Cereal Crops Rice Maize Millet Sorghum Wheat

268 citations, mostly annotated, on gene expressions in barley, maize, corn, millet, oats, rice, rye, triticale, wheat, sorghum, milo, buckwheat, avena, hordeum, aestivum, etc. Author and subject indexes.

West African Worlds provides a critical assessment of social, economic and political change in Africa's most populous and arguably most externally focused region. With an emphasis on globalisation and modernisation, case studies and commentary are integrated throughout to highlight the concerns and issues of the region. Enriched by an impressive mix of West African voices, this text combines theory and application with policy and practice to address socio-economic change, the pursuit of livelihoods, and development within West Africa.

This new 2-volume set, Diseases of Field Crops: Diagnosis and Management, helps to fill the need for research on plant diseases, their effects, how they spread, and effective management measures to mitigate their harmful effects. The volumes in this set showcase recent advances in molecular plant pathology and discuss appropriate diagnostic techniques for identification of causal agents and diseases, providing the information necessary to establish management strategies. The chapters in these two volumes include detailed description of symptoms, causal organisms, disease cycles, epidemiology, and management techniques of economically important diseases. The

volumes explore existing strategies and offer new methods that can be used in an integrated manner and with a comprehensive approach for the management of major diseases of the field crops. Also taken into consideration is the impact of global climate change on the spread and severity of plant diseases.

The Agricultural Outlook 2021-2030 is a collaborative effort of the Organisation for Economic Co-operation and Development (OECD) and the Food and Agriculture Organization (FAO) of the United Nations. It brings together the commodity, policy and country expertise of both organisations as well as input from collaborating member countries to provide an annual assessment of the prospects for the coming decade of national, regional and global agricultural commodity markets. The publication consists of 11 Chapters; Chapter 1 covers agricultural and food markets; Chapter 2 provides regional outlooks and the remaining chapters are dedicated to individual commodities.

The Story of Crops and Humanity

Cereals, Volume 2

Cereal Processing

Ancient Wheats

Cereals and pulses

Cereals

Summarizing landmark research, Volume 2 of this essential series furnishes information on the availability of

germplasm resources that breeders can exploit for producing high-yielding cereal crop varieties. Written by leading international experts, this volume offers the most comprehensive and up-to-date information on employing genetic resources to increase the yield of those cereal crops that provide the main source of nutrition for two-thirds of the world. In thirteen succinct chapters, Genetic Resources, Chromosome Engineering, and Crop Improvement: Cereals, Volume 2 focuses on wheat, rice, maize, oats, barley, millet, sorghum, and rye, as well as triticale: a wheat and rye hybrid with great potential. An introductory chapter outlines the cytogenetic architecture of cereal crops, describes the principles and strategies of cytogenetics and breeding, and summarizes landmarks in current research. This sets the stage for the ensuing crop-specific chapters. Each chapter generally provides a comprehensive account of the crop, its origin, wild relatives, exploitation of genetic resources in the primary, secondary, and tertiary gene pools through breeding and

cytogenetic manipulation, and genetic enrichment using the tools of molecular genetics and biotechnology. Certain to become the standard reference for improving the yields of these critical grains, this book is the definitive source of information for plant breeders, agronomists, cytogeneticists, taxonomists, molecular biologists, biotechnologists, and graduate students and researchers in these fields.

Genetic and Genomic Resources For Cereals Improvement is the first book to bring together the latest available genetic resources and genomics to facilitate the identification of specific germplasm, trait mapping, and allele mining that are needed to more effectively develop biotic and abiotic-stress-resistant grains. As grain cereals, including rice, wheat, maize, barley, sorghum, and millets constitute the bulk of global diets, both of vegetarian and non-vegetarian, there is a greater need for further genetic improvement, breeding, and plant genetic resources to secure the future food supply. This book is an invaluable resource for

researchers, crop biologists, and students working with crop development and the changes in environmental climate that have had significant impact on crop production. It includes the latest information on tactics that ensure that environmentally robust genes and crops resilient to climate change are identified and preserved. Provides a single-volume resource on the global research work on grain cereals genetics and genomics Presents information for effectively managing and utilizing the genetic resources of this core food supply source Includes coverage of rice, wheat, maize, barley, sorghum, and pearl, finger and foxtail millets Originally published in 1933, this book provides candidates for British government service in West Africa with information on agricultural practice in the region. Presents some of the latest research endeavors that aim to improve our understanding of how the chemistry of various grain components can be manipulated to improve contribution of cereals to human health

Diseases of Field Crops Diagnosis and Management

Rice in Human Nutrition
Lost Crops of Africa
Assessing and Managing Quality
Bibliography: 1992-May 1994
An Introduction to Physiology of Cereal Crops

Explains how grains such as wheat, rice, and oats are grown, harvested, and manufactured.

The root hemi-parasitic witchweeds Striga hermonthica and S. asiatica are considered the most important biotic constraint to cereal crop production in sub-Saharan Africa (SSA). These parasites infect the staple cereal crops (rice, maize, sorghum and millet) resulting in considerable yield losses. Control of these parasites is very difficult as the Striga seed bank is widespread and damage to the crop occurs long before the parasite emerges above ground. Resistant cultivars are considered to be an effective and affordable component of an integrated Striga management strategy but very few are available to farmers as sources of resistance to Striga are relatively scarce and little is known about the molecular genetic basis of resistance to this parasite. Rice is an economically important cereal crop in SSA that is mostly cultivated by resource-poor farmers. Both

cultivated rice species, Oryza sativa (L.) and Oryza glaberrima (Steud.), are grown in Africa. To take advantage of superior traits from each species, AfricaRice Center and partners developed inter-specific rice cultivars called NERICA (NEw RICe for Africa) for rain-fed upland ecosystems. Because of their high yields, even on low nutrient soils where Striga spp. are prevalent, the NERICA cultivars have been widely adopted by farmers. Despite this, very little is known about their resistance to different species and ecotypes of Striga. The aims of this study are to determine how resistant and/or tolerant the upland NERICA cultivars are to different species and ecotypes of Striga under controlled environment and Striga-infested field conditions, to identify whether resistance is broad spectrum or specific to particular ecotypes of Striga and to characterize the phenotype of the resistance at a histological level. Finally using a Chromosome Segment Substitution Line (CSSL) population derived from a cross between an O. glaberrima cultivar MG12 (donor parent) and an O. sativa cultivar Caiapo (recurrent parent), the genetic basis of post-attachment resistance to Striga is investigated. The NERICA rice cultivars showed different susceptibilities to both S. hermonthica and S. asiatica species under controlled environment conditions. Some cultivars showed good broad-spectrum resistance

against several Striga ecotypes and species whilst others showed intermediate resistance or were very susceptible. In addition, some cultivars showed resistance to a particular ecotype of Striga but were susceptible to others. The phenotype of a resistant interaction was often characterized by necrosis at the host parasite interface and an inability of the parasite to penetrate the host root endodermis. In general, the most resistant NERICA cultivars grew better than the very susceptible cultivars although even a small number of parasites caused a reduction in above ground host biomass. There was however, genetic variation for tolerance to Striga (the ability to grow and yield well in the presence of Striga) amongst the NERICA cultivars. The NERICA cultivars were also grown in field trials at Kyela in Tanzania (under S. asiatica infestation) and at Mbita Point in Kenya (under S. hermonthica infestation) in 2010 and 2011 to determine the impact of environment on the expression of resistance. The resistance of the NERICA cultivars against S. hermonthica and S. asiatica, in the field, was broadly similar to that observed in the laboratory although there were some exceptions. These results allow us to recommend particular cultivars for Striga-infested regions but they also illustrate the necessity of understanding the genetic basis of resistance to different ecotypes of

Striga for breeding of durable resistance (and pyramiding of appropriate resistance genes) in host cultivars adapted to different rice agro-ecosystems in sub-Saharan Africa. Sixty four lines of an inter-specific CSSL population and the parent cultivars MG12 and Caiapo were phenotyped for resistance to S. hermonthica. MG12 showed good resistance to S. hermonthica whilst Caiapo was very susceptible. The CSSLs showed a range of susceptibility to the parasite, however, only two CSSLs showed the same strong resistance phenotype as MG12. Graphical genotyping and a Quantitative Trait Loci (QTL) analysis revealed a large QTL on chromosome 12 (designated STR12.1) which explained at least 80 % of the variation for resistance in the population and suggests that resistance to S. hermonthica (in MG12) is due to one (or a few genes) of major effect. This finding opens the way for the identification of candidate Striga resistance genes (through fine mapping approaches) and their transfer to farmer-preferred cultivars via marker assisted breeding.

The first premise of this book is that farmers need access to options for improving their situation. In agricultural terms, these options might be manage ment alternatives or different crops to grow, that can stabilize or increase household income, that reduce soil degradation and dependence

on off-farm inputs, or that exploit local market opportunities. Farmers need a facilitating environment, in which affordable credit is available if needed, in which policies are conducive to judicious management of natural resources, and in which costs and prices of production are stable. Another key ingredient of this facilitating environment is information: an understanding of which options are viable, how these operate at the farm level, and what their impact may be on the things that farmers perceive as being important. The second premise is that systems analysis and simulation have an impor tant role to play in fostering this understanding of options, traditional field experimentation being time-consuming and costly. This book summarizes the activities of the International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT) project, an international initiative funded by the United States Agency for International Development (USAID). IBSNAT was an attempt to demonstrate the effectiveness of understanding options through systems analysis and simulation for the ultimate benefit of farm households in the tropics and subtropics. The idea for the book was first suggested at one of the last IBSNAT group meetings held at the University of Hawaii in 1993.

Wheat (Triticum L.), an annual herbaceous plant in Poacae (Gramineae)

family, settles in the Triticeae (Hordeae) subfamily. The grasses (Poaceae Barnhart) are the fifth largest (monocotyledonous flowering) plant family and of great importance for human civilization and life. Cereal crops such as maize, wheat, rice, barley, and millet are the domesticated ones in the family. It is still the most vital economical plant family in modern times, providing food, forage, building materials (bamboo, thatch), and fuel (ethanol). Wheat has many accessions in national and international gene banks. The estimated number of wheats by FAO in 2010 is 856,000, and, followed by rice (774,000), and barley (467,000). However, the recent consumer's (misdirected) focus on gluten content and nutritional value urges scientists to reexamine their knowledge about wheat (i.e., origin, evolution, and general and special quality characteristics), as well as their wild relatives and landraces for newer possible genetic resources. Cultured or non-cultured ancestral wheats: einkorn, emmer, wild emmer, spelt, macha, and vavilovii are still limitedly grown on the higher areas in Turkey, Italy, Germany, Morocco, Israel, and Balkan countries. They are exploited mostly for their desired agronomic, and specific quality. In some cultures, wheat species are believed to be therapeutic, with bioactive compounds that reduce and inhibit stubborn illnesses such as diabetes, cancer,

Alzheimer, and cardiovascular diseases. In this book, we summarize the importance of ancestral wheat species, and provide a prospect for their future with special considerations in terms of species conservation and improvement.

Volume 1: Cereals, Small Millets, and Fiber Crops

Volume 1

Recent Advances in Grain Crops Research

Technology and Policy Challenges in the Face of Climate Change

Handbook on Drying, Milling and Production of Cereal Foods

Understanding Options for Agricultural Production

Scenes of starvation have drawn the world's attention to Africa's agricultural and environmental crisis. Some observers question whether this continent can ever hope to feed its growing population. Yet there is an overlooked food resource in sub-Saharan Africa that has vast potential: native food plants. Africa has more than 2,000 native grains and fruits--"lost" species due for rediscovery and exploitation. This volume focuses on native cereals, presenting information on where and how they are grown, harvested, and processed, their benefits and limitations as a food source, and the the futures of each grain.

Continued population growth, rapidly changing consumption patterns and the

impacts of climate change and environmental degradation are driving limited resources of food, energy, water and materials towards critical thresholds worldwide. These pressures are likely to be substantial across Africa, where countries will have to find innovative ways to boost crop and livestock production to avoid becoming more reliant on imports and food aid. Sustainable agricultural intensification – producing more output from the same area of land while reducing the negative environmental impacts – represents a solution for millions of African farmers. This volume presents the lessons learned from forty sustainable agricultural intensification programmes in twenty countries across Africa, commissioned as part of the UK Government's Foresight project. Through detailed case studies, the authors of each chapter examine how to develop productive and sustainable agricultural systems and how to scale up these systems to reach many more millions of people in the future. Themes covered include crop improvements, agroforestry and soil conservation, conservation agriculture, integrated pest management, horticulture, livestock and fodder crops, aquaculture, and novel policies and partnerships.

New ways to improve cereal crops against fungal, bacterial, and viral diseases are covered in this book that was put together by a group of experts. These include genetics, genome editing systems, and nano-biotechnological tools.

Cereal crops are mainly the world's leading food crops and feed a large share of the world population. However, external factors, such as pathogens, have often threatened their productivity. Like wheat, rice, maize, oats, barley, millet and storage, etiology, epidemiology, and diseases in cereal crop management. In addition, the importance of crop genetics and genomics in combating pathogens has been discussed. This book offers up-to-date information on new methods, such as the potential of the genome editing system for crop improvement, in particular the CRISPR-Cas system. The current volume also talks about identification, plant breeding, genome editing, and nanotechnology tools that can be used to fight disease in cereal crops. This book is good for students, teachers, and researchers who study biotic stress in cereals, as well as scientists who study nanotechnology, disease resistance, pathogen biology, genome editing, agriculture sciences, and future biotechnology.

The edited book highlights various emerging Omics tools and techniques that are currently being used in the analysis of responses to different abiotic stress in agronomically important cereals and their applications in enhancing tolerance mechanism. Plants are severely challenged by diverse abiotic stress factors such as low water availability (drought), excess water (flooding/ waterlogging), extremes of temperatures (cold, chilling, frost, and heat), salinity, mineral

deficiency, and heavy metal toxicity. Agronomically important cereal crops like Rice, Wheat, Maize, Sorghum, Pearl Millet, Barley, Oats, Rye, Foxtail Millets etc. that are the major sources of food material and nutritional components for human health are mostly exposed to abiotic stresses during the critical phases of flowering and grain yield. Different Omics platforms like genomics, transcriptomics proteomics, metabolomics and phenomics, in conjunction with breeding and transgenic technology, and high throughput technologies like next generation sequencing, epigenomics, genome editing and CRISPR-Cas technology have emerged altogether in understanding abiotic stress response and strengthening defense and tolerance mechanism of different cereals. This book is beneficial to different universities and research institutes working with different cereal crops in the areas of stress physiology, stress-associated genes and proteins, genomics, proteomics, genetic engineering, and other fields of molecular plant physiology. The book can also be used as advanced textbook for the course work of research and masters level students. It will be of use to people involved in ecological studies and sustainable agriculture. The proposed book bring together the global leaders working on environmental stress in different cereal crops and motivate scientists to explore new horizons in the relevant areas of research.

Broadening the Genetic Base of Grain Cereals
Cereal Grains for the Food and Beverage Industries
West African Worlds
Cereal Grain Quality
People, Plants & Genes
OECD-FAO Agricultural Outlook 2021–2030

On title page & cover: International Rice Research Institute

Part of a series which offers information on existing ways of improving the technology of food processing and increasing the quality and range of food stuffs produced. This book provides an insight into the processing of four cereal crops - maize, rice, sorghum and wheat.

This book offers comprehensive coverage of important grain cereals including their origin and distribution, crop gene pool, level of diversity, production constraints, traits of importance for genetic base widening, crop improvement methodologies, genome mapping, genomics for breeding, and future strategies. The chapters, contributed by eminent crop researchers from around the world, provide rare insights into the crop-specific constraints and prospects drawing from their substantial experience. As such, the book offers an essential source of information for grain cereals scientists, teachers, students, policy planners and developmental experts alike. Grain cereals, which comprise rice, wheat, maize, barley, oats, sorghum and millets, are members of the grass family. These crops are vital to human nutrition, thanks to their roles as

staple food crops in different parts of the globe. Some of them are rich sources of carbohydrates, which provide energy, while others are important sources of minerals, vitamins and proteins, in addition to their medicinal properties. In most cereals, the existing variability among elite germplasm has been exploited to attain a desirable level of productivity. However, to make further breakthroughs in enhancing yield and improving stability in future crop cultivars, new sources of genes/alleles need to be identified in wild/weedy species and incorporated into the cultivated varieties. Though there have been many publications on various aspects of grain cereal improvement in the recent past, to date this essential information has remained scattered among different periodicals.

Over the past 50 years, cereals such as maize, rice, wheat, sorghum, and barley have emerged as rapidly evolving crops because of new technologies and advances in agronomy, breeding, biotechnology, genetics, and so on. Population growth and climate change have led to new challenges, among which are feeding the growing global population and mitigating adverse effects on the environment. One way to deal with these issues is through sustainable cereal production. This book discusses ways to achieve sustainable production of cereals via agronomy, breeding, transcriptomics, proteomics, and metabolomics. Chapters review research, examine challenges, and present prospects in the field. This volume is an excellent resource for students, researchers, and scientists interested in and working in the area of sustainable crop production.

Volume 2: Pulses, Oil Seeds, Narcotics, and Sugar Crops

Genetic and Genomic Resources for Grain Cereals Improvement
Agricultural Development and Sustainable Intensification
Maize, Sorghum, Rice, and Millet/Tp#55: 10/86
Understanding Cereal Crops II
Guide for Field Crops in the Subtropics

Sustainable Intensification (SI) has recently emerged as a key concept for agricultural development, recognising that yields must increase to feed a growing world population, but it must be achieved without damage to the environment, on finite land resources and while preserving social and natural capital. It also recognises that all initiatives must cope with the challenges of climate change to agricultural production, food security and livelihoods. This multidisciplinary book presents state-of-the-art reviews of current SI approaches to promote major food crops, challenges and advances made in technology, and the institutional and policy measures necessary to overcome the constraints faced by smallholder farmers. Adressing the UN's Sustainable Development Goal 2, the various chapters based on evidence and experiences of reputed researchers show how these innovations, if properly nurtured and implemented, can make a difference to food and nutrition security outcomes. Case studies from around the world are included, with a particular emphasis on Asia and Sub-Saharan Africa. The focus is not only on

scientific aspects such as climate-smart agriculture, agroecology and improving input use efficiency and management, but also on institutional and policy challenges that must be met to increase the net societal benefits of sustainable agricultural intensification. The book is aimed at advanced students and researchers in sustainable agriculture and policy, development practitioners, policy makers and non-governmental and farmer organisations.

Scenes of starvation have drawn the world's attention to Africa's agricultural and environmental crisis. Some observers question whether this continent can ever hope to feed its growing population. Yet there is an overlooked food resource in sub-Saharan Africa that has vast potential: native food plants. When experts were asked to nominate African food plants for inclusion in a new book, a list of 30 species grew quickly to hundreds. All in all, Africa has more than 2,000 native grains and fruits--"lost" species due for rediscovery and exploitation. This volume focuses on native cereals, including African rice, reserved until recently as a luxury food for religious rituals. Finger millet, neglected internationally although it is a staple for millions. Fonio (acha), probably the oldest African cereal and sometimes called "hungry rice." Pearl millet, a widely used grain that still holds great untapped potential. Sorghum, with prospects for making the twenty-first century the "century of sorghum." Tef, in

many ways ideal but only now enjoying budding commercial production. Other cultivated and wild grains. This readable and engaging book dispels myths, often based on Western bias, about the nutritional value, flavor, and yield of these African grains. Designed as a tool for economic development, the volume is organized with increasing levels of detail to meet the needs of both lay and professional readers. The authors present the available information on where and how each grain is grown, harvested, and processed, and they list its benefits and limitations as a food source. The authors describe "next steps" for increasing the use of each grain, outline research needs, and address issues in building commercial production. Sidebars cover such interesting points as the potential use of gene mapping and other "high-tech" agricultural techniques on these grains. This fact-filled volume will be of great interest to agricultural experts, entrepreneurs, researchers, and individuals concerned about restoring food production, environmental health, and economic opportunity in sub-Saharan Africa. Selection, Newbridge Garden Book Club

This book highlights modern methods and strategies to improve cereal crops in the era of climate change, presenting the latest advances in plant molecular mapping and genome sequencing. Spectacular achievements in the fields of molecular breeding, transgenics and genomics in the last three decades have facilitated revolutionary

changes in cereal- crop-improvement strategies and techniques. Since the genome sequencing of rice in 2002, the genomes of over eight cereal crops have been sequenced and more are to follow. This has made it possible to decipher the exact nucleotide sequence and chromosomal positions of agroeconomic genes. Most importantly, comparative genomics and genotyping-by-sequencing have opened up new vistas for exploring available biodiversity, particularly of wild crop relatives, for identifying useful donor genes.

Part of the seven-volume series Genome Mapping and Molecular Breeding in Plants, this book covers Cereals and Millets, which provide staple food for most of the earth's population. This book includes chapters on rice, wheat, maize, barley, oats, rye, sorghum, pearl millet, foxtail millet and finger millet. The emphasis is on advanced research on the major crops, including the model plants maize and rice, as well as on future road maps of genomic research for the less-often considered but equally deserving cereals and millets.

Sustainable Intensification

(Wheat, Rice, Corn, Oat, Barley and Sorghum Processing Technology) 2nd Revised Edition

Cereals and Millets

West African Agriculture

Africa's Encounter with a New World Crop, 1500-2000

OECD-FAO Agricultural Outlook 2018-2027

The tropical environment for crop production; Farming systems for the tropics and subtropics; General principles of improved crop production in the tropics and subtropics; Cereal crops: rice, maize, sorghum; millet; wheat; Barley; Food grain legumes: field beans, cowpeas; chickpeas; lentils; broadbeans; mungbeans; pigeon peas; field peas; secondary food legumes; Oil seed crops: groundnut; soybeans; sesame; sunflower; safflower; Cartorbean; Starchy crops: banana and plantain; taro and yautia; Cassava; Yams; Sweets potatoes; Potatoes; Onions; Fiber crops: cotton; for lint and seed; Jude; Kenaf; Ramie; Abaca; Manila hemp; Sisal; Henequen and related hard fibers; Special crops: pyrethrum; Tobacco.

Cultivation of grain crops has been rightly recognized as one of the main drivers in shaping human civilizations. Considering their key role in fulfilling a major portion of the global food needs, grain crops are the most widely grown crops around the world. Unfortunately, like many other agronomic crops, grain crops are quite vulnerable to climate change and this has posed multifaceted threats to agricultural sustainability. To add to the menace, the deteriorating quantity and quality of both land and water as primary factors of production are further aggravating the scenario. Confronting such challenges demands innovative adaptation strategies through intensification of grain crop production that can ensure grain self-sufficiency worldwide.

Cereal Grains: Assessing and Managing Quality, Second Edition, provides a timely update to

this key reference work. Thoroughly revised from the first edition, this volume examines the latest research and advances in the field. New chapters have been added on alternative grains, including ancient grains and pseudocereals, biosecurity, and industrial processing of grains, amongst others. Quality and food safety are important throughout the value-addition chain, from breeding, production, harvest, storage, transport, processing, and marketing. At all stages, analysis is needed so that quality management can proceed intelligently. These considerations are examined for each of the major cereal species, including wheat (common and durum), rye and triticale, barley and oats, rice, maize (corn), pseudocereal species, sorghum, and the millets. Divided into five sections, the book analyses these for the range of cereal species before a final section summarizes key findings. Documents the latest research in cereal grains, from their nutraceutical and antioxidant traits, to novel detection methods Provides a complete and thorough update to the first edition, analyzing the range of major cereal species Presents detailed advice on the management of cereal quality at each stage of production and processing

Sometime around 1500 A.D., an African farmer planted a maize seed imported from the New World. That act set in motion the remarkable saga of one of the world's most influential crops--one that would transform the future of Africa and of the Atlantic world. Africa's experience with maize is distinctive but also instructive from a global perspective: experts predict that by 2020 maize will become the world's most cultivated crop. James McCann

moves easily from the village level to the continental scale, from the medieval to the modern, as he explains the science of maize production and explores how the crop has imprinted itself on Africa's agrarian and urban landscapes. Today, maize accounts for more than half the calories people consume in many African countries. During the twentieth century, a tidal wave of maize engulfed the continent, and supplanted Africa's own historical grain crops--sorghum, millet, and rice. In the metamorphosis of maize from an exotic visitor into a quintessentially African crop, in its transformation from vegetable to grain, and from curiosity to staple, lies a revealing story of cultural adaptation. As it unfolds, we see how this sixteenth-century stranger has become indispensable to Africa's fields, storehouses, and diets, and has embedded itself in Africa's political, economic, and social relations. The recent spread of maize has been alarmingly fast, with implications largely overlooked by the media and policymakers. McCann's compelling history offers insight into the profound influence of a single crop on African culture, health, technological innovation, and the future of the world's food supply.

Advances in Cereal Science

Cereal Diseases: Nanobiotechnological Approaches for Diagnosis and Management

Cereal Grains

Genetic Resources, Chromosome Engineering, and Crop Improvement

Maize and Grace

Grains

This book links the latest advances in molecular genetics with the science and history of plant domestication, the evolution of plant breeding, and the implications of our new knowledge for the agriculture of today and the future.

Cereals, or grains, are members of the grass family cultivated primarily for their starchy seeds (technically, dry fruits).Cereal grains are grown in greater quantities and provide more food energy worldwide than any other type of crop; they are therefore staple crops. Oats, barley, and some food products made from cereal grains. They are used for both human and animal food and as an industrial raw material. India produces cereals like wheat, rice, barley (jau), buckwheat, oats, corn (maize), rye, jowar (sorghum), pearl millet (bajra), millet (ragi), Sorghum, Triticale, etc. India is the world's second largest producer of Rice, Wheat and other cereals. The huge demand for cereals in the global market is creating an excellent environment for the export of Indian cereal products. India is not only the largest producer of cereal as well as largest exporter of cereal products in the world. India have been offering incredible opportunities as they have an abundant amount of raw materials and a wide availability of cheap labor. The book provides comprehensive coverage of the Drying, Milling and information regarding production method of Cereal Foods .It also covers Plant Layout, Process Flow Sheets and photographs of plant & Machinery with supplier's contact details. Some of the fundamentals of the book are origin of wheat classification of wheat, endeavors to find industrial uses for wheat, criteria of wheat quality, botanical criteria of quality, milling principles, extraction rate and its effect on flour composition, grain structure as

affecting grinding, definition of flour extraction stone milling: yields of products, roller milling: flour extraction rates, rice production and utilization, origin of rice, comparison of rice with other cereal grains, composition of rice and cereal, breeding rice varieties with specific, industrial uses for rice and rice by products, caryopsis and composition of rice, gross structure of the rice caryopsis and its milling fractions etc. This book is essential for those who are interested in cereal areas can find the complete information from manufacture to final uses of Cereal Foods. The present time is an era of information, one should know about what is happening in the world to be able to compete effectively. It will be very informative and useful to consultants, new entrepreneurs, startups, technocrats, research scholars, libraries and existing units.
Cereals are a staple of the human diet and have a significant effect on health. As a result, they are of major significance to the food industry. Cereal grains for the food and beverage industries provides a comprehensive overview of all of the important cereal and pseudo-cereal species, from their composition to their use in food products. The book reviews the major cereal species, starting with wheat and triticale before covering rye, barley and oats. It goes on to discuss other major species such as rice, maize, sorghum and millet, as well as pseudo-cereals such as buckwheat, quinoa and amaranth. Each chapter reviews grain structure, chemical composition (including carbohydrate and protein content), processing and applications in food and beverage products. Cereal grains for the food and beverage industries is an essential reference for academic researchers interested in the area of cereal grains and products. It is also an invaluable reference for professionals in the food and beverage industry working

with cereal products, including ingredient manufacturers, food technologists, nutritionists, as well as policy-makers and health care professionals. A comprehensive overview of all of the important cereal and pseudo-cereal species Chapters review each of the following species: Wheat, Maize, Rice, Barley, Triticale, Rye, Oats, Sorghum, Millet, Teff, Buckwheat, Quinoa and Amaranth Reviews grain structure, chemical composition, processing and applications in food and beverage products for each of the considered grains

Wheat (Triticum L.) is an annual herbaceous plant in the Poacae (Gramineae) family and settles in the Triticeae (Hordeae) subfamily. It is of great ethnobotanical importance. Other cereal crops such as maize, rice, barley, and millet are also domesticated from this family. Together they constitute the most economically important plant family in modern times, providing food, forage, building materials (bamboo, thatch), and fuel (ethanol) to support a diverse range of human activities. In recent years, however, due to the awareness of gluten in wheat-based diet, there has been a rise in interest in its wild relatives and landraces as new resources for consumption. Accordingly, crop scientists have also begun to reexamine the origin, evolution, and unique characteristics of cultured and non-cultured hulled wheats. Although hulled wheats, which include einkorn, emmer, wild emmer, spelta, macha, and vavilovii, are still grown in limited quantities on the higher areas of Turkey, Italy, Germany, Morocco, Israel, and Balkan countries, they have been sought after for their health promoting effects. However, despite the newfound popularity of hulled wheats in the lay communities, there lacks a critically reviewed resource for the researchers and professionals who

wish to further develop these crop species. In this book, we provide an overview of hulled wheats with special attention to genetic diversities, conservation, and applications.

Paths Through Socio-Economic Change, Livelihoods and Development

Understanding Resistance in Inter-specific Rice Cultivars to the Parasitic Witchweed Striga

Gene Expression in Cereal Crops

Implications to Food Processing and Health Promotion

Omics Approach to Manage Abiotic Stress in Cereals

Increasing Productivity in African Food and Agricultural Systems

Summarizing landmark research, Volume 2 of this essential series furnishes information on the availability of germplasm resources that breeders can exploit for producing high-yielding cereal crop varieties. Written by leading international experts, this volume offers the most comprehensive and up-to-date information on employing genetic resources t

The fourteenth joint edition of the OECD-FAO Agricultural Outlook provides market projections for major agricultural commodities, biofuels and fish, as well as a special feature on the prospects and challenges of agriculture and fisheries in the Middle East and North Africa.

Plant diseases cause yield loss in crop production, poor quality of

produce, and great economic losses as well. Knowledge of the perpetuation and spread of the pathogens and various factors affecting disease development is an important need. Disease diagnosis is the prime requirement for determining preventive or curative measures for effective disease management. This new 2-volume set, Diseases of Field Crops, helps to fill the need for research on plant diseases, their effects, how they spread, and effective management measures to mitigate their harmful consequences. The volumes in this set showcase recent advances in molecular plant pathology and discuss appropriate diagnostic techniques for identification of causal agents and diseases, providing the information necessary to establish management strategies. The chapters in these two volumes include detailed description of symptoms, causal organisms, disease cycles, epidemiology, and management techniques of economically important diseases. The volumes explore existing strategies and offer new methods that can be used in an integrated manner and with a comprehensive approach for the management of major diseases of the field crops. Also taken into consideration is the impact of global climate change on the spread and severity of plant diseases. This volume focuses on a selection of cereal crops or grains for fodder and human food and the diseases that affect them. The crops include rice, maize, wheat, millet, sorghum, jute, and more. Volume 2 covers pulses,

oil seeds, narcotics, and sugar crops.
Cereal uses range from human food and beverages to animal feeds and industrial products. It is human food and beverages which are the predominant uses covered in this book, since the nutritional quality of cereals for animal feed is described in other publications on animal nutrition, and industrial products are a relatively minor use of cereals. Cereals are the main components of human diets and are crucial to human survival. Three species, wheat, rice and maize, account for the bulk of human food. Barley is the major raw material for beer production and ranks fourth in world production. Other species such as sorghum are regionally important. This book covers all the major cereal species: wheat, rice, maize, barley, sorghum, millet, oats, rye and triticale. Specific chapters have been devoted to a description of the major end-uses of each of the species and to definition of the qualities required for each of their end uses. The functional and nutritional quality of cereals determines their suitability for specific purposes and may limit the quality of the end product, influencing greatly the commercial value of grain. An under standing of the factors that determine grain quality is thus important in the maintenance of efficient and sustainable agricultural and food production. The biochemical constituents of the grain that determine quality have been described in chapters on proteins, carbohydrates and

other components. An understanding of the relationships between grain composition and quality is important in selecting grain for specific uses.

Volume I: Grains

Hulled Wheat

Diseases of Field Crops Diagnosis and Management 2-Volume Set

Genomic Designing of Climate-Smart Cereal Crops