1. Record Nr. UNINA9910136275003321

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Titolo	Plant responses to flooding / / topic editors, Pierdomenico Perata, Rens Voesenek, Rashmi Sasidharan, and Chiara Pucciariello
Pubbl/distr/stampa	Frontiers Media SA, 2015 [Lausanne, Switzerland] : , : Frontiers Media SA, , 2014
ISBN	9782889193042
Descrizione fisica	1 online resource (142 pages) : illustrations; digital, PDF file(s)
Collana	Frontiers Research Topics
Soggetti	Botany Plants
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Sommario/riassunto	Global warming has dramatically increased the frequency and severity of flooding events worldwide. As a result, many man-made and natural ecosystems have become flood-prone. For plants, the main consequence of flooding is the drastic reduction of oxygen availability that restricts respiratory energy production and finally affects survival. Flooding can negatively influence crop production and wild plant distributions, since most plants are sensitive to excessively wet conditions. However, plants have evolved a broad spectrum of adaptive responses to oxygen deficiency that eventually leads to tolerance. Many of these morphological and physiological adaptations have been described in some crops and wild plant species and considerable progress has been made in understanding the molecular aspects governing tolerance traits. Moreover, the molecular mechanism of plant oxygen sensing has been recently elucidated. However, many other aspects concerning plant acclimation responses to flooding remain unanswered.