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Nota di contenuto	; 1. Terrestrial photosynthesis in a changing environment / Flexas, Loreto and Medrano -- ; Part I. Photosynthesis: The Process;; ; 2. Biochemistry and photochemistry of terrestrial photosynthesis: a synopsis / Sharkey, Ducruet and Parry; ; 3. Photosynthetic regulation / Foyer ad Harbinson; ; 4. Interactions between photosynthesis and day respiration / Tcherkez and Ribas-Carbo; 5. The ecophysiology and global biology of C photosynthesis / Monson and Collatz; ; 6. Ecophysiology of CAM photosynthesis / Luttge; ; 7. Special photosynthetic adaptations / Garcia-Plazaola and Flexas; ; 8. Models of photosynthesis/ Diaz-Espejo, Beracchi, Collatz ad Sharkey -- ; Part II.

Measuring Photosynthesis: ; 9. Gas exchange analysis: basics and problems / Bernacchi, Diaz-Espejo ad Flexas; ; 10. Optical methods for investigation of leaf photosynthesis / Ducruet, Baron, Delucia, Morales and Sharkey; ; 11. Stable isotopic compositions related to photosynthesis, photorespiration and respiration / Brugnoli, Loreto and Ribas-Carbo; ; 12. Mesophyll conductance to CO / Flexas, Brugnoli and Warren; ; 13. Biochemical and molecular techniques for the study of photosynthetic processes / Parry, Andralojc, Foyer, Galmes and Sharkey; ; 14. Measuring CO exchange at canopy scale: the eddy covariance technique / Matteucci and Manca; ; 15. Remote sensing of photosynthesis / Moya and Flexas -- ; Part III. Photosynthesis Response to Single Environmental Factors: ; 16. Photosynthetic responses to radiation / Valladares, Garcia-Plazaola, Morales and Niinemets; ; 17. Photosynthetic responses to increased CO and air pollutants / Calfapietra, Bernacchi, Centritto and Sharkey; ; 18. Response of photosynthesis to low temperature / Ensminger, Berninger and Streb; ; 19. Photosynthetic responses to high temperature / Sharkey and Bernacchi; ; 20. Photosynthesis under water deficits, flooding and salinity / Chaves, Flexas, Gulias, Loreto and Medrano; ; 21. Photosynthetic responses to nutrient deprivation and toxicities / Morales and Warren; ; 22. Photosynthesis responses to biotic stress / Baron, Flexas and Delucia -- ; Part IV. Photosynthesis in Time: ; 23. Photosynthesis during leaf development and ageing / Niinemets, Garcia-Plazaola and Tosens; ; 24. dtEvolution of photosynthesis I: basic leaf morphological traits and diffusion and photosynthetic structures / Flexas and Keeley; ; 25. Evolution of photosynthesis II: evolution and expansion of CAM and C photosynthetic types / Keeley, Monson and Rundel -- ; Part V. Photosynthesis in Space: ; 26. Whole plant photosynthesis: potentials, limitations and physiological and structural controls / Niinemets; ; 27. Ecophysiology of photosynthesis in the tropics / Cheeseman and Montgomery; ; 28. Ecophysiology of photosynthesis in desert ecosystems / Gibson and Rundel; ; 29. Ecophysiology of photosynthesis in semi-arid environments / Galmes, Flexas, Medrano, Niinemets and Valladares; ; 30. Ecophysiology of photosynthesis in temperate forests / Warren, Garcia-Plazaola and Niinemets; ; 31. Ecophysiology of photosynthesis in boreal, arctic and alpine ecosystems / Berninger, Streb and Ensminger; ; 32. Crop photosynthesis / Earl, Bernacchi and Medrano -- ; Part VI. Photosynthesis in a Global Context: ; 33. Photosynthetic water use efficiency / Medrano, Gulias, Chaves, Galmes and Flexas;; ; 34. Global change and photosynthesis / Bernacchi, Calfapietra, Centritto and Valladares.

Sommario/riassunto

Understanding how photosynthesis responds to the environment is crucial for improving plant production and maintaining biodiversity in the context of global change. Covering all aspects of photosynthesis, from basic concepts to methodologies, from the organelle to whole ecosystem levels, this is an integrated guide to photosynthesis in an environmentally dynamic context. Focusing on the ecophysiology of photosynthesis - how photosynthesis varies in time and space, responds and adapts to environmental conditions and differs among species within an evolutionary context - the book features contributions from leaders in the field. The approach is interdisciplinary and the topics covered have applications for ecology, environmental sciences, agronomy, forestry and meteorology. It also addresses applied fields such as climate change, biomass and biofuel production and genetic engineering, making a valuable contribution to our understanding of the impacts of climate change on the primary productivity of the globe and on ecosystem stability.
