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## **BRODERICK GIDEON**

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*Environmental Issues and Options*  
 Academic Press

Aquaponics is the integration of aquaculture and soilless culture in a closed production system. This manual details aquaponics for small-scale production--predominantly for home use. It is divided into nine chapters and seven annexes, with each chapter dedicated to an individual module of aquaponics. The target audience for this manual is agriculture extension agents, regional fisheries officers, non-governmental organizations, community organizers, government ministers, companies and singles worldwide. The intention is to bring a general understanding of aquaponics to people who previously may have only known about one aspect. The hidden potential Food & Agriculture Org.

A text to the advances and development of novel technologies in the production of high-value products from economically viable raw materials Lignocellulosic Biorefining Technologies is an essential guide to the most recent advances and developments of novel technologies in the production of various high-value products from economically

viable raw materials. Written by a team of experts on the topic, the book covers important topics specifically on production of economical and sustainable products such as various biofuels, organic acids, enzymes, biopigments, biosurfactants, etc. The book highlights the important aspects of lignocellulosic biorefining including structure, function, and chemical composition of the plant cell wall and reviews the details about the various components present in the lignocellulosic biomass and their characterizations. The authors explore the various approaches available for processing lignocellulosic biomass into second generation sugars and focus on the possibilities of utilization of lignocellulosic feedstocks for the production of biofuels and biochemicals. Each chapter includes a range of clear, informative tables and figures, and contains relevant references of published articles. This important text: Provides cutting-edge information on the recent developments in lignocellulose biorefinery Reviews production of various economically important and sustainable products, such as biofuels, organic acids, biopigments, and biosurfactants Highlights several broad-ranging areas of recent advances in the utilization of a variety of lignocellulosic

feedstocks Provides a valuable, authoritative reference for anyone interested in the topic Written for post-graduate students and researchers in disciplines such as biotechnology, bioengineering, forestry, agriculture, and chemical industry, *Lignocellulosic Biorefining Technologies* is an authoritative and updated guide to the knowledge about various biorefining technologies.

*Review of Pollution in the African Aquatic Environment* Fao

Biochar is the carbon-rich product which occurs when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its persistence in soil and nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with potentially major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. The first edition of this book, published in 2009, was the definitive work reviewing the expanding research literature on this topic. Since then, the rate of research activity has increased at least ten-fold, and biochar products are now commercially available as soil amendments. This second edition includes not only substantially updated chapters, but also additional chapters: on environmental risk assessment; on new uses of biochar in composting and potting mixes; a new and controversial

field of studying the effects of biochar on soil carbon cycles; on traditional use with very recent discoveries that biochar was used not only in the Amazon but also in Africa and Asia; on changes in water availability and soil water dynamics; and on sustainability and certification. The book therefore continues to represent the most comprehensive compilation of current knowledge on all aspects of biochar.

**Nanobiotechnology Applications in Plant Protection** CRC Press

Agricultural and Environmental Applications of Biochar: Advances and Barriers: Over the past decade, biochar has been intensively studied by agricultural and environmental scientists and applied as a soil quality enhancer and environmental ameliorator in various trials worldwide. This book, with 21 chapters by 57 accomplished international researchers, reports on the recent advances of biochar research and the global status of biochar application. Scientific findings, uncertainties, and barriers to practice of biochar amendment for sustaining soil fertility, improving crop production, promoting animal performance, remediating water and land, and mitigating greenhouse gas emissions are synthesized. The book presents a whole picture of biochar in its production, characterization, application, and development. *Agricultural and Environmental Applications of Biochar: Advances and Barrier* highlights the mechanisms and processes of biochar amendment for achieving stunning agricultural and environmental benefits. Composition and characteristics of biochar, its interactions with contaminants and soil constituents, and its transformation in the environment are illustrated to enlighten the achievements of biochar amendment in

improving soil physical, chemical, and biological quality and animal health, reducing soil greenhouse gas emissions, and decontaminating stormwater and mine sites. Additional emphasis is given to the pyrogenic carbon in Terra Preta soils and Japanese Andosols, the pyrolysis technology for converting agricultural byproducts to biochar, and the existing economic and technical barriers to wide application of biochar in Australia, China, New Zealand, North America, and Europe. Readers will appreciate the comprehensive review on the up-to-date biochar research and application and gain critical guidance in best biochar generation and utilization.

**Carbon-Based Material for Environmental Protection and Remediation** John Wiley & Sons

Biochar and its implementation as a renewable-based material is one of the topics on which the research community has focused the greatest energy in the last twenty years. This book provides readers with a scientific and technological overview of biochar, including new technologies for biochar production, new environmental and agronomic applications (e.g. biochar as growing media component or biochar application for mine land reclamation) and some emerging biochar applications in different fields (e.g. energy storage and catalysis). A special emphasis is placed on analyzing the links between the different stages of the value chain, underpinning the economic viability of biochar systems. Biochar as a Renewable-Based Material: With Applications in Agriculture, the Environment and Energy is designed as a textbook for graduate and postgraduate courses as well as a handbook for early-stage scientists, policy makers and potential technology

customers. The book is written by internationally recognized scientists with a variety of complementary backgrounds.

**Advances and Barriers** Academic Press

The publication was launched at the Global Symposium on Soil Organic Carbon (GSOC) held at FAO headquarters (Rome, 21-23 March 2017). It provides an overview to decision-makers and practitioners of the main scientific facts and information regarding the current knowledge and knowledge gaps on Soil Organic Carbon. It highlights how better information and good practices may be implemented to support ending hunger, adapting to and mitigating climate change and achieving overall sustainable development.

**Biorefinery of Oil Producing Plants for Value-Added Products** Routledge

Biochar is the carbon-rich product when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences,

agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines.

**Food Safety and Human Health** CRC Press

The success of the previous Conferences on Energy from Biomass, held in Brighton 1980 and Berlin 1982, and the continued interest among European countries, encouraged the Commission of the European Communities to organise the third conference on this area of energy production. It brought together about 500 experts from many countries thus presenting an international forum for discussion of the most recent advances in research and development, manufacture and industrial applications. Advanced Oxidation Processes for Wastewater Treatment Academic Press This publication capitalizes on the experience of scientists from the North Africa and Near East countries, in collaboration with experts from around the world, specialized in the different aspects of greenhouse crop production. It provides a comprehensive description and assessment of the greenhouse production practices in use in Mediterranean climate areas that have helped diversify vegetable production and increase productivity. The publication is also meant to be used as a reference and tool for trainers and growers as well as other actors in the greenhouse vegetables value chain in this region.

**Biochar As A Renewable-based Material: With Applications In Agriculture, The Environment And Energy** CRC Press

The congress "Arsenic in the Environment" offers an international, multi- and interdisciplinary discussion platform for arsenic research aimed at short-term solutions of problems with considerable social impact, rather than only focusing on cutting edge and breakthrough research in physical, chemical, toxicological, medical and other specific issue

*Arsenic in Geosphere and Human Diseases; Arsenic 2010* Food and Agriculture Organization Nanomaterials Applications for Environmental Matrices: Water, Soil and Air takes a highly interdisciplinary approach in evaluating the use of a range of nanomaterials for various environmental applications, focusing, in particular, on their use in soil remediation, in improving water cleanliness, and in improving air quality. The book will not only help both materials scientists and environmental scientists understand the role played by nanomaterials in achieving these goals, but also give them practical ways they can be used to this end. Brings together the various applications and experimental aspects of nanoscience in the fields of chemistry, biology, environmental science and physics Maps the relationship between synthesis, properties and environmental interactions of nanomaterials, enabling greater understanding Describes new application opportunities for using nanomaterials in pollution trace detection and environmental improvement

*Commercial Fisheries Review* John Wiley & Sons

Examines the different raw materials, types and applications of activated carbon, plus the processes involved in the production of various carbons. The

scope for the use of oil palm kernel shell as a potential feedstock for activation is considered in detail.

### Third EC conference Livestock's Long Shadow Environmental Issues and Options

On top of a decade of exacerbated disaster loss, exceptional global heat, retreating ice and rising sea levels, humanity and our food security face a range of new and unprecedented hazards, such as megafires, extreme weather events, desert locust swarms of magnitudes previously unseen, and the COVID-19 pandemic. Agriculture underpins the livelihoods of over 2.5 billion people – most of them in low-income developing countries – and remains a key driver of development. At no other point in history has agriculture been faced with such an array of familiar and unfamiliar risks, interacting in a hyperconnected world and a precipitously changing landscape. And agriculture continues to absorb a disproportionate share of the damage and loss wrought by disasters. Their growing frequency and intensity, along with the systemic nature of risk, are upending people's lives, devastating livelihoods, and jeopardizing our entire food system. This report makes a powerful case for investing in resilience and disaster risk reduction – especially data gathering and analysis for evidence informed action – to ensure agriculture's crucial role in achieving the future we want.

### *Science, Technology and Implementation* Food & Agriculture Org.

Energy from solar radiation, fixated by self-assembling plant structures, creates biomass that is converted to energy carriers fit for application in today's and tomorrow's energy-generating equipment. The central theme of this

book is the development of the current largest renewable energy source for efficient applications in modern and developing society—biomass. The book is presented in an easy-to-understand manner for non-experts, nevertheless revealing the true challenges of this extremely broad area. Through this book, passionate pioneers and (ex-)EU officials tell the interesting history of the use of biomass by mankind in general and how the future of its modern use was shaped by active support of the European Union. The book mainly emphasizes specific technologies, both biological and thermo-chemical, from simple to extremely complex.

Recognized experts explain these technologies in a clear way along with their future prospects. Climb on the shoulders of all 35 authors of the book and look into the close and distant future where interaction with other renewable sources will occur, and discover a renewable energy future in which an important role will be played by the oldest one—bioenergy.

### EPA 600/2 Food & Agriculture Org.

*Sustainable Food Waste-to-Energy Systems* assesses the utilization of food waste in sustainable energy conversion systems. It explores all sources of waste generated in the food supply chain (downstream from agriculture), with coverage of industrial, commercial, institutional and residential sources. It provides a detailed analysis of the conventional pathways for food waste disposal and utilization, including composting, incineration, landfilling and wastewater treatment. Next, users will find valuable sections on the chemical, biochemical and thermochemical waste-to-energy conversion processes applicable for food waste and an assessment of commercially available

sustainable food waste-to-energy conversion technologies. Sustainability aspects, including consideration of environmental, economic and social impacts are also explored. The book concludes with an analysis of how deploying waste-to-energy systems is dependent on cross-cutting research methods, including geographical information systems and big data. It is a useful resource for professionals working in waste-to-energy technologies, as well as those in the food industry and food waste management sector planning and implementing these systems, but is also ideal for researchers, graduate students, energy policymakers and energy analysts interested in the most recent advances in the field. Provides guidance on how specific food waste characteristics drive possible waste-to-energy conversion processes Presents methodologies for selecting among different waste-to-energy options, based on waste volumes, distribution and properties, local energy demand (electrical/thermal/steam), opportunities for industrial symbiosis, regulations and incentives and social acceptance, etc. Contains tools to assess potential environmental and economic performance of deployed systems Links to publicly available resources on food waste data for energy conversion

**FAO Forestry Paper** BoD – Books on Demand

Nanotechnology can target specific agricultural problems related to plant pathology and provide new techniques for crop disease control. Plant breeders and phytopathologists are needed who can apply nanogenomics and develop nanodiagnostic technologies to accurately advance the improvement process and take advantage of the potential of genomics. This book serves

as a thorough guide for researchers working with nanotechnology to address plant protection problems. Novel nanobiotechnology methods describe new plant gene transfer tools that improve crop resistance against plant diseases and increase food security. Also, quantum dots (QDs) have emerged as essential tools for fast and accurate detection of particular biological markers. Biosensors, QDs, nanostructured platforms, nanoimaging, and nanopore DNA sequencing tools have the potential to raise sensitivity, specificity, and speed in pathogen detection, thereby facilitating high-throughput analysis and providing high-quality monitoring and crop protection. Also, this book deals with the application of nanotechnology for quicker, more cost-effective, and precise diagnostic procedures of plant diseases and mycotoxins. Applications of nanotechnology in plant pests and disease control, antimicrobial mechanisms, pesticides remediation and nanotoxicity on plant ecosystem and soil microbial communities are discussed in detail. Moreover, the application of specific nanomaterials including silver, copper, carbon- or polymer-based nanomaterials and nanoemulsions are also discussed. Crops treated with safe nanofertilizers and nanopesticides will gain added value because they are free of chemical residues, decay and putative pathogens for human health, sustaining the global demand for high product quality.

[Agricultural Drainage Water Management in Arid and Semi-arid Areas](#)  
Elsevier

Livestock's Long Shadow Environmental Issues and Options Food & Agriculture Org.

*Livestock's Long Shadow* Food &

Agriculture Org.

The aim of this paper is to facilitate the planning and design of land drainage systems for sound land and water management for engineers and other professionals. It considers the integration of technical, socio-economic and environmental factors and the need for system users' participation in the planning, design, operation and maintenance processes. The text provides guidelines for the appropriate identification of drainage problems, for the planning and design of field drainage systems (surface and subsurface) and the main drainage and disposal systems. The annexes provide more detailed information with technical background, appropriate equations, some cross-references for finding appropriate methodologies, and computer programs for calculation of extreme values, of permeability and some land drainage system parameters. --Publisher's description.

Routledge

Food Safety and Human Health provides a framework to manage food safety risks and insure safe food system. This reference takes a reader-friendly approach in presenting the entire range of toxic compounds found naturally in foods or introduced by industrial contamination or food processing methods. It provides the basic principles of food toxicology and its processing and safety for human health to help professionals and students better understand the real problems of toxic materials. This essential resource will help readers address problems regarding food contamination and safety. It will be particularly useful for graduate students, researchers and professionals in the agri-food industry. Encompasses the first

pedagogic treatment of the entire range of toxic compounds found naturally in foods or introduced by industrial contamination or food processing methods Features areas of vital concern to consumers, such as the toxicological implications of food, implications of food processing and its safety to human health Focuses on the safety aspects of genetically modified foods currently available

Biochar for Environmental Management  
World Scientific

"Biochar is the carbon-rich product when biomass (such as wood, manure, or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences, agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines"--Provided by publisher.