



Broadening the Genetic Base of Crop Production

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Food and Agriculture Organization of the United Nations



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Broadening The Genetic Bases Of Crop Production

Robert M. Goodman



Broadening The Genetic Bases Of Crop Production:

Broadening the Genetic Base of Crop Production H. David Cooper, Charlie Spillane, T. Hodgkin, 2001 This book focuses on the previously neglected interface between the conservation of plant genetic resources and their utilization Only through utilization can the potential value of conserved genetic resources be realized However as this book shows much conserved germplasm has to be subjected to long term pre breeding and genetic enhancement before it can be used in plant breeding programs The authors explore the rationale and approaches for such pre breeding efforts as the basis for broadening the genetic bases of crop production Examples from a range of major food crops are presented and issues analyzed by leading authorities from around the world *Broadening the Genetic Base of Grain Legumes* Mohar Singh, Ishwari Singh Bisht, Manoranjan Dutta, 2014-10-28 Grain legumes play significant and diverse role in the farming systems and provide

nutrition security to the largely vegetarian and relatively poorer people around the world These are ideal crops for achieving three simultaneous developmental goals viz reducing poverty improving human health and nutrition and enhancing ecosystem resilience Globally grain legumes are the second most important crop group next only to cereals but a large proportion of area of it is under rainfed low input systems as compared to cereals contributing to lower yields The other important factor responsible for reduced yield in grain legumes is the narrow genetic base of the present day pulse varieties In order to break the yield barriers of these cultivars new sources of genes alleles need to be identified and suitably incorporated into the adapted background The information on various aspects of grain legume improvement although has been considerable in the recent past these information are highly scattered and not available at one place The present book consists of comprehensive and latest crop wise information on important grain legumes of the world including their distribution gene pool systematics status of genetic and genomic resources production constraints traits of importance crop improvement methodologies both conventional as well as contemporary and future strategies to be adopted for comprehensive grain legume improvement in various agro ecological target areas of the globe The chapters have been contributed by eminent crop experts from across the world engaged in research in their respective crops for the past several years thus providing a rare insight into the crop specific constraints and prospects drawing from their rich overall experience The book therefore will be a useful source of information to the grain legume researchers students policy planners and developmental experts alike ***Broadening the Genetic Base of Crop Production*** H. D. Cooper, 2001 General principles

Crop case studies Population management Other approaches to broadening the genetic base of crops *Broadening the Genetic Base of Grain Cereals* Mohar Singh, Sandeep Kumar, 2016-09-13 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

Plant Genetic Resources and Traditional Knowledge for Food Security Romesh Kumar Salgotra, Bharat Bhushan Gupta, 2016-01-22 With exponentially increasing population across the globe and shrinking resources the concern of food security is looming large over the world community To catch up with the fierce pace of growth in all the sectors of development ensuring uninhibited availability of food resources is a prime agenda The growing global demand for food feed fiber and bio based renewable materials such as bio fuels is changing the conditions for genetic resources development and bio resource production worldwide The crucial role in ensuring food security is played by the agro based industries and enterprises Advances in plant genetic resources coupled with traditional knowledge of the local tribes and native practices facilitate achievement of food security Plant Breeding: Past, Present and Future John E. Bradshaw, 2016-03-08 This book aims to help plant breeders by reviewing past achievements currently successful practices and emerging methods and techniques Theoretical considerations are also presented to strike the right balance between being as simple as possible but as complex as necessary The United Nations predicts that the global human population will continue rising to 9.0 billion by 2050 World food production will need to increase between 70-100 per cent in just 40 years First generation bio fuels are also using crops and cropland to produce energy rather than food In addition land area used for agriculture may remain static or even decrease as a result of degradation and climate change despite more land being theoretically available unless crops can be bred which tolerate associated abiotic stresses Lastly it is unlikely that steps can be taken to mitigate all of the climate change predicted to occur by 2050 and beyond and hence adaptation of farming systems and crop production will be required to reduce predicted negative effects on yields that will occur without crop adaptation Substantial progress will therefore be required in bridging the yield gap between what is currently achieved per unit of land and what should be possible in future with the best farming methods and best storage and transportation of food given the availability of suitably adapted cultivars including adaptation to climate change My book is divided into four parts Part I is an historical introduction Part II deals with the origin of genetic

variation by mutation and recombination of DNA Part III explains how the mating system of a crop species determines the genetic structure of its landraces Part IV considers the three complementary options for future progress use of sexual reproduction in further conventional breeding base broadening and introgression mutation breeding and genetically modified crops

Agrobiodiversity Conservation Nigel Maxted, 2012 Based on the 2010 conference Towards the establishment of genetic reserves for crop wild relatives and landraces in Europe this book is the cutting edge discussion of agrobiodiversity conservation By considering the benefits of understanding and preserving crop wild relatives and landraces it encompasses issues as wide ranging and topical as habitat protection ecosystem health and food security Focusing on Europe but globally relevant Agrobiodiversity Conservation is ideal for postgraduate students of conservation and environmental studies conservation professionals policy makers and researchers

Encyclopedia of Plant and Crop Science (Print) Robert M. Goodman, 2004-02-27 Encyclopedia of Plant and Crop Science is the first ever single source reference work to inclusively cover classic and modern studies in plant biology in conjunction with research applications and innovations in crop science and agriculture From the fundamentals of plant growth and reproduction to developments in agronomy and agricultural science the encyclopedia's authoritative content nurtures communication between these academically distinct yet intrinsically related fields offering a spread of clear descriptive and concise entries to optimally serve scientists agriculturalists policy makers students and the general public

Applied Mathematics and Omics to Assess Crop Genetic Resources for Climate Change Adaptive Traits Abdallah Bari, Ardeshir B. Damania, Michael Mackay, Selvadurai Dayanandan, 2018-09-03 Applied Mathematics and Omics to Assess Crop Genetic Resources for Climate Change Adaptive Traits focuses on practical means and approaches to further the use of genetic resources for mitigating the effects of climate change and improving crop production Genetic diversity in crop plants is being further explored to increase yield disease resistance and nutritional value by employing recent advances in mathematics and omics technologies to promote the adaptation of crops to changing climatic conditions This book presents a broad view of biodiversity and genetic resources in agriculture and provides answers to some current problems It also highlights ways to provide much needed information to practitioners and innovators engaged in addressing the effects of global climate change on agriculture The book is divided into sections that cover The implications of climate change for drylands and farming communities The potential of genetic resources and biodiversity to adapt to and mitigate climate change effects Applications of mathematics and omics technologies Genomics and gene identification We are in the midst of significant changes in global climates and its effects are already being felt throughout the world The increasing frequency of droughts and heat waves has had negative impacts on agricultural production especially in the drylands of the world This book shares the collective knowledge of leading scientists and practitioners giving readers a broader appreciation and heightened awareness of the stakes involved in improving and sustaining agricultural production systems in the face of climate change

The Second Report on the State

of the World's Plant Genetic Resources for Food and Agriculture Food and Agriculture Organization of the United Nations, 2010-01-01 Plant genetic resources provide a basis for food security livelihood support and economic development as a major component of biodiversity The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture demonstrates the central role plant genetic diversity continues to play in shaping agriculture growth in the face of climate change and other environmental challenges It is based on information gathered from Country Reports regional syntheses thematic studies and scientific literature documenting the major achievements made in this sector during the past decade and identifying the critical gaps and needs that should urgently be addressed The Report provides the decision makers with a technical basis for updating the Global Plan of Action on Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture It also aims to attract the attention of the global community to set priorities for the effective management of plant genetic resources for the future Purchase a print copy

Broadening The Genetic Bases Of Crop Production Book Review: Unveiling the Magic of Language

In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Broadening The Genetic Bases Of Crop Production**," compiled by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we shall delve into the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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