

From Postharvest Management Of Fruit And Vegetables In

International trade in high value perishables has grown enormously in the past few decades. In the developed world consumers now expect to be able to eat perishable produce from all parts of the world, and in most cases throughout the year. Perishable plant products are, however, susceptible to physical damage and often have a potential storage life of only a few days. Given their key importance in the world economy, *Crop Post-Harvest Science and Technology: Perishables* devotes itself to perishable produce, providing current and comprehensive knowledge on all the key factors affecting post-harvest quality of fruits and vegetables. This volume focuses explicitly on the effects and causes of deterioration, as well as the many techniques and practices implemented to maintain quality through correct handling and storage. As highlighted throughout, regular losses caused by post-harvest spoilage of perishable products can be as much as 50%. A complete understanding, as provided by this excellent volume, is therefore vital in helping to reduce these losses by a significant percentage. Compiled by members of the world-renowned Natural Resources Institute at the United Kingdom's University of Greenwich, with contributions from experts around the world, this volume is an essential reference for all those working in the area. Researchers and upper-level students in food science, food technology, post-harvest science and technology, crop protection, applied biology and plant and agricultural sciences will benefit from this landmark publication. Libraries in all research establishments and universities where these subjects are studied and taught should ensure that they have several copies for their shelves. While products such as bananas, pineapples, kiwifruit and citrus have long been available to consumers in temperate zones, new fruits such as lychee, longan, carambola, and mangosteen are now also entering the market. Confirmation of the health benefits of tropical and subtropical fruit may also promote consumption further. Tropical and subtropical fruits are particularly vulnerable to postharvest losses, and are also transported long distances for sale. Therefore maximising their quality postharvest is essential and there have been many recent advances in this area. Many tropical fruits are processed further into purees, juices and other value-added products, so quality optimization of processed products is also important. The books cover current state-of-the-art and emerging post-harvest and processing technologies. Volume 1 contains chapters on particular production stages and issues, whereas Volumes 2, 3 and 4 contain chapters focused on particular fruit. Chapters in Volume 2 review the factors affecting the quality of different tropical and subtropical fruits from açai to citrus fruits. Important issues relevant to each product are discussed, including means of maintaining quality and minimizing losses postharvest, recommended storage and transport conditions and processing methods, among other topics. With its distinguished editor and international team of contributors, Volume 2 of

Postharvest biology and technology of tropical and subtropical fruits, along with the other volumes in the collection, will be an essential reference both for professionals involved in the postharvest handling and processing of tropical and subtropical fruits and for academics and researchers working in the area. Along with the other volumes in the collection, Volume 2 is an essential reference for professionals involved in the postharvest handling and processing of tropical and subtropical fruits and for academics and researchers working in the area. Reviews the factors affecting the quality of different tropical and subtropical fruits from açai to citrus fruits. Important issues relevant to each particular fruit are discussed, including means of maintaining quality and minimising losses postharvest, recommended storage and transport conditions.

Postharvest Technology involves operations like cleaning, grading, drying, storage, packaging, transport, marketing and utilization. Postharvest losses occur mainly because of improper and inadequate pre and postharvest management practices. These losses can be significantly reduced, if the integrated approaches are adopted in pre and postharvest management of horticultural crops. The concept of integrated approaches encompasses the greater planning of entire demand driven production activity, appropriately linked with pre and postharvest practices. In this context, the present book contains thirty-four chapters, authored by experts in the field, which not only provide an overview of the sustainable horticultural practice and postharvest management, but also give an analytical account of the problems and prospects associated with it. This book will be immense value to students, teachers and researchers as well as growers engaged in the field of dryland fruit crops.

On post harvest management technologies with special reference to India. Managing Quality of Fruit and Vegetables covers the application of proven and novel industrial approaches to quality management of fresh produce that have become common practice among local and global fresh produce chains while also covering the latest postharvest technologies for maintaining quality and safety. In addition, it addresses the impacts of emerging global challenges, such as climate change, the role of fruit and vegetables on nutrition security, and the development of future postharvest technologies to maintain quality and safety. Both academics and post-graduate students studying fresh produce supply chains and industry professionals will find this book extremely useful. Split into three broad themes, the book brings to light the latest developments on the biochemical and physiological basis for the quality of fruit and vegetables, the industrial approaches to quality management of fruit and vegetables, and the latest advances in postharvest technologies for controlling and maintaining quality. Covers the biochemical and physiological basis for quality of fruit and vegetables. Highlights industrial approaches to quality management of fruit and vegetables. Provides information on advances in postharvest technologies for controlling and maintaining quality.

Postharvest features extensive coverage of quality management in the handling,

packaging and distribution of produce. It is intended for university students and students at technical colleges, but it is also an invaluable resource for managers and technologists working in horticulture and in the transportation, warehousing and retailing of fresh produce.

The fruit flies of mango and guava are the main constrain of production, marketing and exports of these lovable desserts. In Sudan the aggravation of this problem in the last decade pushed the Sudan Government to consider these flies as national pests to which the sharp decline in exports referred. However, this work geared a variety of preharvest and postharvest treatments to combat these notorious insects. These treatments include spraying of soft insecticide cypemethrin and entomopathogenic funi, the latter also sprayed in guava besides a neem seed powder suspension. Moreover, the postharvest treatments tested include hot water, hot dry air, hot humid air, gamma irradiation, some fruit characteristics, harvest time and storage as well. All these treatments significantly reduce the fly infestation and only few can completely disinfest the fruits. However, some other studies are also included in this book which drew and drawing a lot of attention of the experts worldwide.

POSTHARVEST PATHOGENS AND DISEASE MANAGEMENT Postharvest diseases caused by microbial pathogens account formillions of dollars in losses of both durable and perishableproduce products every year. Moreover, with consumers increasinglydemanding minimally processed vegetables and fruits--which can beinvaded by human pathogens--there is an imperative need forsuitable protective measures to provide pathogen-free commoditiesthat are free from, or contain only acceptable levels of, chemicalresidues. Providing details of both conventional and modern molecularartehniques applicable for the detection, identification, anddifferentiation of field and storage microbial pathogens,**Postharvest Pathogens and Disease Management:** * Discusses diseases of both durables and perishables duringtransit and storage * Provides a basic understanding of the effects of handling andstorage practices as well as field conditions and productsusceptibility on the development of postharvest diseases * Reveals, as a cautionary note, the potential hazards ofmycotoxins with carcinogenic properties that can contaminate fruitsand vegetables * Contains detailed information derived from elucidative evidenceand disease data in order to explain the infection process andsubsequent stages of disease development * Helps readers to avoid conditions that favor disease incidenceand spread * Includes real life examples of disease management strategies tohelp readers develop effective disease management systems suitablefor different ecosystems * Emphasizes the importance of integrating several differenteffective methods in tandem, including the development of cultivarswith resistance to postharvest diseases; the selection of suitableanalytical methods; and the effective use of biocontrol agents andchemicals * Presents protocols for numerous techniques and basic methods,making the book a distinctive and highly useful teaching andresearch tool **Postharvest Pathogens and Disease Management** offers readers insightinto the principles and methods of avoiding and managingpostharvest diseases of fruit and vegetable products in anefficient, economical, and environmentally feasible manner,allowing producers to sell safer, higher-quality produce to thepublic and prevent the losses associated with

postharvest disease.

This collection of papers includes some of the presentation given at the International congress of Plant Pathology held in Beijing in 2013 in the session of Recent Development in Postharvest Pathology. Fruit production for human consumption is an important part of the market economy. Any waste during to spoilage and pest infestation, in the field and the postharvest phase, results in significant economic losses which are more pronounced as the losses occur closer to the time of produce sale. Careful handling of perishable produce is needed for the prevention of postharvest diseases at different stages during harvesting. Handling, transport and storage in order to preserve the high quality produce. The extent of postharvest losses varies markedly depending on the commodities and country estimated to range between 4 and 8% in countries where postharvest refrigeration facilities are well developed to 30% where facilities are minimal. Microbial decay is one of the main factors that determine losses compromising the quality of the fresh produce. For the development of an integrated approach for decay management, cultural, preharvest, harvest and postharvest practices should be regarded as essential components that influence the complex interactions between host, pathogen, and environmental conditions. Orchard practices including preharvest fungicide applications can also directly reduce the development of postharvest fruit decay. Among postharvest practices, postharvest fruit treatments with fungicide are the most effective means to reduce decay. Ideally, these fungicides protect the fruit from infections that occur before treatment, including pathogen causing quiescent infections, as well from infection that are initiated after treatment during postharvest handling, shipment and marketing. The implementation of these alternatives techniques often requires modifying currently used postharvest practices and development of new formulation for their applications. The present chapters deal with the newest report related to postharvest pathology in the world.

The present book has been written in two parts. Part-I covers all the practices for post-harvest handling of fresh fruits and vegetables while Part-II covers processing of fruits and vegetables. It is hoped that the information provided in this book would serve as knowledge pool and help researchers, growers, processors, entrepreneurs, students of horticulture and food technology disciplines and all those involved in research and development in post-harvest management and value addition of fruits and vegetables. This book provides unparalleled integration of fundamentals and most advanced management to make this strawberry crop highly remunerative besides enhancing per capita availability of fruit even in the non-traditional regions of the world.

While products such as bananas, pineapples, kiwifruit and citrus have long been available to consumers in temperate zones, new fruits such as lychee, longan, carambola, and mangosteen are now also entering the market. Confirmation of the health benefits of tropical and subtropical fruit may also promote consumption further. Tropical and subtropical fruits are particularly vulnerable to postharvest losses, and are also transported long distances for sale. Therefore maximising their quality postharvest is essential and there have been many recent advances in this area. Many tropical fruits are processed further into purees, juices and other value-added products, so quality optimization of processed products is also important. The books cover current state-of-the-art and emerging post-harvest and processing technologies. Volume 1 contains chapters on particular production stages and issues, whereas Volumes 2, 3

and 4 contain chapters focused on particular fruit. Chapters in Volume 3 of this important collection review factors affecting the quality of different tropical and subtropical fruits, concentrating on postharvest biology and technology. Important issues relevant to each specific product are discussed, such as postharvest physiology, preharvest factors affecting postharvest quality, quality maintenance postharvest, pests and diseases and value-added processed products, among other topics. Along with the other volumes in the collection, Volume 3 is an essential reference for professionals involved in the postharvest handling and processing of tropical and subtropical fruits and for academics and researchers working in the area. Covers current state-of-the-art and emerging post-harvest and processing technologies. Important issues relevant to each particular fruit are discussed, such as postharvest physiology, preharvest factors affecting postharvest quality and pests and diseases.

Postharvest physiology; Regulation of ripening and senescence; Harvest and handling; Physiological disorders and diseases; Distribution and utilization.

Updates the introductory textbook on the principles and practice of the postharvest handling and storage of fresh fruit and vegetables. For technical college and university courses, workers in related industries, and interested consumers. Written in Australia, but about products grown worldwide. Ann

The world population has been increasing day by day, and demand for food is rising. Despite that, the natural resources are decreasing, and production of food is getting difficult. At the same time, about one-quarter of what is produced never reaches the consumers due to the postharvest losses. Therefore, it is of utmost importance to efficiently handle, store, and utilize produce to be able to feed the world, reduce the use of natural resources, and help to ensure sustainability. At this point, postharvest handling is becoming more important, which is the main determinant of the postharvest losses. Hence, the present book is intended to provide useful and scientific information about postharvest handling of different produce.

"A Handbook on Post Harvest Management of Fruits and Vegetables" deals with the scientific approach to post harvest management of fresh fruits and vegetables with the intention to minimize the post harvest losses. It is a compilation of informations on various aspects of post harvest technology in to a simple handbook. Separate chapters on the importance of harvesting indices of various fruits and vegetables, methods of harvesting, importance of washing and various techniques and types of machines used for washing are coverd in the earlier chapters with tables and pictures. Importance of packing fresh fruits and vegetables, its comparative merits and demerits of each material, pre-treatments of fruits and vegetables, different storage techniques and hazards during transportation are covered in the later chapters. This is a brief and valid handbook highly suitable for the students and research workers in the field of Horticulture, Agriculture and Food Science and Technology who are doing post harvest aspect of fruit and vegetables and also those who are engaged in fresh fruits and vegetable handling, packaging and marketing.

The Handbook of Postharvest Technology presents methods in the manufacture and supply of grains, fruits, vegetables, and spices. It details the physiology, structure, composition, and characteristics of grains and crops. The text covers postharvest technology through processing, handling, drying and milling to storage, packaging, and distribution. Additionally, it examines cooling and preservation techniques used to

maintain the quality and the decrease spoilage and withering of agricultural products. The Third Edition of the University of California's definitive manual on postharvest technology has been completely updated and expanded. Five new chapters cover consumer issues in quality and safety, preharvest factors affecting fruit and vegetable quality, waste management and cull utilization, safety factors, and processing methods. A new appendix presents a summary of optimal conditions and the potential storage life of 200 fruits and vegetables.

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. This edited volume provides insight into temperate fruits, with an emphasis on postharvest physiology, storage, packaging and technologies for maintaining fruit quality. Chapters are devoted to individual fruits and focus on fundamental issues such as methods for maintaining or enhancing quality, minimizing postharvest losses, and recommended technologies to boost demand. Contributions come from experts in the field, making this a key reference for all aspects of postharvest management of temperate fruits. The volume is unique in its focus on the biodiversity, nutritional and health benefits, and postharvest technologies for shelf life enhancement of temperate fruits. Contributing authors address the postharvest biology and technology of individual temperate fruits such as plum, cherry, peach, apricot, apple, pear, quince, loquat, kiwi, persimmon and berries. There has been tremendous growth in the research and development of new techniques to maintain the quality of temperate fruits from farm to table. Contributions from experts in the field cover these recent advances, providing up-to-date and relevant information for researchers, postharvest/fruit technologists, food scientists, postgraduate students, and others working in the industry.

Best practices for preserving quality and consumer appeal of fresh fruits, vegetables
Clarifies calculations for efficient cooling, controlled ripening and storage
Presents strategies for reducing microbial risks and post-harvest pathologies
A comprehensive introduction to established and emergent post-harvest technologies, this text shows how to enhance the value of perishable fruits and vegetable by mitigating the causes of deterioration and spoilage from farm to point of purchase. After investigating the structural, chemical and nutritional properties of fruits and vegetables, the book provides a step-by-step explanation of processing from machine harvesting through handling, ripening technologies, packaging and distribution. Emphasis is placed on ways to collect data needed to monitor quality. Psychrometric principles and their role in cold storage systems are presented along with calculations enabling effective refrigeration and control of transpiration, humidity and gases. The book includes examples and calculations for improving process control and predicting the shelf-life of temperate-climate and tropical fruits and vegetables.

As a collection of papers that includes material presented at the 2008 International Congress for Plant Pathology, this text features research right at the leading edge of the field. The latest findings are particularly crucial in their implications for fruit production; an important market sector where in some areas up to 50 per cent of the crop can be lost after harvest. While post-harvest fruit treatments with fungicides are the most effective means to reduce decay, rising concerns about toxicity have led to the development of alternative approaches to disease control, including biological methods,

chemical treatments on market quality of fruit; Proposed standardisation of protocols for quarantine treatment of fruit; Session summary; Contributed poster papers: Overview issues: Postharvest studies on some tropical and subtropical fruits in Pakistan; Potential of value-added fruit products in Papua New Guinea; The economic potential of interventions to reduce postharvest losses of tropical fruits and nuts in Papua New Guinea; Aspects of marketing tropical fruits in temperate climates; A multivariate factor analysis of consumer preference on banana attributes; Maturity assessment: Determination of maturity indices for Sri Lankan embul bananas; Development of maturity indices for longan; Maturation and harvesting criteria for avocado (abstract only); Disinfestation and primary processing: Postharvest handling and quarantine of tropical fruit in the Jiangmen region of Guangdong, China; Effects of gamma irradiation and hot-water treatment on the shelf life and quality of Thai Mango cv. rad; Effect of irradiation and storage temperature on the shelf life and quality of Thai lichee; Insect quarantine treatments and fruit ripening; Microwaves as a quarantine treatment to disinfest commodities of pests; Effect of pH and sugar concentration on apple cider quality; Osmotic dehydration of membrane-coated pineapple; Anti-fruit-fly activity of extracts of black pepper and other edible plants; The potential use of insecticidal atmospheres for mango, avocado, and papaya fruits; Preliminary investigation of microorganisms antagonistic to *Colletotrichum gloeosporioides* obtained from rambutan; Electron beam irradiation combined with hot-water immersion treatment for banana preservation (abstract only); Fruit fly problem and disinfestation research in Malaysia (abstract only); Storage and ripening: Internal quality analysis of watermelons by and acoustic technique and its application in Japan; Feasibility studies into NIR technique for measurement of internal quality of some tropical fruits; Distribution of mineral in Alphonso mango during ripening; Effect of calcium on physicochemical changes in Alphonso mango during ripening and storage; A low-cost cool chamber: an innovative technology for developing countries; Effect of low temperatures on storage life and quality of carambola (*Averrhoa carambola* L.) cv. B17; Incidence of chilling injury in *Salacca zalacca*; Internal carbon dioxide and ethylene of avocado fruit (*Persea americana* Mill.) measured by equilibrium technique; Effects of plantation and postharvest management factors on shelf life of 'Williams' banana; Optimisation of indigenous ripening systems for bananas in the Philippines; Fundamental studies on respiration rates and storage properties of some tropical fruits grown on Okinawa; Reducing decay and extending shelf life of bell-peppers and mangoes by modified atmosphere packaging; Modified atmosphere storage of bananas at chilling temperatures; Storage of fresh pineapples; The effect of sucrose ester coating on ambient temperature storage of several fruits; Effects of different precooling methods and times on the storage quality of carambola variety B10; Effect of maturity, damage, and humidity on the ripening of plantain and cooking banana; Modified atmosphere packaging by perforated polymeric film and its effect on physical properties of mango fruit; Productivity and postharvest behaviour of black sapote in the Israeli Negev desert (abstract only); Storage and ripening of Kenyan mangoes (Abstracts only); The storage of sapodilla (*Manilkara achras* L.) at 10, 15, and 20 °C (abstract only); Factors influencing the ripening of 'chancee' and 'monthong' durians (abstract only); Effects of ethylene application on fruit postharvest characteristics of *Cucumis metuliferus* Mey. (abstract only); Postharvest diseases and disorders: Mango postharvest disease

control: effect of rain at harvest, fungicide treatments, and fruit brushing on fruit appearance; Sour rot disease on citrus fruits: importance and control; Hot-water control of anthracnose on mango varieties arumanis, golek and manalagi; Efficacy of propiconazole against fungi causing postharvest disease on eksotika papaya; Freckle disease of banana; Phytophthora fruit rot of durian (*Durio zibethinus* L.); Postharvest fruit rot of banana caused by *Colletotrichum musae* (Berg. & Curt.) Arx. and its control; Application of *Candida guilliermondii* in commercial citrus waxes for biocontrol of *Penicillium* on grapefruit; *Phomopsis* fruit rot of mango and its control; Management of 'jelly-seed' in mango (*Mangifera indica* L.) cv. Tommy Atkins (abstract only); Session summaries-contributed poster papers: Workshop reports: Controlled atmospheres/modified atmospheres; Postharvest physiology; Disinfestation; Diseases; Biocontrol of diseases; Molecular biology; Trade and marketing; Education and training; Research network on tropical fruit trees in Asia.

This book mainly deals with pre- and postharvest management practices of the strawberry to ensure that high-quality fruits are delivered to the consumer. The influence of climatic variables, cultural practices, harvesting techniques, and use of chemicals and other natural compounds on fruit quality are discussed. Factors affecting fruit growth and development and processes regarding maturation and biochemical changes during fruit ripening are also presented in one of the chapters of this book. Some chapters provide information regarding harvesting, storing, packaging, transporting, and also selling that affect strawberry quality greatly. Enhancement of yield and antioxidant contents in the strawberry by various natural products, including chitosan and probiotic bacterial, are also included in this book. The final chapter states that antioxidants present in strawberry fruit play a dietary role in alleviating oxidative stress in experimental liver models. This book focuses on the postharvest quality management of the strawberry and provides a useful resource to educationists, traders, and commercial strawberry growers.

Postharvest is an essential handbook for students, practitioners and growers waiting to understand the science and technology of the harvesting, handling, storage and transport of fruit and vegetables to the consumer. This sixth edition has been substantially revised to capture the current and future trends in postharvest technology, and to help the industry meet the constantly evolving needs and expectations of consumers.

Postharvest Handling, Third Edition takes a global perspective in offering a system of measuring, monitoring, and managing produce processing to improve food quality, minimize food waste, reduce risks and uncertainties, and maximize time and resources. This unique resource provides an overview of the postharvest system and its role in the food value chain, and offers essential tools to monitor and control the handling process. It shows how to predict and combat unexpected events (e.g., spoilage), and manage the food quality and safety within a facility. Proven research methods and applications from various viewpoints are available to help you maintain high-quality produce and achieve the highest yields possible. The book also explores current challenges—including oversupply, waste, food safety, lack of resources, sustainability—and best practices for production to thrive in spite of these challenges. Presents current research methods and applications in temperature control and heat treatments to help minimize moisture content, to prevent spoilage and mold, and more

Addresses challenges of traceability and sustainability Presents testing and measurement techniques and applications Provides technological tools to create crop value and improve both food safety and food quality

The book post harvest technology assumes great attention during recent years since preservation of agricultural produce is a basic necessity to sustain agricultural production. It helps to add value of produce, thus having great scope for employment generation at the production catchments. In this book, the authors have attempted to consolidate different methods of post harvest technology of fruits and vegetables focusing on recent advances. This book will benefit both practicing food technologist/post harvest technologist who are searching for answers to critical technical questions of post harvest technology. Further, it will be useful to agricultural engineers, food processors, food scientist, researchers and progressive farmers and tom those who are working in relevant fields. it is intended to fill a gap in presently available post harvest technology literature

Horticultural produce plays a significant role in human nutrition by supplying vitamins, minerals, dietary fibre and anti-oxidants to the diet. The quality and safety of underutilized fruit produce reaching the consumer depends upon pre-harvest factors as well as proper post-harvest management practices throughout the food chain. This book reviews the factors which contribute to quality and safety during processing through easy steps of product preparation. Specific examples are given to illustrate the economic implications of investment in and applying proper post-harvest technologies. This book has been planned keeping in view the challenges faced during processing and as per the syllabus approved by ICAR for undergraduate and postgraduate students. Besides dealing with the processed products and processing type of underutilized fruits, this book contains a model question bank and suitable illustration with photographs. In addition to the students completing their undergraduate and postgraduate courses, the book will be great help to the Agriculturist, Horticulturist, Food scientist, as well as researchers and other stakeholders including industrialists. A Handbook on Post Harvest Management of Fruits and Vegetables In Indian context.

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