

Book review

TREE ROOTS IN THE BUILT ENVIRONMENT (RESEARCH FOR AMENITY TREES NO. 8)

J. Roberts, N. Jackson and M. Smith. The Stationery Office, 2006.
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Trees cannot survive without vital and functioning root systems. Whereas forest trees grow their roots in environments to which they are well adapted, trees in urban areas often have to make do with inadequate physical and chemical rooting conditions. Soil compaction, soil contamination (from, for example, de-icing agents) and limited soil volumes are typical problems for urban trees. However, in addition to the problems tree roots may experience in urban environments, they also cause problems: they may damage pavements and other sealed surfaces or grow into pipes, sewers and drains. *Tree Roots in the Built Environment* presents a thorough review of the important aspects of what roots need, what roots do and how the immediate environment of roots can be managed in order to improve overall tree vitality while avoiding damage to urban infrastructure.

The first chapter dwells on the general benefits and importance of urban trees. Chapters 2–4 cover basic terms and concepts of root biology and soil science as well as the special characteristics of urban soils. Chapters 5–7 are dedicated to planning and management options, covering tree establishment, water supply and soil contamination. Root protection during excavation and construction works is treated in chapters 8 and 9, respectively. Both chapters describe the effects of neglecting root protection and present options to reduce the risk of tree damage (e.g. root protection zones and trenchless techniques). Chapters 10–12 describe how tree roots can affect urban infrastructure of buildings, pavements and pipes. Topics such as shrinking and swelling soils, root growth management under sealed surfaces and root intrusion into drains and sewers are presented in depth. Based on the preceding chapters, the concluding chapter appropriately outlines important needs for research and raises issues still to be discussed. A summary and an extensive reference list are provided at the end of each chapter. The book also contains a useful glossary and a detailed index.

Recommendations are based on research, as well as on existing guidelines and practical experiences. Text boxes connect theory with the practical world, providing concrete instructions or case studies illustrating the theoretical framework. Numerous photographs and illustrations are included to make the different topics easily accessible; however, not all of the photographs are of the highest technical quality and the illustrations are quite

heterogeneous in style. The number of scientific illustrations could easily have been reduced without losing essential information. It should also be noted that the authors refer to links to the internet for further information in several cases. Although this may be helpful, internet links risk becoming outdated quickly. These criticisms do not, however, diminish the overall value of the book. The chapters dedicated to the protection of trees during construction works and tree root damage to urban infrastructure provide an especially valuable supplement to the existing arboricultural literature.

One of the merits of the book is the extensive incorporation of European arboricultural research, even though only literature published in the English language is considered. However, as the authors remark, much relevant work originates from the USA. This is taken into account in a convincing manner and, wherever possible, US experiences are presented together with European work, for example, in section 4.5 about engineered/structural soils.

Most of the chapters can be read individually. Although mainly addressing arborists, the book convincingly documents the need for cooperation between 'green' and 'grey' municipal engineers in order to achieve sustainable tree plantings not detrimental to the surrounding urban infrastructure.

The book is highly relevant for anybody who in professional life influences, or is influenced by, urban trees. Practitioners and students in the field of arboriculture will find much information. Construction engineers may also find this a useful reference, although some of the introductory chapters may require a certain amount of basic biological knowledge. To be even more valuable to practitioners, the book could perhaps have benefited from more rigorous editing and some slimming down.

In conclusion, *Tree Roots in the Built Environment* is a thorough, systematic, well-documented and well-written review and a successful attempt at taking the step from pure science to practical work. In addition, it is a valuable supplement to the US body of literature. Concerning the development and management of tree roots in the urban environment, interested readers are also directed to *Reducing Infrastructure Damage by Tree Roots: A Compendium of Strategies* by L. R. Costello and K. S. Jones, and *Die Wurzeln der Stadtbäume* (in German) by H. Balder.

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