Biofuels Production And Potential Mariloureiro

EPA-R5
Biodiesel
R&D for Productivity and Sustainability
An overview for unlocking their potential in global aquaculture development
Hydrocarbon Biorefinery
Forest Economics
Social Implications of Climate Change for Latin America and the Caribbean
Quantitative Systems Biology for Engineering Organisms and Pathways
Volume 2
Focus on Kappaphycus and Eucheuma of Commerce
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Linking Ecology and Ethics in Theory and Practice
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Biofuels in Brazil
A Versatile Renewable Feedstock for the Chemical Industry
Glycerol
Decision Support Systems for Weed Management
Super Pro K.O. Vol. 3: Gold for Glory
Process Intensification
Tropical Seaweed Farming Trends, Problems and Opportunities
Structure, Function and Applications
Pulsed Electric Fields Technology for the Food Industry
Seaweeds and microalgae
Biomass and Green Chemistry
Industrial Oil Crops
The Case for Degrowth
Achievements and Perspectives
Reducing Poverty, Protecting Livelihoods, and Building Assets in a Changing Climate
Pretreatment and Bioconversion of Crop Residues
Benefits and Risks
Status and Prospects
Mycotoxin Contamination Management Tools and Efficient Strategies in Feed Industry
Biofuels, Solar and Wind as Renewable Energy Systems
Biokerosene
Sugarcane Biorefinery, Technology and Perspectives
Non-conventional Yeasts: from Basic Research to Application
Amazonia Without Myths
Recent Advances in Thermochemical Conversion of Biomass

From Production to Combustion

LACI SHEPARD

EPA-R5 MDPI
Sugarcane Biorefinery, Technology and Perspectives provides the reader with a current view of the global scenario of sugarcane biorefinery, launching a new expectation on this important crop from a chemical, energy and sustainability point-of-view. The book explores the existing biorefinery platforms that can be used to convert sugarcane to new high value added products. It also addresses one of today's most controversial issues involving energy cane, in addition to the dilemma "sugar cane vs. food vs. the environment", adding even more value in a culture that is already a symbol of case study around the world. Focusing on the chemical composition of sugarcane, and the production and processes that optimize it for either agricultural or energy use, the book is designed to provide practical insights for current application and inspire the further exploration of options for balancing food and fuel demands. Presents the productive chain of sugarcane and its implications on food production and the environment Includes discussions on the evolution of the sustainable development of the sugar-energy sector Contextualizes and premises for the technological road mapping of energy-cane Provides information on new technologies in the sugar-energy sector
Biodiesel Springer
Hydrogen could be the fuel of the future. Some microorganisms can produce hydrogen upon illumination. Biological methods of production could be greener than chemical or physical production methods, but the potential of biological methods is still being harnessed. This comprehensive book highlights the key steps necessary for future exploitation of solar-light-driven hydrogen production by microalgae. The highly regarded editors bring together 46 contributors from key institutions in order to suggest and examine the most significant issues that must be resolved to achieve the goal of practical implementation, while proposing reliable methodologies and approaches to solve such issues. This 19 chapter book will be an indispensable resource for academics, undergraduate and graduate students, postgraduates and postdoctoral scholars, energy scientists, bio/chemical engineers, and policy makers working across the field of biohydrogen and bioenergy.
R&D for Productivity and Sustainability Springer
Weed management Decision Support Systems (DSS) are increasingly important computer-based tools for modern agriculture. Nowadays, extensive agriculture has become highly dependent on external inputs and both economic costs, as well the negative environmental impact of agricultural activities, demands knowledge-based technology for the optimization and protection of non-renewable resources. In this context, weed management strategies should aim to maximize economic profit by preserving and enhancing agricultural systems. Although previous contributions focusing on weed biology and weed management provide valuable insight on many aspects of weed species ecology and practical guides for weed control, no attempts have been made to highlight the forthcoming importance of DSS in weed management. This book is a first attempt to integrate `concepts and practice' providing a novel guide to the state-of-art of DSS and the future prospects which hopefully would be of interest to higher-level students, academics and professionals in related areas.
An overview for unlocking their potential in global aquaculture development Elsevier
In the rough and tumble world of Super Pro K.O., professional wrestling is no joke. With contenders of every kind battling for glory on a nightly basis, there's tons of drama inside and outside the ring! Current SPKO champion and arrogant heel King Crown Jr prepares for a match against mysterious newcomer Bad Bad Butch O'Rowdy, who may care more about settling a personal score with Crown than the title itself. Meanwhile, hotshot Joe Somiano is getting used to the spotlight as his career takes off, but will it be stopped with the arrival of baseball superstar turned wrestler Romeo Colossus?
Food & Agriculture Org.
This book brings together and updates the latest information on the diversity of yeasts, their molecular features and their applications in the welfare of mankind. Yeasts are eukaryotic microfungi widely found in natural environments, including those with extreme conditions such as low temperatures, low oxygen levels and low water availability. To date, approximately 2,000 of the estimated 30,000 to 45,000 species of yeast on Earth, belonging to around 200 genera have been described. Although there are a few that are opportunistic human and animal pathogens, the vast majority of yeasts are beneficial, playing an important role in the food chain and in the carbon, nitrogen and sulphur cycles. In addition, yeasts such as Saccharomyces cerevisiae, Hansenula polymorpha and Pichia pastoris are used in expressing foreign genes to produce proteins of pharmaceutical interest. A landmark in biotechnology was reached in 1996 with the completion of sequencing of the entire S. cerevisiae genome, and it has now become a central player in the development of an entirely new approach to biological research and synthetic biology. The sequencing of genomes of several yeasts including Schizosaccharomyces pombe, Candida albicans and Cryptococcus neofromans has also recently been completed. candida albicans="" and="" p/pp
Hydrocarbon Biorefinery SAE International
The countries of the Caribbean region benefit from a number of preferential trade arrangements. In addition to the industrialized countrys' General System of Preferences (GSP) which are applicable to most developing countries, there are some very special arrangements formulated to promote exports from the Caribbean countries -- the Caribbean Basin Initiative (CBI) of the United States, CARIBCAN of Canada, and the much older Lome Conventions of the European Communities, which includes the Caribbean as well as most African and some Pacific countries. Yet, in spite of this preferential treatment, the Caribbean export performance has been worse than the performance of the developing countries as a whole. This report examines the Caribbean export performance in the 1980s in some detail, analyzes the possible reasons behind this performance, and presents some recommendations to improve it. The scope of the analysis in this report is limited to the member countries of the Caribbean Group for Cooperation in Economic Development. This report not only has a Caribbean perspective, it examines all three major arrangements - the CBI, CARIBCAN, and Lome

Convention in the environment of both groups and specific exporters in the three different markets. In this way, the greatly varying performances can lead to insights on export performance and ways to improve it.

Forest Economics Springer Science & Business Media

This book collates the latest information on Kappaphycus and Eucheuma seaweeds. The edited volume provides an important companion to anyone studying or working with what is the world's largest cultivated marine plant biomass. The contributing authors have excelled in providing information on production and present and future uses of these carrageenan-bearing seaweeds. Important elements of taxonomy, distribution and methods of cultivation and processing are presented to the reader in an accessible and easily understood format. The book provides a number of valuable opinions on value addition and MUZE technologies which highlight value-chains associated with these important red algae.

Social Implications of Climate Change for Latin America and the Caribbean The Minerva Group, Inc.

This groundbreaking collection on global leadership features innovative and critical perspectives by scholars from international relations, political economy, medicine, law and philosophy, from North and South. The book's novel theorization of global leadership is situated historically within the classics of modern political theory and sociology, relating it to the crisis of global capitalism today. Contributors reflect on the multiple political, economic, social, ecological and ethical crises that constitute our current global predicament. The book suggests that there is an overarching condition of global organic crisis, which shapes the political and organizational responses of the dominant global leadership and of various subaltern forces. Contributors argue that to meaningfully address the challenges of the global crisis will require far more effective, inclusive and legitimate forms of global leadership and global governance than have characterized the neoliberal era.

Quantitative Systems Biology for Engineering Organisms and Pathways Springer Science & Business Media

This book gathers selected papers presented at the 2020 World Conference on Information Systems and Technologies (WorldCIST'20), held in Budva, Montenegro, from April 7 to 10, 2020. WorldCIST provides a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences with and challenges regarding various aspects of modern information systems and technologies. The main topics covered are A) Information and Knowledge Management; B) Organizational Models and Information Systems; C) Software and Systems Modeling; D) Software Systems, Architectures, Applications and Tools; E) Multimedia Systems and Applications; F) Computer Networks, Mobility and Pervasive Systems; G) Intelligent and Decision Support Systems; H) Big Data Analytics and Applications; I) Human–Computer Interaction; J) Ethics, Computers & Security; K) Health Informatics; L) Information Technologies in Education; M) Information Technologies in Radiocommunications; and N) Technologies for Biomedical Applications.

Volume 2 Biofuels in BrazilFundamental Aspects, Recent Developments, and Future Perspectives

Mycotoxins represent a significant issue for the feed industry and the safety of the feed supply chain, with an impact on human health, animal health and production, economies, and international trade. The globalization of the trade in agricultural commodities and the lack of legislative harmonization have contributed significantly to the discussion about the awareness of mycotoxins entering the feed/food supply chain. The feed industry is a sustainable outlet for food processing industries, converting byproducts into high-quality animal feed. Mycotoxin occurrence in food byproducts from different technological processes is a worldwide topic of interest for the feed industry, aiming to increase the marketability and acceptance of these products as feed ingredients and include them safely in the feed supply chain. Since mycotoxin contamination cannot be completely prevented pre- or post-harvest, the modern feed industry needs new tools for monitoring and managing the risk of mycotoxins and strategies to prevent and reduce mycotoxins in compound feed manufacturing. The aim of this Special Issue book was to bring together a collection of valuable articles with innovative ideas for a sustainable and competitive feed industry.

Focus on Kappaphycus and Eucheuma of Commerce Springer Science & Business Media

This book investigates the main vegetable biomass types, their chemical characteristics and their potential to replace oil as raw material for the chemical industry, according to the principles of green chemistry. Authors from different scientific and technical backgrounds, from industry and academia, give an overview of the state of the art and ongoing developments. Aspects including bioeconomy, biorefineries, renewable chemistry and sustainability are also considered, given their relevance in this context. Furthermore, the book reviews green chemistry principles and their relation to biomass, while also exploring the main processes for converting biomass into bioproducts. The need to develop renewable feedstock for the chemical industry to replace oil has been identified as a major strategic challenge for the 21st century. In this context, the use of different types of vegetable biomass – starch, lignocellulosic, oleaginous, saccharide and algae – can be seen as a viable alternative to the use of non-renewable, more expensive raw materials. Furthermore, it offers a model for adding economic value to the agro industrial chains such as soybean, sugarcane, corn and forests, among others. This will in turn contribute to the sustainability of a wide range of chemicals, mainly organics and their transformation processes, which are widely used by modern society.

Sustainable Bioenergy Production Springer

Process Intensification is a comprehensive textbook and treats the theory of process intensification design, and all innovation steps from idea generation to commercial implementation, and all focused on contributing to the UN Sustainable Development Goals. This book covers the 'hard' elements of design, modelling, and experimental validations and the 'soft' elements, values of engineers, interests of stakeholders and beliefs of society.

Linking Ecology and Ethics in Theory and Practice Springer Science & Business Media

In Brazil, sugarcane ethanol supplied, in 2009, 17.6 % of the energy for land transportation (excluding railroads)and about 55% of the total energy supplied by liquid fuel for Otto cycle engines. Besides the lower production costs ethanol produced from sugarcane in Brazil has another important advantage: in Central-South Brazil only 1 unit of fossil energy is used for each 8-9 units of energy produced by ethanol from sugarcane. Carbon emissions reduction also benefits from sugarcane ethanol: for each cubic meter of ethanol used as fuel, there is net saving of around 2 t CO2 not emitted to the atmosphere while, at the same time, no SO2 is emitted. Sugarcane was introduced in Brazil in 1532. The "Brazilian model" of producing concomitantly sugar and ethanol, brought important technical benefits and made possible an outstanding increase in the competitiveness in

the international market for sugar and ethanol. Today about 50% of the sucrose of sugarcane produced in the country is directed to the production of sugar while another half is used to produce Ethanol. Industrial and academic R&D has helped to increase the productivity of ethanol steadily over the past 35 years, at a rate of 3.2% per year. Productivity gains implied savings of planted area by a factor of 2.6. In 2009/2010 the area planted with sugarcane for Ethanol production was 4.2 Mha, amounting to 1% of the total arable land available in Brazil. About 60% of the Ethanol produced in Brazil comes from the State of Sao Paulo, where the productivity is the highest (around 86 t/ha.year). Most of the recent expansion is happening in the center-west region of the country, in degraded pasture lands. The FAPESP Program for Research on Bioenergy, BIOEN, aims at articulating public and private R&D, using academic and industrial laboratories to advance and apply knowledge in fields related to ethanol production in Brazil. The BIOEN Program has a solid core for supporting academic exploratory research activities that will generate new knowledge and form scientists and professionals essential for advancing industry capacity in ethanol related technologies. On top of this, BIOEN includes partnerships with industry for cooperative R&D activities between industrial and academic laboratories, which are to be co-funded by FAPESP and industry.Federal agencies, such as CNPq, will also co-fund the research.

Enzymatic and Microbial Tools for Bioethanol Production Springer

Climate change is the defining development challenge of our time. More than a global environmental issue, climate change and variability threaten to reverse recent progress in poverty reduction and economic growth. Both now and over the long run, climate change and variability threatens human and social development by restricting the fulfillment of human potential and by disempowering people and communities in reducing their livelihoods options. Communities across Latin America and the Caribbean are already experiencing adverse consequences from climate change and variability. Precipitation has increased in the southeastern part of South America, and now often comes in the form of sudden deluges, leading to flooding and soil erosion that endanger people s lives and livelihoods. Southwestern parts of South America and western Central America are seeing a decrease in precipitation and an increase in droughts. Increasing heat and drought in Northeast Brazil threaten the livelihoods of already-marginal smallholders, and may turn parts of the eastern Amazon rainforest into savannah. The Andean inter-tropical glaciers are shrinking and expected to disappear altogether within the next 20-40 years, with significant consequences for water availability. These environmental changes will impact local livelihoods in unprecedented ways. Poverty, inequality, water access, health, and migration are and will be measurably affected by climate change. Using an innovative research methodology, this study finds quantitative evidence of large variations in impacts across regions. Many already poor regions are becoming poorer; traditional livelihoods are being challenged in unprecedented ways; water scarcity is increasing, particularly in poor arid areas; human health is deteriorating; and climate-induced migration is already taking place and may increase. Successfully reducing social vulnerability to climate change and variability requires action and commitment at multiple levels. This volume offers key operational recommendations at the government, community, and household levels with particular emphasis placed on enhancing good governance and technical capacity in the public sector, building social capital in local communities, and protecting the asset base of poor households.

Biofuels in Brazil Springer

Growing energy demand and environmental consciousness have re-evoked human interest in wind energy. As a result, wind is the fastest growing energy source in the world today. Policy frame works and action plans have already been for- lated at various corners for meeting at least 20 per cent of the global energy - mand with new-renewables by 2010, among which wind is going to be the major player. In view of the rapid growth of wind industry, Universities, all around the world, have given due emphasis to wind energy technology in their undergraduate and graduate curriculum. These academic programmes attract students from diver- fied backgrounds, ranging from social science to engineering and technology. Fundamentals of wind energy conversion, which is discussed in the preliminary chapters of this book, have these students as the target group. Advanced resource analysis tools derived and applied are beneficial to academics and researchers working in this area. The Wind Energy Resource Analysis (WERA) software, provided with the book, is an effective tool for wind energy practitioners for - sessing the energy potential and simulating turbine performance at prospective sites.

A Versatile Renewable Feedstock for the Chemical Industry Springer Science & Business Media

This book advances Earth Stewardship toward a planetary scale, presenting a range of ecological worldviews, practices, and institutions in different parts of the world and to use them as the basis for considering what we could learn from one another, and what we could do together. Today, inter-hemispheric, intercultural, and transdisciplinary collaborations for Earth Stewardship are an imperative. Chapters document pathways that are being forged by socio-ecological research networks, religious alliances, policy actions, environmental citizenship and participation, and new forms of conservation, based on both traditional and contemporary ecological knowledge and values. “The Earth Stewardship Initiative of the Ecological Society of America fosters practices to provide a stable basis for civilization in the future. Biocultural ethic emphasizes that we are co-inhabitants in the natural world; no matter how complex our inventions may become” (Peter Raven).

Glycerol Frontiers Media SA

Algae, including seaweeds and microalgae, contribute nearly 30 percent of world aquaculture production (measured in wet weight), primarily from seaweeds. Seaweeds and cmicroalgae generate socio-economic benefits to tens of thousands of households, primarily in coastal communities, including numerous women empowered by seaweed cultivation. Various human health contributions, environmental benefits and ecosystem services of seaweeds and microalgae have drawn increasing attention to untapped potential of seaweed and microalgae cultivation. Highly imbalanced production and consumption across geographic regions implies a great potential in the development of seaweed and microalgae cultivation. Yet joint efforts of governments, the industry, the scientific community, international organizations, civil societies, and other stakeholders or experts are needed to realize the potential. This document examines the status and trends of global algae production with a focus on algae cultivation, recognizes the algae sector’s existing and potential contributions and benefits, highlights a variety of constraints and challenges over the sector’s sustainable development, and discusses lessons learned and way forward to unlock full potential in algae cultivation and FAO’s roles in the process. From a balanced perspective that

recognizes not only the potential of algae but also constraints and challenges upon the realization of the potential, information and knowledge provided by this document can facilitate evidence-based policymaking and sector management in algae development at the global, regional and national levels.

Decision Support Systems for Weed Management Springer Science & Business Media

Bioethanol has been recognized as a potential alternative to petroleum-derived transportation fuels. Even if cellulosic biomass is less expensive than corn and sugarcane, the higher costs for its conversion make the near-term price of cellulosic ethanol higher than that of corn ethanol and even more than that of sugarcane ethanol. Conventional process for bioethanol production from lignocellulose includes a chemical/physical pre-treatment of lignocellulose for lignin removal, mostly based on auto hydrolysis and acid hydrolysis, followed by saccharification of the free accessible cellulose portions of the biomass. The highest yields of fermentable sugars from cellulose portion are achieved by means of enzymatic hydrolysis, currently carried out using a mix of cellulases from the fungus Trichoderma reesei. Reduction of (hemi)cellulases production costs is strongly required to increase competitiveness of second generation bioethanol production. The final step is the fermentation of sugars obtained from saccharification, typically performed by the yeast Saccharomyces cerevisiae. The current process is optimized for 6-carbon sugars fermentation, since most of yeasts cannot ferment 5-carbon sugars. Thus, research is aimed at exploring new engineered yeasts abilities to co-ferment 5- and 6-carbon sugars. Among the main routes to advance cellulosic ethanol, consolidate bio-processing, namely direct conversion of biomass into ethanol by a genetically modified microbes, holds tremendous potential to reduce ethanol production costs. Finally, the use of all the components of lignocellulose to produce a large spectra of biobased products is another challenge for further improving competitiveness of second generation bioethanol production, developing a biorefinery.

Super Pro K.O. Vol. 3: Gold for Glory Oni Press

This book addresses the potential of the transformation of biomass into a wide range of marketable products, and examines the biological, biochemical, physical and thermal processing of biomass into products such as fuels, power, heat, feeds, chemicals and materials. Respective chapters explore various topics including biomass characterization, biomass pre-conditioning and sustainability analysis, aspects that are supplemented by a global overview of their implementation in current pilot bio-refineries. Providing a valuable resource to energy engineers, chemical engineers, biotechnologists and economists, this book will also be of great interest to students and policymakers.

Process Intensification Royal Society of Chemistry

This volume scopes several aspects of non-conventional yeast research prepared by the leading specialists in the field. An introduction on taxonomy and systematics enhances the reader’s knowledge on yeasts beyond established ones such as Saccharomyces cerevisiae. Biotechnological approaches that involve fungal utilization of unusual substrates, production of biofuels and useful chemicals as citric acid, glutathione or erythritol are discussed. Further, strategies for metabolic engineering based on knowledge on regulation of gene expression as well as sensing and signaling pathways are presented. The book targets researchers and advanced students working in Microbiology, Microbial Biotechnology and Biochemistry.