

impact factor frontiers in plant science

impact factor frontiers in plant science represents a critical metric for evaluating the scientific influence and prestige of the journal *Frontiers in Plant Science*. This journal is highly regarded within the botanical and agricultural research communities for publishing cutting-edge studies on plant biology, genetics, physiology, ecology, and biotechnology. The impact factor serves as a quantitative measure reflecting the average number of citations to recent articles published in the journal. Understanding the impact factor of *Frontiers in Plant Science* is essential for researchers, academicians, and institutions aiming to assess the journal's role in disseminating influential scientific knowledge. This article provides an in-depth exploration of the impact factor frontiers in plant science, its significance, factors influencing it, and how it compares to other journals in the field. The discussion also covers strategies for authors to enhance their research visibility within this publication. The comprehensive coverage begins with an overview of the impact factor concept, followed by detailed insights into the journal's performance indicators, and concludes with practical guidance for maximizing academic impact.

- Understanding the Impact Factor in Scientific Publishing
- Overview of *Frontiers in Plant Science* Journal
- Significance of the Impact Factor for *Frontiers in Plant Science*
- Factors Influencing the Impact Factor *Frontiers in Plant Science*
- Comparative Analysis with Other Plant Science Journals
- Strategies to Increase Research Impact in *Frontiers in Plant Science*

Understanding the Impact Factor in Scientific Publishing

The impact factor is a widely recognized bibliometric indicator used to evaluate the relative importance of scientific journals within their respective fields. It is calculated annually based on the frequency of citations received by articles published in the previous two years. In the context of plant sciences, the impact factor helps measure how influential a journal is in advancing botanical research and knowledge dissemination. The concept was introduced by Eugene Garfield and is published by Clarivate Analytics through the Journal Citation Reports.

Calculation Methodology

The impact factor is determined by dividing the number of citations in a given year to articles published in the past two years by the total number of citable items published during those years. For example, if *Frontiers in Plant Science* received 5,000 citations in 2023 to articles published in 2021 and 2022, and it published 1,000 citable articles during those two years, the impact factor would be

5.0. This metric allows researchers to gauge the average influence of published work within a journal.

Limitations and Considerations

While the impact factor is a useful tool, it has limitations. It does not account for the quality or significance of individual articles and can be influenced by factors such as citation practices and publication volume. Additionally, it favors journals with rapid citation turnover and may not fully reflect the long-term impact of research.

Overview of Frontiers in Plant Science Journal

Frontiers in Plant Science is an open-access, peer-reviewed journal that publishes original research, reviews, and methodological articles covering all aspects of plant science. Since its inception, the journal has gained significant traction due to its commitment to high editorial standards, rapid publication processes, and broad scope within the plant science community.

Scope and Coverage

The journal encompasses diverse subfields, including plant molecular biology, ecology, physiology, genetics, and biotechnology. It attracts contributions from researchers worldwide, fostering interdisciplinary collaboration and innovation in understanding plant systems and their applications.

Editorial and Peer Review Process

Frontiers in Plant Science employs a rigorous peer-review system designed to ensure the integrity and quality of published work. The editorial board consists of leading experts who oversee manuscript evaluations, promoting transparency and constructive feedback. This process contributes to the journal's reputation and citation performance, directly impacting its impact factor.

Significance of the Impact Factor for Frontiers in Plant Science

The impact factor for Frontiers in Plant Science serves as a benchmark for the journal's academic influence and reach within the broader scientific community. A higher impact factor often correlates with greater visibility, attracting high-quality submissions and readership. For authors, publishing in a journal with a notable impact factor can enhance career prospects, funding opportunities, and collaborative networks.

Influence on Author Decisions

Researchers frequently consider the impact factor when selecting journals for submission, aiming to maximize the exposure and citation potential of their work. Frontiers in Plant Science's impact factor

positions it as a competitive choice for disseminating significant plant biology research, encouraging submissions from prominent investigators.

Role in Institutional Assessments

Academic institutions and funding agencies often use journal impact factors as part of evaluation criteria for research productivity and quality. The impact factor of *Frontiers in Plant Science* thereby plays a role in institutional rankings, grant allocations, and tenure decisions, highlighting the journal's importance beyond individual scholarship.

Factors Influencing the Impact Factor of *Frontiers in Plant Science*

Several elements contribute to the impact factor of *Frontiers in Plant Science*, including publication practices, citation behaviors, and the journal's editorial policies. Understanding these factors provides insight into the dynamics shaping the journal's influence.

Publication Volume and Article Types

The number and type of articles published affect citation rates. Reviews and meta-analyses tend to receive more citations compared to original research articles. *Frontiers in Plant Science's* balanced publication portfolio helps maintain a stable citation base, positively influencing its impact factor.

Open Access Model

As an open-access journal, *Frontiers in Plant Science* allows unrestricted online access to its content, enhancing visibility and citation potential. This accessibility fosters wider dissemination of research findings, contributing to higher citation counts and, consequently, a stronger impact factor.

Research Trends and Hot Topics

The journal's focus on emerging areas such as plant genomics, climate resilience, and sustainable agriculture aligns with current scientific priorities, attracting citations from active research communities. Staying at the forefront of trending topics aids in boosting the journal's citation metrics.

Comparative Analysis with Other Plant Science Journals

Assessing the impact factor of *Frontiers in Plant Science* relative to other journals provides context for its standing within the field. Several prestigious journals compete for attention in plant biology, each with varying influence and specialization.

Top-Ranked Plant Science Journals

Journals such as Plant Cell, Plant Physiology, and Journal of Experimental Botany are recognized for their high impact factors and influential research output. Frontiers in Plant Science, while younger, has rapidly ascended in rankings, reflecting its growing reputation and citation frequency.

Strengths and Differentiators

Unlike some traditional subscription-based journals, Frontiers in Plant Science's open-access policy and interactive review process differentiate it in the publishing landscape. Its rapid publication times and broad thematic coverage appeal to a diverse author and readership base.

Strategies to Increase Research Impact in Frontiers in Plant Science

Authors aiming to maximize the citation potential and visibility of their work within Frontiers in Plant Science can adopt several effective strategies. These approaches align with the journal's standards and audience expectations, fostering greater academic impact.

1. **Focus on Novel and Relevant Topics:** Selecting research themes that address current challenges and emerging trends in plant science increases interest and citation likelihood.
2. **Collaborate Internationally:** Engaging with researchers across institutions and countries can enhance the research scope and dissemination network.
3. **Utilize Clear and Engaging Writing:** Well-structured manuscripts with concise language improve reader comprehension and citation potential.
4. **Promote Published Work:** Sharing articles through academic social networks, conferences, and media increases research visibility.
5. **Engage with the Journal's Community:** Participating in special issues, editorial boards, or reviewer roles can expand professional connections and recognition.

Frequently Asked Questions

What is the current impact factor of Frontiers in Plant Science?

As of the most recent Journal Citation Reports, the impact factor of Frontiers in Plant Science is approximately 6.0, reflecting its influence and citation frequency in the field of plant science.

How does the impact factor of Frontiers in Plant Science compare to other plant science journals?

Frontiers in Plant Science has a competitive impact factor that ranks it among the leading open-access journals in plant science, often comparable to or exceeding many traditional subscription-based journals in the field.

What factors contribute to the impact factor of Frontiers in Plant Science?

The impact factor is influenced by the number of citations its published articles receive within a specific period, the journal's reputation, editorial standards, and the relevance and quality of the research it publishes.

Is Frontiers in Plant Science considered a reputable journal for publishing plant science research?

Yes, Frontiers in Plant Science is widely regarded as a reputable and high-quality open-access journal, known for rigorous peer review and broad dissemination within the plant science community.

How can authors improve the citation impact of their articles in Frontiers in Plant Science?

Authors can improve citation impact by submitting novel, high-quality research, choosing relevant keywords, promoting their work through academic networks and social media, and engaging with the scientific community to increase visibility.

Does open access publishing in Frontiers in Plant Science affect its impact factor?

Open access publishing in Frontiers in Plant Science can enhance visibility and accessibility of articles, potentially leading to higher citation rates and positively influencing the journal's impact factor.

Additional Resources

1. Frontiers in Plant Science: Advances and Impact Factors

This book explores the latest breakthroughs in plant science research, emphasizing the role of impact factors in disseminating influential studies. It covers diverse topics including genomics, plant physiology, and biotechnology, highlighting how high-impact journals shape scientific progress. Readers gain insight into the metrics that drive research visibility and funding in plant science.

2. Impact Metrics and Emerging Trends in Plant Science Research

Focusing on the quantitative evaluation of scientific output, this book discusses various impact metrics such as impact factor, h-index, and altmetrics within the context of plant science. It examines how these metrics influence research priorities, publication strategies, and career development for plant scientists. The volume also reviews emerging research trends that are gaining prominence in

high-impact journals.

3. Innovations at the Frontiers of Plant Molecular Biology

Highlighting cutting-edge research in plant molecular biology, this book showcases studies published in top-tier journals with high impact factors. Topics include gene editing, epigenetics, and plant-pathogen interactions, demonstrating how impactful research is driving agricultural innovation. The text also discusses the challenges of maintaining research quality amid the pressure to publish in high-impact venues.

4. High Impact Research in Plant Physiology and Development

This volume presents significant contributions to understanding plant growth, development, and environmental responses. It emphasizes research published in journals recognized for their high impact factors, illustrating the standards of excellence in the field. The book serves as a guide for researchers aiming to contribute to influential plant physiology literature.

5. Frontier Topics in Plant Biotechnology: Impact and Applications

Covering recent advances in plant biotechnology, this book highlights how impactful research is transforming agriculture and sustainability. It discusses genetic engineering, bioinformatics, and synthetic biology, with attention to studies featured in leading journals. The text also considers the societal and regulatory implications of high-impact biotechnological innovations.

6. Plant Science Publishing: Navigating Impact Factors and Open Access

This book offers a comprehensive overview of the publishing landscape in plant science, focusing on the significance of impact factors and the rise of open access journals. It provides practical advice for researchers on selecting publication venues to maximize visibility and impact. The volume also addresses ethical considerations and evolving trends in scientific communication.

7. Ecophysiology at the Frontiers: High Impact Research in Plant-Environment Interactions

Exploring the dynamic relationship between plants and their environments, this book compiles influential research on stress physiology, adaptation, and ecosystem function. It highlights studies appearing in prominent journals with high impact factors, demonstrating the global relevance of ecophysiological research. Readers learn about experimental approaches that lead to high-impact publications.

8. Genomic Frontiers in Plant Science: Impactful Discoveries and Future Directions

Focusing on the genomics revolution, this book details impactful discoveries in plant genome sequencing, gene expression, and functional genomics. It underscores the role of high-impact journals in advancing knowledge and fostering collaboration among plant scientists. The text also explores future prospects for genomics-driven plant research.

9. Crop Improvement Frontiers: High Impact Research in Plant Breeding and Genetics

This book addresses the latest high-impact research in crop improvement through plant breeding and genetics. It covers conventional and molecular breeding techniques, marker-assisted selection, and genome editing. The volume highlights how publishing in top-tier journals influences the dissemination and application of crop improvement strategies worldwide.

Impact Factor Frontiers In Plant Science

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impact factor frontiers in plant science: *Phytomicrobiome Interactions and Sustainable Agriculture* Amit Verma, Jitendra Kumar Saini, Harikesh Bahadur Singh, Abd El-Latif Hesham, 2021-01-08 A guide to the role microbes play in the enhanced production and productivity of agriculture to feed our growing population Phytomicrobiome Interactions and Sustainable Agriculture offers an essential guide to the importance of 'Phytomicrobiome' and explores its various components. The authors – noted experts on the topic – explore the key benefits of plant development such as nutrient availability, amelioration of stress and defense to plant disease. Throughout the book, the authors introduce and classify the corresponding Phytomicrobiome components and then present a detailed discussion related to its effect on plant development: controlling factors of this biome, its behaviour under the prevailing climate change condition and beneficial effects. The book covers the newly emerging technical concept of Phytomicrobiome engineering, which is an advanced concept to sustain agricultural productivity in recent climatic scenario. The text is filled with comprehensive, cutting edge data, making it possible to access this ever-growing wealth of information. This important book: Offers a one-stop resource on phytomicrobiome concepts Provides a better understanding of the topic and how it can be employed for understanding plant development Contains a guide to sustaining agriculture using phytomicrobiome engineering Presents information that can lead to enhanced production and productivity to feed our growing population Written for students, researchers and policy makers of plant biology, Phytomicrobiome Interactions and Sustainable Agriculture offers a clear understanding of the importance of microbes in overall plant growth and development.

impact factor frontiers in plant science: Impact of Climate Change on Medicinal and Herbal Plant microRNA Kanchanlata Tungare, Parul Johri, Sachidanand Singh, Surojeet Das, 2025-09-30 Climate change poses unprecedented challenges to plant growth, biodiversity, and productivity, necessitating innovative strategies for sustainability. Impact of Climate Change on Medicinal and Herbal Plant microRNA delves into the intricate relationship between climate-induced stress and the molecular mechanisms underpinning plant adaptation, with a special focus on microRNAs (miRNAs). This book provides an in-depth exploration of miRNAs as pivotal regulators in plant biology, offering insights into their biogenesis, functional roles, and applications in stress management and crop improvement. Highlighting the interdisciplinary approach to understanding plant resilience, this book examines critical topics, including the impact of abiotic stressors like heavy metals and elevated CO₂ levels, regulatory roles of miRNAs in photosynthesis and productivity, and the integration of bioinformatics and epigenetics in miRNA research. Through comprehensive chapters, readers gain knowledge about miRNA-mediated bioengineering, genome stability, and the emerging potential of omics technologies to combat the effects of climate change on agriculture. Key Features: A thorough analysis of miRNA biogenesis, regulation, and degradation, along with their myriad functional roles in plant biology Exploration of abiotic stress tolerance mechanisms in medicinal, cereal, legume, tuber, fruit, biofuel, and beverage crops Insights into bioinformatics tools and databases for miRNA analysis and their implications for stress tolerance studies Discussions on miRNA-mediated bioengineering for climate-resilient crops and recent advances in omics approaches Designed for researchers, students, and professionals in plant sciences, bioinformatics, and climate studies, this book bridges fundamental and applied research, making it an essential resource for addressing climate variability through molecular innovations.

impact factor frontiers in plant science: MILLETS-2023: A Transdisciplinary Approach to its Resurgence and Sustainability Prof. Anushree Lokur, Prof. Kamini J. Donde, Prof. Jessy Pius, 2023-10-06 Millets-2023: A Transdisciplinary approach to its Resurgence and Sustainability

endeavours to explore the multifaceted world of millets. The book aims to highlight the nutritional, agricultural, environmental, and socio-economic dimensions of millets. With millets gaining increasing recognition as a sustainable and nutritious food source, the compilation of insightful research papers could be a significance resource for researchers, policymakers, and enthusiasts alike. The topics encapsulated through various research papers touch upon diverse aspect, viz. Socio-cultural, Economic, Geographical and Historical Aspects of Millets, Bio-prospecting and Innovative Sustainable Cultivation Techniques for Millets, Millets Sustainable Solution to Food Security, Entrepreneurship, Start-Ups, Product Development and Marketing Strategies and GO's, NGO's and Policies. In other words, the book presents manifold standpoints, providing a well-rounded view of millets and their potential. It emphasizes the importance of integrating millets into mainstream agriculture and food systems to address global challenges such as malnutrition, climate change, and sustainable development. Millets-2023 is a must-read for anyone seeking a comprehensive understanding of millets and their potential impact on nutrition, agriculture, environment, and socio-economic development.

impact factor frontiers in plant science: Plant Transcription Factors Vikas Srivastava, Sonal Mishra, Shakti Mehrotra, Santosh Kumar Upadhyay, 2022-11-09 Plant Transcription Factors: Contribution in Development, Metabolism, and Environmental Stress provides comprehensive coverage of plant TFs and their various functions, evaluating their crucial role in growth and development, signaling, stress management and other key plant processes. Sections cover the significance of plant TFs in functional genomics, the influence of phyto-hormones on the modulation of plant TFs, plant development and metabolism, including shoot development, flowering development and alkaloid biosynthesis. The book's final section reviews the role of TFs in various plant stresses, including temperature, water and heavy metal stress. Written by leading experts around the globe, this book is an essential read to researchers interested in plant signaling and plant genomics. - Presents the latest advances in plant transcription factors and their functions - Discusses the influence of phyto-hormones on the modulation of plant transcription factors - Highlights the relationship between plant TFs and plant development

impact factor frontiers in plant science: Omics Approaches for Tomato Yield and Quality Trait Improvement Muhammad Waseem, Channapatna S. Prakash, Sajid Faiz, Zhengguo Li, 2025-05-23 This volume explores the latest advancements and innovative techniques in the field of tomato breeding. The book delves into the cutting-edge research trends and methodologies aimed at enhancing tomato yield and improving its quality traits. It highlights the growing importance of molecular breeding approaches in addressing the challenges faced by the tomato industry. Tomatoes are one of the most widely consumed vegetables globally, and enhancing their yield and quality is of paramount importance for sustainable agriculture. Researchers and breeders are increasingly utilizing advanced molecular tools and techniques to dissect the genetic architecture underlying important traits in tomatoes. This book covers the integration of genomics, transcriptomics, proteomics, and metabolomics, enabling a holistic understanding of the molecular mechanisms governing tomato yield and quality. It explores how these omics-based approaches contribute to the identification of key genes and pathways associated with traits such as yield, flavor, color, texture, nutritional content, and disease resistance. It emphasizes the utilization of molecular markers and marker-assisted selection (MAS) in tomato breeding programs and explores how the identification and deployment of markers linked to desirable traits facilitate the selection of superior genotypes, accelerating the breeding process and improving efficiency. It explores the application of techniques such as CRISPR-Cas9, TALENs, and zinc finger nucleases for precise modification of target genes, leading to enhanced yield, improved quality, and resistance to biotic and abiotic stresses. The book highlights the potential of these molecular tools in creating novel tomato varieties with traits that meet the demands of consumers, markets, and sustainable agriculture. It showcases successful case studies, multidisciplinary collaborations, and global initiatives that contribute to advancing the field and overcoming challenges. This book serves as a valuable resource for researchers, breeders, and students interested in understanding and implementing molecular breeding strategies for enhancing

tomato yield and improving its quality traits.

impact factor frontiers in plant science: Genetics of Salt Tolerance in Plants Showkat Ahmad Ganie, Shabir Hussain Wani, 2024-06-25 Gene expression in cells follows a prescribed pathway that conforms to the Central Dogma; where the genetic information stored in DNA is transcribed into RNA and then expressed into proteins, which influences most plant traits. Plant salt tolerance research is directed towards identifying nucleotide variants that could contribute to tolerant phenotypes. This book comprehensively presents the current state of knowledge on plant salt tolerance through meticulous analysis of the processes operating across the Central Dogma. It provides a detailed account of modulation of gene expression through genome editing systems to achieve crop improvement against salt stress. It also provides state-of-the-art information on advances in breeding technologies of genome selection and accelerated de novo domestication for rapidly improving the salt tolerance of plants for global food security. The book will be of particular value to students and researchers of plant genetics, molecular biology and physiology and those with an interest in salinity and salt tolerance.

impact factor frontiers in plant science: Plant Microbiome and Biological Control Piyush Mathur, Swarnendu Roy, 2025-01-07 This book offers a comprehensive guide to discovering, assessing, and utilizing consortia of beneficial microbes for crop protection and enhanced crop production in the context of climate change. It provides deep insights into the functional roles of the rhizomicrobiome, including AMF, endophytes, PGPRs, and the phyllosphere microbiome, as well as the microbiomes of different plant parts such as seeds, fruits, and stems, in promoting plant growth, development, and the biocontrol of pests and pathogens in a sustainable manner. The book also presents the latest updates on molecular biology techniques, genetic engineering, biotechnological tools, and metagenomics, which are widely used for analyzing plant-pathogen interactions and microbial identification. It will be especially valuable for students and faculty involved in the study and teaching of plant-microbe interactions, as well as researchers working on sustainable methods for plant disease management. With cutting-edge research from leading experts, this book aims to contribute to the development of an eco-friendly, sustainable agricultural system.

impact factor frontiers in plant science: Plant Hormones and Climate Change Golam Jalal Ahammed, Jingquan Yu, 2023-01-01 This book provides new insights into the mechanisms of plant hormone-mediated growth regulation and stress tolerance covering the most recent biochemical, physiological, genetic, and molecular studies. It also highlights the potential implications of plant hormones in ensuring food security in the face of climate change. Each chapter covers particular abiotic stress (heat stress, cold, drought, flooding, soil acidity, ozone, heavy metals, elevated CO₂, acid rain, and photooxidative stress) and the versatile role of plant hormones in stress perception, signal transduction, and subsequent stress tolerance in the context of climate change. Some chapters also discuss hormonal crosstalk or interaction in plant stress adaptation and highlight convergence points of crosstalk between plant hormones and environmental signals such as light, which are considered recent breakthrough studies in plant hormone research. As exogenous application or genetic manipulation of hormones can alter crop yield under favorable and/or unfavorable environmental conditions, the utilization of plant hormones in modern agriculture is of great significance in the context of global climate change. Thus, it is important to further explore how hormone manipulation can secure a good harvest under challenging environmental conditions. This volume is dedicated to Sustainable Development Goals (SDGs) 2 and 13. The volume is suitable for plant science-related courses, such as plant stress physiology, plant growth regulators, and physiology and biochemistry of phytohormones for undergraduate, graduate, and postgraduate students at colleges and universities. The book can be a useful reference for academicians and scientists involved in research related to plant hormones and stress tolerance.

impact factor frontiers in plant science: Role of Potassium in Abiotic Stress Noushina Iqbal, Shahid Umar, 2022-01-09 This book on potassium in abiotic stress tolerance deals with the ongoing trend in increasing abiotic stresses and interlinked issues food security. As mineral nutrient potassium holds an important place in agriculture and is involved in various physiological and

biochemical processes. It takes part in protein synthesis, carbohydrate metabolism, enzyme activation, cation-anion balance, osmoregulation, water movement, energy transfer, and regulates stomata and photosynthesis. Potassium plays an important role as abiotic stress buster. This book will deal with potassium relevance to plant functions and adaptations, range of its biological functions, role of potassium in abiotic stress tolerance, analyses of mechanisms responsible for perception and signal transduction of potassium under abiotic stress, critical evaluation of and cross-talks on nutrients and phytohormones signaling pathways under optimal and stressful conditions, and interaction of potassium with other nutrients for abiotic stress tolerance. This book will be of interest to teachers, researchers, scientists working on abiotic stresses. Also the book serves as additional reading material for undergraduate and graduate students of agriculture, forestry, ecology, and environmental sciences. National and international agricultural scientists, policy makers will also find this to be a useful read.

impact factor frontiers in plant science: *AI Technologies for Crop Breeding* Jen-Tsung Chen, 2025-10-01 AI Technologies for Crop Breeding offers the latest insights into the use of artificial intelligence models to improve plant health and production. Presenting applications of AI technologies in plant biology, biotechnology, and crop breeding, it explores practices for the mitigation of biotic and abiotic stressors as well as other plant growth challenges. AI-based technologies are expected to advance approaches to plant functional genomics and multiple omics, resulting in smarter and more efficient crop breeding for next-generation agriculture helping to address the challenges of the increasing human population and the globally changing climate. AI tools such as machine learning, particularly deep learning, have been applied to predict chief players in complicated biological networks, increasing the understanding of in-depth mechanisms of plant-pathogen and plant-environment interactions. Additionally, responses of plants facing stress can be modeled using AI technologies, and the resulting data are valuable not only to plant stress physiology but also for stress-resilient and disease-resistant crop breeding. This book introduces AI technologies for studying plant biology, focusing on machine learning and deep learning models for integrating multiple omics approaches and revealing the knowledge of plant functional genomes. Technological advancements and emerging applications of machine learning and deep learning in genomic selection, genome-wide association study (GWAS), phenotyping and constructing phenomics, and transcriptomics are also featured in this book. AI Technologies for Crop Breeding is an ideal reference for researchers, academics, and advanced-level students and professors in the fields of plant sciences, plant stress physiology, bioinformatics, systems biology, and crop breeding. - Reviews AI-based technologies in crop plant functional genomics - Presents integration of AI tools with high-throughput omics - Advances understanding of the potential impact of AI technologies in addressing the UN Sustainable Development Goals

impact factor frontiers in plant science: Current Omics Advancement in Plant Abiotic Stress Biology Deepesh Bhatt, Manoj Nath, Saurabh Badoni, Rohit Joshi, 2024-05-07 Applied Biotechnology Strategies to Combat Plant Abiotic Stress investigates the causal molecular factors underlying the respective mechanisms orchestrated by plants to help alleviate abiotic stress in which Although knowledge of abiotic stresses in crop plants and high throughput tools and biotechnologies is available, in this book, a systematic effort has been made for integrating omics interventions across major sorts of abiotic stresses with special emphasis to major food crops infused with detailed mechanistic understanding, which would furthermore help contribute in dissecting the interdisciplinary areas of omics-driven plant abiotic stress biology in a much better manner. In 32 chapters Applied Biotechnology Strategies to Combat Plant Abiotic Stress focuses on the integration of multi-OMICS biotechnologies in deciphering molecular intricacies of plant abiotic stress namely drought, salt, cold, heat, heavy metals, in major C3 and C4 food crops. Together with this, the book provides updated knowledge of common and unique set of molecular intricacies playing a vital role in coping up severe abiotic stresses in plants deploying multi-OMICS approaches This book is a valuable resource for early researchers, senior academicians, and scientists in the field of biotechnology, biochemistry, molecular biology, researchers in agriculture and, crops for human

foods, and all those who wish to broaden their knowledge in the allied field. - Describes biotechnological strategies to combat plant abiotic stress - Covers the latest evidence based multipronged approaches in understanding omics perspective of stress tolerance - Focuses on the integration of multi-OMICS technologies in deciphering molecular intricacies of plant abiotic stress

impact factor frontiers in plant science: Emerging Methods for Oil Extraction from Food Processing Waste Prem Prakash Srivastav, Sangeetha Karunanithi, 2024-09-13 Emerging Methods for Oil Extraction from Food Processing Waste is a comprehensive and cutting-edge exploration of sustainable oil extraction practices, catering to professionals and researchers in food science. The book, spanning 13 insightful chapters, intricately reviews the extraction of oil from food processing by-products, including pomace and surplus raw materials. It specifically focuses on emerging non-thermal technologies, offering valuable insights into improving oil extraction rates. The discussions encompass factors influencing extraction rates and suggest processing conditions based on various extraction methods and raw materials. In addition to providing a nuanced understanding of conventional and novel extraction techniques, the text delves into the diverse applications of the extracted oil, ranging from food preservation to fortification and fat replacement. Notably, it covers advanced processing techniques for enhancing oil stability, bioavailability, and bioactivity through emulsion and encapsulation methods. Addressing crucial commercial aspects, the text explores economic feasibility, safety considerations, and consumer acceptability, providing a holistic perspective for successful industrial adaptation. Authored by global specialists, each chapter offers in-depth scientific reports and critical analyses, making this volume an indispensable resource for continuous research and advancement in the dynamic field of food processing.

impact factor frontiers in plant science: Latin American Viticulture Adaptation to Climate Change Gastón Gutiérrez Gamboa, Mercedes Fourment, 2024-03-19 Latin American viticulture faces a wide range of difficulties that include social, political, economic, and productive aspects. Soil diversity, together with the climates in which the viticulture activity takes place, favours the production of grapes, juices, raisins, musts, wines, and distillates with unique and distinctive characters for the world. In addition, the great genetic diversity that covers autochthonous and minor grapevine varieties, including unknown genotypes, opens a wide range of research opportunities for the adaptation of the viticulture to the negative effects of global warming, favouring sustainability and social equity. This book compiles the research about the new viticultural trends performed in diverse regions from Latin America such as Argentina, Brazil, Bolivia, Chile, Dominican Republic, Haiti and Uruguay, covering different topics in viticulture of global importance. This book addresses the impacts of soil and climatic conditions and viticultural practices on vine physiology, berry quality and wine typicity, including topics related to social sciences and agricultural economics. This will allow to provide a relevant discussion for future guidelines in viticulture under a territorial development perspective.

impact factor frontiers in plant science: Exogenous Priming and Engineering of Plant Metabolic and Regulatory Genes Manish Kumar Patel, Lam-Son Phan Tran, Sonika Pandey, Avinash Mishra, 2025-01-30 Exogenous Priming and Engineering of Plant Metabolic and Regulatory Genes: Stress Mitigation Strategies in Plants provides insights into metabolic adjustment, their regulation, and the regulatory networks involved in plants responding to stress situations. It contains comprehensive information, combining mechanistic priming and engineering approaches from the conventional to those recently developed. In addition, the book addresses seed priming, tolerance mechanisms, pre-and post-treatment, as well as sensory response, and genetic manipulation. From basic concepts to modern technologies and prevailing policies, readers will find this book useful in enhancing their understanding of the area as well as helping in identifying approaches for future research. - Provides detailed information on developing stress-tolerant crop varieties using two distinct approaches - Highlights advancements in OMICS approaches for different crops - Assists readers in designing and evaluating plan for future research

impact factor frontiers in plant science: The Model Legume Medicago truncatula, 2 Volume Set Frans J. de Bruijn, 2020-01-29 Fully covers the biology, biochemistry, genetics, and

genomics of *Medicago truncatula* Model plant species are valuable not only because they lead to discoveries in basic biology, but also because they provide resources that facilitate translational biology to improve crops of economic importance. Plant scientists are drawn to models because of their ease of manipulation, simple genome organization, rapid life cycles, and the availability of multiple genetic and genomic tools. This reference provides comprehensive coverage of the Model Legume *Medicago truncatula*. It features review chapters as well as research chapters describing experiments carried out by the authors with clear materials and methods. Most of the chapters utilize advanced molecular techniques and biochemical analyses to approach a variety of aspects of the Model. The Model Legume *Medicago truncatula* starts with an examination of *M. truncatula* plant development; biosynthesis of natural products; stress and *M. truncatula*; and the *M. truncatula*-*Sinorhizobium meliloti* symbiosis. Symbiosis of *Medicago truncatula* with arbuscular mycorrhiza comes next, followed by chapters on the common symbiotic signaling pathway (CSSP or SYM) and infection events in the *Rhizobium*-legume symbiosis. Other sections look at hormones and the rhizobial and mycorrhizal symbioses; autoregulation of nodule numbers (AON) in *M. truncatula*; *Medicago truncatula* databases and computer programs; and more. Contains reviews, original research chapters, and methods Covers most aspects of the *M. truncatula* Model System, including basic biology, biochemistry, genetics, and genomics of this system Offers molecular techniques and advanced biochemical analyses for approaching a variety of aspects of the Model Legume *Medicago truncatula* Includes introductions by the editor to each section, presenting the summary of selected chapters in the section Features an extensive index, to facilitate the search for key terms The Model Legume *Medicago truncatula* is an excellent book for researchers and upper level graduate students in microbial ecology, environmental microbiology, plant genetics and biochemistry. It will also benefit legume biologists, plant molecular biologists, agrobiologists, plant breeders, bioinformaticians, and evolutionary biologists.

impact factor frontiers in plant science: *Mitigation of Plant Abiotic Stress by Microorganisms* Gustavo Santoyo, Ajay Kumar, Mohd Aamir, Sivakumar Utandhi, 2022-04-30 The microbial ecosystem provides an indigenous system for improving plant growth, health and stress resilience. Plant microbiota, including isolated microbial communities, have been studied to further understand the functional capacities, ecological structure and dynamics of the plant-microbe interaction. Due to climatic changes, there is an urgent need to bring microbial innovations into practice. *Mitigation of Plant Abiotic Stress by Microorganisms: Applicability and Future Directions* is a comprehensive review of the different strategies available to improve the plant microbiome. Chapters include key topics such as: harnessing endophytic microbial diversity, microbial genes for improving abiotic stress tolerance, and microbial bioformulations. Putting these strategies into practice can have varying success in the field, so it is crucial that scientists are equipped with the knowledge of which microorganisms are needed, as well as the use and suitability of delivery approaches and formulations. This title will be an essential read for researchers and students interested in plant microbial technologies and plant bio stimulants, plant pathology, biocontrol, agronomy, and environmental mediation. - Discusses adaptive mechanisms of plant against multiple stresses - Highlights diversity of symbiotic microorganisms associated with insects and their impact on host plants - Provides functional genomics tools for studying microbe-mediated stress tolerance

impact factor frontiers in plant science: Epigenetics for Climate-Smart and Sustainable Agriculture Jen-Tsung Chen, 2025-07-29 This book provides a state-of-the-art overview of current achievements and future possibilities for the application of epigenetic and epigenomic techniques to the improvement of crops. Creating crops more resilient to the stresses caused by climate change will be an important part of a climate-smart and sustainable agriculture strategy for the future. All critical environmental stressors are explored: temperature, salt, drought, pollutants, pests, fungi, bacteria, and viruses. The exciting possibilities for the integration of epigenetic resources and technologies with plant functional genomics and the new field of precision molecular breeding in crops are discussed. Examples are shown of crops showing better growth performance, enhanced yields, more efficient nutrient utilization, and higher quality food production. This book is an ideal

complete guide for students, researchers, experts, and professionals to overview this critical topic.

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