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Nota di contenuto	Chapter 1. Introduction -- PART I: Photosynthesis and Biomass Production under Changing World -- Chapter 2. Climate Change: Challenges to Reduce Global Warming and Role of Biofuels -- Chapter 3. The multifaceted connections between photosynthesis and

mitochondrial metabolism -- Chapter 4. Regulation of assimilatory processes and distribution of energy for improved productivity -- Chapter 5. Strategies to enhance photosynthesis for the improvement of crop yields -- Chapter 6. Photosynthetic Acclimation and Adaptation to Cold Ecosystems -- Chapter 7. What is the limiting factor? – The key question for grain yield of maize as a renewable resource under salt stress -- PART II: Microalgae and engineered crops for production of biofuels and high-value products -- Chapter 8. Bio-production from microalgal resources -- Chapter 9. Hydrogen photoproduction in green algae: novel insights and future perspectives -- Chapter 10. Synthetic Biofuels and Green-House Gas Mitigation -- Chapter 11. Synthetic biology and future production of biofuels and high-value products -- PART III: Genetic resources and engineering methods to improve crop plants -- Chapter 12. Kinetics, genetics and heterosis -- Chapter 13. Genome information resources to improve plant biomass productivity -- Chapter 14. RNA interference: formproving traits and disease management in plants -- Chapter 15. Current transformation methods for genome editing applications in energy crop sugarcane -- Chapter 16. Development of transgenic sugarcane for insect resistance -- Chapter 17. Rapid Agrobacterium-mediated transformation of tobacco cotyledons using toothpicks Yuan-Yeu Yau, Mona Easterling and Lindsey Brennan -- Chapter 18. Genetic improvement of Jatropha curcas through conventional and biotechnological tools -- Chapter 19. Plant cell manipulation technology for bio-refinery. .

Sommario/riassunto

The use of fossil fuels results in rising CO2 and other greenhouse gas (GHG) emissions, causing global temperature rise and climate change that will negatively impact human health, the food supply, and eventually worsen hunger and misery. Presently, fossil fuels meet 88% of the energy demand, resulting in rising CO2/GHG emissions at alarming rates. The increased use of biofuels would help to mitigate climate change. Efficiently designing methods for the production of biofuels and plant-derived high-value products requires a deeper understanding of photosynthetic processes as a prerequisite for applying novel biotechnologies. Accordingly, this book provides ample information and a wealth of illustrative examples. The book’s eighteen richly illustrated chapters are divided into three thematic parts. I: Photosynthesis and Biomass Production under Changing Conditions, II: Microalgae and Engineered Crops for Production of Biofuels and High-value Products, and III: Genetic Resources and Engineering Methods to Improve Crop Plants. Readers will find the latest information on the molecular basis of photosynthetic processes in plants (including the regulatory principles that allow plants to maintain homeostasis under changing conditions), stress resistance and synthetic pathways. In addition, the basic principles of important biotechnologies, as well as examples of specially designed crops capable of growing under stress conditions with improved productivity, are presented. The book sets the course for future research in the field of biofuel development and production and provides both general and specific information for students, teachers, academic researchers, industrial teams, and general readers who are interested in new developments concerning the production of biofuels with value-added properties.