

Conference On Pulses For Sustainable Agriculture And Human

Continued population growth, rapidly changing consumption patterns and the impacts of climate change and environmental degradation are driving limited resources of food, energy, water and materials towards critical thresholds worldwide. These pressures are likely to be substantial across Africa, where countries will have to find innovative ways to boost crop and livestock production to avoid becoming more reliant on imports and food aid. Sustainable agricultural intensification - producing more output from the same area of land while reducing the negative environmental impacts - represents a solution for millions of African farmers. This volume presents the lessons learned from 40 sustainable agricultural intensification programmes in 20 countries across Africa, commissioned as part of the UK Government's Foresight project. Through detailed case studies, the authors of each chapter examine how to develop productive and sustainable agricultural systems and how to scale up these systems to reach many more millions of people in the future. Themes covered include crop improvements, agroforestry and soil conservation, conservation agriculture, integrated pest management, horticulture, livestock and fodder crops, aquaculture, and novel policies and partnerships. This book will bring together all recent and updated information on RCT in pulses and pulse based cropping system which will be of immense use to researchers, extension personnel, students, research scholars across the nation.

The Indian Society of Genetics and Plant Breeding was established in 1941 in recognition of the growing contribution of improved crop varieties to the country's agriculture. Scientific plant breeding had started in India soon after the rediscovery of Mendel's laws of heredity. The Indian Agricultural Research Institute set up in 1905 and a number of Agricultural Colleges in different parts of the country carried out some of the earliest work mostly in the form of pure-line selections. In subsequent years, hybridization programmes in crops like wheat, rice, oilseeds, grain legumes, sugarcane and cotton yielded a large number of improved cultivars with significantly higher yields. A turning point came in the 1960s with the development of hybrids in several crops including inter-specific hybrids in cotton. And when new germplasm with dwarfing genes became available in wheat and rice from CIMMYT and IRRI, respectively, Indian plant breeders quickly incorporated these genes into the genetic background of the country's widely grown varieties with excellent grain quality and other desirable traits. This was to mark the beginning of modern agriculture in India as more and more varieties were developed, characterized by a high harvest index and response to modern farm inputs like the inorganic fertilizers. India's green revolution which has led to major surpluses of food grains and other commodities like sugar and cotton has been made possible by the work of one of the largest groups of plant breeders working in a coordinated network.

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Pulses Nutritious seeds for a sustainable future
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Of late, farming community in India has been facing new challenges of food and nutrition security, human health and structural adjustment to comply with WTO stipulations on the one hand and sustainable environment on the other. The overuse of fertilizers and chemicals, and depleting water resources are essentially threatening the sustainability of Indian agriculture. The slow growth of agriculture sector mainly due to stagnation in productivity growth is a grave concern for policy-makers and development planners. The key challenge to India's agriculture in the 21st century in the wake of open global economy lies in designing, developing and managing agricultural systems that enable farmers to be efficient, equitable and sustainable in the bio-physical and socio-cultural environments. This book has deliberated on the key issues

of sustainable agriculture in the context of emerging technologies, policies and institutions by promoting efficiency, equity and better management of natural resources. In the process, thoughts and experience of world-class leaders in agricultural education, research, extension, policy, agri-business and development in addressing the challenges confronting farmers have been documented

Pulses are nutritionally diverse crops that can be successfully utilized as a food ingredient or a base for new product development. They provide a natural food grade ingredient that is rich in lysine, dietary fiber, complex carbohydrates, protein and B-vitamins suggesting that pulses can provide a variety of health benefits such as reducing heart disease and diabetes. Interest in the use of pulses and their ingredients in food formulations is growing and several factors are contributing to this drive. *Pulse Foods: Processing, Quality and Nutraceutical Applications* is the first book to provide up-to-date information on novel and emerging technologies for the processing of whole pulses, techniques for fractionating pulses into ingredients, their functional and nutritional properties, as well as their potential applications, so that the food industry can use this knowledge to incorporate pulses into new food products. First reference bringing together essential information on the processing technology of pulses Addresses processing challenges relevant to legume and pulse grain processors Delivers insights into the current state-of-art and emerging processing technologies In depth coverage of developments in nutraceutical applications of pulse protein and carbohydrate based foods

Pulse Foods: Processing, Quality and Nutraceutical Applications, Second Edition, provides up-to-date information on emerging technologies for the processing of whole pulses, techniques for fractionating pulses into ingredients, their functional and nutritional properties, as well as their potential applications, so that the food industry can incorporate pulses into new food products. Since the first edition, significant developments have occurred in various aspects of pulse, pulse chemistry, processing and applications. This second edition provides thorough and authoritative coverage of pulse quality, technology and nutraceutical applications. *Pulse Foods: Processing, Quality and Nutraceutical Applications, Second Edition*, will continue to be an important resource for academics, students, researchers and industry professionals in providing essential details on various aspects of pulse foods. Fully revised and updated with new chapters on nutritional and health properties, storage and pre-processing, extraction technologies and sustainability topics Addresses processing challenges relevant to legume and pulse grain processors Delivers insights into the current state-of-art and emerging processing technologies In depth coverage of developments in nutraceutical applications of pulse protein and carbohydrate based foods

Plant improvement has shifted its focus from yield, quality and disease resistance to factors that will enhance commercial export, such as early maturity, shelf life and better processing quality. Conventional plant breeding methods aiming at the improvement of a self-pollinating crop, such as wheat, usually take 10-12 years to develop and release of the new variety. During the past 10 years, significant advances have been made and accelerated methods have been developed for precision breeding and early release of crop varieties. This work summarizes concepts dealing with germplasm enhancement and development of improved varieties based on innovative methodologies that include doubled haploidy, marker assisted selection, marker assisted background selection, genetic mapping, genomic selection, high-throughput genotyping, high-throughput phenotyping, mutation breeding, reverse breeding, transgenic breeding, shuttle breeding, speed breeding, low cost high-throughput field phenotyping, etc. It is an important reference with special focus on accelerated development of improved crop varieties.

The production, trade and consumption of pulses have seen substantial growth over the last fifteen years. This report examines the trends and patterns of this growth, and the factors that explain these for different kinds of pulses. The report presents an analysis of trends of

consumption of pulses in different regions of the world and discusses the role that pulses can play in human nutrition. The report presents an analysis of the dynamics of growth of major pulses in different pulse-producing countries of the world. It describes the increasingly important role of trade in the global economy of pulses and presents an analysis of changing patterns of trade. The report argues that there is a pressing need to close the large gap between potential and actual yields, particularly on smallholder farms in South Asia and sub-Saharan Africa, by increased adoption of improved varieties and modern agronomic practices in all developing countries. This in turn requires a major thrust in agricultural research and extension, improving credit availability, and public investment directed at pulse production. The report discusses future prospects and policy imperatives for sustaining the growth of pulse production.

This book emphasizes the role of various biopesticides in the protection of various crops like rice, maize, pulses, oilseeds, cotton, sugarcane, vegetables, fruits, tobacco, spice crops, tuber crops, coconut, tea, forest plantations and stored products. The present book is an attempt to evaluate the scope of biopesticides in sustainable agriculture of various crops in order to contemplate the progress and constraints and suggest a future roadmap for potential use of biopesticides.

Considering the detrimental environmental impact of current food systems, and the concerns raised about their sustainability, there is an urgent need to promote diets that are healthy and have low environmental impacts. These diets also need to be socio-culturally acceptable and economically accessible for all. Acknowledging the existence of diverging views on the concepts of sustainable diets and healthy diets, countries have requested guidance from the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) on what constitutes sustainable healthy diets. These guiding principles take a holistic approach to diets; they consider international nutrition recommendations; the environmental cost of food production and consumption; and the adaptability to local social, cultural and economic contexts. This publication aims to support the efforts of countries as they work to transform food systems to deliver on sustainable healthy diets, contributing to the achievement of the SDGs at country level, especially Goals 1 (No Poverty), 2 (Zero Hunger), 3 (Good Health and Well-Being), 4 (Quality Education), 5 (Gender Equality) and 12 (Responsible Consumption and Production) and 13 (Climate Action).

This book is based on a workshop held in Zimbabwe, May 1999, organized by the Department of Research and Specialist Services (Zimbabwe) and the International Board for Soil Research and Management (IBSRAM). Reviewing the current state of knowledge on and the practical aspects of the management of Vertisols in Africa, this book also includes comparative chapters covering other parts of the world, such as India, Australia and Texas (USA).

The Voluntary Guidelines for Sustainable Soil Management (VGSSM) embody a framework for worldwide application addressing sustainable management of soils (SSM) in all type of land use systems. They promote the effective and viable maintenance and enhancement of the ecosystem services that soils provide such as food, feed, fiber production, climate regulation, nutrient cycling, carbon sequestration, and the regulation of water quality and quantity. Their overarching goals are to achieve food security for all, improve nutrition and support the progressive realization of a judicious management of non-renewable natural resource in the context of sustainable development. They represent a key output for the Global Soil Partnership that demonstrate once again to be an effective global policy forum where global soil issues are discussed and addressed by multiple stakeholders. The Guidelines serve as both a complementary tool fostering the implementation of the revised World Soil Charter and as a reference for a wide range of committed stakeholders, such as government officials, policy makers, farmers, pastoralists, forest and land managers, extension specialists and agricultural advisors, development partners, civil society, private sector and, academia, etc.

The VGSSM's added value is in its principal aim: setting out established scientific principles and internationally acknowledged recommended management practices for the responsible governance of soils. By setting out these technical and policy recommendations, they provide guidance to all stakeholders on how sustainable soil management can be achieved.

Proceedings of the Third International Food Legumes Research Conference

Under ongoing climate changes, natural and cultivated habitats of major crops are being continuously disturbed. Such conditions impose and exacerbate abiotic and biotic stressors. Drought, salinity, flood, cold, heat, heavy metals, metalloids, oxidants, irradiation, etc. are important abiotic stressors, while diseases and infections caused by plant pathogens, such as fungal agents, bacteria and viruses, are major biotic stresses. In many instances, stresses have become the major limiting factor for agricultural productivity and exert detrimental role on growth and yield of the crops. To help feed an ever increasing world population and to ensure global food security, concerted efforts from scientists and researchers have identified strategies to manage and mitigate the impacts of climate-induced stresses. This book, summarizing their findings, is aimed at crop improvement beyond such kind of barriers, by agronomic practices (genetics, breeding, phenotyping, etc.) and biotechnological applications, including molecular markers, QTL mapping, genetic engineering, transgenesis, tissue culture, various 'omics' technologies and gene editing. It will cover a wide range of topics under environmental challenges, agronomy and agriculture processes, and biotechnological approaches. Additionally, fundamental mechanisms and applied information on stress responses and tolerance will be discussed. This book highlights problems and offers proper solutions for crop stress management with recent information and up-to-date citations. We believe this book is suitable for scientists, researchers and students working in the fields of agriculture, plant science, environmental biology and biotechnology.

A well-known writer and speaker in forums all over the world, a list of Dr. Swaminathan's writings and speeches goes to over 50 . This book collects together some of his more recent observations, edited for publication. It is evident from the range of issues discussed that the author's mission in life is to foster a movement of hope and peace by eradicating hunger and poverty, for humankind to live in harmony with nature. Swaminathan stresses that sustainable development must be firmly rooted in the principles of ecology, social and gender equity, employment generation, and economic potential. Note: T&F does not sell or distribute the hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka. This title is co-published with NIPA.

Sustainable food systems are fundamental to ensuring that future generations are food secure and eat healthy diets. To transition towards sustainability, many food system activities must be reconstructed, and myriad actors around the world are starting to act locally. While some changes are easier than others, knowing how to navigate through them to promote sustainable consumption and production practices requires complex skill sets. This handbook is written for

“sustainable food systems innovators” by a group of innovators from Asia, Africa, the Americas and Europe who are leading initiatives to grow, share, sell and consume more sustainable foods in their local contexts. It includes experiences that are changing the organizational structures of local food systems to make them more sustainable. The handbook is organized as a “choose your own adventure” story where each reader – individually or in a facilitated group – can develop their own personalized learning and action journeys according to their priorities. The topics included in this handbook are arranged into four categories of innovations: engaging consumers, producing sustainably, getting products to market and getting organized.

This clear-sighted volume synthesizes wide-ranging knowledge of human food consumption, food production systems, and sustainability to offer methods of improving the impact of food choices on people and the environment. The comprehensive coverage addresses myriad challenges and paradoxes (e.g., health-conscious food choices that put greater stress on the planet, hunger amidst plenty) associated with the production of sustainable, nutritious food. Direct and complex links between local and global issues are highlighted in innovative approaches to transforming food production from the farm to the table and from the policy desk to the real world. Chapters identify, examine, and offer realistic recommendations for achieving critical goals, among them: Supporting healthy people and communities within planetary boundaries Reduction and prevention of food waste Combining health and sustainability on the plate "Serving sustainable and healthy food to consumers and decision makers": from commitment to action. Investing in healthier and more sustainable production. Ensuring a healthy sustainable diet is a goal of all public policies. Towards Healthy and Sustainable Diets is geared toward professionals and policymakers dealing with food, nutrition, and environmental topics seeking new perspectives on longstanding issues in these interrelated areas. It also makes a suitable reference for students studying and conducting research in these areas.

Sustainable management of soils is an important global issue of the 21st century. Feeding roughly 8 billion people with an environmentally sustainable production system is a major challenge, especially considering the fact that 10% of the world's population at risk of hunger and 25% at risk of malnutrition. Accordingly, the 68th United Nations (UN) general assembly declared 2016 the “International Year of Pulses” to raise awareness and to celebrate the role of pulses in human nutrition and welfare. Likewise, the assembly declared the year 2015 as the “International Year of Soils” to promote awareness of the role of “healthy soils for a healthy life” and the International Union of Soil Science (IUSS) has declared 2015-2024 as the International Decade of Soils. Including legumes in cropping systems is an important toward advancing soil sustainability, food and nutritional security without compromising soil quality or its production potential. Several textbooks and edited volumes are currently available on general soil fertility or on legumes but, to date, none have been dedicated to the study of “Legumes for

Soil Health and Sustainable Management". This is important aspect, as the soil, the epidermis of the Earth (geoderma), is the major component of the terrestrial biosphere. This book explores the impacts of legumes on soil health and sustainability, structure and functioning of agro-ecosystems, agronomic productivity and food security, BNF, microbial transformation of soil N and P, plant-growth-promoting rhizobacteria, biofertilizers, etc. With the advent of fertilizers, legumes have been sidelined since World War II, which has produced serious consequences for soils and the environment alike. Therefore, legume-based rational cropping/soil management practices must support environmentally and economically sustainable agroecosystems based on (sequential) rotation and intercropping considerations to restore soil health and sustainability. All chapters are amply illustrated with appropriately placed data, tables, figures, and photographs, and supported with extensive and cutting-edge references. The editors have provided a roadmap for the sustainable development of legumes for food and nutritional security and soil sustainability in agricultural systems, offering a unique resource for teachers, researchers, and policymakers, as well as undergraduate and graduate students of soil science, agronomy, ecology, and the environmental sciences.

India, a country with high concentrations of poor and malnourished people, long promoted a cereal-centric diet composed of subsidized staple commodities such as rice and wheat to feed its population of more than a billion. Today, however, dietary patterns are changing. Policy makers, researchers, and health activists are looking for ways to fight hunger and malnutrition in the country. As they shift their focus from calorie intake to nutrition, neglected foods such as pulses (the dried, edible seeds of legumes) are gaining attention. *Pulses for Nutrition in India: Changing Patterns from Farm to Fork* explores the numerous benefits of a diet that incorporates pulses. Pulses, including pigeonpeas, lentils, and chickpeas, are less expensive than meat and are excellent sources of protein. In India, people consume pulses and other legumes for protein intake. Pulses also benefit the ecosystem. Among protein-rich foods, pulses have the lowest carbon and water footprints. Pulses also improve soil health by naturally balancing atmospheric nitrogen in the soil; thus, growing pulses reduces the need for nitrogenous fertilizer. *Pulses for Nutrition in India: Changing Patterns from Farm to Fork* looks at the country's pulses sector in light of agricultural systems, climate change, irrigation design, and how policies (including the Green Revolution) have evolved over time. To understand how pulses can help fulfill the objectives of India's food policies, experts explore the role that pulse production plays in global trade; the changing demand for pulses in India since the 1960s; the possibility of improving pulse yields with better technology to compete with cereals; and the long-term health benefits of greater reliance on pulses. The analyses in *Pulses for Nutrition in India: Changing Patterns from Farm to Fork* contribute to the emerging literature on pulses and will aid policy makers in finding ways to feed and nourish a growing population.

This book comes out of the 12th Iberoamerican Congress of Food Engineering, which took place at the University of Algarve in Faro, Portugal in July 2019. It includes the editors' selection of the best research works from oral and poster presentations delivered at the conference. The first section is dedicated to research carried out on SUSTAINABLE ALTERNATIVES TO CHEMICAL ADDITIVES TO EXTEND SHELF LIFE, with special emphasis on animal products. The second section discusses recent research in SUSTAINABLE NEW PRODUCT DEVELOPMENT. The third section delves into the development of PLANT-BASED ALTERNATIVES TO DAIRY AND GLUTEN BASED CEREALS. The fourth section tackles CONSUMER BEHAVIOR regarding food products with new sources of protein (e.g. insects) or new sources of important nutrients (e.g. seaweeds) and the fifth discusses the VALORIZATION OF BY-PRODUCTS IN THE FOOD INDUSTRY (from fruits and wine making). For food engineers, food technologists, and food scientists looking to stay up-to-date in this field of sustainable food engineering, Sustainable Innovation in Food Product Design is the ideal resource.

This book covers how Internet of Things (IoT) has a role in shaping the future of our communities. The author shows how the research and education ecosystem promoting impactful solutions-oriented science can help citizenry, government, industry, and other stakeholders to work collaboratively in order to make informed, socially-responsible, science-based decisions. Accordingly, he shows how communities can address complex, interconnected socio-environmental challenges. This book addresses the key inter-related challenges in areas such as the environment, climate change, mining, energy, agro-economic, water, and forestry that are limiting the development of a sustainable and resilient society -- each of these challenges are tied back to IoT based solutions. Presents research into sustainable IoT with respect to wireless communications, sensing, and systems Provides coverage of IoT technologies in sustainability, health, agriculture, climate change, mining, energy, water management, and forestry Relevant for academics, researchers, policy makers, city planners and managers, technicians, and industry professionals in IoT and sustainability

The aim of raising global awareness on the multitude of benefits of pulses was integral to the International Year of Pulses. This coffee table book is part guide and part cookbook— informative without being technical. The book begins by giving an overview of pulses, and explains why they are an important food for the future. It also has more than 30 recipes prepared by some of the most prestigious chefs in the world and is peppered with infographics. Part I gives an overview of pulses and gives a brief guide to the main varieties in the world. Part II explains step-by-step how to cook them, what to keep in mind and what condiments and instruments to use. Part III underscores the five messages that FAO conveys to the world about the impact pulses have on nutrition, health, climate change, biodiversity and food security. Part IV illustrates how pulses can be grown in a garden patch with easy gardening instructions and how they are grown in the

world, highlighting major world producers, importers and exporters. Part V takes the reader on a journey around the world showing how pulses fit a region's history and culture and visits 10 internationally acclaimed chefs as they go the market to buy pulses. Back at their restaurant or home, each chef prepares easy dishes and gives their best kept secrets. Each chef provides 3 recipes that are beautifully illustrated.

Rising prices and declining consumption of pulses cause concern in terms of both nutrition and food inflation in India. This paper outlines policy strategies to increase the availability of pulses at affordable prices in India and also points out limitations of some of the most common recommendations for achieving these objectives. There seems to be no option but to increase domestic production of pulses in India. The global supply of pulses is limited compared with India's needs, and sizable imports by India are bound to increase world prices. Domestic production of pulses in India is most likely piecewise inelastic, meaning that small price increases do not translate into a significant supply response. Because farmers face both production and marketing risks, they increase pulse area and intensify production only when there is a large increase in expected prices that covers the risk premium. Droughts, too, are a major risk for pulses. Access to one or two protective irrigations during the growing season can possibly lead to sizable increases in pulse production and reduce the production risk. The *har khet ko paani* (assured irrigation) initiative under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) program should give priority to pulse-producing areas. The minimum support price (MSP) for pulses, without direct government procurement, helps traders more than farmers because it acts as a focal point for tacit collusion among traders. Farmers will benefit from the MSP only if it is raised substantially from its current levels. The increase in farmgate prices due to a higher MSP will not necessarily lead to an increase in the retail price of pulses because much of the wedge between farmgate prices and consumer prices is traders' margin. Including subsidized pulses in public distribution systems can save households some money, but it has only a small effect on total consumption of pulses and almost no effect on total protein intake. We suggest, as more potent solutions, investing in research and extension for pulses, aggregating pulse growers into farmer producer organizations, and paying pulse growers or pulse-growing areas for the ecosystem services offered by pulses.

The Encyclopedia of Food Security and Sustainability covers the hottest topics in the science of food sustainability, providing a synopsis of the path society is on to secure food for a growing population. It investigates the focal issue of sustainable food production in relation to the effects of global change on food resources, biodiversity and global food security. This collection of methodological approaches and knowledge derived from expert authors around the world offers the research community, food industry, scientists and students with the knowledge to relate to, and report on, the novel challenges of food production and sustainability. This comprehensive encyclopedia will act as a platform to

show how an interdisciplinary approach and closer collaboration between the scientific and industrial communities is necessary to strengthen our existing capacity to generate and share research data. Offers readers a 'one-stop' resource on the topic of food security and sustainability Contains articles split into sections based on the various dimensions of Food Security and Food Sustainability Written by academics and practitioners from various fields and regions with a "farm to fork understanding Includes concise and accessible chapters, providing an authoritative introduction for non-specialists and readers from undergraduate level upwards, as well as up-to-date foundational content for those familiar with the field

In a sustainable agricultural system, legume crops are one of the essential components. However, improving the productivity of legume crops and improving their tolerance to adverse environments are essential tasks for plant biologists. This book includes nine comprehensive chapters addressing various aspects of legume crop biology, production and importance. There are several chapters on the adaptation of legumes to an adverse environment. Particular focus is provided on the sustainable production of legume crops under changing environments. This book will be useful for undergraduate and graduate students, teachers, and researchers, particularly from the field of Crop Science, Soil Science, Plant Breeding and Agronomy.

This book reviews and synthesizes the recent advances in exploiting host plant resistance to insects, highlighting the role of molecular techniques in breeding insect resistant crops. It also provides an overview of the fascinating field of insect-plant relationships, which is fundamental to the study of host-plant resistance to insects. Further, it discusses the conventional and molecular techniques utilized/useful in breeding for resistance to insect-pests including back-cross breeding, modified population improvement methods for insect resistance, marker-assisted backcrossing to expedite the breeding process, identification and validation of new insect-resistance genes and their potential for utilization, genomics, metabolomics, transgenesis and RNAi. Lastly, it analyzes the successes, limitations and prospects for the development of insect-resistant cultivars of rice, maize, sorghum and millet, cotton, rapeseed, legumes and fruit crops, and highlights strategies for management of insect biotypes that limit the success and durability of insect-resistant cultivators in the field. Arthropod pests act as major constraints in the agro-ecosystem. It has been estimated that arthropod pests may be destroying around one-fifth of the global agricultural production/potential production every year. Further, the losses are considerably higher in the developing tropics of Asia and Africa, which are already battling severe food shortage. Integrated pest management (IPM) has emerged as the dominant paradigm for minimizing damage by the insects and non-insect pests over the last 50 years. Pest resistant cultivars represent one of the most environmentally benign, economically viable and ecologically sustainable options for utilization in IPM programs. Hundreds of insect-resistant cultivars of rice,

wheat, maize, sorghum, cotton, sugarcane and other crops have been developed worldwide and are extensively grown for increasing and/or stabilizing crop productivity. The annual economic value of arthropod resistance genes developed in global agriculture has been estimated to be greater than US\$ 2 billion. Despite the impressive achievements and even greater potential in minimizing pest-related losses, only a handful of books have been published on the topic of host-plant resistance to insects. This book fills this wide gap in the literature on breeding insect-resistant crops. It is aimed at plant breeders, entomologists, plant biotechnologists and IPM experts, as well as those working on sustainable agriculture and food security.

This book aims at showing how big data sources and data analytics can play an important role in sustainable mobility. It is especially intended to provide academicians, researchers, practitioners and decision makers with a snapshot of methods that can be effectively used to improve urban mobility. The different chapters, which report on contributions presented at the 4th Conference on Sustainable Urban Mobility, held on May 24-25, 2018, in Skiathos Island, Greece, cover different thematic areas, such as social networks and traveler behavior, applications of big data technologies in transportation and analytics, transport infrastructure and traffic management, transportation modeling, vehicle emissions and environmental impacts, public transport and demand responsive systems, intermodal interchanges, smart city logistics systems, data security and associated legal aspects. They show in particular how to apply big data in improving urban mobility, discuss important challenges in developing and implementing analytics methods and provide the reader with an up-to-date review of the most representative research on data management techniques for enabling sustainable urban mobility.

This comprehensive text provides the latest research on key concepts, principles and practices for promoting healthy and sustainable food systems. There are increasing concerns about the impact of food systems on environmental sustainability and, in turn, the impact of environmental sustainability on the capacity of food systems to protect food and nutrition security into the future. The contributors to this book are leading researchers in the causes of and solutions to these challenges. As international experts in their fields, they provide in-depth analyses of the issues and evidence-informed recommendations for future policies and practices. Starting with an overview of ideas about health, sustainability and equity in relation to food systems, *Healthy and Sustainable Food Systems* examines what constitutes a food system, with chapters on production, manufacturing, distribution and retail, among others. The text explores health and sustainable diets, looking at issues such as overconsumption and waste. The book ends with discussions about the politics, policy, personal behaviours and advocacy behind creating healthy and sustainable food systems. With a food systems approach to health and sustainability identified as a priority area for public health, this text introduces core knowledge for students, academics, practitioners and policy-makers from a range of disciplines including food and nutrition sciences, dietetics, public health, public policy, medicine, health science and environmental science.

Sustainable practices within the mining and energy sectors are assuming greater significance due to uncertainty and change within the global economy and safety, security, and health concerns. This book examines sustainability issues facing the mining and energy sectors by

addressing six major themes: Mining and Mineral Processing; Metallurgy and Recycling; Environment; Energy; Socioeconomic and Regulatory; and Sustainable Materials and Fleets. Emphasizing an integrated transdisciplinary approach, it deliberates on optimizing mining productivity and energy efficiency and discusses integrated waste management practices. It discusses risk management, cost cutting, and integration of sustainable practices for long-term business value. It gives a comprehensive outlook for sustainable mineral futures from academic and industry perspectives covering mine to mill optimization, waste, risk and water management, improved efficiencies in mining tools and equipment, and performance indicators for sustainable developments. It covers how innovation and research underpin management of natural resources including sustainable carbon management.

- Focuses on mining and mineral processing, metallurgy and recycling, the environment, energy, socioeconomic and regulatory issues, and sustainable materials and fleets.
- Describes metallurgy and recycling and uses economic, environmental and social parameter analyses to identify areas for improvement in iron, steel, aluminium, lead, zinc, copper, and gold production.
- Discusses current research on mining, performance indicators for sustainable development, sustainability in mining equipment, risk and safety management, and renewable energy resources
- Covers alternative and conventional energy sources for the mineral sector as well water treatment and remediation and energy sustainability in mining.
- Provides an overview of sustainable carbon management.
- Offers an interdisciplinary approach with international focus.

The International Year of Fruits and Vegetables 2021 (IYFV), as declared by the UN General Assembly in Resolution A/RES/74/244, aims at raising awareness of, directing policy attention to, and sharing good practices on the nutritional and health benefits of fruit and vegetable consumption, the contribution of fruit and vegetable consumption to the promotion of diversified, balanced and healthy diets and lifestyles, and reducing loss and waste of fruits and vegetables. This background paper outlines the benefits of fruit and vegetable consumption, but also examines the various aspects of the fruit and vegetable sector from a food systems approach: from sustainable production and trade to loss and waste management. This paper provides an overview of the sector and a framework and a starting point for discussion for the Year, highlighting the interlinkages of stakeholders and key issues to be considered for action during the IYFV.

Undernourishment in some areas and abundance in others, accelerated climate changes, food distribution and security challenges, fluctuating economic and political stability and oversaturation in information - this is the world we are living in today. It seems that there is no time for the basic science plant research; instead of years of dedicated investigation, scientists are forced to wrap up their know-how in a project-oriented deliverables as fast as possible. The main strength of this book is the new knowledge about plant engineering that could be transferred into the applied science and, later on, to the industry. However, we should not forget that all great discoveries begin with the fundamental research, the wealth of good ideas and the dedicated scientific work.

Sustainability covers environmental, social and economic dimensions, and requires a multi-disciplinary approach in order to examine, explore and critically engage with issues and advances in its related areas. As we are aware, climate change is a certainty and it affects many economic sectors, including agriculture, particularly production of crop and livestock enterprises. Vast regional differences in these impacts are expected for various parts of the world, culminating in changes in trade patterns, and perhaps eventually even threatening the food security in certain parts of the world. Agricultural sustainability may be especially threatened by climate extremes, such as heat waves, droughts, and floods. However, not all changes induced by climate change would be negative; some may even be positive. Undoubtedly, there would be winners and losers within a nation, as well as among countries. Achieving sustainability would require changes in the way we manage agriculture. Equally

important in this discourse is to find solutions to achieve sustainability in the wake of climate change, one of the major threats to sustainability. This book is devoted to various aspect of sustainable agriculture and climate change and their interplay.

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