduced stormwater runoff and erosion, improved soils and habitat provision, over a few to hundreds of years depending on the species and site conditions. In Which Plant Where, we provide the tools to inform selection of tree species that are "climate ready" for locations across Australia as the climate changes over the coming decades.

DIFFERENT LIFESPANS FOR DIFFERENT PURPOSES

Species with appropriate lifespans for your site will depend on the requirements of planting. Longer-lived species are not necessarily the best choice. In natural vegetation communities there is often a mix of shorter- and longer-lived species that play different roles in the ecosystem and the same is true for urban and landscaped environments (Penn State Extension, 2023). Short lived trees can provide screens, habitat structure or erosion control in just a few years. Trees that live for several decades might be appropriate for managed locations like streets and gardens while longer lived trees might take several decades to reach maturity but will provide canopy and shade for generations.

HOW IS LIFESPAN MEASURED?

Tree lifespan classifications (average ULEs) are normally derived from estimates by horticultural experts and arborists but records of maximum lifespans (LEs) of tree species can also be found in the scientific literature (Perez-Harguindeguy, & Ray, 2022). Our estimates were derived from a variety of sources including existing scientific trait databases, horticultural and government literature and species factsheets. Because of the subjective nature of the data, curating the sourced estimates of lifespan was essential. For example, *Acacia dealbata* the Silver Wattle was reported as living for an average of 20 years in a forestry publication (Boland, 2006) but its maximum lifespan has been reported to be 120 years in the scientific literature (one individual, under ideal conditions) (Ferrer-Paris *et al*, 2025). Other sources reported the average lifespan to be "several decades" (WT Landcare Group, n.d.) and this species was therefore assigned to the 10-50 year category. The final lifespan values were assessed by industry experts for data quality control and corrected where necessary.

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