The Science Of Grapevines

Biocontrol of Major Grapevine DiseasesOme-wide Studies of Grapevine Fruit Composition and Responses to Agro-environmental Factors in the Era of Systems BiologyThe Science of GrapevinesPrecision Agriculture for Sustainability and Environmental ProtectionOregon ViticultureThe Science of WineWine SciencePhytohormonesWine Grape Varieties in CaliforniaIntegrated Pest Control in ViticultureGrapevine Molecular Physiology & BiotechnologyNative Wine Grapes of ItalyUnderstanding Vineyard SoilsBiology of the GrapevineGrapevine Breeding Programs for the Wine IndustryGraft-transmitted Diseases of GrapevinesThe Science of GrapevinesTerroir and Other Myths of WinegrowingGrapesGrapevine Yellows Diseases and Their Phytoplasma AgentsWine Grape VarietiesA Natural History of WineDying on the VineGenetics, Genomics, and Breeding of GrapesResponse of Crops to Limited WaterGluten-Free Cereal Products and BeveragesArthropod Management in Vineyards:Grape and Wine BiotechnologyMolecular Wine MicrobiologyEnvironmentally Sustainable ViticultureHealthy Soils for Healthy VinesPests of Fruit CropsWinemakingThe Grape GrowerThe GrapevineSoils for Fine WinesGrapes and WinesGrapevine in a Changing EnvironmentThe Grape GenomeMethodologies and

Results in Grapevine Research

Biocontrol of Major Grapevine Diseases

Describes 92 of the most popular wine grape varieties currently used by wine makers around the world.

Ome-wide Studies of Grapevine Fruit Composition and Responses to Agro-environmental Factors in the Era of Systems Biology

Grapevine Breeding Programs for the Wine Industry: Traditional and Molecular Techniques summarizes recent trends in grapevine breeding, both in terms of research and practical programs. The first group of chapters covers the challenges faced by breeders and existing and emerging techniques used to combat them. Two further groups of chapters focus on grapevine breeding programs in different wine-producing countries around the world. With authoritative contributions from experts across the world's winemaking regions, this book will be an essential reference for all those involved in viticulture and oeneology wanting to explore new methods, understand different approaches and refine existing practices. Covers challenges faced by breeders Highlights grapevine breeding programs in different wine-

producing countries Contributions from experts across the world's winemaking regions

The Science of Grapevines

A concise but comprehensive overview of the biology and cultivation of the grapevine.

Precision Agriculture for Sustainability and Environmental Protection

Molecular Wine Microbiology features rigorous scientific content written at a level comprehensible for wine professionals as well as advanced students. It includes information on production and spoilage issues, the microbial groups relevant for wine production and microbial wine safety. Microbiology has long been recognized as a key tool in studying wine production, however only recently have wine microbiology studies been addressed at a molecular level, increasing the understanding of how microbiology impacts not only the flavor quality of the wine, but also its safety. Understanding, at a molecular level, how a starter culture can impact ethanol, glycerol, volatile phenols, mannoproteins, biogenic amines or ochratoxin A of a wine are just some of the core points that must be considered in order to achieve maximium consumer acceptability while addressing safety concerns during processing

and storage. While other books offer insights into the technological aspects of enology, this book is written by expert microbiologists, who explore the positive and negative impacts of gene function in the production of wine, from a microbiological point of view. Winner of the 2012 Jury Award in Enology from the International Organisation of Vine and Wine Presents the most current methods of studying the microbiology of wine Includes latest identification and typing methods, reducing identification time from days and weeks to minutes and hours Provides important knowledge about the impact of microbiological factors at the molecular level for reduction of wine spoilage and increased wine quality and safety

Oregon Viticulture

Written by a recognized expert and based on his experience in teaching the subject to students with a variety of educational backgrounds, The Science of Grapevines: Anatomy and Physiology is the only book to comprehensively explore the physiology of the grapevine as it occurs around the world. While other books have focused on the vines of specific regions, the globalization of the wine industry and the resulting increase of lands around the world being used for grapevine cultivation have left a gap in

information. This book addresses not only the specific issues and concerns of grapevines from regions around the world, but includes important emerging topics such as global climate change, water relations, temperature effect and more. * Provides global coverage of grapevines, including the regional differences, similarities, challenges and potential changes * Avoids jargon while bringing the reader into this important aspect of the wine industry * Classroom proven by a leading expert in grapevine anatomy

The Science of Wine

A captivating survey of the science of wine and winemaking for anyone who has ever wondered about the magic of the fermented grape An excellent bottle of wine can be the spark that inspires a brainstorming session. Such was the case for Ian Tattersall and Rob DeSalle, scientists who frequently collaborate on book and museum exhibition projects. When the conversation turned to wine one evening, it almost inevitably led the two--one a palaeoanthropologist, the other a molecular biologist--to begin exploring the many intersections between science and wine. This book presents their fascinating, freewheeling answers to the question "What can science tell us about wine?" And vice versa. Conversational and

accessible to everyone, this colorfully illustrated book embraces almost every imaginable area of the sciences, from microbiology and ecology (for an understanding of what creates this complex beverage) to physiology and neurobiology (for insight into the effects of wine on the mind and body). The authors draw on physics, chemistry, biochemistry, evolution, and climatology, and they expand the discussion to include insights from anthropology, primatology, entomology, Neolithic archaeology, and even classical history. The resulting volume is indispensible for anyone who wishes to appreciate wine to its fullest.

Wine Science

Dying on the Vine chronicles 150 years of scientific warfare against the grapevine’s worst enemy: phylloxera. In a book that is highly relevant for the wine industry today, George Gale describes the biological and economic disaster that unfolded when a tiny, root-sucking insect invaded the south of France in the 1860s, spread throughout Europe, and journeyed across oceans to Africa, South America, Australia, and California—laying waste to vineyards wherever it landed. He tells how scientists, viticulturalists, researchers, and others came together to save the world’s vineyards and, with years of observation and research,

developed a strategy of resistance. Among other topics, the book discusses phylloxera as an important case study of how one invasive species can colonize new habitats and examines California's past and present problems with it.

Phytohormones

David Alford provides in this new book an authoritative illustrated account of fruit, hop and nut pests in temperate and subtropical climates. Pests of Fruit Crops focuses on insects and mites affecting pome fruits, stone fruits, cane fruits and strawberries, bush fruits, hops, vines, citrus fruits, nuts, figs, olives and more. The pests are considered in their natural sequence of less advanced to more advanced forms, including a description of each, its life history, plants affected and damage caused, Families of pests are arranged according to generally accepted classification systems, species appear under scientific names; common names are also cited. Detailed indexes allow cross-referencing between pests and their host plants. Illustrated by over 1,150 color photographs, Pests of Fruit Crops is an invaluable reference source for professional, academic and lay readers - growers, extension workers, consultants, scientists, students and private gardeners.

Wine Grape Varieties in California

Mountainous terrain, volcanic soils, innumerable microclimates, and an ancient culture of winemaking influenced by Greeks, Phoenicians, and Romans make Italy the most diverse country in the world of wine. This diversity is reflected in the fact that Italy grows the largest number of native wine grapes known, amounting to more than a quarter of the world's commercial wine grape types. Ian D'Agata spent thirteen years interviewing producers, walking vineyards, studying available research, and tasting wines to create this authoritative guide to Italy's native grapes and their wines. Writing with great enthusiasm and deep knowledge, D'Agata discusses more than five hundred different native Italian grape varieties, from Aglianico to Zibibbo. D'Agata provides details about how wine grapes are identified and classified, what clones are available, which soils are ideal, and what genetic evidence tells us about a variety's parentage. He gives historical and anecdotal accounts of each grape variety and describes the characteristics of wines made from the grape. A regional list of varieties and a list of the best producers provide additional guidance. Comprehensive, thoroughly researched, and engaging, this book is the perfect companion for anyone who wants to know more about the vast enological treasures

cultivated in Italy.

Integrated Pest Control in Viticulture

The Grapevine explores the links between the scientific principles and the practice of viticulture. It will be of great interest to anyone involved in viticulture and winemaking as, while it focuses on theory, it also contains practical aspects of growing vines for wine. It covers the basic principles of the molecular, physiological, biochemical and practical aspects of growing vines for wine.

Grapevine Molecular Physiology & Biotechnology

"Matthews brings a scientist's skepticism and scrutiny to widely held ideas and beliefs about viticulture--often promulgated by people who have not tried to grow grapes for a living--and subjects them to critical examination: Is terroir primarily a marketing ploy that obscures our understanding of which environments really produce the best wine? Can grapevines that yield a high berry crop generate wines of high quality? What does it mean to have vines that are balanced or grapes that are fully mature? Do biodynamic practices violate biological principles? These and other questions will be addressed in a book that could alternatively be titled (in homage to a PUP bestseller) On Wine

Bullshit"--Provided by publisher.

Native Wine Grapes of Italy

Oregon Viticulture is a comprehensive, easy-to-use guide to successful strategies and methods for commercial vineyards in Oregon that will be extremely valuable both for current winegrape growers and for prospective growers. It is unique in its approach of combining the expertise and experience of university researchers with that of professional grape growers and winemakers -- most chapters were written by at least two authors with different perspectives. Oregon Viticulture is the successor to the popular Oregon Winegrape Growers Guide, with both broader coverage of more topics and greater depth of coverage than the earlier book. It emphasizes the importance of understanding the characteristics of a vineyard site, matching grape varieties to the site, and selecting and adjusting the most appropriate management practices for each unique site. The structure and physiology of grapevines is concisely summarized, and viticulture principles are introduced throughout the book. Standard production practices are described, and separate chapters discuss sustainable viticulture practices and organic grape growing. In addition, Oregon Viticulture addresses important business management topics not usually found in

similar books, including economics, marketing and contracts, compliance with government regulations, and labor management. Commercial winegrape growers, students, researchers, serious home viticulturists, and individuals with a strong interest in Northwest wines and the wine industry will find Oregon Viticulture to be a valuable reference and easy-to-use textbook and guide.

Understanding Vineyard Soils

Biocontrol of major grapevine diseases provides a timely research update on the use of biological control agents and plant resistance inducers against phytopathogenic infections of the grapevine by fungi, oomycetes, bacteria and phytoplasma.Taking a holistic approach, this book presents in detail the ecology, mechanisms and the application methods of these agents. Its 19 chapters, authored by international experts, cover diseases such as grey mould, trunk diseases, powdery and downy mildews, as well as phytoplasma diseases, and, by nature, emphasise applications of biocontrol in organic viticulture and as part of integrated pest management systems.

Biology of the Grapevine

This book presents some conditions and/or factors which are little known as possibly

affecting moth population density, or have been little-studied and, determines their possible usefulness for integrated pest control in vineyards.

Grapevine Breeding Programs for the Wine Industry

Grapes are one of the world's most widely-planted horticultural crops, used to make a variety of fresh, dried and processed products. The science of grapes and grape production are discussed through an examination of wine grapes as well as grapes for fresh consumption and raisin production. Providing historical and current information about the grape industry, the chapters cover genetics, breeding and cultivars, grapevine growth, development and nutrition, climate requirements, pests and diseases and post-harvest production. This informative text thoroughly covers the influence of the environment on grapevine health and productivity, and informs the reader on how grapes are grown and factors affecting grape quality.

Graft-transmitted Diseases of Grapevines

The book "Grapes and Wines: Advances in Production, Processing, Analysis, and Valorization" intends to provide to the

reader a comprehensive overview of the current state-of-the-art and different perspectives regarding the most recent knowledge related to grape and wine production. Thus, this book is composed of three different general sections: (1) Viticulture and Environmental Conditions, (2) Wine Production and Characterization, and (3) Economic Analysis and Valorization of Wine Products. Inside these 3 general sections, 16 different chapters provide current research on different topics of recent advances on production, processing, analysis, and valorization of grapes and wines. All chapters are written by a group of international researchers, in order to provide up-to-date reviews, overviews, and summaries of current research on the different dimensions of grape and wine production. This book is not only intended for technicians actively engaged in the field but also for students attending technical schools and/or universities and other professionals that might be interested in reading and learning about some fascinating areas of grape and wine research.

The Science of Grapevines

Wine Science, Third Edition, covers the three pillars of wine science – grape culture, wine production, and sensory evaluation. It takes readers on a scientific tour into the world

of wine by detailing the latest discoveries in this exciting industry. From grape anatomy to wine and health, this book includes coverage of material not found in other enology or viticulture texts including details on cork and oak, specialized wine making procedures, and historical origins of procedures. Author Ronald Jackson uniquely breaks down sophisticated techniques, allowing the reader to easily understand wine science processes. This updated edition covers the chemistry of red wine color, origin of grape varietyies, wine language, significance of color and other biasing factors to wine perception, various meanings and significance of wine oxidation. It includes significant additional coverage on brandy and ice wine production as well as new illustrations and color photos. This book is recommended for grape growers, fermentation technologists; students of enology and viticulture, enologists, and viticulturalists. NEW to this edition: * Extensive revision and additions on: chemistry of red wine color, origin of grape varietyies, wine language, significance of color and other biasing factors to wine perception, various meanings and significance of wine oxidation * Significant additional coverage on brandy and ice wine production * New illustrations and color photos

Terroir and Other Myths of Winegrowing

Phytohormones are regulatory compounds that play crucial roles in plants. This book brings together recent work and progress that has recently been made in the dynamic field of phytohormone regulation in plant development and stress responses. It also provides new insights and sheds new light regarding the exciting hormonal cross talk phenomenon in plants. This book will provoke interest in many readers and scientists, who can find this information useful for the advancement of their research works.

Grapes

This beautifully illustrated book is a must-have for growers, vintners, and enthusiasts. Inside you'll find information on ripening periods for 53 varieties grown in California, ripening dates of varieties by period and growing district, and detailed illustrations of grapevine structure. Most valuable of all is the discussion of the 36 major wine grape varieties grown in the state. Every variety receives an overview of synonyms, source, physical characteristics, harvest periods and methods, and winery use. Each variety is highlighted by close-up photography of its clusters, leaves, and leaf shoots.

Grapevine Yellows Diseases and Their Phytoplasma Agents

Grapes (Vitis spp.) are economically the most important fruit species in the world. Over the last decades many scientific advances have led to understand more deeply key physiological, biochemical, and molecular aspects of grape berry maturation. However, our knowledge on how grapevines respond to environmental stimuli and deal with biotic and abiotic stresses is still fragmented. Thus, this area of research is wide open for new scientific and technological advancements. Particularly, in the context of climate change, viticulture will have to adapt to higher temperatures, light intensity and atmospheric CO2 concentration, while water availability is expected to decrease in many viticultural regions, which poses new challenges to scientists and producers. With Grapevine in a Changing Environment, readers will benefit from a comprehensive and updated coverage on the intricate grapevine defense mechanisms against biotic and abiotic stress and on the new generation techniques that may be ultimately used to implement appropriate strategies aimed at the production and selection of more adapted genotypes. The book also provides valuable references in this research area and original data from several laboratories worldwide. Written by 63 international experts on grapevine ecophysiology, biochemistry and molecular biology, the book is a reference for a wide audience with different backgrounds, from plant physiologists, biochemists and graduate

and post-graduate students, to viticulturists and enologists.

Wine Grape Varieties

In recent years, viticulture has seen phenomenal growth, particularly in such countries as Australia, New Zealand, the United States, Chile, and South Africa. The surge in production of quality wines in these countries has been built largely on the practice of good enology and investment in high technology in the winery, enabling vintners to produce consistently good, even fine wines. Yet less attention has been paid to the influence of vineyard conditions on wines and their distinctiveness-an influence that is embodied in the French concept of terroir. An essential component of terroir is soil and the interaction between it, local climate, vineyard practices, and grape variety on the quality of grapes and distinctiveness of their flavor. This book considers that component, providing basic information on soil properties and behavior in the context of site selection for new vineyards and on the demands placed on soils for grape growth and production of wines. Soils for Fine Wines will be of interest to professors and upper-level students in enology, viticulture, soils and agronomy as well as wine enthusiasts and professionals in the wine industry.

A Natural History of Wine

Wine is one of the oldest forms of alcoholic beverages known to man. Estimates date its origins back to 6000 B.C. Ever since, it has occupied a significant role in our lives, be it for consumption, social virtues, therapeutic value, its flavoring in foods, etc. A study of wine production and the technology of winemaking is thus imperative. The preparation of wine involves steps from harvesting the grapes, fermenting the must, maturing the wine, stabilizing it finally, to getting the bottled wine to consumers. The variety of cultivars, methods of production, and style of wine, along with presentation and consumption pattern add to the complexity of winemaking. In the past couple of decades, there have been major technological advances in wine production in the areas of cultivation of grapes, biochemistry and methods of production of different types of wines, usage of analytical techniques has enabled us to produce higher quality wine. The technological inputs of a table wine, dessert wine or sparkling wine, are different and has significance to the consumer. The role played by the killer yeast, recombinant DNA technology, application of enzyme technology and new analytical methods of wine evaluation, all call for a comprehensive review of the advances made. This comprehensive volume provides a holistic view

of the basics and applied aspects of wine production and technology. The book comprises production steps, dotted with the latest trends or the innovations in the fields. It draws upon the expertise of leading researchers in the wine making worldwide.

Dying on the Vine

"The Science of Wine does an outstanding job of integrating 'hard' science about wine with the emotional aspects that make wine appealing."--Patrick J. Mahaney, former senior Vice President for wine quality at Robert Mondavi Winery "Jamie Goode is a rarity in the wine world: a trained scientist who can explain complicated subjects without dumbing them down or coming over like a pointy head. It also helps that he's a terrific writer with a real passion for his subject."--Tim Atkin MW, The Observer

Genetics, Genomics, and Breeding of Grapes

Terroir connotes a sense of place that imparts a distinctive character to wine. A central component of terroir is the soil and its immediate surroundings. Thus, an understanding of the basic properties of soils and how they function as a "living skin" on the earth's surface is of fundamental importance to grape growers and

winemakers. Stripped of scientific jargon, Understanding Vineyard Soils explains to a wide audience how soils form and why they are so variable. Robert White describes essential chemical and physical processes involving nutrients, water, oxygen and carbon dioxide, moderated by the activities of soil organisms, and proposes remedies to alleviate adverse conditions such as soil acidity, compaction, poor drainage and salinity. The pros and cons of organic viticulture are discussed, as are the possible impacts of climate change. The author explains how sustainable wine production requires grape growers and winemakers to take care of the soil and minimize the impact of their activities on the environment. This book is a practical guide for viticulturists and for the lay reader who is seeking general information about soils, but who may also wish to pursue in more depth the influence of different soil types on vine performance and wine character. Understanding Vineyard Soils will discuss new developments, especially in precision viticulture and organic viticulture. The introduction will address new technologies (near and remote sensing, digital soil mapping) as well as traditional soil classification. Following a chapter on site selection are the three core chapters on vineyard and soil management - The Nutrition of Grapevines, Where the Vine Roots Live, and The Living Soil. The book is written from an international perspective - the important

points discussed in Chapters 1 through 6 are illustrated with examples drawn from many wine regions around the world.

Response of Crops to Limited Water

Provides a state-of-the-science overview of arthropods affecting grape production around the world. Vineyard pest management is a dynamic and evolving field, and the contributed chapters provide insights into arthropods that limit this important crop and its products. Written by international experts from the major grape-growing regions, it provides a global overview of arthropods affecting vines and the novel strategies being used to prevent economic losses, including invasive pests affecting viticulture. The book contains reviews of the theoretical basis of integrated pest management, multiple chapters on biological control, current status of chemical control, as well as in-depth and well-illustrated reviews of the major arthropod pests affecting grape production and how they are being managed worldwide. This text will serve as a primary resource for applied entomologists, students, growers, and consultants with interests at the intersection of viticulture and applied entomology.

Gluten-Free Cereal Products and

Beverages

Gluten-Free Cereal Products and Beverages is the only book to address gluten-free foods and beverages from a food science perspective. It presents the latest work in the development of gluten-free products, including description of the disease, the detection of gluten, and the labeling of gluten-free products as well as exploring the raw materials and ingredients used to produce gluten-free products. Identifying alternatives to the unique properties of gluten has proven a significant challenge for food scientists and for the 1% of the world's population suffering from the immune-mediated entropathy reaction to the ingestion of gluten and related proteins, commonly known as Celiac Disease. This book includes information on the advances in working with those alternatives to create gluten free products including gluten-free beer, malt and functional drinks. Food scientists developing gluten-free foods and beverages, cereal scientists researching the area, and nutritionists working with celiac patients will find this book particularly valuable. Written by leading experts, presenting the latest developments in gluten-free products Addresses Coeliac Disease from a food science perspective Presents each topic from both a scientific and industrial point of view

Arthropod Management in Vineyards:

Fruits play a substantial role in the human diet as a source of vitamins, minerals, dietary fiber and a wide range of molecules relevant to health promotion and disease prevention. The characterization of genes involved in the accumulation of these molecules during fruit development and ripening, and in the overall plant's response to the environment, constitutes a fundamental step for improving yield- and quality-related traits, and for predicting this crop's behavior in the field. This is certainly the case for grapevine (Vitis vinifera L.), one of the most largely cultivated fruit crops in the world. The cultivation of this species is facing challenging scenarios driven by climate change – including increases in atmospheric carbon dioxide (CO2), solar radiation, and earth surface temperature, and decreases of water and nutrient availability. All these events will potentially affect the grapevine phenology, physiology, and metabolism in many growing regions and ultimately affect the quality of their fruits and of the most important derived product, the wine. The sequencing of the grapevine genome has given rise to a new era, characterized by the generation of large-scale data that requires complex computational analyses. Numerous transcriptomic and metabolomic studies have

been performed in the past fifteen years, providing insights into the gene circuits that control the accumulation of all sorts of metabolites in grapevines. From now on, the integration of two or more ‘omics’ will allow depicting gene-transcript-metabolite networks from a more holistic (i.e. systems) perspective. This eBook attempts to support this new direction, by gathering innovative studies that assess the impact of genotypes, the environment, and agronomical practices on fruits at the ‘ome’-scale. The works hereby collected are part of a Research Topic covering the use of ‘omics’-driven strategies to understand how environmental factors and agronomical practices – including microclimate modification (e.g. sunlight incidence or temperature), water availability and irrigation, and postharvest management – affect fruit development and composition. These studies report well-settled transcriptomic and metabolomic methods, in addition to newly-developed techniques addressing proteome profiles, genome methylation landscapes and ionomic signatures, some of which attempt to tackle the influence of terroir, i.e. the synergic effect of (micro)climate, soil composition, grape genotype, and vineyard practices. A few reviews and opinions are included that focus on the advantages of applying network theory in grapevine research. Studies on vegetative organs in their relation to fruit development and on fruit-derived cell cultures are also

considered.

Grape and Wine Biotechnology

Shows grape growers how to incorporate organic methods.

Molecular Wine Microbiology

Precision agriculture (PA) involves the application of technologies and agronomic principles to manage spatial and temporal variation associated with all aspects of agricultural production in order to improve crop performance and environmental quality. The focus of this book is to introduce a non-specialist audience to the the role of PA in food security, environmental protection, and sustainable use of natural resources, as well as its economic benefits. The technologies covered include yield monitors and remote sensing, and the key agronomic principles addressed are the optimal delivery of fertilizers, water and pesticides to crops only when and where these are required. As a result, it is shown that both food production and resource efficiency can be maximized, without waste or damage to the environment, such as can occur from excessive fertilizer or pesticide applications. The authors of necessity describe some technicalities about PA, but the overall aim is to introduce readers who are unfamiliar with PA to this

very broad subject and to demonstrate the potential impact of PA on the environment and economy. The book shows how farmers can place sustainability of the environment at the centre of their operations and that this is improved with the application of PA. The range of topics described includes sampling and mapping, weed and pest control, proximal and remote sensing, spatio-temporal analysis for improving management, management zones and water management. These are illustrated with case studies on sampling and mapping, biofuels from sugar cane and maize, paddy rice cultivation, and cotton production. Chapter 3 of this book is freely available as a downloadable Open Access PDF at http://www.tandfebooks.com/page/openaccess It has been made available under a Creative Commons Attribution-Non Commercial-No Derivatives 3.0 license.

Environmentally Sustainable Viticulture

This work is to compile our current knowledge on GY phytoplasma biology at the genomic, transcriptomics, proteomics and metabolomics level, as well as to summarize the approaches for their detection.Phytoplasma are the most poorly characterized plant pathogenic bacteria from the Mollicutes class. In recent years new biostatistics and bioinformatics approaches have improved our understanding of their biology and interactions with host

grapevines and a great improvement has been made toward their molecular detection, both in laboratories and on-site. They have a broad range of plant hosts among the monocots and dicots, and diseases of many important crops are associated with these pathogens. At least ten taxonomically unrelated phytoplasmas, one of them a quarantine pest in Europe, have been associated with grapevine yellows diseases (GY), which have great economic impact on viticulture worldwide.

Healthy Soils for Healthy Vines

Grapevine is a highly valuable crop worldwide, both from a cultural as well as a commercial point of view. One of its major advantages is that it is well adapted to scarce water conditions. The main object of grapevine breeding is to develop varieties that are resistant to pathogens and at the same time well-adapted to a changing environment. Since the beginning of the 21st century, there has been a concerted effort by the international scientific community to develop genomic tools and resources for grapevine, culminating in its complete genome sequence. The book reviews these efforts and their usefulness for grapevine breeding and viticulture improvement.

Pests of Fruit Crops

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.

Winemaking

Water stress and heat stress are considered to be two primary factors that limit crop production in many parts of the world. Global warming appears to be increasing the water requirements of plants. Understanding the impact of water deficit on plant physiological processes and efficient water management are of great concern in maintaining food production to meet ever increasing world food demand. The book addresses various climatic soil and plant factors that contribute to the water use efficiency in plants subjected to water stress. It covers all issues related to soil, plant and climatic factors that contribute to the crop responses to water stress. The books

advances the knowledge in improving and sustaining crop yields in ever increasing unpredictable climatic fluctuations This book uses crop simulation models for response of crops to limited water under various management and climatic conditions.

The Grape Grower

Grapevine is one of the most widely cultivated plant species worldwide. With the publication of the grapevine genome sequence in 2007, a new horizon in grapevine research has unfolded. Thus, we felt that a new edition of ‘Molecular Biology & Biotechnology of the Grapevine’ could expand on all the latest scientific developments. In this edition and with the aid of 73 scientists from 15 countries, ten chapters describe new aspects of Grapevine Molecular Physiology and Biotechnology and eleven chapters have been revised and updated. This book is intended to be a reference book for researchers, scientists and biotechnological companies, who want to be updated in viticultural research, but also it can be used as a textbook for graduate and undergraduate students, who are interested in the Molecular Biology and Biotechnology of Plants with an emphasis on the Grapevine.

The Grapevine

Healthy Soils for Healthy Vines provides a clear understanding of vineyard soils and how to manage and improve soil health for best vineyard performance. It covers the inherent and dynamic properties of soil health, how to choose which soil properties to monitor, how to monitor soil and vine performance, and how vineyard management practices affect soil health, fruit composition and wine sensory characters. It also covers the basic tenets of sustainable winegrowing and their significance for business resilience in the face of a changing climate. This book will be of practical value to anyone growing grapevines, managing a vineyard or making wine, from the small individual grower to the large wine company employee. It will be of special interest to winegrowers employing organic, natural or biodynamic methods of production, where the primary focus is on the biological health of the soil.

Soils for Fine Wines

For almost 40 years, Australian researchers have been part of an international group of scientists who have studied graft-transmitted disorders of the grapevine. The Australian wine and grape industries are undergoing significant expansion as is the case in some other countries. Preventing the spread of pathogens, by producing clean propagation material, and minimising the disease load on

new vines, is essential for the continuing success of the industry. This book covers the characteristics of each class of graft-transmitted pathogen, their effect on vines, how they spread and strategies for their control. Eleven of the most important diseases are illustrated and described comprehensively, including information about occurrence, symptoms, detection, transmission and effect on yield and quality. Finally there is a discussion of quarantine issues and disease management. This book will be an invaluable teaching tool and is intended for vineyard managers, grape growers, consultants, extension offers and students. While it provides a basic understanding of the nature of pathogens, it will aid in field assessment and identification of the often confusing disease symptoms.

Grapes and Wines

Grape and Wine Biotechnology is a collective volume divided into 21 chapters focused on recent advances in vine pathology and pests, molecular tools to control them, genetic engineering and functional analysis, wine biotechnology including molecular techniques to study Saccharomyces and non-Saccharomyces yeast in enology, new fermentative applications of nonconventional yeasts in wine fermentation, biological aging on lees and wine stabilization, advanced instrumental

techniques to detect wine origin and frauds, and many other current applications useful for researchers, lecturers, and vine or wine professionals. The chapters have been written by experts from different universities and research centers of 13 countries being representative of the knowledge, research, and know-how of many wine regions worldwide.

Grapevine in a Changing Environment

Grapevine is a crop of major economical interest, and wine represents a multicultural heritage which has been growing since several milleniums. Yet, modern viticulture must face several challenges. Global climate has increased berry sugar content (and alcohol in the wine) whereas phenolic and aromatic ripeness are not always achieved. Water supply is becoming shorter. New varieties better adapted to new climatic conditions might have to be planted, which may affect wine typicity. Phytochemical treatments are more controlled, and the consumer pays increasing attention to environmentally safe practices. New methods reducing pesticide use, but maintaining yield and typicity, must be designed. The present book illustrates the recent progress made in ecophysiology, molecular and cell biology, and pathology of grapevine, as well as in precision viticulture and berry composition. Combination of these new tools with field

observations will undoubtly make it easier to face the challenges described above. These multidisciplinary contributions will be of interest to anyone involved in grapevine and wine activities.

The Grape Genome

The Science of Grapevines, Third Edition reflects the latest insights into cultivar relationships, vascular transport, hormone action, and stress responses of grapevines. Based on the author's many years of teaching, research and practical experience with grapevines and grape production, the book is completely revised and updated, presenting a comprehensive introduction on the physical structure of the grapevine, its organs, their functions, and their environmental interactions. While many concepts discussed are broadly applicable to plants in general, the focus is on grapevines, especially cultivated grapevines. This book enables readers to use these concepts in their own scientific research or in practical production systems. Scientifically grounded and integrating discoveries in other plant species, the book explores the physiological processes underlying grapevine form and function, their developmental and environmental control, and their implications for practical vineyard management. Improves user understanding of the impact of their

management decisions and cultural practices Enables prediction of the consequences of actions in the vineyard and the diagnosis and mitigation of potential problems before they threaten the sustainability of grape production Includes specific insights on canopy-environment interactions, yield formation, sources of variation in fruit composition and environmental constraints

Methodologies and Results in Grapevine Research

As climate change becomes a growing reality, more industries must grapple with how to implement sustainable business practices at every step of the production process. This is especially true for viticulture, where every step of production can take years to come to fruition, and any decision made must take into account the future. This valuable volume serves as an introduction to some of the important concerns that viticulturists must address to keep this industry moving in the right direction, including the best sustainable practices in the wine industry, how to assess sustainability programs, how to consider viticulture in the broader context of sustainable agriculture and industry, and the role of the consumer. Edited by a researcher from Cornell University, this easily accessible volume offers a glimpse into the future of the winemaking industry

and points to future steps in both research and business practices.

Read More About The Science Of Grapevines

Arts & Photography
Biographies & Memoirs
Business & Money
Children's Books
Christian Books & Bibles
Comics & Graphic Novels
Computers & Technology
Cookbooks, Food & Wine
Crafts, Hobbies & Home
Education & Teaching
Engineering & Transportation
Health, Fitness & Dieting
History
Humor & Entertainment
Law
LGBTQ+ Books
Literature & Fiction
Medical Books
Mystery, Thriller & Suspense
Parenting & Relationships
Politics & Social Sciences
Reference
Religion & Spirituality
Romance
Science & Math
Science Fiction & Fantasy
Self-Help
Sports & Outdoors
Teen & Young Adult
Test Preparation
Travel