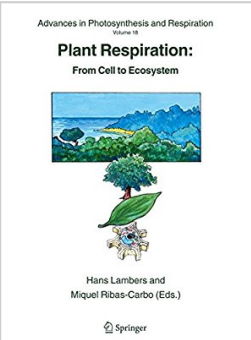

Plant Respiration: From Cell to Ecosystem (Advances in Photosynthesis and Respiration)

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Respiration in plants, as in all living organisms, is essential to provide metabolic energy and carbon skeletons for growth and maintenance. As such, respiration is an essential component of a plant's carbon budget. Depending on species and environmental conditions, it consumes 25-75% of all the carbohydrates produced in photosynthesis – even more at extremely slow growth rates. Respiration in plants can also proceed in a manner that produces neither metabolic energy nor carbon skeletons, but heat. This type of respiration involves the cyanide-resistant, alternative oxidase; it is unique to plants, and resides in the mitochondria. The activity of this alternative pathway can be measured based on a difference in fractionation of oxygen isotopes between the cytochrome and the alternative oxidase. Heat production is important in some flowers to attract pollinators; however, the alternative oxidase also plays a major role in leaves and roots of most plants. A common thread throughout this volume is to link respiration, including alternative oxidase activity, to plant functioning in different environments.

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- Sales Rank: #4202059 in Books
- Brand: Brand: Springer
- Published on: 2005-08-22
- Original language: English
- Number of items: 1
- Dimensions: 10.00" h x .75" w x 7.01" l, 1.54 pounds
- Binding: Hardcover
- 250 pages

Editorial Review

Review

From the reviews:

"From Cell to Ecosystem is the second book related to plant respiration of higher plants in the book series Advances in Photosynthesis and Respiration. … The chapters are written by outstanding scientists who all have profound knowledge in their special fields. Thus, the book is recommended to scientists who wish to extend their understanding of plant respiration and are in search of further literature sites." (Markus Lötscher, Journal of Plant Physiology, Vol. 164 (6), 2007)

"'Advances in Photosynthesis and Respiration' (AIPH, Springer) has published four books on respiration … . The figure quality, including the half-tone figures, is high, and the type is crisp and easy to read. … The figures in the different chapters are of highly variable quality … . I will rapidly admit that I have used … as background reading and source materials for courses and as background for my own research. … can easily recommend that these volumes be included in all biology library collections." (J. M. Cheeseman, Photosynthesis Research, Vol. 94, July, 2007)

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