

agriCULTURAL
landscapes

30 years of landscape
architecture education
in Nitra

BOOK OF
ABSTRACTS

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**A SYSTEMATIC FRAMEWORK FOR CITY -
SCALE STREET TREE PLANTING:
OPTIMIZING TREE INTEGRATION BASED
ON STREET WIDTH AND
FUNCTIONAL REQUIREMENTS**

Urban street tree planning is pivotal in fostering sustainable and resilient cities, offering diverse benefits such as enhanced air quality, microclimate regulation, stormwater management, and biodiversity support. However, the multifaceted nature of urban streets presents significant challenges to effective tree integration, requiring innovative approaches to landscape practices. This study addresses these complexities by developing a systematic framework for street tree planting based on street width and essential functional requirements.

This framework introduces a methodology for determining the ‘minimum street suitable for tree planting’ – the minimum width required to accommodate trees while ensuring pedestrian and emergency vehicle access, optimized for Portuguese standards. Based on this minimum width, the framework proposes models for optimal tree positioning and size, maximizing ecological benefits without compromising street functionality. This methodology is based

on the spatial and functional characteristics of streets, making it broadly applicable in diverse geographic and cultural contexts.

Application of this framework to the urban areas of Matosinhos and Leça da Palmeira in Portugal demonstrates its utility. The methodology involves measuring the width of all streets within a study area and classifying them into distinct width categories, each corresponding to specific tree planting models. The study emphasizes the importance of selecting species well-adapted to local environmental conditions, particularly spatial constraints, and integrating tree planting seamlessly into the initial stages of street design.

By adopting this innovative and systematic framework, urban planners and policymakers can implement a scalable street tree planting model that enhances the sustainability and liveability of urban environments at the city- scale.