

About Icrisat Core

Sorghum is the most important cereal crop grown in the semi-arid tropics (SAT) of Africa, Asia, Australia and Americas for food, feed, fodder and fuel. It is the fifth most important cereal crop globally after rice, wheat, maize and barley, and plays a major role in global food security. Sorghum is consumed in different forms for various end-uses. Its grain is mostly used directly for food purposes. After the release of the proceedings of two international symposia in the form of books “Sorghum in Seventies” and “Sorghum in Eighties”, global sorghum research and development have not been documented at one place. Of course, few books on sorghum have been released that focus on specific issues/research areas, but comprehensive review of all aspects of recent development in different areas of sorghum science has not been compiled in the form a single book. This book is intended to fill in a void to bridge the gap by documenting all aspects of recent research and development in sorghum encompassing all the progress made, milestones achieved across globe in genetic diversity assessment, crop improvement and production, strategies for high yield, biotic and abiotic stress resistance, grain and stover quality aspects, storage, nutrition, health and industrial applications, biotechnological applications to increase production, including regional and global policy perspectives and developmental needs. This book will be an institutional effort to compile all the latest information generated in research and development in sorghum across the globe at one place.

This open access book shares impact stories – testimonies from various value chain actors who have been part of the Tropical Legumes (TL) projects, over the past twelve years. The Tropical Legumes projects led by ICRISAT in three parts (TLI, TLII and TLIII), constitute a major international initiative supported by the Bill & Melinda Gates Foundation (BMGF) and jointly implemented by the International Center for Tropical Agriculture (CIAT), International Institute of Tropical Agriculture (IITA) and National Agricultural Research Systems (NARS) partners from Sub-Saharan Africa and India. The project developed improved cultivars of common bean, cowpea, chickpea and groundnut (but also soya bean and pigeon pea cultivars in its initial phases) and delivers their seed to smallholders in BMGF-focus areas. It also strengthens the NARS and CGIAR's breeding programs and seed platforms to enhance their ability to deliver high and sustained outputs to smallholder farmers. The book compiles the experiences of a diversity of actors within the grain legume value chains, with a focus on groundnut and common beans in Tanzania and Uganda, groundnut and cowpea in Nigeria, and groundnut in Ghana. All stakeholders involved share their thoughts on being part of a decade-long development project family. National agricultural research institutes, knowledge brokering organizations, NGOs, public and private seed companies, agro-dealers, individual seed entrepreneurs, farm-implement makers, farmer cooperatives, farmer groups, individual men and women farmers, middlemen, processors, traders and consumers were all involved in this project, and as such this book provides valuable insights for development workers, technical staff, and project managers.

This book highlights modern strategies and methods to improve oilseed crops in the era of climate change, presenting the latest advances in plant molecular breeding and genomics-driven breeding. Spectacular achievements in the fields of molecular breeding, transgenics and genomics in the last three decades have facilitated revolutionary changes in oilseed- crop-improvement strategies and techniques. Since the genome sequencing of rice, as the first crop plant, in 2002, the genomes of about one dozen oilseed crops have been sequenced and more are to follow. This has made it possible to decipher the exact nucleotide sequence and chromosomal positions of agro-economic 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.

Grain legumes, including common-bean, chickpea, pigeonpea, pea, cowpea, lentil and others, form important constituents of global diets, both vegetarian and non-vegetarian. Despite this significant role, global production has increased only marginally in the past 50 years. The slow production growth, along with a rising human population and improved buying capacity has substantially reduced the per capita availability of food legumes. Changes in environmental climate have also had significant impact on

production, creating a need to identify stable donors among genetic resources for environmentally robust genes and designing crops resilient to climate change. Genetic and Genomic Resources of Grain Legume Improvement is the first book to bring together the latest resources in plant genetics and genomics to facilitate the identification of specific germplasm, trait mapping and allele mining to more effectively develop biotic and abiotic-stress-resistant grains. This book will be an invaluable resource for researchers, crop biologists and students working with crop development. Explores origin, distribution and diversity of grain legumes Presents information on germplasm collection, evaluation and maintenance Offers insight into pre-breeding/germplasm enhancement efforts Integrates genomic and genetic resources in crop improvement Internationally contributed work

Molecular Breeding in Wheat, Maize and Sorghum

Genomic Designing of Climate-Smart Oilseed Crops

Sustainable Agriculture and New Biotechnologies

Genomics of Tropical Crop Plants

Enhancing Smallholder Farmers' Access to Seed of Improved Legume Varieties Through Multi-stakeholder Platforms

Food legumes are important constituents of the human diet and animal feed where they are crucial to a balanced diet, supplying high quality proteins. These crops also play an important role in low-input agricultural production systems by fixing atmospheric nitrogen. Despite systematic and continuous breeding efforts through conventional methods, substantial genetic gains have not been achieved. With the rise in demand for food legumes/pulses and increased market value of these crops, research has focused on increasing production and improving the quality of pulses for both edible and industrial purposes. "Biology and Breeding of Food Legumes" covers the history, origin and evolution, botany, breeding objectives and procedures, nutritional improvement, industrial uses and post-harvest technology and also recent developments made through biotechnological intervention.

Peanuts: Genetics, Processing, and Utilization (Oilseed Monograph) presents innovations in crop productivity and processing technologies that help ensure global food security and high quality peanut products. The authors cover three central themes, modern breeding methods for development of agronomic varieties in the U.S., China, West Central Africa, and India, enhanced crop protection and quality through information from the peanut genome sequence, and state-of-the-art processing and manufacturing of products in market environments driven by consumer perception, legislation, and governmental policy. Discusses modern breeding methods and genetically diverse resources for the development of agronomic varieties in the U.S., China, India, and West Central Africa Provides enhanced crop protection and quality through the application of information and genetic tools derived from analysis of the peanut genome sequence Includes state-of-art processing and manufacture of safe, nutritious, and flavorful food products

This open access book shares the experiences of Tropical Legumes III (TLIII) project in facilitating access to seed of improved legume varieties to smallholder farmers through innovation platforms. It highlights practices and guiding principles implemented in eight developing countries of sub-Saharan Africa and South Asia. This book details key processes that respective teams employed to create an innovation space that delivers seed, other inputs, knowledge and financial services to agricultural communities and most importantly, the underserved farmers in remote areas of the drylands. It offers valuable insights into the pathway to establishing, promoting and operating innovation platforms to enhance the performance and competitiveness of legume crops' value chains, and addresses critical issues that must be considered to make innovation platforms more sustainable and attractive to beneficiaries. The book offers a wealth of practical insights for development workers, technical staff, and project managers. This publication is all about TLIII community of practice. It will definitely inspire other development workers and scientists to share their own experiences for others to learn from.

For a long time there has been a critical need for a book to assess the genomics of tropical plant species. At last, here it is. This brilliant book covers recent progress on genome research in tropical crop plants, including the development of molecular markers, and many more subjects. The first section provides

information on crops relevant to tropical agriculture. The book then moves on to lay out summaries of genomic research for the most important tropical crop plant species.

Pratiyogita Darpan

4. Chickpea

Oilseed Crops, Volume 4

Plant Breeding Reviews

Genetic Diversity, Erosion, Conservation and Utilization

Part of the seven-volume series Genome Mapping and Molecular Breeding in Plants, the volume Oilseeds is devoted to oil-producing field crops such as soybeans, oilseed rape, peanuts, sunflowers, Indian mustard, Brassica rapa, black mustard and flax. While the grouping of economic plants is conventionally based on their agricultural purposes, several crops covered in this volume have other uses besides yielding oils. Brassica rapa is also used as a vegetable, the sunflower as an ornamental, and flax as a fibre crop. Black mustard, which is used as a condiment but is genetically close to other Brassica species, is also included here.

Brings together research from a range of fields to address key questions relating to agriculture: its origins and long-term sustainability.

*This book presents the current state of the art in peanut genomics, focusing particularly on the latest genomic findings, tools and strategies employed in genome sequencing, transcriptomes and analysis, availability of public and private genomic resources, and ways to maximize the use of this information in peanut breeding programs. Further, it demonstrates how advances in plant genomics can be used to improve crop breeding. The peanut or groundnut (*Arachis hypogaea* L. Millsp) is a globally important grain legume and oilseed crop, cultivated in over 100 countries and consumed in the form of roasted seeds, oil and confectionary in nearly every country on Earth. The peanut contributes towards achieving food and nutritional security, in addition to financial security through income generation; as such, it is also vital to the livelihood of the poor in the developing world. There have been significant advances in peanut research, especially in the last five years, including sequencing the genome of both diploid progenitors, and the availability of tremendous transcriptome resources, large-scale genomic variations that can be used as genetic markers, genetic populations (bi- and multiparent populations and germplasm sets), marker-trait associations*

and molecular breeding products. The immediate availability of the genome sequence for tetraploid cultivated peanuts is the most essential genomic resource for achieving a deeper understanding of peanut traits and their use in breeding programs.

Setaria viridis and S.italica make up a model grass system to investigate C4 photosynthesis, cell wall biosynthesis, responses to drought, herbicide, and other environmental stressors, genome dynamics, developmental genetics and morphology, and interactions with microorganisms. Setaria viridis (green foxtail) is one of the world's most widespread weeds, and its small size, native variation, rapidly burgeoning genetic and genomic resources, and transformability are making it the system of choice for both basic research and its translation into crop improvement. Its domesticated variant, S. italica (foxtail millet), is a drought-hardy cereal grown in China, India and Africa, and new breeding techniques show great potential for improving yields and nutrition for drought-prone regions. This book brings together for the first time evolutionary, genomic, genetic, and morphological analyses, together with protocols for growing and transforming Setaria, and approaches to high throughput genotyping and candidate gene analysis. Authors include major Setaria researchers from both the USA and overseas.

Genetic Resources, Chromosome Engineering, and Crop Improvement

Integrated Watershed Management in Rainfed Agriculture

Genetics, Genomics and Breeding of Peanuts

ICRISAT Annual Report

Genetic and Genomic Resources for Grain Cereals Improvement

Pratiyogita Darpan (monthly magazine) is India's largest read General Knowledge and Current Affairs Magazine. Pratiyogita Darpan (English monthly magazine) is known for quality content on General Knowledge and Current Affairs. Topics ranging from national and international news/ issues, personality development, interviews of examination toppers, articles/ write-up on topics like career, economy, history, public administration, geography, polity, social, environment, scientific, legal etc, solved papers of various examinations, Essay and debate contest, Quiz and knowledge testing features are covered every month in this magazine.

This book provides a comprehensive presentation of the realization of improved rainfed agriculture yield in semi-arid and dry land areas. The incentive of watershed programs is to increase the return on investment with over 20% for 65% of the projects that are currently underperforming. Besides techniques to

improve the livelihood of the many small

Quite simply, this is required reading for anyone involved in managing agricultural research. With a wealth of practical solutions and advice, it offers a how-to guide for managers as well as highlighting the differences in the way that different nations approach this key area of research – one of the most widespread forms of inquiry in the world. The lessons that can be learned from this brilliant study apply in equal measure to developed and developing nations. The spread of modern varieties and hybrids of pearl millet and sorghum that began in the mid-1960s has had an important impact on small farmer welfare in India. The success and sustainability of these improved cultivars resulted from three types (or periods) of interventions by the Indian government: (1) increased investments in crop improvement by national and international agricultural systems during the 1970s; (2) development of efficient seed systems, with the gradual inclusion of the private sector in the 1980s; and (3) the liberalization of the Indian seed industry in the late 1990s. In addition to increased overall production levels of sorghum and millet, there have been substantial yield gains in semi-arid regions as well as improved cultivars adopted in some of the poorest areas of India. The innovations of new, hybrid technology have not been limited to the Green Revolution crops; they have also had significant impact on the productivity of small-farmer households growing dryland crops, such as millet and sorghum in India.

Food Security and Climate Change

Biodiversity in Agriculture

Grain Legumes

Peanuts

Chickpea Breeding and Management

Biology and Breeding of Food Legumes CABI

When one is privileged to participate long enough in a professional capacity, certain trends may be observed in the dynamics of how challenges are met or how problems are solved. Agricultural research is no exception in view of how the plant sciences have moved forward in the past 30 years. For example, the once grand but now nearly forgotten art of whole plant physiology has given way almost completely to the more sophisticated realm of molecular biology. What once was the American Society of Plant Physiologists' is now the American Society of Plant Molecular Biology; a democratic decision to indemnify efforts to go beyond the limits of the classical science and actually begin to understand the underlying biological basis for genetic regulation of metabolic mechanisms in plants. Yet, as new technologies open windows of light on the inner workings of biological processes, one might reminisce with faint nostalgia on days long past when the artisans of plant physiology, biochemistry, analytical chemistry and other scientific disciplines ebbed and waned in prominence. No intentional reference is made here regarding Darwinism; the plant sciences always have been extremely competitive. Technology is pivotal. Those who develop and/or implement innovative concepts typically are regarded as leaders in their respective fields. Each

positive incremental step helps bring recognition and the impetus to push a scientific discipline forward with timely approaches to address relevant opportunities.

Proceedings of the Third International Food Legumes Research Conference Plant Breeding Reviews presents state-of-the-art reviews on plant genetics and the breeding of all types of crops by both traditional means and molecular methods. Many of the crops widely grown today stem from a very narrow genetic base; understanding and preserving crop genetic resources is vital to the security of food systems worldwide. The emphasis of the series is on methodology, a fundamental understanding of crop genetics, and applications to major crops. It is a serial title that appears in the form of one or two volumes per year.

Nutritional Quality Improvement in Plants

9. Peanut

Proven Successes in Agricultural Development

Legumes for Global Food Security

Linking Research and Marketing Opportunities for Pulses in the 21st Century

This book presents a detailed overview and critical evaluation of recent advances and remaining challenges in improving nutritional quality and/or avoiding the accumulation of undesirable substances in plants using a variety of strategies based on modern biological tools and techniques. Each review chapter provides an authoritative and insightful account of the various aspects of nutritional enhancement of plants. In the course of the last two decades, several food crops rich in macro- and micronutrients have been developed to improve health and protect a large section of the populace in developing countries from chronic diseases. Providing extensive information on these developments, this book offers a valuable resource for all researchers, students and industrialists working in agriculture, the plant sciences, agronomy, horticulture, biotechnology, food and nutrition, and the soil and environmental sciences.

???This book is devoted to grain legumes and include eight chapters devoted to the breeding of specific grain legume crops and five general chapters dealing with important topics which are common to most of the species in focus. Soybean is not included in the book as it is commonly considered an oil crop more than a grain legume and is included in the Oil Crops Volume of the Handbook of Plant Breeding. Legume species belong to the Fabaceae family and are characterized by their fruit, usually called pod.

Several species of this family were domesticated by humans, such as soybean, common bean, faba bean, pea, chickpea, lentil, peanut, or cowpea. Some of these species are of great relevance as human and animal food. Food legumes are consumed either by their immature pod or their dry seeds, which have a high protein content. Globally, grain legumes are the most relevant source of plant protein, especially in many countries of Africa and Latin America, but there are some constraints in their production, such as a poor adaptation, pest and diseases and unstable yield. Current research trends in Legumes are focused on new methodologies involving genetic and omic studies, as well as new approaches to the genetic improvement of these species, including the relationships with their symbiotic rhizobia. Plant Breeding Reviews presents state-of-the-art reviews on plant genetics and the breeding of all types of crops by both traditional means and molecular methods. Many of the crops widely grown today stem from a very narrow genetic base; understanding and preserving crop genetic resources is vital to the security of food systems worldwide. The emphasis of the series is on methodology, a fundamental understanding of crop genetics, and applications to major crops. The series is sponsored by the American Society for Horticultural Science and appears in the form of one or two volumes per year.

The genus *Arachis* has 80 diploid, aneuploid and tetraploid species that have been separated into nine sections. The cultivated peanut *Arachis hypogaea* L. is an allotetraploid that originated from the two diploids in section *Arachis*, and there has been no apparent introgression from related wild species since its origin. Systematic acquisition of wild and cultivated species began in the 1960s and has resulted in large collections of both *Arachis* species and *A. hypogaea*. However, additional germplasm is needed to fill in gaps for several *A. hypogaea* botanical varieties, and large areas in South America remain unexplored for *Arachis* species. The cultivated germplasm collection has been evaluated for several diseases, but many useful traits have not been assessed in the germplasm collections. Significantly higher levels of disease and insect resistances are found in the *Arachis* species, but introgression is difficult and very slow due to ploidy and genomic differentiation. Progress has been made in recent

years for utilizing wild species genetic resources, including development of several cultivars.

Learning from the TLIII Project Experiences in Sub-Saharan Africa and South Asia

The Sorghum Genome

Cash Crops

Agricultural Research Management

Pearl millet and sorghum improvement in India

This book provides an up-to-date overview of international research work on sorghum. Its comprehensive coverage of our current understanding of transgenic development in sorghum and the strategies that are being applied in molecular breeding make this book unique. Important areas such as genetic diversity, QTL mapping, heterosis prediction, genomic and bioinformatics resources, post-genome sequencing developments, molecular markers development using bioinformatics tools, genetic transformation and transgenic research are also addressed. The availability of the genome sequence along with other recent developments in sequencing and genotyping technologies has resulted in considerable advances in the area of sorghum genomics. These in turn have led to the generation of a large number of DNA-based markers and resulted in the identification and fine mapping of QTL associated with grain yield, its component traits, biotic and abiotic stress tolerance as well as grain quality traits in sorghum. Though a large volume of information has accumulated over the years, especially following the sequencing of the sorghum genome, until now it was not available in a single reference resource. This book fills that gap by documenting advances in the genomics and transgenic research in sorghum and presenting critical reviews and future prospects. "Sorghum Molecular Breeding" is an essential guide for students, researchers and managers who are involved in the area of molecular breeding and transgenic research in sorghum and plant biologists in general. The world has made enormous progress in the past 50 years toward eliminating hunger and malnutrition. While, in 1960, roughly 30 percent of the world's population suffered from hunger and malnutrition, today less than 20 percent do. Some five billion people now have enough food to live healthy, productive lives. Agricultural development has contributed significantly to these gains by increasing food supplies, reducing food prices, and creating new income and employment opportunities for some of the world's poorest people. This book examines where, why, and how past interventions in agricultural development have succeeded. It carefully reviews the policies, programs, and investments in agricultural development that have reduced hunger and poverty across Africa, Asia, and Latin America over the past half century. The 19 successes included here are described in in-depth case studies that synthesize the evidence on the intervention's impact on agricultural productivity and food security, evaluate the rigor with which the evidence was collected, and assess the tradeoffs inherent in each success. Together, these chapters provide evidence of "what works" in agricultural development.

Plant Breeding Reviews presents state-of-the-art reviews on plant genetics and the breeding of all types of crops by both traditional means and molecular methods. Many of the crops widely grown today stem from a very narrow genetic base; understanding

and preserving crop genetic resources is vital to the security of food systems worldwide. The emphasis of the series is on methodology, a fundamental understanding of crop genetics, and applications to major crops.

The chickpea is an ancient crop that is still important in both developed and developing nations. This authoritative account by international experts covers all aspects of chickpea breeding and management, and the integrated pest management and biotechnology applications that are important to its improvement. With topics covered including origin and taxonomy, ecology, distribution and genetics, this book combines the many and varied research issues impacting on production and utilization of the chickpea crop on its journey from paddock to plate.

The Peanut Genome

A Technical Compendium to Millions Fed

Oil Crops

India–Africa Partnerships for Food Security and Capacity Building

Oilseeds

Taking a broad and innovative informational approach, *Sustainable Agriculture and New Biotechnologies* is the first book to apply omic technologies to address issues related to understanding and improving agricultural sustainability in the food production process. The transformation from industrial to sustainable agriculture is discussed within the

The global population is projected to reach almost 10 billion by 2050, and food and feed production will need to increase by 70%. Wheat, maize and sorghum are three key cereals which provide nutrition for the majority of the world's population. Their production is affected by various abiotic stresses which cause significant yield losses. The effects of climate change also increase the frequency and severity of such abiotic stresses. Molecular breeding technologies offer real hope for improving crop yields. Although significant progress has been made over the last few years, there is still a need to bridge the large gap between yields in the most favorable and most stressful conditions.

Chickpea is an important protein-rich crop with considerable diversity present among 44 annual *Cicer* species. A large collection of chickpea germplasm including wild *Cicer* species has been conserved in different gene banks globally. However, the effective and efficient utilization of these resources is required to develop new cultivars with a broad genetic base. Using core and mini-core collections, chickpea researchers have identified diverse germplasm possessing various beneficial traits that are now being used in chickpea breeding. Further, for chickpea improvement, the genus *Cicer* harbours alleles/genes for tolerance/resistance to various abiotic and biotic stresses as well as for agronomic and nutrition-related traits. Recent advances in plant biotechnology have resulted in developing large number of markers specific to chickpea in addition to technological breakthrough in developing high-throughput genotyping platforms for unlocking the genetic potential available in germplasm collections.

This compendium showcases the ongoing trends and challenges in South-South cooperation between India and select countries in Africa, for achieving food security

and poverty reduction. Scholars and practitioners share diverse perspectives on the role of India's development compact; aid, trade, private sector driven Foreign Direct Investments (FDIs), and concessional Lines of Credit (LOCs) to the agricultural and agro-processing sector in Africa. India- Africa cooperation also underscores that the sharing of knowledge and capabilities- technical and financial, along with North- South partnerships- through trilateral and multilateral mechanisms, can upscale agriculture and agro-processing sectors to centre stage the food security agenda and reduce poverty. Arguments made through the volume critically highlight hegemonic neo-liberal economic policies, structural adjustment programmes, import substitution practices, and the denationalization of food production, and illustrate the need for sustainable and cost effective agro-ecological practices, in the face of ongoing global challenges, such as the climate emergency and degradation of biodiversity and habitats. The axial questions addressed are; how does cooperation between countries of the Global South- India and Africa - impact intra-South trading, capacity building, and the investment landscape. Scientists, academics, development professionals, government officials, NGOs and international organizations, offer the readers; empirical case studies, policy perspectives, the limitations and challenges, and the way forward in an analytical manner.

Genetics, Processing, and Utilization

A Renaissance within Communities in Sub-Saharan Africa

South-South Cooperation

Fundamentals of Field Crop Breeding

This book provides insights into the current state of sorghum genomics. It particularly focuses on the tools and strategies employed in genome sequencing and analysis, public and private genomic resources and how all this information is leading to direct outcomes for plant breeders. The advent of affordable whole genome sequencing in combination with existing cereal functional genomics data has enabled the leveraging of the significant novel diversity available in sorghum, the genome of which was fully sequenced in 2009, providing an unmatched resource for the genetic improvement of sorghum and other grass species. Cultivated grain sorghum is a food and feed cereal crop adapted to hot and dry climates, and is a staple for 500 million of the world's poorest people. Globally, sorghum is also an important source of animal feed and forage, an emerging biofuel crop and model for C4 grasses, particularly genetically complex sugarcane.

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

This book looks at the current state of food security and climate change, discusses the issues that are affecting them, and the actions required to ensure there will be enough food for the future. By casting a much wider net than most previously published books—to include select novel approaches, techniques, genes from crop diverse genetic resources or relatives—it shows how agriculture may still be able to triumph over the very real threat of climate change. Food Security and Climate Change integrates various challenges posed by changing climate, increasing population, sustainability in crop productivity, demand for food grains to sustain food security, and the anticipated future need for nutritious quality foods. It looks at individual factors resulting from climate change, including rising carbon emission levels, increasing temperature, disruptions in rainfall patterns, drought, and their combined impact on planting environments, crop adaptation, production, and management. The role of plant genetic resources, breeding technologies of crops, biotechnologies, and integrated farm management and agronomic good practices are included, and demonstrate the significance of food grain production in achieving food security during climate change. Food Security and Climate Change is an excellent book for researchers, scientists, students, and policy makers involved in agricultural science and technology, as well as those concerned with the effects of climate change on our environment and the food industry.

Summarizing landmark research, Volume 4 of this essential series furnishes information on the availability of germplasm resources that breeders can exploit for producing high-yielding oilseed crop varieties. Written by leading international experts, this volume presents the most up-to-date information on employing genetic resources to increase
Sowing Legume Seeds, Reaping Cash

Proceedings of the Third International Food Legumes Research Conference

Sorghum in the 21st Century: Food – Fodder – Feed – Fuel for a Rapidly Changing World

Sorghum Molecular Breeding

Biology and Breeding of Food Legumes

Peanut, an amphidiploid, is an important food and oil crop and has an interesting evolutionary history. This book provides a glimpse of the advances in genetic resources and genomics research of peanut made during the last decade. It contains an overview of germplasm, advances in genetic and genomic resources, genetic and trait mapping, proteomic and transcriptomic analyses, functional and comparative genomics studies, and molecular breeding applications. This book should prove useful to students, teachers, and young researchers as a ready reference to the latest information on peanut genetics and genomics.

Domestication, Evolution, and Sustainability

Strategies for Improving Abiotic Stress Tolerance and Yield

Genetic and Genomic Resources of Grain Legume Improvement

Genetics and Genomics of Setaria