

1. Record Nr.	UNINA9910784562103321
Titolo	C4 plant biology [[electronic resource] /] / edited by Rowan F. Sage, Russell K. Monson
Pubbl/distr/stampa	San Diego, : Academic Press, c1999
ISBN	1-281-04690-6 9786611046903 0-08-052839-2
Descrizione fisica	1 online resource (616 p.)
Collana	Physiological ecology series
Altri autori (Persone)	SageRowan Frederick MonsonR. K <1954-> (Russell K.)
Disciplina	572/.46
Soggetti	Photosynthesis - Regulation Photosynthesis - Molecular aspects
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; C4 Plant Biology; Copyright Page; Contents; Contributors; Preface; Part I: Perspectives; Chapter 1. Why C4 Photosynthesis?; I. Introduction; II. The Problem with Rubisco; III. How C4 Photosynthesis Solves the Rubisco Problem; IV. Significant Variations on the C4 Theme; V. The Consequences of the Evolution of C4 Photosynthesis; VI. C4 Photosynthesis in the Future; VII. Summary; References; Chapter 2. C4 Photosynthesis: A Historical Overview; I. Introduction; II. The Prediscovery Scene (Before 1965); III. Discovery: Radiotracer Evidence (1954-1967) IV. Mechanism, Functions, and Recognition (1965-1970)V. Selected Aspects of the C4 Story (1970- ); VI. Summary; References; Part II: Structure-Function of the C4 Syndrome; Chapter 3. The Biochemistry of C4 Photosynthesis; I. Introduction; II. CO2 Concentration and Rubisco Activity in Bundle Sheath Cells; III. Energetics of C4 Photosynthesis; IV. Coordination of the Two Cell Types in C4 Photosynthesis; V. Intracellular Transport of Metabolites; VI. Summary; References; Chapter 4. Regulation of the C4 Pathway; I. Introduction; II. An Overview of the Regulation of the C4 Cycle III. Regulation of the C4 CycleIV. Interactions between the C4 Cycle and

Mitochondrial Metabolism; V. Regulation of the Benson-Calvin Cycle in C4 Plants; VI. Regulation of Product Synthesis in Leaves of C4 Plants; VII. Summary; References; Chapter 5. Leaf Structure and Development in C4 Plants; I. Introduction; II. Kranz Anatomy and Biochemical Compartmentation; III. Development of the C4 Syndrome; IV. Summary; References; Chapter 6. Modeling C4 Photosynthesis; I. Introduction; II. Basic Model Equations; III. Analysis of the Model; IV. Summary; References

Part III: Ecology of C4 PhotosynthesisChapter 7. Environmental Responses; I. Introduction; II. Light; III. Nitrogen; IV. Water; V. Temperature; VI. Summary; References; Chapter 8. Success of C4 Photosynthesis in the Field: Lessons from Communities Dominated by C4 Plants; I. Introduction; II. The C4-Dominated Tallgrass Prairies of North America; III. The C4-Dominated Neotropical Savannas; IV. Summary; References; Chapter 9. C4 Plants and Herbivory; I. Introduction; II. Unique Features of C4 Species That May Affect Herbivores and Plant Responses to Herbivory III. How Important Are C4 Characteristics to Herbivory Tolerance and Resistance?IV. Summary; References; Chapter 10. The Biogeography of C4 Photosynthesis: Patterns and Controlling Factors; I. Introduction; II. The Global Distribution of C4 Photosynthesis; III. Factors Controlling the Distribution of C4 Species; IV. C4 Plants in the Future; V. Summary; References; Part IV: The Evolution of C4 Photosynthesis; Chapter 11. The Origins of C4 Genes and Evolutionary Pattern in the C4 Metabolic Phenotype; I. Introduction; II. The Evolution of C4 Genes III. The Evolution of C4 Metabolism as Evidenced in C3-C4 Intermediates

---

#### Sommario/riassunto

Due to many issues related to long-term carbon dynamics, an improved understanding of the biology of C4 photosynthesis is required by more than the traditional audience of crop scientists, plant physiologists, and plant ecologists. This work synthesizes the latest developments in C4 biochemistry, physiology, systematics, and ecology. The book concludes with chapters discussing the role of C4 plants in the future development of the biosphere, particularly their interactive effects on soil, hydrological, and atmospheric processes.

---