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BURLEIGH DODDS SERIES IN AGRICULTURAL SCIEM

Understanding and optimising the nutraceutical properties of fruit and vegetables



Understanding and optimising the nutraceutical properties of fruit and vegetables

Editors: Professor Victor Preedy, King's College – University of London, UK and Dr Vinood Patel, University of Westminster, UK

This collection reviews research on phytochemicals in fruits and vegetables, their health benefits and ways these benefits can be optimised to improve human health.

CHAPTER TITLES

Part 1 Phytochemical compounds in fruits and

vegetables: polyphenols; 1.Advances in understanding the nutraceutical properties of antioxidants in fruits and vegetables; 2.Advances in understanding the nutraceutical properties of phenolic compounds in fruits and vegetables; 3.Understanding the nutraceutical properties of flavonoids in fruits and vegetables: chemical structure and groups; 4.Understanding the nutraceutical

Autreport poor server in Admicutureal source Achieving sustainable cultivation of ornamental plants



burleigh dodds

Achieving sustainable cultivation of ornamental plants

Editor: Emeritus Professor Michael Reid, University of California-Davis, USA

This collection reviews recent research in ornamentals. Part 1 discusses advances in understanding plant physiology, genetic diversity and breeding techniques. Part 2 surveys advances in cultivation techniques in areas such as nutrition, irrigation, protected cultivation and pest management.

CHAPTER TITLES

Part 1 Physiology and breeding; 1.Environmental physiology of ornamental plants; 2.Exploiting the genetic diversity of ornamentals; 3.Advances in conventional breeding techniques for ornamentals; 4.Advances in tissue culture techniques for ornamental plant propagation; 5.Advances in molecular breeding of ornamentals;

properties of flavonoids in fruits and vegetables: mechanisms of action; **Part 2 Phytochemicals in fruits and vegetables: glucosinolates and organosulfur compounds;** 5.Health-promoting effects of glucosinolates and their breakdown products; 6.Nutraceutical potential of glucosinolates; 7.Understanding the health benefits and nutraceutical properties of organosulphur compounds in vegetables; Part 3 Phytochemicals and the prevention of disease; 8.Advances in understanding the role of plant phytochemicals in preventing cancer;

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6.The use of gene-editing techniques in breeding improved ornamentals; 7.Advances in abiotic stressresistant varieties of ornamentals; 8.Improving nutrient management in the cultivation of ornamental plants in greenhouse, container and field production; **Part 2 Cultivation techniques;** 9.Advances in irrigation practices and technology in ornamental cultivation; 10.Advances in protected cultivation of ornamentals; 11.Diseases affecting ornamental geophytes and their control

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Advances in postharvest management of horticultural produce

Editor: Professor Chris Watkins, Cornell University, USA

Postharvest losses remain a serious problem in the fresh produce sector. This collection reviews advances in preservation and disinfection, monitoring and management techniques to optimise safety and quality of fresh fruit and vegetables.

CHAPTER TITLES

Part 1 Preservation techniques; 1.Advances in cooling technologies to preserve horticultural produce; 2.Advances in controlled atmosphere storage of horticultural produce; 3.Advances in modified atmosphere and active packaging of horticultural produce; 4.Advances in the use of barrier coatings and additives in the preservation of fresh horticultural produce; Part 2 Safety management and disinfection techniques; 5.Post-harvest risk management of biological hazards encountered in horticultural produce; 6.Advances in understanding pathogens contaminating horticultural produce; 7.Advances in postharvest sanitising regimes for horticultural produce; 8.Advances in using heat for disinfection/ disinfestation of horticultural produce; 9.Advances in the use of irradiation for the market access of fresh horticultural produce; 10.Advances in the potential use of nonthermal plasma in postharvest treatment of fresh horticultural produce; 11.Advances in the use of ozone in the disinfection of horticultural produce; 12.Advances in the use of biological control agents in the disinfection of horticultural produce; Part 3 Monitoring and management; 13.Monitoring postharvest attributes: instrumental techniques for measuring harvest maturity/fruit quality; 14.Postharvest handling of organically produced specialty crops; 15.Smart distribution to maintain shelf life of horticultural produce

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Achieving sustainable cultivation of vegetables

Editor: Professor George Hochmuth, University of Florida, USA

This volume summarises the wealth of research on improving sustainability in vegetable cultivation. Part 1 reviews advances in physiology and breeding. Parts 2-3 summarise advances in cultivation and pest management. The final part includes case studies on the breeding and cultivation of key vegetables.

CHAPTER TITLES

Part 1 Physiology and breeding; 1.Advances in understanding vegetable physiology: root systems as the next frontier in improving sustainable vegetable production; 2.Advances in understanding and mitigating vegetable responses to abiotic stress; 3.Developments in breeding vegetables; Part 2 Cultivation; 4.Advances in irrigation techniques in vegetable cultivation; 5.Advances in understanding soil health for vegetable cultivation; 6.Advances in greenhouses and other protected structures used for cultivation of vegetables; 7.Developments in soilless/hydroponic cultivation of vegetables; 8.Advances in organic cultivation of vegetables; Part 3 Pests and pathogens; 9. Understanding and monitoring diseases of vegetables; 10.Advances in understanding insect pests of vegetables: a case study of sweetpotato weevil; 11.Integrated pest management (IPM) of vegetables: examples of successful deployment; 12. Microbiological safety of vegetable produce: the impact of pre- and post-harvest practices; Part 4 Case studies; 13.Advances in carrot breeding; 14.Sustainable carrot product; 15.Advances in lettuce breeding; 16.Advances in lettuce cultivation; 17.Advances in breeding of cucumbers and watermelon; 18.Alternative tillage production systems for cucurbit vegetables; 19.Sustainable production of cabbage on plasticulture; 20.Advances in pea breeding



Achieving sustainable cultivation of temperate zone tree fruits and berries

Volume 1: Physiology, genetics and cultivation

Editor: Professor Gregory A. Lang, Michigan State University, USA

Volume 1 in this collection summarises the wealth of research addressing the challenges facing temperate fruit cultivation, from breeding improved varieties to better crop management and protection methods.

CHAPTER TITLES

Part 1 Physiology and genetics; 1.Advances in understanding fruit tree root-rhizosphere relationships for enhanced plant health; 2.Advances in the development and utilization of rootstocks: a case study for apple; 3.Advances in understanding fruit tree growth; 4.Advances in understanding reproductive development in fruit-bearing plants; 5.Advances in fruit genetics; Part 2 Optimizing sustainable cultivation and quality; 6.Optimizing production of quality nursery plants for fruit tree cultivation; 7.Optimizing precision in orchard irrigation and nutrient . management; 8.Optimizing plant growth, yield and fruit quality with plant bioregulators; 9.Optimizing fruit production efficiencies through mechanization; 10.Optimizing pest management in fruit cultivation;11.Optimizing disease management in fruit cultivation; 12.Preand post-harvest strategies to optimize fruit quality and shelf-life; 13.Bioactive/nutraceutical compounds in fruit that optimize human health benefits

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 AS53

Built on a reputation of experience, engagement and innovation



Achieving sustainable cultivation of temperate zone tree fruits and berries

Volume 2: Case studies

Editor: Professor Gregory A. Lang, Michigan State University, USA

The second volume in this collection reviews advances in breeding and cultivation of key stone fruits (peach, cherry, plum and apricot), pome fruits (pear and apple), and berry fruits (strawberry, raspberry, blackberry and blueberry).

CHAPTER TITLES

Part 1 Stone and pome fruits; 1. Advances and challenges in peach breeding; 2.Advances and challenges in sustainable peach production; 3.Advances and challenges in cherry breeding; 4.Sustainable sweet cherry cultivation: a case study for designing optimized orchard production systems; 5. Challenges and opportunities in pear breeding; 6.Challenges and opportunities in pear cultivation; 7.Advances and challenges in apple breeding; 8.Advances and challenges in sustainable apple cultivation; 9.Sustainable plum and apricot cultivation; Part 2 Berry fruits; 10.Advances and challenges in strawberry genetic improvement; 11.Strawberries: a case study of how evolving market expectations impact sustainability; 12.Advances and challenges in raspberry and blackberry breeding; 13.Advances and challenges in sustainable raspberry/blackberry cultivation; 14.Advances and challenges in blueberry breeding

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Achieving sustainable cultivation of apples

Editor: Dr Kate Evans, Washington State University, USA

This book reviews our understanding of tree and fruit physiology and how it can be used in breeding better varieties. It also discusses pests and diseases and ways they can be prevented or controlled to make cultivation more productive.

CHAPTER TITLES

Part 1 Plant physiology and breeding; 1.Ensuring the genetic diversity of apples; 2. The apple genome - harbinger of innovation for sustainable apple production; 3.Advances in understanding apple tree growth: rootstocks and planting systems; 4.Advances in understanding apple tree growth: the manipulation of tree growth and development; 5.Advances in understanding flowering and pollination in apple trees; 6.Advances in understanding apple fruit development; 7. Evaluating and improving rootstocks for apple cultivation; 8.Advances in marker-assisted breeding of apples; Part 2 Cultivation techniques; 9.Innovations in apple tree cultivation to manage crop load and ripening; 10.Advances in soil and nutrient management in apple cultivation; 11.Mechanization and automation for apple production; 12.Sustainable approaches to control postharvest diseases of apples; 13.Advances in postharvest handling and storage of apples; Part 3 Diseases and pests; 14.Pre- and postharvest fungal apple diseases; 15.Management of viruses and virus-like agents affecting apple production; 16.Bacterial diseases affecting apples; 17.Sustainable arthropod management for apples; 18.Advances in pest- and disease-resistant apple varieties; Part 4 Sustainability; 19.The economics of apple production; 20.Consumer trends in apple sales; 21.Assessing the environmental impact and sustainability of apple cultivation; 22. Growing organic apples in Europe

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Achieving sustainable cultivation of tomatoes

Editors: Dr Autar Mattoo, ARS-USDA, USA and Professor Avtar K. Handa, Purdue University, USA

This book reviews key developments in tomato breeding, including developing improved varieties with desirable traits such as drought or pest resistance. It also discusses ways of improving cultivation techniques as well as pests, diseases and their control.

CHAPTER TITLES

Part 1 Cultivation techiques; 1.Modelling crop growth and yield in tomato cultivation; 2. Optimizing yields in tomato cultivation: maximizing tomato plant use of resources; 3. Improving water and nutrient management in tomato cultivation; 4. Organic greenhouse tomato production; Part 2 Plant physiology and breeding; 5. Understanding and improving water-use efficiency and drought resistance in tomato; 6.Ensuring the genetic diversity of tomatoes; 7.Tomato plant responses to biotic and abiotic stress; 8.Developments in tomato breeding: conventional and biotechnology tools; 9.Advances in marker-assisted breeding of tomatoes; 10.Genetic engineering of tomato to improve nutritional quality, resistance to abiotic and biotic stresses, and for non-food applications; 11.Developing tomato varieties with improved flavour; 12.Understanding and improving the shelf life of tomatoes; Part 3 Diseases, pests and weeds; 13.Insecttransmitted viral diseases infecting tomato crops; 14.Genetic resistance to viruses in tomato; 15.Bio-ecology of major insect and mite pests of tomato crops in the tropics; 16.Integrated pest management in tomato cultivation; 17.Developing disease-resistant tomato varieties; 18.Integrated weed management in tomato cultivation

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Internationally renowned contributors from academia, industry and research

INSECT PESTS, DISEASES AND WEEDS



Advances in monitoring of native and invasive insect pests of crops

Editors: Dr Michelle Fountain, NIAB-EMR, UK and Dr Tom Pope, Harper Adams University, UK

Early detection of insect pests is critical to successful integrated pest management (IPM) programmes. This collection reviews the wealth of research on improving monitoring techniques for the detection of both native and alien insect pests.

CHAPTER TITLES

Part 1 Detection; 1.Advances in techniques for trapping crop insect pests; 2.Advances and challenges in monitoring insect pests of major field crops in the United States; 3. Quantifying captures from insect pest trap networks; 4.Developments in crop insect pest detection techniques; 5. Monitoring airborne movement of crop insect pests and beneficials; Part 2 Identification, modelling and risk assessment; 6.Advances in image-based identification and analysis of crop insect pests; 7.Advances in insect pest monitoring using pest population growth and geospatial data for pest risk assessment; 8.Advances in pest risk assessment techniques focusing on invertebrate pests of European outdoor crops; Part 3 Invasive species; 9.Assessing the potential economic impact of invasive plant pests; 10.Developing effective phytosanitary measures to prevent the introduction of invasive insect pests; 11. Mitigating invasive insect species: eradication, long-term management, and the importance of sampling and monitoring

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Improving integrated pest management in horticulture

Editor: Professor Rosemary Collier, Warwick University, UK

This collection reviews current advances in integrated pest management (IPM) for horticultural crops, including the use of biological control mechanisms, technological developments such as proximal sensors, agronomic practices and physical control.

CHAPTER TITLES

Part 1 Using biological agents in integrated pest management; 1.Advances in biopesticides for insect control in horticulture; 2.Advances in bioprotectants for plant disease control in horticulture; 3.Advances in biostimulants as an IPM tool in horticulture; 4.Improving application systems for bioprotectants in integrated pest management (IPM) programmes in horticulture; Part 2 Using decision support systems in integrated pest management; 5.Advances in insect pest and disease monitoring and forecasting in horticulture; 6.Advances in proximal sensors to detect crop health status in horticultural crops; 7.Advances in decision support systems (DSSs) for integrated pest management in horticultural crops; Part 3 Improving integrated pest management techniques and implementation; 8. The use of agronomic practices in integrated pest management programmes in horticulture; 9.Advancing conservation biological control as a component of integrated pest management of horticultural crops; 10.Assessing the economics of integrated pest management for horticultural crops; 11.Encouraging integrated pest management uptake in horticultural crop production; Part 4 Case studies; 12. Practical application of integrated pest management in greenhouses and protected cultivation; 13.Practical applications of integrated pest management in horticultural cultivation: the cases of protected tomato and outdoor Brassica production; 14.Practical application of integrated pest management to control cabbage root fly in vegetables

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Microbial bioprotectants for plant disease management

Editors: Dr Jürgen Köhl, Wageningen University & Research, The Netherlands and Dr Willem J. Ravensberg, Koppert, The Netherlands

This collection summarises and reviews the wealth of recent research on the development of more environmentally friendly biological methods to control plant diseases.

CHAPTER TITLES

Part 1 Product development of microbials; 1.Advances in understanding modes of action of microbial bioprotectants; 2.Advances in screening approaches for the development of microbial bioprotectants to control plant diseases; 3. Visualising plant colonisation by beneficial bacteria: a key step to improve the understanding of plant-microbe interactions; 4. Durability of efficacy of microbial bioprotectants against plant diseases; 5.Advances in production and formulation of commercial microbial bioprotectant products; 6.Key issues in the regulation of microbial bioprotectants in the European Union: challenges and solutions to achieve more sustainable crop protection; 7. Microbial bioprotectants and the marketplace; Part 2 Biological control agents; 8. The use of Bacillus spp. as bacterial biocontrol agents to control plant diseases; 9. The use of Pseudomonas spp. as bacterial biocontrol agents to control plant diseases; 10.Are there bacterial bioprotectants besides Bacillus and Pseudomonas species?; 11. The use of Trichoderma spp. to control plant diseases; 12. Clonostachys rosea to control plant diseases; 13.Bacteriophages to control plant diseases; 14. The use of mild viruses for control of plant pathogenic viruses; 15.Biocontrol via mycoviruses, a neglected option for bioprotection?; Part 3 Examples of use of microbial bioprotectants;

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Biopesticides for sustainable agriculture

Editors: Professor Nick Birch, formerly The James Hutton Institute, UK and Professor Travis Glare, Lincoln University, New Zealand

Part 1 of this collection reviews research on developing and assessing new biopesticides. Part 2 summarises advances in different types of entomopathogenic biopesticide. Part 3 assesses semiochemical, peptide-based and other natural substance-based biopesticides.

CHAPTER TITLES

Part 1 General; 1.Improving methods for developing new microbial biopesticides; 2.Implementing biopesticides as part of an integrated pest management (IPM) programme; 3. Improving regulatory approval processes for biopesticides and other new biological technologies in agriculture; Part 2 Microbial biopesticides, entomopathogenic nematodes and mites; 4.Advances in the use of entomopathogenic fungi as biopesticides in suppressing crop pests; 5.Advances in the use of entomopathogenic bacteria/microbial control agents (MCAs) as biopesticides in suppressing crop insect pests; 7.Plant growth-promoting bacteria (PGPBs) as biocontrol agents against invertebrate pests; 8.Advances in the use of entomopathogenic viruses as biopesticides in suppressing crop insect pests; 9.Advances in the use of entomopathogenic nematodes (EPNs) as biopesticides in suppressing crop insect pests; 10.Advances in the use of entomopathogenic oomycetes as biopesticides in suppressing crop insect pests; Part 3 Natural substancebased biopesticides; 11.Advances in the use of semiochemicals in integrated pest management: pheromones; 12.Possible use of allelochemicals in integrated pest management (IPM); 13.Peptides as novel biopesticides; 14.Development of plant-derived compounds as biopesticides

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Integrated management of insect pests: Current and future developments

Editors: Professor Marcos Kogan, Oregon State University, USA and Emeritus Professor E. A. Heinrichs, University of Nebraska-Lincoln, USA

This volume reviews current developments in integrated pest management (IPM), focussing on insect pests. It discusses advances in understanding species and landscape ecology on which IPM is founded, as well as advances in cultural, physical and biological methods of control.

CHAPTER TITLES

Part 1 Ecological foundations of IPM;

1.Foundations of an IPM program: detection, identification, and quantification; 2.Advances in understanding species ecology: phenological and life cycle modeling of insect pests; 3. Understanding agroecosystems and pest management: from chemical control to integrated biodiversity management; 4.Advances in understanding agroecosystems ecology and its applications in integrated pest management; 5.Advances in understanding the ecology of invasive crop insect pests and their impact on IPM; 6.Plant-insect interactions, host-plant resistance, and integrated pest management; Part 2 Cultural and physical methods in IPM; 7.Advances in breeding crops resistant to insect pests: rice as a paradigm; 8. The role and use of genetically engineered insect-resistant crops in integrated pest management systems; 9.Biotechnology applications for integrated pest management; 10.Advances in physical control methods in IPM; 11.Robot-enhanced insect pest control: reality or fantasy?; Part 3 Biological methods in IPM; 12.Advances in classical biological control to support IPM of perennial agricultural crops; 13.Advances in conservation biological control and habitat management for IPM;

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 Series No
 AS69



Integrated management of diseases and insect pests of tree fruit

Editors: Professor Xiangming Xu and Dr Michelle Fountain, NIAB-EMR, UK

This collection reviews advances in understanding key diseases and insect pests of tree fruit. It shows how this understanding can be used to improve integrated disease and pest management techniques.

CHAPTER TITLES

Part 1 Fruit diseases; 1.Epidemiology and management of apple scab; 2.Powdery mildew: biology, epidemiology, and management of Podosphaera spp. of tree fruit; 3.Apple replant disease: causes and management; 4. Fungal diseases of fruit: apple cankers in Europe; 5.Fungal diseases of fruit: apple canker in Asia; 6.Brown rot: causes, detection and control of Monilinia spp. affecting tree fruit; 7.Apple mosaic virus: biology, epidemiology and detection; 8.Plum pox virus: detection and management; Part 2 Integrated fruit disease management; 9. Disease monitoring and decision making in integrated fruit disease management; 10.Breeding fruit cultivars with durable disease resistance; 11.Improving plant propagation methods for fruit disease control; 12. Improving fungicide use in integrated fruit disease management; 13.Use of biocontrol agents in fruit tree disease management; 14.New techniques for managing post-harvest diseases of fruit: physical, chemical and biological agents; Part 3 Insect pests of fruit; 15.Insect pests of fruits: aphids; 16.Integrated management of tortricid pests of tree fruit; 17.Integrated management of mite pests of tree fruit; 18.Integrated management of tree fruit insect pests: Drosophila suzukii (Spotted Wing Drosophila); Part 4 Integrated management of fruit insect pests;

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CROP MANAGEMENT



Advances in horticultural soilless culture

Editor: Professor Nazim S. Gruda, University of Bonn, Germany

Soilless cultivation techniques have attracted growing attention. This collection reviews current research on optimising substrates for soilless cultivation and assesses recent advances in technologies, such as fertigation systems and process control.

CHAPTER TITLES

1.Soilless culture systems and growing media in horticulture: an overview; Part 1 Materials; 2.Advances in understanding plant root behaviour and rootzone management in soilless culture systems; 3.Developments in inorganic materials, synthetic organic materials and peat in soilless culture systems; 4.Developments in alternative organic materials for growing media in soilless culture systems; 5. Understanding and optimizing the physical properties of growing media for soilless cultivation; 6.Understanding and optimising the chemical properties of growing media for soilless cultivation; 7.Understanding and optimising the biological properties of growing media for soilless cultivation; Part 2 Technologies; 8.Advances in liquid- and solidmedium soilless culture systems; 9.Advances in irrigation/fertigation techniques in greenhouse soilless culture systems (SCS); 10.Advances in nutrient management modelling and nutrient concentration prediction for soilless culture systems; 11.Advanced hydroponics design for plant cultivation in cities; 12.Optimizing product quality in soilless culture systems (SCS); Part 3 Case studies; 13.Advances in soilless cultivation of tomatoes and other fruit vegetables; 14.Advances in soilless culture strawberry production; 15.Advances in soilless culture of ornamentals



Biostimulants for sustainable crop production

Editors: Youssef Rouphael, University of Naples Federico II, Italy; Patrick du Jardin, University of Liège, Belgium; Patrick Brown, University of California-Davis, USA; Stefania de Pascale, University of Naples Federico II, Italy; and Giuseppe Colla, University of Tuscia, Italy

Part 1 reviews research on ways of evaluating biostimulants. Part 2 surveys the various types of biostimulant, from arbuscular mycorrhizal fungi (AMF) to seaweed extracts. Part 3 discusses advances in their practical application in areas such as enhancing nutrient use efficiency (NUE).

CHAPTER TITLES

Part 1 Introduction and biostimulant characterization; 1. Plant biostimulants: a new paradigm for the sustainable intensification of crops; 2.Bioactive compounds and evaluation of biostimulant activity; Part 2 Non-microbial and microbial categories of biostimulants; 3. Humic substances (HS) as plant biostimulants in agriculture; 4.Seaweed extracts as plant biostimulants in agriculture; 5.Biostimulant action of protein hydrolysates on crops; 6.Silicon as a biostimulant in agriculture; 7.Plant growth-promoting rhizobacteria (PGPR) as plant biostimulants in agriculture; 8.Arbuscular mycorrhizal fungi as biostimulants for sustainable crop production; Part 3 Innovation and practical applications; 9.Designing and formulating microbial and non-microbial; 10.Plant biostimulants and their influence on nutrient use efficiency (NUE); 11.Combining plant biostimulants and precision agriculture

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Achieving sustainable greenhouse cultivation

Editors: Professor Leo Marcelis and Dr Ep Heuvelink, Wageningen University, The Netherlands

Greenhouse and other forms of protected cultivation create controlled environments to offset climate change and optimise resource use. This book reviews current research in more efficient climate control and root development to optimise their use.

CHAPTER TITLES

1. Achieving sustainable greenhouse production: present status, recent advances and future developments; Part 1 Production systems; 2.Advances in greenhouse design; 3.Advances in screenhouse design and practice for protected cultivation; 4.Aquaponic systems for crop cultivation; 5.Advances in organic greenhouse cultivation; 6.Towards sustainable plant factories with artificial lighting (PFALs): from greenhouses to vertical farms; Part 2 Crop management; 7.Understanding crop responses to controlled climates in greenhouses; 8.Developments in growing substrates for greenhouse cultivation; 9.Advances in irrigation management in greenhouse cultivation; 10.Advances in nutrient management in greenhouse cultivation; 11.Advances in pest and disease management in greenhouse cultivation; Part 3 System management; 12. Automation and robotics in greenhouses; 13.Models, sensors and decision support systems in greenhouse cultivation; 14.Assessing the impact of environmental factors on the quality of greenhouse produce; 15.Sustainable use of energy in greenhouses; 16.Assessing the environmental impact of greenhouse cultivation

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TECHNOLOGY & DATA



Advances in sensor technology for sustainable crop production

Editors: Dr Craig Lobsey, University of Southern Queensland, Australia and Dr Asim Biswas, University of Guelph, Canada

This collection reviews key advances in sensor technology, including developments in proximal and remote sensing techniques to measure and monitor crop health, weeds and diseases.

CHAPTER TITLES

Part 1 Advances in remote sensing technologies; 1.Advances in remote/aerial sensing of crop water status; 2.Advances in remote/aerial sensing technologies to assess crop health; 3.Advances in remote/ aerial sensing techniques for monitoring soil health; Part 2 Advances in proximal sensing technologies; 4.Advances in using proximal spectroscopic sensors to assess soil health; 5.Advances in using proximal ground penetrating radar (GPR) sensors to assess soil health; 6.Using proximal electromagnetic/ electrical resistivity (ER)/electrical impedance spectroscopy sensors to assess soil health and water status; 7.Using GPR to map and improve soil drainage systems for improved crop yields; Part 3 Advances in sensor data analytics; 8.Advances in machine vision technologies for the measurement of soil texture, structure and topography; 9.Using machine learning to identify and diagnose crop diseases; 10.Advances in proximal sensor fusion/ multi-sensor platforms for improved crop management; 11.Advances in integrating remote and proximal sensor data for precision agriculture applications



Advances in plant phenotyping for more sustainable crop production

Editor: Professor Achim Walter, ETH Zurich, Switzerland

Soil health is critical to successful agriculture. This second volume reviews ways of classifying and measuring soils and their properties. It then discusses ways soil health can be maintained or enhanced to ensure sustainable agricultural production, as well as regional case studies of managing soil health in practice.

CHAPTER TITLES

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Editor: Professor John Billingsley, University of Southern Queensland, Australia

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