

Plant Responses to Drought Stress

Ricardo Aroca
Editor

Plant Responses to Drought Stress

From Morphological
to Molecular Features

 Springer

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ISBN 978-3-642-32652-3 ISBN 978-3-642-32653-0 (eBook)
DOI 10.1007/978-3-642-32653-0
Springer Heidelberg New York Dordrecht London

Library of Congress Control Number: 2012949708

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Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Since plants are sessile organisms, they have to develop multiple strategies to cope with environmental constraints. One of the most common and damaging environmental stress is soil drought. The soil drought characteristics may vary from intervals of water scarcity and water depletion to prolonged periods of water deprivation or to long periods of soil water contents below the full capacity. Hence, the drought experienced by desert plants is not the same that for agricultural ones, or plants grown in Mediterranean climatic areas. So, each specific plant is adapted to their specific water soil conditions. At the same time, the responses of plants to drought varied from morphological ones to molecular, including physiological and biochemical ones too.

This book is intended to complete a comprehensive review about all aspects of the response of plants to drought. In each chapter a basic concepts will be first exposed, followed by the last findings of each topic. The first chapter is an overview of the effects and responses of plants to drought stress. The following chapters are subdivided in five parts: Morphological and anatomical responses, Physiological responses, Biochemical and Molecular responses, Ecophysiological responses, and Field responses. [Chapters 2 and 3](#) will deal about the morphological and anatomical adaptations of plants in response to drought. [Chapter 4](#) will deal with how water is up taken from the soil. [Chapters 5 and 6](#) will focus on how photosynthesis and water use efficiency is regulated under drought conditions. [Chapter 7](#) will deal about how drought stress affects nutrients uptake and assimilation. [Chapters 8–10](#) will tackle different biochemical drought responses such as osmotic adjustment, antioxidant systems or hormones. [Chapter 11](#) will deal with molecular aspects of the drought response. [Chapter 12](#) will tackle the particularities of tree response to drought. [Chapters 13–15](#) will review how different soil beneficial microorganisms change the response of plant to drought. Finally, [Chap. 16 and 17](#) will deal with the plant responses to drought under field conditions.

The potential readers of this book will be any graduate student or established researcher who wants to know basic concepts of plant responses to drought, as well as such researchers specialized in studies of plant response to drought stress.

Dr. Ricardo Aroca

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