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Nota di contenuto	Cover; Title page; Copyright page; Contents; Preface; Contributors; 1: Integrated Biorefinery for Sustainable Production of Fuels, Chemicals, and Polymers; 1.1 Introduction; 1.2 Biorefineries Using Corn, Soybeans, and Sugarcane; 1.2.1 Corn Refinery; 1.2.2 Soybean Biorefinery; 1.2.3 Sugarcane Biorefinery; 1.3 Lignocellulosic Biorefinery; 1.3.1 Pretreatment; 1.3.2 Cellulose Hydrolysis and Saccharification; 1.3.3 Fermentation; 1.3.4 Plant Genetic Engineering to Improve Biomass Feedstock; 1.3.5 Thermochemical Platform for Lignocellulosic Biorefinery; 1.4 Aquacultures and Algae Biorefinery 1.5 Chemical and Biological Conversions for Fuel and Chemical Production1.5.1 Biofuels; 1.5.2 Bio-Based Chemicals; 1.5.3 Hybrid Chemical and Biological Conversion Processes; 1.5.4 Biorefinery Feedstock Economics; 1.6 Conclusions and Future Prospects; References; 2: The Outlook of Sugar and Starch Crops in Biorefinery; 2.1 Introduction; 2.2 Sugar Crops; 2.2.1 Sugarcane; 2.2.2 Sugar Beet; 2.2.3 Sweet Sorghum; 2.3 Starch Crops; 2.3.1 Corn; 2.3.2 Potato; 2.3.3

Wheat; 2.3.4 Cassava; 2.3.5 Rice; 2.4 Uses of Sugar and Starch Crops in Biorefinery; 2.4.1 Use of Sugar Crops in Biorefinery
2.4.2 Use of Starch Crops in Biorefinery2.5 Conclusion; References; 3: Novel and Traditional Oil Crops and Their Biorefinery Potential; 3.1 Introduction; 3.2 Oil Crop Breeding and Its Bioprocessing Potential; 3.3 Novel Oil Crops; 3.3.1 Jatropha; 3.3.2 Pongamia; 3.3.3 Lesquerella and Cuphea; 3.3.4 Camelina and Crambe; 3.3.5 Other New Oil Crops; 3.4 Traditional Oil Crops; 3.4.1 Soybean; 3.4.2 Oilseed Rape; 3.4.3 Sunflower; 3.4.4 Linseed (Flax); 3.4.5 Cottonseed; 3.4.6 Castor Bean; 3.4.7 Oil Palm; 3.5 Perspectives for Nonfood Oil Crop Production; References; 4: Energy Crops
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5.5 Bioprocessing of Microalgae as Feedstock for Biofuel Production

Sommario/riassunto

For researchers already familiar with biomass conversion technologies and for professionals in other fields, such as agriculture, food, and chemical industries, here is a comprehensive review of the emerging biorefinery industry. The book's content has been conveniently organized according to technologies (biomass feedstock and pretreatment, hydrolytic enzymes in biorefinery, and biofuels), with each chapter highlighting an important biobased industrial product. For undergraduate and graduate students, the book is a thorough introduction to biorefinery technologies.