

# WHY STREET TREES DON'T LAST LONG IN THE REGION

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*Poor nursery stock without stem taper or good branch structure can never make good trees*

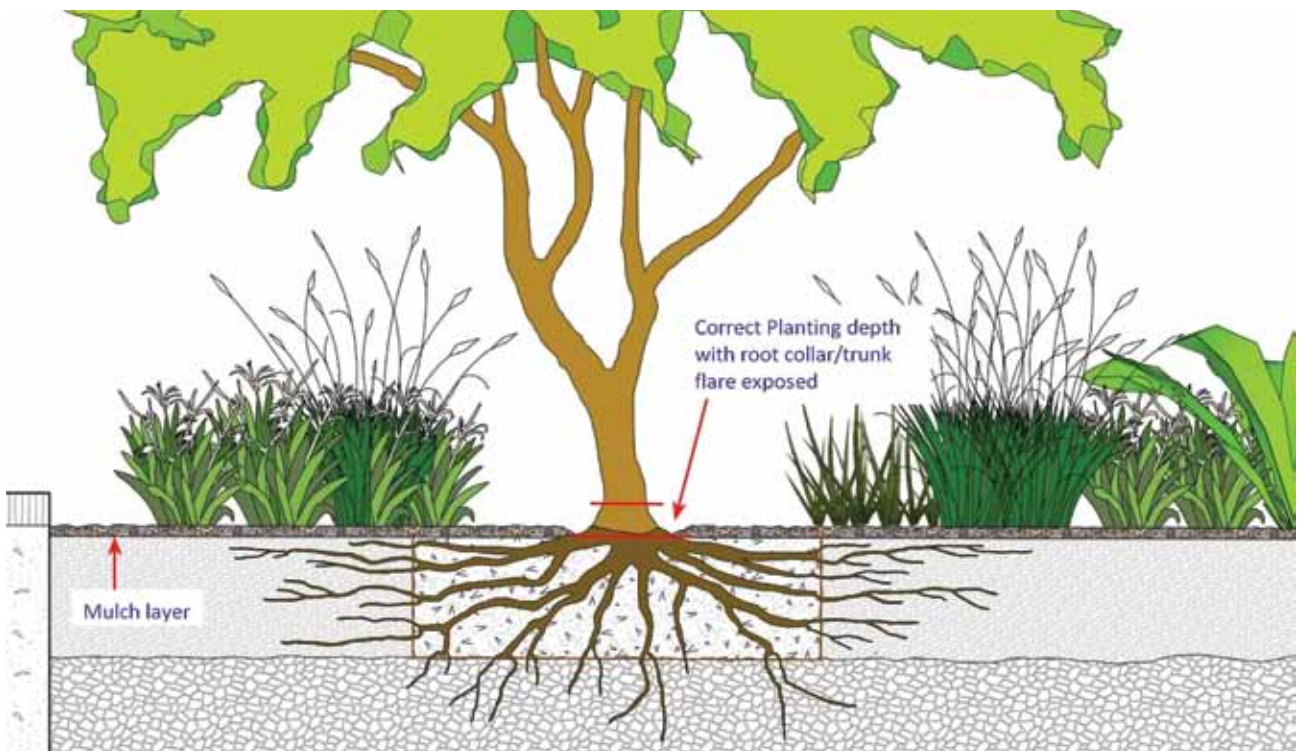


If there is one thing that makes being outdoors bearable in an urban arid environment, it is trees. It can be up to 20°C cooler in the direct shade of a tree and a street with trees planted along it will be several degrees cooler overall. But not all trees do well in the street, where conditions are naturally hostile, soil volumes inadequate and paving holds and reflects heat. Add poor nursery stock and bad planting practices and it all contributes to the short life of an urban tree (various studies show that the average urban tree lives for between 7 -28 years - in temperate climates).

In my last article, in February, I wrote about the importance of tree roots and soil, which goes hand-

in-glove with how we should plant and care for street trees - do find and read that article too. This article is not about the technical specifying or a how-to guide on tree planting, but rather a visual exploration and reminder that we must do more to ensure we have healthy, vibrant, and effective street trees. The technical stuff will be another article.

Street trees in the region live fast and die young - if they're lucky. Otherwise, they struggle and die. Few make it to a natural old age, and you might not expect them to, for they do not live in a natural environment. Yet there is much that could be done to improve the health and lifespan of urban trees and this falls into the following categories: right tree species



*This is the correct depth of planting, with the natural root collar/trunk flare above the soil level*

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selection, good planting specification, adequate soil pit preparation, correct planting at the correct height, good quality nursery stock, good staking/support practice, correct irrigation and correct on-going pruning and maintenance. Unfortunately, I have rarely seen these applied in almost any region of the world. Why is this? Two factors - training, and cost. There are not enough trained horticulturalists or arborists (even the word horticulturist is not used in the Middle East) and competitive pricing ensures low-quality stock and quick planting methods, no matter what the specification says. There is also a lack of perception that trees need more than just a hole in the ground.

Ultimately, the client must give preference to quality and pay for it, ensuring this message transfers from intent, down through multiple companies and sub-contractors, to implementation and after-care.

Let's think about sourcing trees. Firstly, the market is global, not local, and most trees are likely to have originated abroad, often in the Far East. Even the largest nurseries import trees, the demand is just too great. There are vast amounts of proposed tree plantings right now, especially in Saudi Arabia, and the demand means a shortage of supply. This puts pressure on nurseries to grow them faster.

The result is often that trees are grown very close together with rootballs that are too small (to keep transport weight down). Competition for light in dense rows forces upright growth with few side branches and little or no stem taper. This is important because the trees are being grown (in essence) as a crowded forest tree while the end requirement is generally for a tree with an open, full canopy. Such trees need good stem taper and a sound branch scaffolding to become good specimens. They also



These trees are poorly staked and have no stem taper with a crown formed by heading cuts



This frangipani has been planted at least 30cm too deep. Don't bury the root flare



Poor plant pit design, staking and poor nursery stock leaves little chance of survival



*Palms may need less root volume, but this is poor placement and design*



*The inevitable consequence of poor design*



*Some trees survive, despite all that is wrong*

need a good root system yet are in a too-small container, likely to have circling roots if not correctly pruned and repotted. Finally, if the tree does not have, from the supplier, the right branch structure, this can't be altered and what formative pruning could be done is often ignored, or more likely, not perceived as necessary. Straight away, production has limited and sometimes negated the end required result; such trees don't have a high rate of survival. There is also a large risk of importing exotic diseases from the place of origin.

Incidentally, the tall thin growth without stem taper is precisely why the Miyawaki mini-forest fad is doomed to ultimate failure. Trees planted at 4 or 5 per square meter can only grow upwards in fierce competition for light. This is not what we need in urban environments. The initial results of this system may be impressive, but the long-term results will likely be a failure. Physiology rules in this respect, and these will never form good, mature trees.

The next consideration is the planting pit, soil, planting method, and staking. I'll write a separate article on this but will mention now a big concern: many trees are planted too deep. This starts with the architects and designers; many tree planting diagrams show rootballs sitting at some depth underneath the new soil surface, which is highly detrimental to the tree. If specifiers don't know better, is it any wonder trees get planted in this manner? Trees have a root

flare and this needs to remain exposed to the air, (see diagram) which puts the lateral roots at the correct depth in the soil. It doesn't help that nurseries often grow trees too deeply in their containers. Root collar/trunk flair must always be visible at the surface.

One of the ways of creating root space for trees in paved environments is by using underground crating systems, which form a structural support for the hard surfaces but allow the substrate to remain uncompacted, giving a good root-run. These are especially beneficial when they are joined up in a line down the street, giving a continuous rooting medium. Oxygen still needs to infiltrate this medium though.

The best solution, where space allows, is to have soil open to the air, with uncompressed soil and suitable underplanting and/or mulch, to or beyond the drip line. Mulch is important yet little-used in the Middle-East region and landscapes themselves can be managed as coppice to produce their own mulch, turning a purely aesthetic approach to design into a functional ecosystem.

By becoming more sophisticated in our design aspirations we can set tree planting to achieve multiple goals; another one is stormwater mitigation. No one in the UAE is going to argue against this after the recent flood events and trees can/should be designed into the heart of urban drainage systems. The use of crating mentioned above is a key part of

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*Despite inadequate soil volume, some trees are just tough.  
This has led to low design expectations*



*Would you want to live in there? No room for a tree*



*Trees like Ziziphus are street survivors - with  
extensive root systems*

that and this is known as SUDS, sustainable urban drainage systems. During the recent storms many trees were blown over, revealing inadequate root systems and insufficient root space (see pic). This is also a problem exacerbated by excessive, shallow irrigation. Over-irrigated trees don't need deep roots to find water. Look at the number of ghaf trees in irrigated landscapes which are severely leaning, compared with those you find in the desert. The winds are the same, the water availability is what's different.

Whilst tree pit design requirements can seem inflexible, tree species selection is also a vital part of the design. Some trees grow larger and have invasive root systems. These are generally the toughest trees, for they are survivors. Think damas, sidr, neem, or various figs. All have aggressive roots and will take care of themselves in harsh environments, but at some potential cost to surrounding infrastructure. Better to use less aggressive species in an urban street. Palms of course, have adventitious, fibrous root systems that are generally benign and (some) are of limited spread.

At the same time, we don't want to just use small, 'pretty' trees, we need a mix of species to allow diversity and a micro-ecosystem to emerge. That may be a challenge in your average urban street but I remain convinced that by increasing design parameters, expectations, and budgets, we can do much more to make urban streets more beautiful, livable, and more able to mitigate the increasing adverse effects of climate change. ■