Cassava And Starch Technology Research Unit Biotec

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Cassava is a major tropical tuber crop found throughout the tropics (India, Oceania, Africa and Latin America). Hitherto, there has been no single text covering all aspects of cassava biology, production and utilization. This book fills that gap, representing the first comprehensive research level overview of this main staple crop. Chapters are written by leading experts in this field from all continents. The book is suitable for those working and researching in cassava, in both developed and developing countries, as well as advanced students.

This book focuses on the usage and application of plant- and animal-based food products with significant functional properties and health benefits as well as their development into processed food. Many chapters in this book contain overviews on superfood and functional food from South America. Details on the functional properties of apiculture products are also included herein. Additionally, an area that is not widely discussed in academia - pet food with functional properties - is also covered. It is hoped that this book will serve as a source of knowledge and information to make better choices in food consumption and alterations to dietary patterns. It is also recommended for readers to take a look at a related book, Superfood and Functional Food - The Development of Superfoods and Their Roles as Medicine.

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Recent studies have shown strong evidence of human activity impact on the climate of the planet. Higher temperatures and intensification of extreme weather events such as hurricanes are among the consequences. This scenario opens up several possibilities for what is now called "green" or low carbon economy. We are talking about creating new businesses and industries geared to develop products and services with low consumption of natural resources and reduced greenhouse gases emission. Within this category of business, biofuels is a highlight and the central theme of this book. The first section presents some research results for first generation ethanol production from starch and sugar raw materials. Chapters in the second section present results on some efforts around the world to develop an efficient technology for producing second-generation ethanol from different types of lignocellulosic materials. While these production technologies are being developed, different uses for ethanol could also be studied. The chapter in the third section points to the use of hydrogen in fuel cells, where this hydrogen could be produced from ethanol.

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"Furnishes exhaustive, single-source coverage of the production and postharvest technology of more than 70 major and minor vegetables grown in tropical, subtropical, and temperate regions throughout the world. Provides comparative data for each vegetable presented. "

Handbook of Research on Food Processing and Preservation Technologies will be a 5-volume collection that attempts to illustrate various design, development, and applications of novel and innovative strategies for food processing and preservation. The role and applications of minimal processing techniques (such as ozone treatment, vacuum drying, osmotic dehydration, dense phase carbon dioxide treatment, pulsed electric field, and high-pressure assisted freezing) are also discussed, along with a wide range of applications. The handbook also explores some exciting computer-aided techniques emerging in the food processing sector, such as robotics, radio frequency identification (RFID), three-dimensional food printing, artificial intelligence, etc. Some emphasis has also been given on nondestructive quality evaluation techniques (such as image processing, terahertz spectroscopy imaging technique, near infrared, Fourier transform infrared spectroscopy technique, etc.) for food quality and safety evaluation. The significant roles of food properties in the design of specific foods and edible films have been elucidated as well. The first volume in this set, Nonthermal and Innovative Food Processing Methods, provides a detailed discussion of many nonthermal food process techniques. These include high-pressure processing, ultraviolet light technology, microwave-assisted extraction, high pressure assisted freezing, microencapsulation, dense phase carbon dioxide aided preservation, to name a few. The volume is a treasure house of valuable information and will be an excellent reference for researchers, scientists, students, growers, traders, processors, industries, and others.

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In developing countries, traditional fermentation serves many purposes. It can improve the taste of an otherwise bland food, enhance the digestibility of a food that is difficult to assimilate, preserve food from degradation by noxious organisms, and increase nutritional value through the synthesis of essential amino acids and vitamins. Although "fermented food" has a vaguely distasteful ring, bread, wine, cheese, and yogurt are all familiar fermented foods. Less familiar are gari, ogi, idli, ugba, and other relatively unstudied but important foods in some African and Asian countries. This book reports on current research to improve the safety and nutrition of these foods through an elucidation of the microorganisms and mechanisms involved in their production. Also included are recommendations for needed research.

Starch is one of the major polysaccharides employed as biopolymers by the food industry, and its wide range of applications has resulted in intense research of starch structure and technology. Written by an outstanding multidisciplinary team with complementary expertise in both academia and industry, Starches: Characterization, Properties, and Applications takes an innovative approach to the trends of starch production. The book provides an up-to-date overview of starch applications in the food, textiles, pharmaceuticals, chemical, agricultural, and plastic industries when used as a substitute for synthetic polymers. Starch nanocomposites properties and starch-based blends biodegradability are also discussed. The book covers the recent advances made in starch characterization using techniques such as atomic force microscopy and nuclear magnetic resonance. It discusses the main modified starches applications and enzymes used on starch industry. It also addresses starch characterization at the granular, macromolecular, and rheological levels. Under the editorial guidance of renowned food scientist, Andréa Curiacos Bertolini, this book to address starch characterization, applications and biodegradation of starch blends, making it an ideal resource for researchers and product developers interested in starch characterization, nanocomposites, and biopolymer

degradation.
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The present book relates to benefits of bio technology in providing food security, alleviation of poverty and agriculture and rural development.. This book also focuses on framework for food chain approach to food safety and evaluation of technology oriented food security. The book is highly informative and of use to students, researchers, scientists and policy planners working in different direction like agriculture, food and bio technology.
Advances in food science, technology, and engineering are occurring at such a rapid rate that obtaining current, detailed information is challenging at best. While almost everyone engaged in these disciplines has accumulated a vast variety of data over time, an organized, comprehensive resource containing this data would be invaluable to have. The
This book provides comprehensive and up-to-date knowledge relating to the morphological, structural, and functional characteristics of tuber starches, particularly in relation to their applications in food and industry. In recent years there has been significant progress and extensive research conducted on tropical root starches and especially on some of the lesser known tuber crop starches. There has also been a shift towards using biomaterials in place of synthetic materials in various applications. As researchers investigate the availability of natural products with similar properties, starch has been identified as a reliable alternative to these synthetic materials. The book is a valuable resource for researchers and students, plant breeders, and commercial producers working with, or considering working with, tropical tuber starches.
New product development is vital for the future of the food industry. Many books have been written on NPD theory over the last 40 years, but much can still be learnt by studying actual experiences of NPD. Case studies in food product development describes specific NPD projects in a variety of industries internationally and also records overall comments, written by the very people who have completed the projects. Part one outlines new product development in the food industry and part two views product development strategy and management in different companies and organisations. Parts three, four and five are twelve case studies on respectively the product development process, technological development, consumer and market research. Part six considers product development in practice and the final chapter demonstrates how product developers are being educated. The case studiers are written by experienced product developers talking openly about experiences with their own products. It is hoped that those faced with similar challenges will gain from these real life experiences. Mary and Dick are also co-authors with Allan Anderson of Food product development, which has achieved international success. Case studies in food product development is a complement and a practical companion to this book. Describes new product development in a variety of international industries Outlines new product development in the food industry and views product management and strategy in different organisations Includes case studies focusing on the product development process, technological development, and consumer and market research
Starch is one of the most important natural and biodegradable polymers on Earth. It is used by many plants as an energy reserve, and due to its biocompatibility and relatively easy structural modification, it is widely used in the cosmetic, food, pharmaceutical and materials industries. In recent years, interest in starch has increased due to the development of starch-based nanomaterials. Nanomaterials are small particles—diameters ranging from 10 nm to 500 nm—that can be highly crystalline (nanocrystals) or completely amorphous (nanoparticles). Owing to their versatility, starch-based nanomaterials can be used as carriers of bioactive molecules to improve medical treatments or nutrient absorption. They can also be used as reinforcement in composite materials, improving their mechanical and barrier properties, and new potential applications are continuously reported in the literature. This brief provides a quick guide to the exciting world of starch-based nanomaterials, including their chemical and physical characteristics as well as their synthesis methods and most common applications.
Tuber and root crops are the third important group of food crops after cereals and pulses, feeding about one fifth of the world population. With the burgeoning population coupled with limited land, water and other resources, the future beckons tuber and root crops in fulfilling the country's food requirements. These crops have higher biological efficiency and greater adoption with profound production potential per unit area per unit time. Tuber and root crops are well known from time immemorial as nature's energy bank and famine savior. This book is conceived to have an updated version on the tuber and root crops especially in the Indian context, including information on the history, biodiversity, geographical distribution, botany, neutraceutical and pharmaceutical values, new varieties, production technologies, IPM strategies, starches, post harvest technologies and value added products, bio-processing, biotechnology, ITK and future thrusts. Various aspects of cassava, sweet potato, elephant foot yam, taro, yams, coleus, yam bean and arrow root are elucidated in 17 s and appendices. This book will be of immense use to the policy makers, scientists, post graduate and under graduate students and officials concerned with tuber and root crops research, development and extension.
Cassava origin, distribution, and cultivation; Cassava nutrition and toxicity; Cassava spoilage and preservation; Preservation of dried cassava products; Processing of cassava; Cassava in animal feed; Cassava foods; Cassava starch; Cassava based industries; Analytical methods for cassava.
The book addresses the perceived need for a publication with looks at both, climate smart technologies and the integration of renewable energy and energy efficiency in mitigation and adaptation responses. Based on a set of papers submitted as part of the fifth on-line climate conference (CLIMATE 2012) and a major conference on renewable energy on island States held in Mauritius in 2012, the book provides a wealth of information on climate change strategies and the role of smart technologies. The book has been produced in the context of the project "Small Developing Island Renewable Energy Knowledge and Technology Transfer Network" (DIREKT), funded by the ACP Science and Technology Programme, an EU programme for cooperation between the European Union and the ACP region. ?

This book, through its overview chapter and 12 country studies, provides useful information on the evolving biotechnological research in Asia, Africa, and Latin America. The emphasis is on the potential biotechnologies hold for agriculture in developing countries. The reports vary in depth of coverage, but all combine to show the urgent need that exists for public- and private-sector investment to ensure that all countries share in the benefits of modern biotechnologies, while minimizing any unintended effects. The book contains a subject index.

Environmental Microbiology, besides a traditional discipline in Developing fast, because of realization of its importance in Industry, Agriculture Pharmaceutical concerns, Public Health, Geological explorations, bioenergetics and as a mean to exploit new sources of energy useful for various purposes. Environmental Microbiology comprises a crucial element of studies in microbiology. Enabling scientists to explore microbes in greater detail, it gives an insight into how microorganisms behave under non-simulated, natural conditions, although microbes that exist in artificial environments such as bioreactors are also studies. Exploring such processes as microbial ecology, microbially mediated nutrient cycling, geomicrobiology, microbial diversity and bioremediation the subject encompasses a great deal. Environmental Microbiology was born at the dawn of the "e;environmental era"e; at the beginning of the 1970s. Thirty years of maturation have led to an exciting and vibrant field that has attracted countless numbers of productive and enthusiastic scientists and students at universities, research centers and government agencies around the world. The present text has been designed to outline the basic and fundamental aspects of Environmental Microbiology to be understood in its right perspective. The modern techniques and designs employed in microbiological applications are discussed in a comprehensive manner which will update the readers of the commercial aspects of microbiology.

Through country case studies centred around Sub-Saharan Africa; this book provides critical insights into why science and technology should be popularised; what and whose science and technology systems should be introduced and promoted; and how science and technology should be implemented and practised.

Cassava (Manihot esculenta Crantz) is the staple food of more than 300 million people in the world. Though cassava is utilized in a variety of ways, scientific books of any category written on the postharvest aspects of cassava are relatively few. The effect of this paucity was strikingly felt during recent years. This was one of the impelling reasons behind the present venture which, it is hoped, will stimulate other publications on this neglected crop.

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Roots and tubers are considered as the most important food crops after cereals and contribute significantly to sustainable development, income generation and food security especially in the tropical regions. The perishable nature of roots and tubers demands appropriate storage conditions at different stages starting from farmers to its final consumers. Because of their highly perishable nature, search for efficient and better methods of preservation/processing have been continuing alongside the developments in different arena. This book covers the processing and technological aspects of root and tuber foods, detailing the production and processing of roots and tubers such as taro, cassava, sweet potato, yam and elephant foot yam. Featuring chapters on anatomy, taxonomy and physiology, molecular and biochemical characterization, GAP, GMP, HACCP, Storage techniques, as well as the latest technological interventions in Taro, Cassava, Sweet potato, yam and Elephant foot Yam.