



Plant Roots: The Hidden Half, Fourth Edition

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The decade since the publication of the third edition of this volume has been an era of great progress in biology in general and the plant sciences in particular. This is especially true with the advancements brought on by the sequencing of whole genomes of model organisms and the development of "omics" techniques. This fourth edition of **Plant Roots: The Hidden Half** reflects these developments that have transformed not only the field of biology, but also the many facets of root science.

Highlights of this new edition include:

- The basics of root research and their evolution and role in the global context of soil development and atmosphere composition
- New understandings about roots gained in the post-genomic era, for example, how the development of roots became possible, and the genetic basis required for this to occur
- The mechanisms that determine root structure, with chapters on cellular patterning, lateral root and vascular development, the molecular basis of adventitious roots, and other topics
- Plant hormone action and signaling pathways that control root development, including new chapters on strigolactones and brassinosteroids
- Soil resource acquisition from agricultural and ecological perspectives
- Root response to stress, with chapters that address the impact of the genomic revolution on this topic
- Root-rhizosphere interactions, from beneficial microorganisms to detrimental nematodes
- Modern research techniques for the field and the lab

Each chapter not only presents a clear summation of the topic under discussion, but also includes a vision of what is to be expected in the years to come. The wide coverage of themes in this volume continues the tradition that makes this work recognized as a fundamental source of information for root scientists at all levels.

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Plant Roots: The Hidden Half, Fourth Edition From CRC Press Bibliography

- Sales Rank: #2013894 in Books
- Published on: 2013-04-17
- Original language: English
- Number of items: 1
- Dimensions: 10.90" h x 2.10" w x 8.40" l, .0 pounds
- Binding: Hardcover
- 848 pages

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Editorial Review

Review

"...covers a broad range of topics that answer both fundamental and complex questions of plant root research."

?*South African Journal of Botany*, 95 (2014)

Praise for previous editions:

"...a critical reference for anyone who is even peripherally interested in roots and root function....sufficiently comprehensive. ...an excellent book....a must have for any collegiate library, and a critical reference for a serious root researcher."

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"The contents of this book represent the most comprehensive text on the root research literature available to date. ...an accessible and valuable reference work..."

"It is in fact up-to-date and covers many more aspects than the ordinary plant scientist would normally consider. ... The book gives a truly multidisciplinary view of the field. It is intended to challenge the reader to consider the most pressing problems in root research and to seek solutions for the future. ... The book is suitable as reference for lectures, researchers and students. It is easy to read and is thought provoking. This book should be on the shelves of all teaching and research institution libraries."

?Johanes Van Staden, Research Centre for Plant Growth and Development, School of Biological and Conservation Sciences, University of KwaZulu-Natal Pietermaritzburg, South Africa, in *South African Journal of Botany*, Issue 2, 2007

About the Author

Amram Eshel was born and raised in Israel. He received his degrees from Tel Aviv University, where he was a member of the academic staff from 1980 until his retirement in 2012. During this time, he held short visiting appointments at Ohio Agricultural Research Center in Wooster, Ohio; Michigan State University; The Pennsylvania State University; CNRS at Gif-Sur-Yvette; and University of Western Australia. His main research interests are in the area of plant physiological ecology, especially as related to mineral nutrition and water relations. He is the manager of the Sarah Racine Root Research Laboratory at Tel Aviv University.

Tom Beeckman studied botany at Ghent University in Belgium and, after performing postdoctoral research at the Molecular Genetics Department, became group leader of the Root Development Group at the Flanders Institute of Biotechnology (VIB) in 2001. In 2007, he became a professor at Ghent University, teaching plant

developmental biology. He has devoted a considerable part of his research to understanding how cell division is integrated into plant developmental processes, especially during the branching of roots.

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