



Halophytes for Food Security in Dry Lands



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Halophytes For Food Security In Dry Lands

Walter Leal Filho, Evangelos Manolas



Halophytes For Food Security In Dry Lands:

Halophytes for Food Security in Dry Lands Muhammad Ajmal Khan, Munir Ozturk, Bilquees Gul, Muhammad Zaheer Ahmed, 2015-09-15 Halophytes for Food Security in Dry Lands addresses the concerns surrounding global food scarcity especially focusing on those living in arid and dry lands The book touches on food crises in dry regions of the world and proposes halophytes as an alternate source of consumption for such areas Halophytes those plants that thrive in saline soil and provide either food source options themselves or positively enhance an eco system s ability to produce food and are thus an important and increasingly recognized option for addressing the needs of the nearly 1 6 of the world s population that lives in these arid and semi arid climates Including presentations from the 2014 International Conference on Halophytes for Food Security in Dry Lands this book features insights from the leading researchers in the subject It is a valuable resource that includes information on the nutritional value of halophytes their genetic basis and potential enhancement adaption of halophytes and lessons learned thus far Provides comprehensive coverage of the importance and utilization of halophytes to compensate the demand of food in whole world especially in the dry regions Contains insights from ecological to molecular fields Includes edible halophytes as well as those that enhance food producing eco systems Presents information for improving abiotic stress tolerance in plants

Ethnic Knowledge and Perspectives of Medicinal Plants Münir Öztürk, Kandikre Ramaiah Sridhar, Maryam Sarwat, Volkan Altay, Francisco Martín Huerta-Martínez, 2023-10-20 This new 2 volume set aims to share and preserve ethnic and traditional knowledge of herbal medicine and treatments while also emphasizing the link between biodiversity human nutrition and food security Ethnic Knowledge and Perspectives of Medicinal Plants is divided into two volumes with volume 1 focusing on the traditional use of curative properties and treatment strategies of medicinal plants and volume 2 addressing the varied nutritional and dietary benefits of medicinal plants and the practice of Ayurveda Both volumes stress the importance of bioresources for human nutrition and nutraceuticals based on ethnic knowledge and the need for efforts to protect biodiversity in many regions rich with medicinal plants Exploring the benefits of medicinal plants in disease prevention treatment and management Volume 1 discusses the traditional use of medicinal plants as promising therapeutics for cancer liver conditions COVID 19 and other human ailments It examines the efficacy of Ayurvedic and Chinese herbal medicine Indian traditional medicine and other ethnic herbal practices used by indigenous peoples of Azerbaijan South America Turkey India etc A variety of plants are discussed and the ethnomedicinal applications of over 100 wild mushrooms for their medicinal and healthcare purposes are elaborated on While volume 1 focuses primarily on natural plant resources for addressing specific health issues volume 2 looks at traditional medicinal plant use for their nutritional and dietary benefits while also encouraging the preservation of biodiversity for healthy and sustainable diets The volume presents information on over 2200 vascular plant taxa from 127 families as well as many taxa from leaf parts fruits underground parts floral parts seeds and more that have potential use as

edible food plants Ethnic knowledge on the wild edible mushrooms is an emerging area which is unique and is dependent on the folk knowledge of tribals this volume discusses the unique nutritional attributes of wild edible mushrooms 206 species belonging to 73 genera in Southern India The authors look at various lichens as nutritional aids and medicine and as flavoring agents and spices Fucoidans derived from the seaweeds and spirulina are described for their antioxidant activity nutritional and anti aging properties antiviral activities anti cancer properties anti diabetic properties and more The authors also examine how ethnicity affects healthcare nutritive systems at different levels through various dynamics such as lower income inability for services uptake disputes among different ethnic groups cultural attitudes some ethnic group are vegetarian lack of socio economic resources and disease prevalence Together these two important volumes aim to preserve and disseminate the valuable ethnic knowledge of medicinal plants gained over thousands of years and to promote the value of integrating and safeguarding biodiversity *Halophyte Plant Diversity and Public Health* Münir Öztürk,Volkan

Altay,Moona Nazish,Mushtaq Ahmad,Muhammad Zafar,2023-03-01 Salinity is one of the acute problems causing enormous yield loss in many regions of the world This phenomenon is particularly pronounced in arid and semiarid regions Halophytes can remove salt from various types of problematic soils due to their unique morphological physiological and anatomical adaptations to these environments Halophytes are also used for the treatment of certain diseases but scientific documentation in terms of current phytotherapeutic applications is deficient in this unique group of plants Different ethnic groups around the world use medicinal halophytes according to their own beliefs and ancestor s experiences However their knowledge about the use of salt tolerant medicinal plants is usually confined to their own community There is thus a knowledge gap on halophytes which should be bridged and preserved This book provides a comprehensive account on the distribution of halophytes their ethnobotanical and medicinal aspects economic importance and chemical constituents along with scientific description The book therefore serves as a valuable resource for professionals and researchers working in the fields of plant stress biology and ethnobotanical aspects *Ecophysiology, Abiotic Stress Responses and Utilization of*

Halophytes Mirza Hasanuzzaman,Kamrun Nahar,Münir Öztürk,2019-04-12 Halophytes are those plant species that can tolerate high salt concentrations There are diversified species of halophytes suited for growth in various saline regions around the world e g coastal saline soil soils of mangrove forests wetlands marshlands lands of arid and semiarid regions and agricultural fields These plants can be grown in soil and water containing high salt concentrations and unsuitable for conventional crops and can be good sources of food fuel fodder fiber essential oils and medicine Moreover halophytes can be exploited as significant and major plant species for the desalination and restoration of saline soils as well as phytoremediation This book highlights recent advances in exploring the unique features of halophytes and their potential uses in our changing environment Halophytic and Salt-Tolerant Feedstuffs Hassan M. El Shaer,Victor Roy

Squires,2015-11-18 Naturally occurring salt tolerant and halophytic plants trees shrubs grasses and forbs have always been

utilized by livestock as a supplement or drought reserve Salt tolerant forage and fodder crops are now being planted over wide areas Increasingly large scale production of fodder on formerly abandoned irrigated cropland has allowed salt t

Sustainable Utilisation and Bioengineering of Halophytes Jaya Arora,Marius-Nicutor Grigore,Abhishek Joshi,2025-02-14

This book provides a comprehensive overview of the cutting edge research in the bioengineering of halophytes with a particular focus on advancements in biotechnology transcriptomics proteomics metabolomics and genomics Halophytes are a unique group of plants that have adapted to grow in extreme environmental conditions such as high salt low water and high temperatures In desert conditions these plants are crucial for supporting animal and human life However overexploitation of these plants degrades the ecosystem Sustainable utilization and improvement of these plants through modern tools are essential for the sustainability of both the plants and the environment Halophytes possess unique metabolic and physiological features making them an attractive target for bioengineering Recent advancements in bioengineering have significantly enhanced the study and manipulation of halophytes By exploring the intricacies of these technologies this book addresses key questions and challenges in harnessing the potential of halophytes for sustainable plant resources environmental remediation and novel biotechnological applications This book will be valuable for researchers in plant biology environmental studies desertification plant improvement and biotechnology

Biodiversity, Conservation and Sustainability in Asia Münir

Öztürk,Shujaul Mulk Khan,Volkan Altay,Recep Efe,Dilfuza Egamberdieva,Furkat O. Khassanov,2022-03-10 Of the world's seven continents Asia is the largest Its physical landscapes political units and ethnic groups are both wide ranging and many Southwest South and Middle Asia are highly populated regions which as a whole cover an extremely large area of varied geography In total this domain is unique in its plant diversity and large vegetation zones with different communities and biomes It is rich in endemics with specific and intraspecific diversity of fruit trees and medicinal plants including a number of rare high value species At the same time much of the land in the region is too dry or too rugged with many geographical extremes Overgrazing oil and mineral extraction and poaching are the major threats in the area This two volume project focuses on the dynamic biodiversity of the region with in depth analysis on phytosociology plants animals and agroecology There are also chapters that explore new applications as well as approaches to overcome problems associated with climate change Much of the research and analysis are presented here for the first time We believe this work is a valuable resource for professionals and researchers working in the fields of plant diversity and vegetation animal diversity and animal populations and geo diversity and sustainable land use among others The first volume guides our readers to West Asia and the Caucasus region while volume two focuses on issues unique to South and Middle Asia

Sustainable Management and Conservation of Environmental Resources in India Sumit Chakravarty,Vineeta I,Jahangeer A. Bhat,Munesh Kumar,Gopal

Shukla,2024-11-22 The concept of natural resource sustainability has taken on new importance in today's world and community participation in the conservation of forest resources is essential for generating innovative sustainability solutions

This new book looks at some of the important issues in sustainability and natural resource conservation including pollution agroforestry forest fire detection and monitoring sericulture based agroforestry soil quality preservation and restoration and remote sensing and machine learning for improved agriculture **Halophytes and Climate Change** Mirza

Hasanuzzaman, Sergey Shabala, Masayuki Fujita, 2019-02-14 This book contains current knowledge and the most recent developments in the field of halophyte biology ecology and potential uses Halophytes are characterized as plants that can survive and complete their life cycle in highly saline environments This book explores the adaptive mechanisms and special features of halophytes that allow them to grow in environments that are unsuitable for conventional crops and considers their role as a source of food fuel fodder fiber essential oils and medicines Halophytes and Climate Change includes coverage of Special morphological anatomical and physiological features of halophytes Ion accumulation patterns and homeostasis in halophytes Potential use of halophytes in the remediation of saline soil Growth and physiological response and tolerance to toxicity and drought Mangrove ecology physiology and adaptation Written by a team of international authors and presented in full color this book is an essential resource for researchers in the fields of plant physiology ecology soil science environmental science botany and agriculture **Global Perspectives on Underutilized Crops** Munir Ozturk, Khalid

Rehman Hakeem, Muhammad Ashraf, Muhammad Sajid Aqeel Ahmad, 2018-05-17 Increase in world population extreme weather conditions decrease in fresh water supplies and changes of dietary habits are major issues that affect global food security We are expected to face the challenges of land use by 2050 because population will reach 9 billion while agricultural productivity losses are expected due to overuse of lands How can we feed the next generations in a manner that respects our finite natural resources Managing our resources in a sustainable way have only begun for selected crops Much remains to be done to increase food yield Cropping practices capable of sustainable production need to be elaborated especially in fragile ecosystems Typical applications will include the improvement and use of genetic resources crop management and diversification diffusion of improved varieties development of cropping systems sustainable cropping systems for areas prone to environmental degradation use of agro ecological data for crop production forecasting and networks for regional coordination and data exchange The impetus behind this book is to bring attention to a cropping system that bears direct relevance to sustainable agriculture and food security Underutilized crops are found in numerous agricultural ecosystems and often survive mainly in marginal areas It is timely to review their status because in recent decades scientific and economic interests have emerged which focus on lesser known cultivated species Underutilized crops have a great potential to alleviate hunger directly through increasing food production in challenging environments where major crops are severely limited Global Perspectives on Underutilized Crops is therefore topical and highlights the unmet agricultural challenges that we face today This book is an important resource for students and researchers of crop science and agricultural policy makers

Ion Transporters Swarnendu Roy, Khalid Rehman Hakeem, Piyush Mathur, 2025-11-13 In the struggle between plants

and salt ion transporters are the silent warriors that turn adversity into growth As our planet faces the growing threat of climate change and soil salinization the need to develop resilient crops has never been more urgent **Ion Transporters The Clue to Salt Tolerance and Adaptation in Plants** offers an honest attempt to delve into the molecular mechanisms that enable plants to survive in salty environments The book explores how ion transporters specialized proteins that regulate the movement of ions across plant cell membranes are central to a plant's ability to manage salt stress and thrive in challenging conditions Drawing from cutting edge research in plant physiology molecular biology and genetics this book uncovers the complex role of ion channels pumps and transporters in salt tolerance It also highlights how scientists are leveraging these mechanisms to develop crops capable of withstanding increasing soil salinity From halophytes nature's salt survivors to biotechnological breakthroughs this book reveals the future of sustainable agriculture in a salt affected world A special focus is given to advanced biotechnological tools such as gene editing CRISPR Cas9 and modern breeding techniques **Key Features** In depth explanation of ion transporters and their role in salt tolerance Coverage of ion channels pumps and their coordination in stress adaptation Case studies on halophytes and naturally salt tolerant systems Insights into gene editing CRISPR Cas9 and biotechnology applications Exploration of sustainable crop development under saline conditions Whether you are a researcher educator or agricultural practitioner this book will deepen your understanding of the molecular underpinnings of salt tolerance and inspire innovative solutions for global food security

Baseline study of biosaline agriculture and roadmap to concerted cooperation in Maghreb countries Food and Agriculture Organization of the United Nations,2023-12-14 Over 80 percent of the freshwater used in the Maghreb region is used by the agriculture sector The region deals with rising soil and water salinization as well as agricultural land degradation The sector is being impacted by climate change particularly in light of the recent extended droughts Making the most of all available water resources especially saline waters becomes essential in a situation where water scarcity is getting worse due to a combination of climate change's effects and rising demand FAO conducted this study on the state and prospects of biosaline agriculture in the member nations of the Arab Maghreb Union AMU in collaboration with the International Center for Biosaline Agriculture ICBA and the AMU as part of a regional initiative on water scarcity Biosaline agriculture is the cultivation of plants in water or on soils high in salt It entails using tolerant plants that can produce a significant amount of biomass under saline circumstances to recover and maintain saline soils and to exploit saline waters for sustainable and financially advantageous production The report provides a comparative analysis of the five nations in the Maghreb region assesses the diverse farming practices and experiences already in use there and offers a vision and framework for coordinated action and the promotion of biosaline farming The report highlights the regions of the Maghreb countries that are most affected by salt along with their features existing practices methods of adaptation and prospects for future sustainable agricultural production *Sabkha Ecosystems* Bilquees Gul,Benno Böer,M. Ajmal Khan,Miguel Clüsener-Godt,Abdul Hameed,2019-08-05 This book is the sixth

and final volume in the Tasks for Vegetation Science book series and it concludes the most comprehensive scientific documentation dealing with hypersaline ecosystems of the world

Ethnobotany of Northern Africa and Levant Rainer W. Bussmann, Mostafa Elachouri, Zaal Kikvidze, 2024-11-15 Research in recent years has increasingly shifted away from purely academic research and into applied aspects of the discipline including climate change research conservation and sustainable development It has by now widely been recognized that traditional knowledge is always in flux and adapting to a quickly changing environment Trends of globalization especially the globalization of plant markets have greatly influenced how plant resources are managed nowadays While ethnobotanical studies are now available from many regions of the world no comprehensive encyclopedic series focusing on the worlds mountain regions is available in the market Scholars in plant sciences worldwide will be interested in this dynamic content The field and thus the market of ethnobotany and ethnopharmacology has grown considerably in recent years Student interest is on the rise attendance at professional conferences has grown steadily and the number of professionals calling themselves ethnobotanists has increased significantly Various societies of such professionals include the Society for Economic Botany the International Society of Ethnopharmacology the Society of Ethnobiology the International Society for Ethnobiology and many regional and national societies in the field that currently have thousands of members Growth has been most robust in BRIC countries The objective of this new MRW on Ethnobotany of Mountain Regions is to take advantage of the increasing international interest and scholarship in the field of mountain research We anticipate including the best and latest research on a full range of descriptive methodological theoretical and applied research on the most important plants for each region Each contribution will be scientifically rigorous and contribute to the overall field of study

Mulberry Munir Ozturk, Azra N. Kamili, Volkan Altay, Gulab Khan Rohela, 2023-12-09 Mulberry *Morus* spp is widely distributed tree taxon found almost in every continent across the globe Habitat of this plant species is very much diversified as it is found across all climatic zones ranging from tropical sub tropical temperate tundra semi arid to desert arid conditions It flourishes on all types of landforms mountains valleys plateaus forests grasslands hills plains and arid lands Successful utilization of mulberry leaf for silkworm rearing and production of quality cocoons has been studied at length Now mulberry is being recognized as a multipurpose plant by most of the countries across the globe As mulberry is eco friendly in nature the propagation of mulberry needs to be done at large scale to address the ecological issues like conversion of arid lands to cultivable lands eco restoration of degraded lands bioremediation of polluted land sites conservation of water and soil cleaning the air pollution in urban areas utilization of mulberry in producing renewable energy in the form of biodiesel Similarly there is the need to produce the identified and highly commercially valued pharmaceutical compounds of mulberry under laboratory conditions through in vitro culture based secondary metabolite production through enhanced expression under the stress conditions or in presence of elicitors Lately protocols have been developed for genetic transformation of mulberry through agrobacterium mediated and particle

bombardment mediated gene transfer techniques Biotechnology based molecular breeding techniques could also be utilized in raising the improved lines through marker assisted selection soma clonal variations mutational breeding somatic hybridization genome editing and other genetic engineering approaches Apart from sericulture mulberry should also be utilized and exploited in other sectors across the globe for additional revenue generation for livestock maintenance for environmental safety and in promoting human health These diversified aspects of mulberry coupled with its economic importance in revenue generation through sericulture animal husbandry and industrial products has prompted us to prepare this book It will present a comprehensive account of mulberry plant under 9 chapter headings introduction botanical features ecological features ecophysiological aspects interactions and development molecular aspects propagation and production economic importance and global perspectives as well as future approaches

Climate Change in the Mediterranean and Middle Eastern Region Walter Leal Filho, Evangelos Manolas, 2022-01-01 This book serves the purpose of showcasing some of the works in respect of applied research field projects and best practice to foster climate change adaptation across the region Climate change is having a much greater impact in the Mediterranean than the global average In the Paris Climate Agreement the UN member states pledged to stop global warming at well below two degrees if possible at 1.5 degrees This mark which is expected elsewhere only for 2030 to 2050 has already been reached in the region The situation could worsen in the coming years if the global community does not limit its emissions The above state of affairs illustrates the need for a better and more holistic understanding of how climate change affects countries in the Mediterranean region on the one hand but also on the many problems it faces on the other which prevent adaptation efforts There is also a perceived need to showcase successful examples of how to duly address and manage the many social economic and political problems posed by climate change in the region in order to replicate and even upscale the successful approaches used It is against this background that the book **Climate Change in the Mediterranean and Middle Eastern Region** has been produced It contains papers prepared by scholars practitioners and members of governmental agencies undertaking research and or executing climate change projects and working across the region

Environmental Security in Africa Augustine Avwunudiogba, Leonard Sitji Bombom, Elisha Jasper Dung, 2024-08-19 **Environmental Security in Africa** Conflicts Politics and Development investigates the nature scope and dimension of environmental security in Africa from a multidisciplinary perspective to examines the history theories spatial patterns sociocultural socioeconomic consequences and legal ramifications of Africa's environmental concerns This book is grounded in theories that cut across the social behavioral and environmental sciences arguing that environmental security is a multifaceted subject intricately linked to global climate change and magnified by globalization Drawing from case studies across different parts of Africa Elisha Jasper Dung Leonard Sitji Bombom Augustine Avwunudiogba and the contributors argue that the integral part of the solution to Africa's environmental security issues are entrenched in victims local regional social cultural political and economic circumstances in

specific geographical locations such as Nigeria Northeast Africa Kenya and South Sudan Comprised of 17 chapters this book provides a unique perspective that facilitates understanding the complex problem of environmental security and its sundry ramifications for scholars and policymakers

Dry Land Crops Yves Earhart, AI, 2025-02-23 In the face of escalating climate change Dry Land Crops explores the critical role of drought resistant agriculture in ensuring global food security It highlights how certain plants through unique physiological and genetic mechanisms can thrive in arid conditions Understanding these mechanisms is crucial considering that agriculture has historically relied on water intensive methods often unsustainable in dry environments The book reveals actionable strategies for mitigating the impacts of climate change on agricultural systems emphasizing the necessity of shifting towards crops inherently adapted to water limited conditions The book progresses by first introducing the diverse forms of drought resistance from morphological adaptations to efficient water use It then delves into the genetic basis of drought tolerance exploring how molecular biology can accelerate the breeding of drought resistant varieties Major sections cover examples of drought resistant crops including cultivation techniques and nutritional value The book uniquely integrates scientific findings with practical experience making it a valuable resource for farmers policymakers and researchers alike It connects environmental science with sustainable land management economics and sociology

Management of Concentrate from Desalination Plants Nikolay Voutchkov, Gisela Kaiser, 2020-08-15 Management of Concentrate from Desalination Plants provides an overview of the alternatives for managing concentrate generated by brackish water and seawater desalination plants as well as site specific factors involved in the selection of the most viable alternative for a given project and the environmental permitting requirements and studies associated with their implementation The book focuses on widely used alternatives for disposal of concentrate including discharge to surface water bodies disposal to the wastewater collection system deep well injection land application evaporation and zero liquid discharge Direct discharge through new outfall discharge through existing wastewater treatment plant outfall and co disposal with the cooling water of existing coastal power plant are thoroughly described and design guidance for the use of these concentrate disposal alternatives is presented with engineers and practitioners in the field of desalination in mind Key advantages disadvantages environmental impact issues and possible solutions are presented for each discharge alternative Easy to use graphs depicting construction costs as a function of concentrate flow rate are provided for all key concentrate management alternatives Gives a critical overview of the latest practices and technological advancements in managing concentrate Discusses the relationship between concentrate quality and quantity and other desalination processes Provides design and cost guidance information to assist practitioners with the selection and sizing of the most commonly practiced concentrate disposal alternatives

Plant Adaptation to Abiotic Stress: From Signaling Pathways and Microbiomes to Molecular Mechanisms Radhouane Chaffai, Markkandan Ganesan, Ameer Cherif, 2024-05-23 The book Plant Adaptation to Abiotic Stress From Signaling Pathways and Microbiomes to

Molecular Mechanisms comprehensively examines abiotic stressors cold heat light salinity and water scarcity across its 18 chapters Focusing particularly on *Arabidopsis thaliana* it investigates abiotic stresses adaptation strategies and molecular pathways Furthermore it addresses broader issues including climate challenges food security water scarcity and agricultural concerns such as soil acidity and aluminum stress It proposes adaptive measures for cultivating stress resistant crops and sheds light on genetic modification methods such as CRISPR Cas9 integrating nanotechnology in plant breeding Emphasizing transcription factors post translational protein modifications and diverse noncoding RNAs long noncoding RNAs circular RNAs microRNAs and small interfering RNAs the book highlights their role in regulating gene expression during stress responses It specifically underscores secondary messengers plant hormones and MAPK cascades within intracellular signaling pathways Additionally it discusses the roles of endophytic bacteria and microbial interactions in bolstering stress resilience The book explores state of the art research methodologies in plant breeding omics approaches and nanotechnology integration for developing stress resistant crop varieties advocating for agricultural sustainability Tailored for plant physiology scientists academics and postgraduate students it amalgamates diverse research findings serving as a pivotal resource to comprehend intricate plant responses to environmental challenges

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