



Functional and Ecological Xylem Anatomy

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The book will describe the xylem structure of different plant groups, and will put the findings in a physiological and ecological context. For instance, when differences in vessel diameter are featured, then there will be an explanation why this matters for water transport efficiency and safety from cavitation. The focus is on the hydraulic function of xylem, although mechanical support and storage will also be covered. Featured plant groups include ferns (which only have primary xylem), conifers (tracheid-based xylem), lianas (extremely wide and long vessels), drought-adapted shrubs as well as the model systems poplar and grapevine. The book chapters will draw on the expertise and cutting edge research of a diversified group of internationally known researchers working in different anatomical and physiological sub-disciplines. Over the last two decades, much progress has been made in understanding how xylem structure relates to plant function. Implications for other timely topics such as drought-induced forest dieback or the regulation of plant biomass production will be discussed.

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Editorial Review

From the Back Cover

This book analyzes what is currently known about functional and ecological xylem anatomy. In addition to serving as a source of information to professionals, instructors, and advanced students in plant science and forestry, the inherent beauty of xylem that is apparent in many images will be a source of inspiration to readers who are not yet familiar with the topic. This work offers a unique combination of scientific insight based on thorough experimental work and beautiful images, which often speak for themselves. The beauty of xylem is evident at different scales; from views of striking tree ring patterns and vascular networks in fern fronds, conifer needles, and angiosperm leaves, to microscopic images of developing pits. *Functional and Ecological Xylem Anatomy* not only serves as a source of information, but also of inspiration.

About the Author

Dr. Uwe Hacke serves as Associate Professor in the Department of Renewable Resources for the University of Alberta, as well as Canada Research Chair in Tree-Water Relations. He was a recipient of the 2013 C.D. Nelson Award from the Canadian Society of Plant Biologists for outstanding research contributions to plant biology.

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