Free read Chemical constituents of floral omics international Copy

this second edition details new and updated protocols for experimental approaches that are currently used to study the formation of flowers chapters guide readers on genetic methods phenotypic analyses genome wide experiments modeling and system wide approaches written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and key tips on troubleshooting and avoiding known pitfalls authoritative and cutting edge flower development methods and protocols second edition aims to be a useful and practical guide to new researchers and experts looking to expand their knowledge this book reviews the current status of p mume research highlighting how the new data coming from the release of the p mume genomes can advance science and help to solve a number of problems facing the p mume industry prunus mume which was domesticated in china more than 3 000 years ago as an ornamental plant and for its fruit is one of the first genomes among the prunus subfamilies of the rosaceae family that has been sequenced combining the p mume genome with available data scientists have succeeded in reconstructing nine ancestral chromosomes of the rosaceae family as well as the chromosome fusion fission and duplication history of three major subfamilies the p mume genome sequence adds to our understanding of rosaceae evolution and provides an important basis for the improvement of fruit trees this book offers an essential a guide for all those who are interested in gene discovery comparative genomics molecular breeding and new breeding techniques and will be particularly useful for scientists breeders university students and public sector institutes that are involved in the p mume industry and or rosaceae research as with nearly all living creatures humans have always been attracted and intrigued by floral scents yet while we have been manufacturing perfumes for at least 5000 years to serve a myriad of religious sexual and medicinal purposes until very recently the limitation of our olfactory faculty has greatly hindered our capacity to clearly and ob buckwheat forgotten crop for the future offers an overview of this globally important crop including its history origin and its importance to functional food sector due to its short growth span ability to grow at higher altitudes and superior quality of its protein buckwheat is considered as an important crop for addressing global food requirements the book also provides upto date information on the abiotic stress tolerance properties of the crop including its hyperaccumulating potential the book talks about the issues and challenges being faced for adopting this crop and the ways to address and overcome these limitations the book guides the readers through different varietal adaptations and provides information on appropriate research directions this book would serve as an ideal guide for researchers and advanced level students seeking better understanding of the buckwheat crop introduces the buckwheat s origin history and diversity summarizes the distribution of buckwheat species around the world presents agro techniques and cultivation practices of buckwheat explores the nutraceutical potential of buckwheat includes adaptation of buckwheat towards different environmental factors affecting growth and production discusses the reasons for declining buckwheat production addresses the strategies for buckwheat crop improvement as orchards are faced with different challenges such as production and the growing global population there is a need to update and understand the principles and practices for successful orchard management to increase food productivity the economics of cultivation irrigated agriculture and smart agriculture are important topics in precision agriculture that relate to these various challenges and must be studied further additionally technologies have played a key role in promoting the development of orchards and new strategies have led to substantial improvements in fruit productivity and quality these strategies and technologies must also be considered in order to ensure a successful future for orchard management the handbook of research on principles and practices for orchards management aims to improve fruit orchards productivity by exploring the latest practical research findings in the area and considers the new techniques in various agricultural management practices to improve the growth and productivity of fruit orchards under different biotic and abiotic stresses covering topics such as nutrient management pest control orchard pruning and magnetic water this reference work is ideal for industry professionals researchers practitioners scholars academicians instructors and students flower breeding and maintenance is a comprehensive guide that delves into the fascinating world of flowers providing valuable insights and practical knowledge on the art and science of flower breeding and maintenance this book serves as an essential resource for flower enthusiasts horticulturists gardeners and anyone passionate about cultivating and caring for flowers the book begins by exploring the profound importance of understanding flower genetics and care emphasizing how a deep understanding of plant chromosomes genes and modes of inheritance can greatly enhance our ability to breed and maintain healthy and vibrant flowers it delves into the rich history of flower breeding highlighting notable achievements and advancements that have shaped the floral landscape we know today throughout the book readers are introduced to the fundamental principles of flower breeding and maintenance including genetic variation cross pollination hybridization selection propagation and the implications of genetic modification the author explores the diverse aspects of flower development including color and pattern variations fragrance and scent size and shape disease and pest resistance and the impact of environmental factors such as light temperature humidity soil composition and water quality flower breeding and maintenance is an inspiring and comprehensive guide that equips readers with the knowledge and practical skills to excel in the art of flower breeding and maintenance filled with in depth information expert insights and practical tips this book is an invaluable resource for anyone seeking to unlock the secrets of nature s most exquisite creations and create a more vibrant diverse and beautiful floral world horsemeat in burgers was hard to swallow but there are far more sinister culinary crimes afoot chicken eggs that haven t come from chickens melamine in infant s milk in china nut shells in spices these are just some examples of the food fraud that has occurred in recent years as our urban lifestyle takes us further and further away from our food sources there are increasing opportunities for dishonesty duplicity and profit making short cuts food adulteration motivated by money is an issue that has spanned the globe throughout human history whether it s a matter of making a good quality oil stretch a bit further by adding a little extra something or labelling a food falsely to appeal to current consumer trends it s all food fraud and it costs the food industry billions of dollars each year the price to consumers may be even higher with some paying for these crimes with their health and in some cases their lives sorting the beef from the bull is a collection of food fraud tales from around the world it explains the role of science in uncovering some of the century s biggest food scams and explores the arms race between food forensics and fraudsters as new methods of detection spur more creative and sophisticated means of committing the crimes this book equips us with the knowledge of what is possible in the

world of food fraud and shines a light on the shady areas of our food supply system where these criminals lurk this book examines the development of innovative modern methodologies towards augmenting conventional plant breeding for the production of new crop varieties under the increasingly limiting environmental and cultivation factors to achieve sustainable agricultural production and enhanced food security two volumes of advances in plant breeding strategies were published in 2015 and 2016 respectively volume 1 breeding biotechnology and molecular tools and volume 2 agronomic abiotic and biotic stress traits this is volume 3 fruits which is focused on advances in breeding strategies for the improvement of individual fruit crops it consists of 23 chapters grouped into three parts according to distribution classification of fruit trees part i temperate fruits part ii subtropical fruits and part iii tropical fruits each chapter comprehensively reviews the modern literature on the subject and reflects the authors own experience this book describes the current state of international grape genomics with a focus on the latest findings tools and strategies employed in genome sequencing and analysis and genetic mapping of important agronomic traits it also discusses how these are having a direct impact on outcomes for grape breeders and the international grape research community while v vinifera is a model species it is not always appreciated that its cultivation usually requires the use of other vitis species as rootstocks the book discusses genetic diversity within the vitis genus the available genetic resources for breeding and the available genomic resources for other vitis species grapes vitis vinifera spp vinifera have been a source of food and wine since their domestication from their wild progenitor vitis vinifera ssp sylvestris around 8 000 years ago and they are now the world s most valuable horticultural crop in addition to being economically important v vinifera is also a model organism for the study of perennial fruit crops for two reasons firstly its ability to be transformed and micropropagated via somatic embryogenesis and secondly its relatively small genome size of 500 mb the economic importance of grapes made v vinifera an obvious early candidate for genomic sequencing and accordingly two draft genomes were reported in 2007 remarkably these were the first genomes of any fruiting crop to be sequenced and only the fourth for flowering plants although riddled with gaps and potentially omitting large regions of repetitive sequences the two genomes have provided valuable insights into grape genomes cited in over 2 000 articles the genome has served as a reference in more than 3 000 genome wide transcriptional analyses further recent advances in dna sequencing and bioinformatics are enabling the assembly of reference grade genome references for more grape genotypes revealing the exceptional extent of structural variation in the species addressing the pear genome this book covers the current state of knowledge regarding genetic and genomic resources breeding approaches and strategies as well as cutting edge content on how these tools and resources are being soon will be utilized to pursue genetic improvement efforts that will combine fruit quality high productivity precocious fruit bearing and long postharvest storage life along with elevated levels of resistance to various major diseases and insect pests throughout the book also explores potential opportunities and challenges in genomic analysis sequence assembly structural features as well as functional studies that will assist in future genetic improvement efforts for pears the pear pyrus an important tree fruit crop is grown worldwide and has several economically relevant cultivars in recent years modern genetic and genomic tools have resulted in the development of a wide variety of valuable resources for the pear in the past few years completion of whole genome assemblies of dangshansuli an asian pear and bartlett a european pear have paved the way for new discoveries regarding for example the pear s genomic structure chromosome evolution and patterns of genetic variation this wealth of new resources will have a major impact on our knowledge of the pear genome in turn these resources and knowledge will have significant impacts on future genetic improvement efforts this book is about saffron crocus sativus l that is the most expensive spice in the world though there are other books on saffron but none of them has comprehensive information on saffron genome transcriptome proteome metabolome and microbiome the book has been divided into five sections and 17 chapters that cover all the areas related to its cultivation market economy genomics transcriptomics proteomics metabolomics tissue culture microbiomics metagenomics etc in addition a chapter on molecular markers and their use in molecular genetic mapping in saffron that lacks genetic diversity as a sterile plant paves a way for selection of elite varieties based on the epigenetic variability a section on in vitro propagation elaborates on the corm production under controlled conditions in summary this book encompasses most of the information available on this golden spice this book describes the history of tobacco genomics from its discovery by europeans to next generation omics approaches in plant science the authors primarily focus on the allotetraploid common tobacco plant n tabacum however separate chapters are dedicated to closely related nicotiana species such as n benthamiana and n attenuata for which substantial progress in omics data analysis has been already achieved while genetic maps transcriptomes and physical maps of bac libraries have significantly enhanced our understanding of the tobacco plant the genome of tobacco and related nicotiana species has opened a new era in modern tobacco research this book addresses current and future industrial and research applications as well as central challenges in tobacco science including diseases low variability of cultivars the genome s large size polyploidy and gene duplication the need for tailored data for machine learning models is often unsatisfied as it is considered too much of a risk in the real world context synthetic data an algorithmically birthed counterpart to operational data is the linchpin for overcoming constraints associated with sensitive or regulated information in high dimensional data where the dimensions of features and variables often surpass the number of available observations the emergence of synthetic data heralds a transformation applications of synthetic high dimensional data delves into the algorithms and applications underpinning the creation of synthetic data which surpass the capabilities of authentic datasets in many cases beyond mere mimicry synthetic data takes center stage in prioritizing the mathematical domain becoming the crucible for training robust machine learning models it serves not only as a simulation but also as a theoretical entity permitting the consideration of unforeseen variables and facilitating fundamental problem solving this book navigates the multifaceted advantages of synthetic data illuminating its role in protecting the privacy and confidentiality of authentic data it also underscores the controlled generation of synthetic data as a mechanism to safeguard private information while maintaining a controlled resemblance to real world datasets this controlled generation ensures the preservation of privacy and facilitates learning across datasets which is crucial when dealing with incomplete scarce or biased data ideal for researchers professors practitioners faculty members students and online readers this book transcends theoretical discourse orchids are fascinating with attractive flowers that sell in the markets and an increasing demand around the world additionally some orchids are edible or scented and have long been used in preparations of traditional medicine this book presents recent advances in orchid biochemistry including original research articles and reviews it provides in depth insights into the biology of flower pigments floral scent formation bioactive compounds pollination and plant microbial interaction as well as the biotechnology of protocorm like bodies in orchids it reveals the secret of orchid biology using

molecular tools advanced biotechnology multi omics and high throughput technologies and offers a critical reference for the readers this book explores the knowledge about species evolution using comparative transcriptomics flower spot patterning involving the anthocyanin biosynthetic pathways the regulation of flavonoid biosynthesis which contributes to leaf color formation gene regulation in the biosynthesis of secondary metabolites and bioactive compounds the mechanism of pollination involving the biosynthesis of semiochemicals gene expression patterns of volatile organic compounds the symbiotic relationship between orchids and mycorrhizal fungi techniques using induction proliferation and regeneration of protocorm like bodies and so on in this book important or model orchid species were studied including anoectochilus roxburghii bletilla striata cymbidium sinense dendrobium officinale ophrys insectifera phalaenopsis panda pleione limprichtii processing and sustainability of beverages volume two in the science of beverages series is a general reference of the current and future actions for a sustainable beverage industry this resource takes a unique approach combining processing with sustainability topics of note include waste treatment and management environmental analysis for a sustainable beverage industry and modern technologies for beverage processing to reduce contaminants and increase the quality this book is essential to scientists researchers and technologists in the beverages field covering both alcoholic and nonalcoholic beverages covers a broad range of beverage products to increase knowledge of quality improvement and product development presents novel food processing technologies on beverage antioxidants offers sustainable management strategies for implementing added value in beverage products genetics and genomics of populus provides an indepth description of the genetic and genomic tools and approaches for populus examines the biology that has been elucidated using genomics and looks to the future of this unique model plant this volume is designed to serve both experienced populus researchers and newcomers to the field contributors to the volume are a blend of researchers some who have spent most of their research career on populus and others that have moved to populus from other model systems research on populus forms a useful complement to research on arabidopsis in fact many plant species found in nature are in terms of the life history and genetics more similar to populus than to arabidopsis thus the genetic and genomic strategies and tools developed by the populus community and showcased in this volume will hopefully provide inspiration for researchers working in other less well developed systems written by researchers representing six countries and 28 institutions this book highlights the development of the genus populus as a model organism for tree genomics reflecting an impressive depth of coverage the contributors thorough reviews and analyses of populus genomics provide insight into future discoveries about the basic biology of thi applied plant genomics and biotechnology reviews the recent advancements in the post genomic era discussing how different varieties respond to abiotic and biotic stresses investigating epigenetic modifications and epigenetic memory through analysis of dna methylation states applicative uses of rna silencing and rna interference in plant physiology and in experimental transgenics and plants modified to produce high value pharmaceutical proteins the book provides an overview of research advances in application of rna silencing and rna interference through virus based transient gene expression systems virus induced gene complementation vigc virus induced gene silencing sir vigs mr vigs virus based microrna silencing vbms and virus based rna mobility assays vrma rna based vaccines and expression of virus proteins or rna and virus like particles in plants the potential of virus vaccines and therapeutics and exploring plants as factories for useful products and pharmaceuticals are topics wholly deepened the book reviews and discuss plant functional genomic studies discussing the technologies supporting the genetic improvement of plants and the production of plant varieties more resistant to biotic and abiotic stresses several important crops are analysed providing a glimpse on the most up to date methods and topics of investigation the book presents a review on current state of gmo the cisgenesis derived plants and novel plant products devoid of transgene elements discuss their regulation and the production of desired traits such as resistance to viruses and disease also in fruit trees and wood trees with long vegetative periods several chapters cover aspects of plant physiology related to plant improvement cytokinin metabolism and hormone signaling pathways are discussed in barley parp domain proteins involved in stress induced morphogenetic response regulation of nad signaling and ros dependent synthesis of anthocyanins apple allergen isoforms and the various content in different varieties are discussed and approaches to reduce their presence euphorbiaceae castor bean cassava and jathropa are discussed at genomic structure their diseases and viruses and methods of transformation rice genomics and agricultural traits are discussed and biotechnology for engineering and improve rice varieties mango topics are presented with an overview of molecular methods for variety differentiation and aspects of fruit improvement by traditional and biotechnology methods oilseed rape is presented discussing the genetic diversity quality traits genetic maps genomic selection and comparative genomics for improvement of varieties tomato studies are presented with an overview on the knowledge of the regulatory networks involved in flowering methods applied to study the tomato genome wide dna methylation its regulation by small rnas microrna dependent control of transcription factors expression the development and ripening processes in tomato genomic studies and fruit modelling to establish fleshy fruit traits of interest the gene reprogramming during fruit ripening and the ethylene dependent and independent dna methylation changes provides an overview on the ongoing projects and activities in the field of applied biotechnology includes examples of different crops and applications to be exploited reviews and discusses plant functional genomic studies and the future developments in the field explores the new technologies supporting the genetic improvement of plants the crop plants cater not only to our basic f5 food feed fiber fuel and furniture needs but also provide a number of nutraceuticals with potential nutritional safety and therapeutic properties many crop plants provide an array of minerals vitamins and antioxidant rich bioactive phytochemicals increasing incidences of chronic diseases such as cancer diabetes and hiv and malnutrition necessitate global attention to health and nutrition security with equal emphasis to food security this compendium compiles results of researches on biochemical physiological and genetic mechanisms underlying biosynthesis of the health and nutrition related nutraceuticals it also explores the precise breeding strategies for augmentation of their content and amelioration of their quality in crop plants under all commodity categories including cereals and millets oilseeds pulses fruits and nuts and vegetables the compendium comprise 5 sections dedicated to these 5 commodity groups and presents enumeration on the concepts strategies tools and techniques of nutraceutomics these sections include 50 chapters devoted to even number of major crop plants these chapters present deliberations on the biochemistry and medicinal properties of the nutracuticals contained genetic variation in their contents classical genetics and breeding for their quantitative and qualitative improvement tissue culture and genetic engineering for augmentation of productivity and quality and sources of genes underlying their biosynthesis they also include comprehensive enumeration on genetic mapping of the genes and qtls controlling the contents and profile of the nutraceuticals and molecular breeding for their further improvement through marker assisted selection and backcross breeding tools prospects of post genomic precise breeding strategies

including genome wide association mapping genomic selection allele mining and genome editing are also discussed this compendium fills the gap in academia and research and development wings of the private sector industries interested in an array of subjects including genetics genomics tissue culture genetic engineering molecular breeding genomics assisted breeding bioinformatics biochemistry physiology pathology entomology pharmacognosy ipr etc and will also facilitate understanding of the policy making agencies and people in the socio economic domain and research sponsoring agencies plants face a wide range of environmental challenges which are expected to become more intense as a result of global climate change plant soil interactions play an important role in the functioning of ecosystems soil properties represent a strong selection pressure for plant diversity and influence the structure of plant communities and biodiversity the complexity of plant soil interactions has recently been studied by developing a trait based approach in which responses and effects of plants on soil environment are quantified and modelled this fundamental research on plant soil interaction in ecosystems is essential to transpose knowledge of functional ecology to environmental management frontiers in plant soil interaction molecular insights into plant adaptation will address topics that provide advances in understanding plant responses to soil conditions through the integration of genetic molecular and plant level studies of diverse biotic and abiotic stresses under field and laboratory conditions this book will be beneficial to students and researchers working on stress physiology and stress proteins genomics proteomics genetic engineering and other fields of plant soil interactions frontiers in plant soil interaction will also help scientists explore new horizons in their area of research brings together global leaders working in the area of plant environment interactions and shares their research findings presents current and future scenarios for the management of stressors illustrates the central role for plant soil interactions in applying basic research to address current and future challenges to humans transcriptome analysis is the study of the transcriptome of the complete set of rna transcripts that are produced under specific circumstances using high throughput methods transcription profiling which follows total changes in the behavior of a cell is used throughout diverse areas of biomedical research including diagnosis of disease biomarker discovery risk assessment of new drugs or environmental chemicals etc transcriptome analysis is most commonly used to compare specific pairs of samples for example tumor tissue versus its healthy counterpart in this volume dr pyo hong discusses the role of long rna sequences in transcriptome analysis dr shinichi describes the next generation single cell sequencing technology developed by his team dr prasanta presents transcriptome analysis applied to rice under various environmental factors dr xiangyuan addresses the reproductive systems of flowering plants and dr sadovsky compares codon usage in conifers this book provides information on genome complexity and evolution transcriptome analysis mirnome simple sequence repeats genome relationships molecular cytogenetics polyploidy induction and application flower and embryo development orchids account for a great part of the worldwide floriculture trade both as cut flowers and as potted plants and are assessed to comprise around 10 of global fresh cut flower trade a better understanding of the basic botanical characteristics flower regulation molecular cytogenetics karyotypes and dna content of important orchids will aid in the efficient development of new cultivars the book also describes the composition expression and function of various micrornas and simple sequence repeats information on their involvement in all aspects of plant growth and development will aid functional genomics studies the onset of flowering is an important step during the lifetime of a flowering plant during the past two decades there has been enormous progress in our understanding of how internal and external environmental cues control the transition to reproductive growth in plants many flowering time regulators have been identified from the model plant arabidopsis thaliana most of them are assembled in regulatory pathways which converge to central integrators which trigger the transition of the vegetative into an inflorescence meristem for crop cultivation the time of flowering is of upmost importance because it determines yield phenotypic variation for this trait is largely controlled by genes which were often modified during domestication or crop improvement understanding the genetic basis of flowering time regulation offers new opportunities for selection in plant breeding and for genome editing and genetic modification of crop species fruit crops diagnosis and management of nutrient constraints is the first and only resource to holistically relate fruits as a nutritional source for human health to the state of the art methodologies currently used to diagnose and manage nutritional constraints placed on those fruits this book explores a variety of advanced management techniques including open field hydroponic fertigation bio fertigation the use of nano fertilizers sensors based nutrient management climate smart integrated soil fertility management inoculation with microbial consortium and endophytes backed up by ecophysiology of fruit crops these intricate issues are effectively presented including real world applications and future insights presents the latest research including issues with commercial application details comprehensive insights into the diagnosis and management of nutrient constraints includes contributions by world renowned researchers providing global perspectives and experience natural bioactive compounds have become an integral part of plant microbe interactions geared toward adaptation to environmental changes they regulate symbiosis induce seed germination and manifest allelopathic effects i e they inhibit the growth of competing plant species in their vicinity in addition the use of natural bioactive compounds and their products is considered to be suitable and safe in e g alternative medicine thus there is an unprecedented need to meet the increasing demand for plant secondary metabolites in the flavor and fragrance food and pharmaceutical industries however it is difficult to obtain a constant quantity of compounds from the cultivated plants as their yield fluctuates due to several factors including genotypic variations the geography edaphic conditions harvesting and processing methods yet familiarity with these substances and the exploration of various approaches could open new avenues in their production this book describes the basis of bioactive plant compounds their mechanisms and molecular actions with regard to various human diseases and their applications in the drug cosmetic and herbal industries accordingly it offers a valuable resource for students educators researchers and healthcare experts involved in agronomy ecology crop science molecular biology stress physiology and natural products this ebook is a collection of articles from a frontiers research topic frontiers research topics are very popular trademarks of the frontiers journals series they are collections of at least ten articles all centered on a particular subject with their unique mix of varied contributions from original research to review articles frontiers research topics unify the most influential researchers the latest key findings and historical advances in a hot research area find out more on how to host your own frontiers research topic or contribute to one as an author by contacting the frontiers editorial office frontiersin org about contact vols for 1963 include as pt 2 of the jan issue medical subject headings

Genomics in Flower Development: From 'Omics' to Functional Characterization

2022-04-26

this second edition details new and updated protocols for experimental approaches that are currently used to study the formation of flowers chapters guide readers on genetic methods phenotypic analyses genome wide experiments modeling and system wide approaches written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and key tips on troubleshooting and avoiding known pitfalls authoritative and cutting edge flower development methods and protocols second edition aims to be a useful and practical guide to new researchers and experts looking to expand their knowledge

Application of multi-omics to important traits of ornamental and beverage plants

2023-07-04

this book reviews the current status of p mume research highlighting how the new data coming from the release of the p mume genomes can advance science and help to solve a number of problems facing the p mume industry prunus mume which was domesticated in china more than 3 000 years ago as an ornamental plant and for its fruit is one of the first genomes among the prunus subfamilies of the rosaceae family that has been sequenced combining the p mume genome with available data scientists have succeeded in reconstructing nine ancestral chromosomes of the rosaceae family as well as the chromosome fusion fission and duplication history of three major subfamilies the p mume genome sequence adds to our understanding of rosaceae evolution and provides an important basis for the improvement of fruit trees this book offers an essential a guide for all those who are interested in gene discovery comparative genomics molecular breeding and new breeding techniques and will be particularly useful for scientists breeders university students and public sector institutes that are involved in the p mume industry and or rosaceae research

The Development and Application of Multi-Omics Integration Approaches to Dissecting Complex Traits in Plants

2022-05-06

as with nearly all living creatures humans have always been attracted and intrigued by floral scents yet while we have been manufacturing perfumes for at least 5000 years to serve a myriad of religious sexual and medicinal purposes until very recently the limitation of our olfactory faculty has greatly hindered our capacity to clearly and ob

Applications of Omics in Plant-Microbiome Interactions

2024-04-01

buckwheat forgotten crop for the future offers an overview of this globally important crop including its history origin and its importance to functional food sector due to its short growth span ability to grow at higher altitudes and superior quality of its protein buckwheat is considered as an important crop for addressing global food requirements the book also provides upto date information on the abiotic stress tolerance properties of the crop including its hyperaccumulating potential the book talks about the issues and challenges being faced for adopting this crop and the ways to address and overcome these limitations the book guides the readers through different varietal adaptations and provides information on appropriate research directions this book would serve as an ideal guide for researchers and advanced level students seeking better understanding of the buckwheat crop introduces the buckwheat s origin history and diversity summarizes the distribution of buckwheat species around the world presents agro techniques and cultivation practices of buckwheat explores the nutraceutical potential of buckwheat includes adaptation of buckwheat towards different environmental factors affecting growth and production discusses the reasons for declining buckwheat production addresses the strategies for buckwheat crop improvement

Omics data-based identification of plant specialized metabolic genes

2023-06-30

as orchards are faced with different challenges such as production and the growing global population there is a need to update and understand the principles and practices for successful orchard management to increase food productivity the economics of cultivation irrigated agriculture and smart agriculture are important topics in precision agriculture that relate to these various challenges and must be studied further additionally technologies have played a key role in promoting the development of orchards and new strategies have led to substantial improvements in fruit productivity and quality these strategies and technologies must also be considered in order to ensure a successful future for orchard management the handbook of research on principles and practices for orchards management aims to improve fruit orchards productivity by exploring the latest practical research findings in the area and considers the new techniques in various agricultural management practices to improve the growth and productivity of fruit orchards under different biotic and abiotic stresses covering topics such as nutrient management pest control orchard pruning and magnetic water this reference work is ideal for industry professionals researchers practitioners scholars academicians instructors and students

Flower Development

2023-08-04

flower breeding and maintenance is a comprehensive guide that delves into the fascinating world of flowers providing valuable insights and practical knowledge on the art and science of flower breeding and maintenance this book serves as an essential resource for flower enthusiasts horticulturists gardeners and anyone passionate about cultivating and caring for flowers the book begins by exploring the profound importance of understanding flower genetics and care emphasizing how a deep understanding of plant chromosomes genes and modes of inheritance can greatly enhance our ability to breed and maintain healthy and vibrant flowers it delves into the rich history of flower breeding highlighting notable achievements and advancements that have shaped the floral landscape we know today throughout the book readers are introduced to the fundamental principles of flower breeding and maintenance including genetic variation cross pollination hybridization selection propagation and the implications of genetic modification the author explores the diverse aspects of flower development including color and pattern variations fragrance and scent size and shape disease and pest resistance and the impact of environmental factors such as light temperature humidity soil composition and water quality flower breeding and maintenance is an inspiring and comprehensive guide that equips readers with the knowledge and practical skills to excel in the art of flower breeding and maintenance filled with in depth information expert insights and practical tips this book is an invaluable resource for anyone seeking to unlock the secrets of nature s most exquisite creations and create a more vibrant diverse and beautiful floral world

Primary Metabolism in Fruits

2022-02-23

horsemeat in burgers was hard to swallow but there are far more sinister culinary crimes afoot chicken eggs that haven t come from chickens melamine in infant s milk in china nut shells in spices these are just some examples of the food fraud that has occurred in recent years as our urban lifestyle takes us further and further away from our food sources there are increasing opportunities for dishonesty duplicity and profit making short cuts food adulteration motivated by money is an issue that has spanned the globe throughout human history whether it s a matter of making a good quality oil stretch a bit further by adding a little extra something or labelling a food falsely to appeal to current consumer trends it s all food fraud and it costs the food industry billions of dollars each year the price to consumers may be even higher with some paying for these crimes with their health and in some cases their lives sorting the beef from the bull is a collection of food fraud tales from around the world it explains the role of science in uncovering some of the century s biggest food scams and explores the arms race between food forensics and fraudsters as new methods of detection spur more creative and sophisticated means of committing the crimes this book equips us with the knowledge of what is possible in the world of food fraud and shines a light on the shady areas of our food supply system where these criminals lurk

The Prunus mume Genome

2019-07-29

this book examines the development of innovative modern methodologies towards augmenting conventional plant breeding for the production of new crop varieties under the increasingly limiting environmental and cultivation factors to achieve sustainable agricultural production and enhanced food security two volumes of advances in plant breeding strategies were published in 2015 and 2016 respectively volume 1 breeding biotechnology and molecular tools and volume 2 agronomic abiotic and biotic stress traits this is volume 3 fruits which is focused on advances in breeding strategies for the improvement of individual fruit crops it consists of 23 chapters grouped into three parts according to distribution classification of fruit trees part i temperate fruits part ii subtropical fruits and part iii tropical fruits each chapter comprehensively reviews the modern literature on the subject and reflects the authors own experience

Biology of Floral Scent

2006-03-27

this book describes the current state of international grape genomics with a focus on the latest findings tools and strategies employed in genome sequencing and analysis and genetic mapping of important agronomic traits it also discusses how these are having a direct impact on outcomes for grape breeders and the international grape research community while v vinifera is a model species it is not always appreciated that its cultivation usually requires the use of other vitis species as rootstocks the book discusses genetic diversity within the vitis genus the available genetic resources for breeding and the available genomic resources for other vitis species grapes vitis vinifera spp vinifera have been a source of food and wine since their domestication from their wild progenitor vitis vinifera ssp sylvestris around 8 000 years ago and they are now the world s most valuable horticultural crop in addition to being economically important v vinifera is also a model organism for the study of perennial fruit crops for two reasons firstly its ability to be transformed and micropropagated via somatic embryogenesis and secondly its relatively small genome size of 500 mb the economic importance of grapes made v vinifera an obvious early candidate for genomic sequencing and accordingly two draft genomes were reported in 2007 remarkably these were the first genomes of any fruiting crop to be sequenced and only the fourth for flowering plants although riddled with gaps and potentially omitting large regions of repetitive sequences the two genomes have provided valuable insights into grape genomes cited in over 2 000 articles the genome has served as a reference in more than 3 000 genome wide transcriptional analyses further recent advances in dna sequencing and bioinformatics are enabling the assembly of reference grade genome references for more grape genotypes revealing the exceptional extent of structural variation in the species

Buckwheat: Forgotten Crop for the Future

2021-07-14

addressing the pear genome this book covers the current state of knowledge regarding genetic and genomic resources breeding approaches and strategies as well as cutting edge content on how these tools and resources are being soon will be utilized to pursue genetic improvement efforts that will combine fruit quality high productivity precocious fruit bearing and long postharvest storage life along with elevated levels of resistance to various major diseases and insect pests throughout the book also explores potential opportunities and challenges in genomic analysis sequence assembly structural features as well as functional studies that will assist in future genetic improvement efforts for pears the pear pyrus an important tree fruit crop is grown worldwide and has several economically relevant cultivars in recent years modern genetic and genomic tools have resulted in the development of a wide variety of valuable resources for the pear in the past few years completion of whole genome assemblies of dangshansuli an asian pear and bartlett a european pear have paved the way for new discoveries regarding for example the pear s genomic structure chromosome evolution and patterns of genetic variation this wealth of new resources will have a major impact on our knowledge of the pear genome in turn these resources and knowledge will have significant impacts on future genetic improvement efforts

Handbook of Research on Principles and Practices for Orchards Management

2022-06-03

this book is about saffron crocus sativus l that is the most expensive spice in the world though there are other books on saffron but none of them has comprehensive information on saffron genome transcriptome proteome metabolome and microbiome the book has been divided into five sections and 17 chapters that cover all the areas related to its cultivation market economy genomics transcriptomics proteomics metabolomics tissue culture microbiomics metagenomics etc in addition a chapter on molecular markers and their use in molecular genetic mapping in saffron that lacks genetic diversity as a sterile plant paves a way for selection of elite varieties based on the epigenetic variability a section on in vitro propagation elaborates on the corm production under controlled conditions in summary this book encompasses most of the information available on this golden spice

Flower breeding and maintenance

2023-08-21

this book describes the history of tobacco genomics from its discovery by europeans to next generation omics approaches in plant science the authors primarily focus on the allotetraploid common tobacco plant n tabacum however separate chapters are dedicated to closely related nicotiana species such as n benthamiana and n attenuata for which substantial progress in omics data analysis has been already achieved while genetic maps transcriptomes and physical maps of bac libraries have significantly enhanced our understanding of the tobacco plant the genome of tobacco and related nicotiana species has opened a new era in modern tobacco research this book addresses current and future industrial and research applications as well as central challenges in tobacco science including diseases low variability of cultivars the genome s large size polyploidy and gene duplication

Plant secondary metabolic regulation and engineering

2023-05-17

the need for tailored data for machine learning models is often unsatisfied as it is considered too much of a risk in the real world context synthetic data an algorithmically birthed counterpart to operational data is the linchpin for overcoming constraints associated with sensitive or regulated information in high dimensional data where the dimensions of features and variables often surpass the number of available observations the emergence of synthetic data heralds a transformation applications of synthetic high dimensional data delves into the algorithms and applications underpinning the creation of synthetic data which surpass the capabilities of authentic datasets in many cases beyond mere mimicry synthetic data takes center stage in prioritizing the mathematical domain becoming the crucible for training robust machine learning models it serves not only as a simulation but also as a theoretical entity permitting the consideration of unforeseen variables and facilitating fundamental problem solving this book navigates the multifaceted advantages of synthetic data illuminating its role in protecting the privacy and confidentiality of authentic data it also underscores the controlled generation of synthetic data as a mechanism to safeguard private information while maintaining a controlled resemblance to real world datasets this controlled generation ensures the preservation of privacy and facilitates learning across datasets which is crucial when dealing with incomplete scarce or biased data ideal for researchers professors practitioners faculty members students and online readers this book transcends theoretical discourse

Sorting the Beef from the Bull

2016-02-25

orchids are fascinating with attractive flowers that sell in the markets and an increasing demand around the world additionally some orchids are edible or scented and have long been used in preparations of traditional medicine this book presents recent advances in orchid biochemistry including original research articles and reviews it provides in depth insights into the biology of flower pigments floral scent formation bioactive compounds pollination and plant microbial interaction as well as the biotechnology of protocorm like bodies in orchids it reveals the secret of orchid biology using molecular tools advanced biotechnology multi omics and high throughput technologies and offers a critical reference for the readers this book explores the

knowledge about species evolution using comparative transcriptomics flower spot patterning involving the anthocyanin biosynthetic pathways the regulation of flavonoid biosynthesis which contributes to leaf color formation gene regulation in the biosynthesis of secondary metabolites and bioactive compounds the mechanism of pollination involving the biosynthesis of semiochemicals gene expression patterns of volatile organic compounds the symbiotic relationship between orchids and mycorrhizal fungi techniques using induction proliferation and regeneration of protocorm like bodies and so on in this book important or model orchid species were studied including anoectochilus roxburghii bletilla striata cymbidium sinense dendrobium officinale ophrys insectifera phalaenopsis panda pleione limprichtii

Advances in Plant Breeding Strategies: Fruits

2018-07-20

processing and sustainability of beverages volume two in the science of beverages series is a general reference of the current and future actions for a sustainable beverage industry this resource takes a unique approach combining processing with sustainability topics of note include waste treatment and management environmental analysis for a sustainable beverage industry and modern technologies for beverage processing to reduce contaminants and increase the quality this book is essential to scientists researchers and technologists in the beverages field covering both alcoholic and nonalcoholic beverages covers a broad range of beverage products to increase knowledge of quality improvement and product development presents novel food processing technologies on beverage antioxidants offers sustainable management strategies for implementing added value in beverage products

The Grape Genome

2019-11-13

genetics and genomics of populus provides an indepth description of the genetic and genomic tools and approaches for populus examines the biology that has been elucidated using genomics and looks to the future of this unique model plant this volume is designed to serve both experienced populus researchers and newcomers to the field contributors to the volume are a blend of researchers some who have spent most of their research career on populus and others that have moved to populus from other model systems research on populus forms a useful complement to research on arabidopsis in fact many plant species found in nature are in terms of the life history and genetics more similar to populus than to arabidopsis thus the genetic and genomic strategies and tools developed by the populus community and showcased in this volume will hopefully provide inspiration for researchers working in other less well developed systems

The Pear Genome

2019-07-03

written by researchers representing six countries and 28 institutions this book highlights the development of the genus populus as a model organism for tree genomics reflecting an impressive depth of coverage the contributors thorough reviews and analyses of populus genomics provide insight into future discoveries about the basic biology of thi

The Saffron Genome

2022-11-18

applied plant genomics and biotechnology reviews the recent advancements in the post genomic era discussing how different varieties respond to abiotic and biotic stresses investigating epigenetic modifications and epigenetic memory through analysis of dna methylation states applicative uses of rna silencing and rna interference in plant physiology and in experimental transgenics and plants modified to produce high value pharmaceutical proteins the book provides an overview of research advances in application of rna silencing and rna interference through virus based transient gene expression systems virus induced gene complementation vigc virus induced gene silencing sir vigs mr vigs virus based microrna silencing vbms and virus based rna mobility assays vrma rna based vaccines and expression of virus proteins or rna and virus like particles in plants the potential of virus vaccines and therapeutics and exploring plants as factories for useful products and pharmaceuticals are topics wholly deepened the book reviews and discuss plant functional genomic studies discussing the technologies supporting the genetic improvement of plants and the production of plant varieties more resistant to biotic and abiotic stresses several important crops are analysed providing a glimpse on the most up to date methods and topics of investigation the book presents a review on current state of gmo the cisgenesis derived plants and novel plant products devoid of transgene elements discuss their regulation and the production of desired traits such as resistance to viruses and disease also in fruit trees and wood trees with long vegetative periods several chapters cover aspects of plant physiology related to plant improvement cytokinin metabolism and hormone signaling pathways are discussed in barley parp domain proteins involved in stress induced morphogenetic response regulation of nad signaling and ros dependent synthesis of anthocyanins apple allergen isoforms and the various content in different varieties are discussed and approaches to reduce their presence euphorbiaceae castor bean cassava and jathropa are discussed at genomic structure their diseases and viruses and methods of transformation rice genomics and agricultural traits are discussed and biotechnology for engineering and improve rice varieties mango topics are presented with an overview of molecular methods for variety differentiation and aspects of fruit improvement by traditional and biotechnology methods oilseed rape is presented discussing the genetic diversity quality traits genetic maps genomic selection and comparative genomics for improvement of varieties tomato studies are presented with an overview on the knowledge of the regulatory networks involved in flowering methods applied to study the tomato genome wide dna methylation its regulation by small rnas microrna dependent control of transcription factors expression the development and ripening processes in tomato genomic studies and fruit modelling to establish fleshy fruit traits of interest the gene reprogramming during fruit ripening and the ethylene dependent and independent dna methylation changes provides an overview on the ongoing projects

and activities in the field of applied biotechnology includes examples of different crops and applications to be exploited reviews and discusses plant functional genomic studies and the future developments in the field explores the new technologies supporting the genetic improvement of plants

Interactions Between Biochemical Pathways Producing Plant Colors and Scents

2022-07-18

the crop plants cater not only to our basic f5 food feed fiber fuel and furniture needs but also provide a number of nutraceuticals with potential nutritional safety and therapeutic properties many crop plants provide an array of minerals vitamins and antioxidant rich bioactive phytochemicals increasing incidences of chronic diseases such as cancer diabetes and hiv and malnutrition necessitate global attention to health and nutrition security with equal emphasis to food security this compendium compiles results of researches on biochemical physiological and genetic mechanisms underlying biosynthesis of the health and nutrition related nutraceuticals it also explores the precise breeding strategies for augmentation of their content and amelioration of their quality in crop plants under all commodity categories including cereals and millets oilseeds pulses fruits and nuts and vegetables the compendium comprise 5 sections dedicated to these 5 commodity groups and presents enumeration on the concepts strategies tools and techniques of nutraceutomics these sections include 50 chapters devoted to even number of major crop plants these chapters present deliberations on the biochemistry and medicinal properties of the nutracuticals contained genetic variation in their contents classical genetics and breeding for their quantitative and qualitative improvement tissue culture and genetic engineering for augmentation of productivity and quality and sources of genes underlying their biosynthesis they also include comprehensive enumeration on genetic mapping of the genes and qtls controlling the contents and profile of the nutraceuticals and molecular breeding for their further improvement through marker assisted selection and backcross breeding tools prospects of post genomic precise breeding strategies including genome wide association mapping genomic selection allele mining and genome editing are also discussed this compendium fills the gap in academia and research and development wings of the private sector industries interested in an array of subjects including genetics genomics tissue culture genetic engineering molecular breeding genomics assisted breeding bioinformatics biochemistry physiology pathology entomology pharmacognosy ipr etc and will also facilitate understanding of the policy making agencies and people in the socio economic domain and research sponsoring agencies

The Tobacco Plant Genome

2020-03-16

plants face a wide range of environmental challenges which are expected to become more intense as a result of global climate change plant soil interactions play an important role in the functioning of ecosystems soil properties represent a strong selection pressure for plant diversity and influence the structure of plant communities and biodiversity the complexity of plant soil interactions has recently been studied by developing a trait based approach in which responses and effects of plants on soil environment are quantified and modelled this fundamental research on plant soil interaction in ecosystems is essential to transpose knowledge of functional ecology to environmental management frontiers in plant soil interaction molecular insights into plant adaptation will address topics that provide advances in understanding plant responses to soil conditions through the integration of genetic molecular and plant level studies of diverse biotic and abiotic stresses under field and laboratory conditions this book will be beneficial to students and researchers working on stress physiology and stress proteins genomics proteomics genetic engineering and other fields of plant soil interactions frontiers in plant soil interaction will also help scientists explore new horizons in their area of research brings together global leaders working in the area of plant environment interactions and shares their research findings presents current and future scenarios for the management of stressors illustrates the central role for plant soil interactions in applying basic research to address current and future challenges to humans

Applications of Synthetic High Dimensional Data

2024-03-25

transcriptome analysis is the study of the transcriptome of the complete set of rna transcripts that are produced under specific circumstances using high throughput methods transcription profiling which follows total changes in the behavior of a cell is used throughout diverse areas of biomedical research including diagnosis of disease biomarker discovery risk assessment of new drugs or environmental chemicals etc transcriptome analysis is most commonly used to compare specific pairs of samples for example tumor tissue versus its healthy counterpart in this volume dr pyo hong discusses the role of long rna sequences in transcriptome analysis dr shinichi describes the next generation single cell sequencing technology developed by his team dr prasanta presents transcriptome analysis applied to rice under various environmental factors dr xiangyuan addresses the reproductive systems of flowering plants and dr sadovsky compares codon usage in conifers

Insights in plant abiotic stress: 2021

2023-01-06

this book provides information on genome complexity and evolution transcriptome analysis mirnome simple sequence repeats genome relationships molecular cytogenetics polyploidy induction and application flower and embryo development orchids account for a great part of the worldwide floriculture trade both as cut flowers and as potted plants and are assessed to comprise around 10 of global fresh cut flower trade a better understanding of the basic botanical characteristics flower regulation molecular cytogenetics karyotypes and dna content of important orchids will aid in the efficient development of new cultivars the book also describes the composition expression

and function of various micrornas and simple sequence repeats information on their involvement in all aspects of plant growth and development will aid functional genomics studies

Orchid Biochemistry

2021-08-18

the onset of flowering is an important step during the lifetime of a flowering plant during the past two decades there has been enormous progress in our understanding of how internal and external environmental cues control the transition to reproductive growth in plants many flowering time regulators have been identified from the model plant arabidopsis thaliana most of them are assembled in regulatory pathways which converge to central integrators which trigger the transition of the vegetative into an inflorescence meristem for crop cultivation the time of flowering is of upmost importance because it determines yield phenotypic variation for this trait is largely controlled by genes which were often modified during domestication or crop improvement understanding the genetic basis of flowering time regulation offers new opportunities for selection in plant breeding and for genome editing and genetic modification of crop species

Processing and Sustainability of Beverages

2018-12-07

fruit crops diagnosis and management of nutrient constraints is the first and only resource to holistically relate fruits as a nutritional source for human health to the state of the art methodologies currently used to diagnose and manage nutritional constraints placed on those fruits this book explores a variety of advanced management techniques including open field hydroponic fertigation bio fertigation the use of nano fertilizers sensors based nutrient management climate smart integrated soil fertility management inoculation with microbial consortium and endophytes backed up by ecophysiology of fruit crops these intricate issues are effectively presented including real world applications and future insights presents the latest research including issues with commercial application details comprehensive insights into the diagnosis and management of nutrient constraints includes contributions by world renowned researchers providing global perspectives and experience

Genetics and Genomics of Populus

2010-03-02

natural bioactive compounds have become an integral part of plant microbe interactions geared toward adaptation to environmental changes they regulate symbiosis induce seed germination and manifest allelopathic effects i e they inhibit the growth of competing plant species in their vicinity in addition the use of natural bioactive compounds and their products is considered to be suitable and safe in e g alternative medicine thus there is an unprecedented need to meet the increasing demand for plant secondary metabolites in the flavor and fragrance food and pharmaceutical industries however it is difficult to obtain a constant quantity of compounds from the cultivated plants as their yield fluctuates due to several factors including genotypic variations the geography edaphic conditions harvesting and processing methods yet familiarity with these substances and the exploration of various approaches could open new avenues in their production this book describes the basis of bioactive plant compounds their mechanisms and molecular actions with regard to various human diseases and their applications in the drug cosmetic and herbal industries accordingly it offers a valuable resource for students educators researchers and healthcare experts involved in agronomy ecology crop science molecular biology stress physiology and natural products

Recent advances in flower and fruit development in perennial plants

2023-07-20

this ebook is a collection of articles from a frontiers research topic frontiers research topics are very popular trademarks of the frontiers journals series they are collections of at least ten articles all centered on a particular subject with their unique mix of varied contributions from original research to review articles frontiers research topics unify the most influential researchers the latest key findings and historical advances in a hot research area find out more on how to host your own frontiers research topic or contribute to one as an author by contacting the frontiers editorial office frontiersin org about contact

Genetics, Genomics and Breeding of Poplar

2011-03-29

vols for 1963 include as pt 2 of the jan issue medical subject headings

Applied Plant Genomics and Biotechnology

2015-01-27

Compendium of Crop Genome Designing for Nutraceuticals

2024-01-15

Frontiers in Plant-Soil Interaction

2021-05-01

Transcriptome Analysis

2019-11-20

The Orchid Genome

2021-04-20

Recent Advances in Flowering Time Control

2017-03-10

Fruit Crops

2019-11-30

Natural Bio-active Compounds

2019-09-28

Orchid Genomics and Developmental Biology

2020-09-02

Biotechnological and genomic approaches for enhancing agronomic performance of crops

2023-04-05

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2003

Improvement for Quality and Safety Traits in Horticultural Plants

2022-06-23

Orchid Genomics and Developmental Biology, Volume II

2023-02-20

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