

Talking the talk and walking the walk in the selection of trees for urban environments

Henrik Sjöman

Trees are among our best allies in the fight against climate change and biodiversity loss. Although we often think of them in forests, most of our interactions with trees take place in urban environments, where they provide us with shade, heat control, flood avoidance, noise and pollution reduction, pollination, beauty, and much more. However, to maintain and increase those manifold benefits we urgently need to rethink tree selection for urban environments, to include those species and provenances most suitable for the environmental conditions and stresses posed by a rapidly changing and unpredictable climate, spreading pests and emerging plant diseases. To create resilience to present and future challenges, where the exact consequences of future scenarios cannot be predicted in advance, a commonly proposed solution is to cultivate a large diversity of trees, i.e., increase tree diversity at many taxonomic levels, including infraspecific variation. Achieving an increased diversity of urban trees to improve the resilience of urban forests to future conditions is likely to involve greater use of non-traditional tree species, particularly in regions with relatively few native species, such as western and northern Europe.

Since our experience with these non-traditional species that do not pose any invasive threats is very limited as they usually occur with a few individuals in exclusive botanical plant collections, these species will require extensive research into their capacity or limitations in managing challenging urban environments in a future climate. This means developing an understanding of the inherited characteristics of different species to handle different types of climate and growing conditions in order to predict their matching to urban environments. At the same time, the research must be communicated in a way that makes it easy to understand and easy to spread, as researchers not only have the task of sharing our research, but other actors such as nurseries, landscape architects, tree consultants must be able to develop the same language. Thus in order to be able to more easily argue the trees' capacity to manage the plant conditions for the exact location as well as their capacity to deliver specific ecosystem services.

The demands presented by selecting trees to mitigate the threats of urbanization and climate change, challenge the traditional and conventional ways of planning, designing and maintaining urban trees and will need both innovative solutions and higher resolution data. Tree selection and planting regimes that help develop a self-sustaining system of tree populations will subsequently result in less failure and economic expenditure. Trees that are fit to cope with the constraints of urban environments will subsequently provide nature-based solutions to providing both long term economical, ecological and social sustainability. By understanding the biological and ecological traits of different tree species, the likelihood of fostering a robust and resilient urban forest in the planning and design process increases while unnecessary costs are kept at a minimum in the future. In turn, this should help create inclusive urban forests, reachable for every citizen in the urban community. While the shade of a tree can be luxurious in the heat of summer, access and pleasures from trees should not be a luxury commodity. Finding viable routes towards self-sustaining systems of urban forests thus cover a wide spectrum, where tree species selection is one of the initial ignition keys.