

Aacc International Approved Methods Of Analysis Highlights

Wheat: Science and Trade is an up-to-date, comprehensive reference work designed to expand the current body of knowledge on this staple crop, incorporating new information made available by genetic advances, improvements in the understanding of wheat's biology, and changes in the wheat trade industry. Covering phylogeny and ontogeny, manipulation of the environment and optimal management, genetic improvement, and utilization and commercialization, the book focuses on the most economically significant diseases and impacts. This fifth edition provides information on techniques needed to analyze foods for chemical and physical properties. The book is ideal for undergraduate courses in food analysis and is also an invaluable reference to professionals in the food industry. General information chapters on regulations, labeling, sampling, and data handling provide background information for chapters on specific methods to determine chemical composition and characteristics, physical properties, and objectionable matter and constituents. Methods of analysis covered include information on the basic principles, advantages, limitations, and applications. Sections on spectroscopy and chromatography along with chapters on techniques such as immunoassays, thermal analysis, and microscopy from the perspective of their use in food analysis have been expanded. Instructors who adopt the textbook can contact the editor for access to a website with related teaching materials.

In Asian Noodles: Science, Technology and Processing, international experts review the current knowledge and offer comprehensive cutting-edge coverage on Asian noodles unmatched in any publication. The authors cover an array of topics including breeding for noodle wheat, noodle flour milling, noodle flour quality control and analysis, noodle processing, sensory and instrumental measurements of noodle quality, the effects of wheat factors on noodle quality, packaging and storage, nutritional fortification of noodle products, noodle flavor seasoning, and noodle plant setup and management.

Publishing high-quality food production applications handbooks is a hallmark of AACCI PRESS and Mixolab: A New Approach to Rheology is no exception. Increasing consumer demand for quality foods with superior nutritional value makes innovative tools like the Mixolab of increasing interest to food developers and producers. Operators, breeders, millers, researchers, product developers, formulators, and bakers will find answers to their questions, along with guidelines for maximizing the use of the Mixolab for a wide range of applications. Gaining a better understanding of the instrument's capabilities will assist in discovery of novel uses by both research and production professionals. Key Features: Technical description of the Mixolab and comparison with existing devices Coverage of durum wheat, rice, corn, buckwheat, and other cereals Specific focus on gluten, starch, ingredients, and enzymes Influence of sugar, fats, and salt on dough rheology International comparisons of HACCP experiences Table of uses for specific carbohydrates Descriptions of improved laboratory techniques Wheat testing for breeders An Essential Reference For: Additive manufacturers Bakers Breeders Enzyme manufacturers Millers Quality control laboratories Research laboratories Research and development centers Storage elevators Students Universities Yeast producers

Not since "Sugar Chemistry" by Shallenberger and Birch (1975) has a text clearly presented and applied basic carbohydrate chemistry to the quality attributes and functional properties of foods. Now in Food Carbohydrate Chemistry, author Wrolstad emphasizes the application of carbohydrate chemistry to understanding the chemistry, physical and functional properties of food carbohydrates. Structure and nomenclature of sugars and sugar derivatives are covered, focusing on those derivatives that exist naturally in foods or are used as food additives. Chemical reactions emphasize those that have an impact on food quality and occur under processing and storage conditions. Coverage includes: how chemical and physical properties of sugars and polysaccharides affect the functional properties of foods; taste properties and non-enzymic browning reactions; the nutritional roles of carbohydrates from a food chemist's perspective; basic principles, advantages, and limitations of selected carbohydrate analytical methods. An appendix includes descriptions of proven laboratory exercises and demonstrations. Applications are emphasized, and anecdotal examples and case studies are presented. Laboratory units, homework exercises, and lecture demonstrations are included in the appendix. In addition to a complete list of cited references, a listing of key references is included with brief annotations describing their important features. Students and professionals alike will benefit from this latest addition to the IFT Press book series. In Food Carbohydrate Chemistry, upper undergraduate and graduate students will find a clear explanation of how basic principles of carbohydrate chemistry can account for and predict functional properties such as sweetness, browning potential, and solubility properties. Professionals working in product development and technical sales will value Food Carbohydrate Chemistry as a needed resource to help them understand the functionality of carbohydrate ingredients. And persons in research and quality assurance will rely upon Food Carbohydrate Chemistry for understanding the principles of carbohydrate analytical methods and the physical and chemical properties of sugars and polysaccharides.

Exploration, Identification and Utilization of Barley Germplasm explores the timely global challenges related to barley production posed by the narrowing of biodiversity and problem soils, identifying elite genotypes which will enhance barley breeding and be essential to genetic and evolution studies. The book covers the utilization of barley germplasm for improving the quality of both food and feed barley as well as exploring and utilizing varieties of germplasm that are tolerant to drought, waterlogged, salt, and acid soil. Chapters are devoted to prime strategies for future research, including identifying barley germplasm by applying Omics, exploring barley germplasm by means of the Focused Identification of Germplasm Strategy (FIGS), and creating barley germplasm through mutation. Users will find this book to be a key research reference for both professionals and academics, providing a comprehensive update for established barley researchers that equips them with an understanding of the new methodologies needed for innovation and discovery, while also providing a helpful entry to the subject for young researchers and students. Provides a one-stop shop to acquire a speedy overview of the main and recently applied issues of barley breeding Provides newly-developed methodologies in barley germplasm research Describes special genotypes from wild barley, including Tibetan wild barley, which show a high tolerance to abiotic stresses and carry different alleles from cultivated barley

The first edition of Breadmaking: Improving quality quickly established itself as an essential purchase for baking professionals and researchers in this area. With comprehensively updated and revised coverage, including six new chapters, the second edition helps readers to understand the latest developments in bread making science and practice. The book opens with two

introductory chapters providing an overview of the breadmaking process. Part one focuses on the impacts of wheat and flour quality on bread, covering topics such as wheat chemistry, wheat starch structure, grain quality assessment, milling and wheat breeding. Part two covers dough development and bread ingredients, with chapters on dough aeration and rheology, the use of redox agents and enzymes in breadmaking and water control, among other topics. In part three, the focus shifts to bread sensory quality, shelf life and safety. Topics covered include bread aroma, staling and contamination. Finally, part four looks at particular bread products such as high fibre breads, those made from partially baked and frozen dough and those made from non-wheat flours. With its distinguished editor and international team of contributors, the second edition of Breadmaking: Improving quality is a standard reference for researchers and professionals in the bread industry and all those involved in academic research on breadmaking science and practice. With comprehensively updated and revised coverage, this second edition outlines the latest developments in breadmaking science and practice. Covers topics such as wheat chemistry, wheat starch structure, grain quality assessment, milling and wheat breeding. Discusses dough development and bread ingredients, with chapters on dough aeration and rheology.

Rapid, inexpensive, and easy-to-deploy, near-infrared (NIR) spectroscopy can be used to analyze samples of virtually any composition, origin, and condition. The Handbook of Near Infrared Analysis, Fourth Edition, explores the factors necessary to perform accurate and time- and cost-effective analyses across a growing spectrum of disciplines. This updated and expanded edition incorporates the latest advances in instrumentation, computerization, chemometrics applied to NIR spectroscopy, and method development in NIR spectroscopy, and underscores current trends in sample preparation, calibration transfer, process control, data analysis, instrument performance testing, and commercial NIR instrumentation. This work offers readers an unparalleled combination of theoretical foundations, cutting-edge applications, and practical experience. Additional features include the following: Explains how to perform accurate as well as time- and cost-effective analyses. Reviews software-enabled chemometric methods and other trends in data analysis. Highlights novel applications in pharmaceuticals, polymers, plastics, petrochemicals, textiles, foods and beverages, baked products, agricultural products, biomedicine, nutraceuticals, and counterfeit detection. Underscores current trends in sample preparation, calibration transfer, process control, data analysis, and multiple aspects of commercial NIR instrumentation. Offering the most complete single-source guide of its kind, the Handbook of Near Infrared Analysis, Fourth Edition, continues to offer practicing chemists and spectroscopists an unparalleled combination of theoretical foundations, cutting-edge applications, and detailed practical experience provided firsthand by more than 50 experts in the field.

Imagine an analytical technique that uses no chemicals, gives accurate and precise results in minutes or even continuously, and is simple to install and safe to use. Near-infrared spectroscopy (NIRS) supplies this dream. This book covers all of the essential features for successful NIRS application in a practical and easily understandable format. The driving force behind compiling this book is to provide knowledge on all aspects of NIRS to potential users, and to users who would like to delve a little deeper into the technology. We have assembled the book, mainly to help in the application of near-infrared (NIR) instruments and technology in industry.

The bioeconomy initially focused on resource substitution, including the production of biomass from various resources; its conversion, fractionation, and processing by means of biotechnology; and chemistry and process engineering towards the production and marketing of food, feed, fuel, and fibre. Nevertheless, although resource substitution is still considered important, the emphasis has been recently shifted to the biotechnological innovation perspective of the bioeconomy, in terms that ensure environmental sustainability. It is estimated that around one-third of the food produced for human consumption is wasted throughout the world, posing not only a sustainability problem related to food security but also a significant environmental problem. Food waste streams, mainly derived from fruits and vegetables, cereals, oilseeds, meat, dairy, and fish processing, have unavoidably attracted the interest of the scientific community as an abundant reservoir of complex carbohydrates, proteins, lipids, and functional compounds, which can be utilized as raw materials for added-value product formulations. This Special Issue focuses on innovative and emerging food and by-products processing methods for the sustainable transition to a bioeconomy era. Contributions addressing valorisation, the bioprocessing and biorefining of food industry-based streams, the isolation of high-added-value compounds, applications of resulting bio-based chemicals to food products, novel food formulations, economic policies for food waste management, and sustainability or technoeconomic analyses of the proposed processing methods are welcome in this Special Issue.

This book examines the effect of whole-wheat bread on health, with evidence linking the consumption of whole-wheat products to a decrease in the relative risk of non-communicable diseases in comparison with products baked from refined flour. The authors focus on key areas such as milling and refining procedures, bakery products, and assessment of the present consumption of wheat products. They offer a detailed description of all available ingredients of wheat-kernel, with particular attention paid to the health benefits of wheat-kernel antioxidants and dietary fiber ingredients. Vitamins, glutathione, choline and betaine, carotenoids, sterols and stanols are covered, and the book concludes with a general overview of the effect of whole-wheat bread on colon activity and immune capacity. Methods of improving bread nutritional quality, and the potential for the upgrading of the nutritional qualities of whole-bread, are also discussed.

Consumption of whole-wheat in Western societies, however, has either not increased or increased very slightly. The authors intend for this book to highlight the health benefits of whole-wheat bread and the factors that contribute to these benefits.

Corn and wheat are among the most important cereals worldwide, representing many of the calories and proteins consumed. Tortillas and tortilla-related products are among the fastest-growing segments of the food industry and represent a sizeable portion of those calories. Tortillas: Wheat Flour and Corn Products answers the food industry's need to meet the growing demand for high-quality tortillas and tortilla-based foods. This book will guide food scientists, product developers, and nutritionists through the fascinating science and technology behind the production of corn and wheat flour tortillas. This title is the most comprehensive English-language book of its kind. It fully describes the technology, nutritional value, and quality control measures of corn and wheat flour tortillas, tortilla chips, and related products. It accomplishes this through 300 pages of quality text, complemented by easy-to-understand facts, figures, tables, and summaries that seamlessly guide users to an understanding of the fundamental underlying principles that optimize tortilla production and guide product development. Tortillas: Wheat Flour and Corn Products is ideal for academics and industry professionals, including food science and nutrition students; people working in the tortilla and snack food industries; industry staff interested in the quality control/assurance aspects of tortillas; and professionals interested in cereal processing and product development. Edited by the renowned food science

educators in tortilla production, this book provides high-quality training at both the academic and corporate levels Coverage Includes: A history of corn and wheat flour tortillas Ideal physicochemical properties of corn kernels and wheat flours to optimize processing Quality attributes of processed products and quality control/troubleshooting Food safety and quality control, from the raw materials to intermediate and finished products Various industrial setups and pilot plant techniques currently used to manufacture wheat flour tortillas Ideal physical, chemical, and rheological properties of tortilla flours Roles of leavening agents in tortilla quality Functions of dough emulsifiers and reducing agents in textural shelf life and “process-ability Effects and roles of preservatives and supplemented enzymes on shelf life Common quality and consistency issues encountered by the flour tortilla industry, along with solutions and recommendations Optimum properties of corn kernels for tortillas and nixtamalized snacks, such as parched fried corn, corn chips, and tortilla chips Milling processes and quality control testing used to obtain lime-cooked dough, the backbone for the fabrication of table tortillas and corn and tortilla chips

The world's most comprehensive, well documented, and well illustrated book on this subject. With extensive subject and geographical index. 30 photographs and illustrations - mostly color. Free of charge in digital PDF format.

Pre-harvest sprouting (PHS) and late-maturity alpha-amylase (LMA) are two of the biggest grain quality defects that grain growers encounter. About 50 percent of the global wheat crop is affected by pre-harvest sprouting to various degrees. Pre-harvest sprouting is a genetically-based quality defect and results in the presence of alpha-amylase in otherwise sound mature grain. It can range from perhaps undetectable to severe damage on grain and is measured by the falling numbers or alpha-amylase activity. This is an international issue, with sprouting damage lowering the value of crops to growers, seed and grain merchants, millers, maltsters, bakers, other processors, and ultimately the consumer. As such it has attracted attention from researchers in many biological and non-biological disciplines. The 13th International Symposium on Pre-Harvest Sprouting in Cereals was held 18-20 September, 2016 in Perth to discuss current findings of grain physiology, genetic pathways, trait expression and screening methods related to pre-harvest sprouting and LMA. This event followed the previous symposium in 2012 in Canada.

Approved Methods of the American Association of Cereal Chemists Amer Assn of Cereal Chemists

This third edition laboratory manual was written to accompany Food Analysis, Fifth Edition, by the same author. New to this third edition of the laboratory manual are four introductory chapters that complement both the textbook chapters and the laboratory exercises. The 24 laboratory exercises in the manual cover 21 of the 35 chapters in the textbook. Many of the laboratory exercises have multiple sections to cover several methods of analysis for a particular food component or characteristic. Most of the laboratory exercises include the following: background, reading assignment, objective, principle of method, chemicals, reagents, precautions and waste disposal, supplies, equipment, procedure, data and calculations, questions, and references. This laboratory manual is ideal for the laboratory portion of undergraduate courses in food analysis.

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.

One of the most rapidly growing segments in the food industry is gluten-free baked products. These goods not only cater to those with medical needs, from celiac disease to gluten intolerance; they also cater to the millions of individuals who seek a gluten-free diet. Gluten-Free Baked Products is a practical guide on the development, manufacturing, and marketing of gluten-free baked products. The book gives readers an entry-level understanding of gluten-free product requirements, their production, and the breadth of ingredients available to baked product developers. This highly relevant book was written as an initial reference for food scientists, including those who need an introduction to gluten-free product development. It was also written as a general reference to those who are indirectly involved with gluten-free products, such as marketers, consultants, and quality assurance and regulatory professionals. Nutrition enthusiasts and consumers following a gluten-free diet for medical reasons will also find this book useful. Gluten-Free Baked Products can serve as a supplemental resource for students and faculty of general food science courses, as well as those covering product development, food allergies, and autoimmune conditions. Whether you are a student, professional in the food industry, or nutrition enthusiast, this book offers an easy way to understand the complex world of gluten-free baking Coverage includes: A detailed discussion on celiac disease, wheat allergies, and gluten intolerance, including symptoms, diagnosis, and nutritional deficiencies A marketing perspective on the consumer segments of gluten-free products, as well as the market size and growth trends Formulations and processing of gluten-free breads, snacks, and pasta products, as well as cookies, cakes, and other batter-based products Manufacturing and supply chain best practices, certification procedures, regulations, and labeling requirements A comprehensive discussion of the ingredients used when formulating gluten-free products, including flours, starches, maltodextrins, corn/maize, millet, oats, rice, sorghum, teff, pseudocereals, inulin, tubers, legumes, noncereal proteins, enzymes, and gums/hydrocolloids

Rice is life, for most people living in Asia. Rice has shaped the cultures, diets, and economies of thousands of millions of people. Growing, selling, and eating rice are integral to the culture of many countries. Products of the rice plant are used for a number of different purposes, such as fuel, thatching, industrial starch, and artwork. Rice is the staple food of more than half of the world's population - more than 3.5 billion people depend on rice for more than 20% of their daily calories. Asia accounts for 90% of global rice consumption, exceeding 100 kg per capita annually in many countries. Keeping in view the importance of rice, the United Nations declared 2004 as the International Year of Rice. Food security, which is the condition of having enough food to provide adequate nutrition for a healthy life, is a critical issue. Sustainable rice production is important for food self-sufficiency and food security in changing climates. Sustainable rice production practices are those which (1) increase rice productivity and its quality, (2) improve soil fertility and health, (3) increase water use efficiency and conservation, and (4) increase

diversification of rice fields, growers' income, and climate resilience.

Corn: Chemistry and Technology, Third Edition, provides a broad perspective on corn from expert agronomists, food scientists and geneticists. This encyclopedic storehouse of comprehensive information on all aspects of the world's largest crop (in metric tons) includes extensive coverage of recent development in genetic modification for the generation of new hybrids and genotypes. New chapters highlight the importance of corn as a raw material for the production of fuel bioethanol and the emerging topic of phytochemicals or nutraceutical compounds associated to different types of corns and their effect on human health, especially in the prevention of chronic diseases and cancer. Written by international experts on corn, and edited by a highly respected academics, this new edition will remain the industry standard on the topic. Presents new chapters that deal with specialty corns, the production of first generation bioethanol, and the important relationship of corn phytochemicals or nutraceuticals with human health Provides contributions from a new editor and a number of new contributors who bring a fresh take on this highly successful volume Includes vastly increased content relating to recent developments in genetic modification for the generation of new hybrids and genotypes Contains encyclopedic coverage of grain chemistry and nutritional quality of this extensively farmed product Covers the production and handling of corn, with both food and non-food applications

With higher food quality in increasing demand by consumers, there is continuous pressure on food engineers to meet market needs. One of the critical challenges is to use modern technology and knowledge to develop new processes for improving food quality. Given the global food marketplace, there is also a greater need for a means of objectively clas

Baking is a process that has been practiced for centuries, and bakery products range in complexity from the simple ingredients of a plain pastry to the numerous components of a cake. While currently there are many books available aimed at food service operators, culinary art instruction and consumers, relatively few professional publications exist that cover the science and technology of baking. In this book, professionals from industry, government and academia contribute their perspectives on the state of industrial baking today. The second edition of this successful and comprehensive overview of bakery science is revised and expanded, featuring chapters on various bread and non-bread products from around the world, as well as nutrition and packaging, processing, quality control, global bread varieties and other popular bakery products. The book is structured to follow the baking process, from the basics, flour and other ingredients, to mixing, proofing and baking. Blending the technical aspects of baking with the latest scientific research, Bakery Products Science and Technology, Second Edition has all the finest ingredients to serve the most demanding appetites of food science professionals, researchers, and students.

This book is a printed edition of the Special Issue "Anthocyanins" that was published in Molecules

Diet is a major factor in health and disease. Controlled, long-term studies in humans are impractical, and investigators have utilized long-term epidemiological investigations to study the contributions of diet to the human condition. Such studies, while valuable, have often been limited by contradictory findings; a limitation secondary to systematic errors in traditional self-reported dietary assessment tools that limit the percentage of variances in diseases explained by diet. New approaches are available to help overcome these limitations, and Advances in the Assessment of Dietary Intake is focused on these advances in an effort to provide more accurate dietary data to understand human health. Chapters cover the benefits and limitations of traditional self-report tools; strategies for improving the validity of dietary recall and food recording methods; objective methods to assess food and nutrient intake; assessment of timing and meal patterns using glucose sensors; and physical activity patterns using validated accelerometers. Advances in the Assessment of Dietary Intake describes new avenues to investigate the role of diet in human health and serves as the most up-to-date reference and teaching tool for these methods that will improve the accuracy of dietary assessment and lay the ground work for future studies.

New methods have been added to the 10th Edition. The 10th Edition provides scientists working with grain-based ingredients the most up-to-date techniques and the highest level of analytical results. The 10th Edition also removes obsolete methods that are no longer in common use or for which equipment is no longer available. A concise and clearly written Objective has been added to every method in the 10th Edition, helping food scientists easily identify methods most appropriate for their specific applications. The 10th Edition Supplier Index is now greatly expanded, giving food scientists complete and rapid access to information about companies that can provide the instruments, chemicals, and equipment they need for each method.

Food texture has evolved to be at the forefront of food formulation and development. Food Texture Design and Optimization presents the latest insights in food texture derived from advances in formulation science as well as sensory and instrumental measurement. This unique volume provides practical insights for professionals who are starting in the field as well as experts looking to enhance their knowledge or expand into new areas. The first part of this book presents case studies on formulating products in a broad variety of application segments, such as cheese, ice-cream, baked goods, gluten-free products, low-fat/non-fat dairy products and more. Challenges related to maintaining texture while optimizing nutritional content, cost, flavor and other attributes of the food product are investigated. The book also highlights the importance of texture design and optimization in several types of food products and demonstrates how experts have applied this knowledge in the industry. Part two provides an overview of the latest advances in tools and techniques for food texture design and optimization, focusing on the use of instrumental techniques, the application of sensory techniques, and the use of marketing and consumer insight tools in the design and optimization of food products. The ability to use advanced characterization techniques in this field is critical for both new and established practitioners in tackling the problems they face. Food Texture Design and Optimization serves as an important reference for technical practitioners on how to adopt advanced techniques in food texture research. This information is invaluable in reviewing establish the state of the art in this field and providing a minimum recommended standard for food formulators.

This book provides information on the techniques needed to analyze foods in laboratory experiments. All topics covered include information on the basic principles, procedures, advantages, limitations, and applications. This book is ideal for undergraduate courses in food analysis and is also an invaluable reference to professionals in the food industry. General information is provided on regulations, standards, labeling, sampling and data handling as background for chapters on specific methods to determine the chemical composition and characteristics of foods. Large, expanded sections on spectroscopy and chromatography also are included. Other methods and instrumentation such as thermal analysis, ion-selective electrodes, enzymes, and immunoassays are covered from the perspective of their use in the analysis of foods. A website with related teaching materials is accessible to instructors who adopt the textbook.

Advance in barley sciences presents the latest developments in barley sciences. It collects 39 papers submitted to the 11th International Barley Genetics Symposium, and covers all presentation sessions of the conference, i.e., barley development and economy, utilization of germplasm, genetic resources and genetic stocks, end-uses, biotic stress tolerance, abiotic stresses, new and renewed breeding methodology, barley physiology, breeding success stories, barley genomics and all other '-omics.' The information will be useful for barley breeders, brewers, biochemists, molecular geneticists and

biotechnologists. This book may also serve as reference text for students and scientists engaged in barley research. Dr. Guoping Zhang is a barley breeder and crop physiologist at the Department of Agronomy, Zhejiang University, China. Dr. Chengdao Li is a senior molecular geneticist and barley breeder at the Department of Agriculture and Food, Western Australia, Australia. He is also an adjunct professor at Murdoch University of Australia and Zhejiang University. Dr. Xu Liu, a member of the China Academy of Engineering, is a plant resources researcher at the Chinese Academy of Agricultural Sciences.

The lifestyle of humans is rapidly changing, and, correspondingly, their needs and the current and future megatrends of the food market. It is worth mentioning (1) the preference for natural, simple, and flexible diets that drive the further expansion of plant-focused formulations, (2) the focus on food sustainability (food waste reduction), and (3) the interest in healthy eating as the basis for good health. The hectic routine and rapid urbanization in developed and developing regions, respectively, have shifted consumer preferences toward bread and baked foods, which, interestingly, are often high in sugars and are categorized as having a high glycemic index. Therefore, it is of major importance to address the technological challenges of manufacturing baked goods with high physical and sensory quality that result in positive metabolic responses. This Special Issue seeks to provide fundamental understanding in this area and novel strategies to improve the nutritional properties of baked goods, including a decrease in starch bioaccessibility, sugar reduction, increase in fiber and/or protein content, and the improvement of phytochemical bioactivity. This Special Issue will also cover studies on the physical and sensory improvements of baked goods that may provide a mechanistic understanding to minimize the loss of quality after the incorporation of nutritional-improving ingredients, such as edible byproducts, proteins, or fibers. Last but not least, studies focused on the reduction of additives (clean label) or fat and on the use of sourdough to improve the sensory properties of baked goods will also be included.

A considerable amount of research has emerged in recent years on the science, technology and health effects of oats but, until now, no book has gathered this work together. Oats Nutrition and Technology presents a comprehensive and integrated overview of the coordinated activities of nutritionists, plant scientists, food scientists, policy makers, and the private sector in developing oat products for optimal health. Readers will gain a good understanding of the value of best agricultural production and processing practices that are important in the oats food system. The book reviews agricultural practices for the production of oat products, the food science involved in the processing of oats, and the nutrition science aimed at understanding and advancing the health effects of oats and how they can affect nutrition policies. There are individual chapters that summarize oat breeding and processing, the many bioactive compounds that oats contain, and their health benefits. With respect to the latter, the health benefits of oats and oat constituents on chronic diseases, obesity, gut health, metabolic syndromes, and skin health are reviewed. The book concludes with a global summary of food labelling practices that are particularly relevant to oats. Oats Nutrition and Technology offers in-depth information about the life cycle of oats for nutrition, food and agricultural scientists and health practitioners interested in this field. It is intended to provoke thought and stimulate readers to address the many research challenges associated with the oat life cycle and food system.

Food companies, regardless of their size and scope, understand that it is impossible to establish a single division devoted to "quality", as quality is the responsibility and purpose of every company employee. Applying this theory demands the cooperation of each employee and an understanding of the methodology necessary to establish, implement, and evaluate a Quality Assurance program. Quality Assurance for the Food Industry: A Practical Approach provides in-depth coverage of all aspects of quality assurance. It identifies the basic concepts and principles behind Total Quality Management and presents examples of Quality Assurance programs that can be applied to the food industry using simple, proven formats. The author discusses the role of Quality Assurance in product manufacturing, emphasizing the need for interactions among an organization's Quality Assurance, Quality Control, Product Development, Marketing, Sales, and Consumer Affairs departments. He analyzes the characteristics of a quality audit and the purpose of a proper audit, then focuses on specific examples including product manufacturing audits, food plant sanitation audits, and product quality audits. A comprehensive examination of HACCP and its applications concludes the coverage. This practical, industry-oriented reference explains the fundamental role of Quality Assurance and provides the knowledge required for establishing a Total Quality Management system in your own company. The concepts and procedures discussed are the key components for attaining and maintaining the highest standards of quality in the food industry. Wheat flour is a key ingredient in many food creations, from baked goods to breakfast cereals to various pastas and noodles. And while it may seem like a simple ingredient to some, the quality, composition, milling, and other aspects of wheat flour will make a big difference in the final product—as well as its success (or failure) in the market. Wheat Flour, Second Edition breaks down this important ingredient from a range of perspectives important to the food industry, including wheat crops, milling, the composition of commercial flour, nutrition, wheat and flour testing, production issues, quality specifications, and products derived from hard, soft, and durum wheats. Like other books in AACCI's Ingredient Handbook series, Wheat Flour, Second Edition offers expert information currently unavailable in a single source and presents it in straightforward language. This book is among the fastest, easiest references for a variety of food industry professionals, including product developers, quality assurance staff, purchasing agents, production personnel, plant managers and supervisors, teachers and students, suppliers, technical sales representatives, engineers, microbiologists, food scientists, and nutritionists. Wheat Flour, Second Edition features clearly written text filled with many easy-to-use tables and illustrations. Concise troubleshooting guides help those dealing with product quality or production issues. And for quick reference, definitions of key terms appear in the margins of pages throughout the text and are compiled in the book's extensive glossary. This new edition incorporates the latest technical information on wheat flour, representing the many recent changes in technology and research since the first edition was produced in 2001. Also new feature of this edition is that the book considers key nutritional questions that were not as important to the public when the first edition was produced, such as health conditions involving gluten and wheat allergies and the quest for products with less fat and salt. Coverage of specific product applications and problem resolution, as well as basics about wheat and milling, make Wheat Flour a must-have for food industry professionals. Everyone from new product developers to technical sales personnel will find answers to their questions about wheat flour in this one-stop, practical ingredient handbook. With this book, you will be able to: Quickly orient yourself and colleagues to the latest research on wheat flour. Swiftly troubleshoot costly issues related to flour quality and food production. Develop a range of consistent, superior products that include wheat flour.

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.

Cultivation of grain crops has been rightly recognized as one of the main drivers in shaping human civilizations. Considering their key role in fulfilling a major portion of the global food needs, grain crops are the most widely grown crops around the world. Unfortunately, like many other agronomic crops, grain crops are quite vulnerable to climate change and this has posed multifaceted threats to agricultural sustainability. To add to the menace, the deteriorating quantity and quality of both land and water as primary factors of production are further aggravating the scenario. Confronting such challenges demands innovative adaptation strategies through intensification of grain crop production that can ensure grain self-sufficiency worldwide.

Increased consumer awareness of the effects of food in preventing nutrient-related diseases and maintaining physical and mental well-being has made nutritional improvement an important goal for the food and beverage industry, including the cereal sector. The Book "Qualitative and Nutritional Improvement of Cereal-Based Foods and Beverages" collects research articles aimed at exploring innovative ways to improve cereal-based foods and beverages; an old—if not ancient—group of products which are still on our table every day. The main directions of research aimed at nutritional improvement have to face either excess or deficiency in the diet. To this end, different strategies may be adopted, such as the reformulation of products, the introduction of functional ingredients, and the application of biotechnologies to increase the bioavailability of bioactive compounds. These interventions, however, can alter the physico-chemical and sensory properties of final products, making it necessary to achieve a balance between nutritional and quality modification. This book offers readers information on innovative ways to improve cereal-based foods and beverages, useful for researchers and for industry operators.

The third edition of The Laboratory Rat features updated information on a variety of topics, including rats as research models for basic and translational research in areas such as genomics, alcoholism, diabetes, metabolic syndrome, obesity, neuroscience, spinal cord injury, traumatic brain injury, regenerative medicine, and infectious disease. New information related to the husbandry and veterinary care of rats is provided including topics related to nutrition, reproduction, anesthesia and surgery, infectious and noninfectious disease, and the care of surgical and other fragile models. It is a premier source of information on the laboratory rat, this book will be of interest to veterinary and medical students, senior graduate students, postdocs and researchers who utilize animals in biomedical research. New chapters on the care of surgical and fragile models and on the use of rats in research areas such as alcoholism, regenerative medicine, spinal cord injury, traumatic brain injury, and others are included. All chapters were written by scientific and veterinary experts. This book condenses information from many sources on topics related to the care and use of rats in research. It is the premier source of information on the laboratory rat.

This volume is a comprehensive introduction to the techniques and information required for the testing and analysis of cereals throughout the entire grain chain, from breeding through harvesting and storage to processing and the manufacture of cereal-based food products. The book describes testing protocols in detail, offering many practical pointers for testing in fields, food plants, and in stores. It shows how data from the tests are acquired, interpreted, and linked to a range of global testing standards. The book covers wheat, barley, sorghum and other non-wheat cereals and a wide range of baked products, including breads, extruded products, and animal feeds. A final section introduces the entire spectrum of analytical devices for grain analysis from all major international equipment manufacturers. This is a practical and comprehensive reference designed for specialists responsible for ensuring the safety of, and adding value to, cereals, including cereal scientists, technologists, and producers.

This book contains a wealth of useful information on current research on viscoelasticity. By covering a broad variety of rheology, non-Newtonian fluid mechanics and viscoelasticity-related topics, this book is addressed to a wide spectrum of academic and applied researchers and scientists but it could also prove useful to industry specialists. The subject areas include, theory, simulations, biological materials and food products among others.

For the first major update of this topic in 21 years, editors Webster and Wood have gathered an elite group of internationally recognized experts. This new edition addresses all aspects of oat chemistry, processing, nutrition, and plant genetics. It reflects the considerable changes in the science and food uses of oats that have occurred during the last two decades. Each chapter presents an in-depth review of a specific research area complete with an extensive bibliography. The book provides an important summary of oat nutritional research and associated health claims that have been granted in recognition of the nutritional benefits associated with oat consumption. The individual chapters on component chemistry and functionality provide an excellent resource for product developers in their quest to design new, healthy, oat-based food products. The chapters on oat molecular biology and oat breeding coupled with the extensive works on oat nutrition provide direction to researchers interested in developing oats with enhanced nutrition. Oats: Chemistry and Technology, Second Edition, is the only up-to-date review of oat chemistry and technology and will be a valuable resource for food science professionals including nutritionists, cereal chemists, plant biochemists, plant breeders, molecular biologists, grain millers, and product development and research scientists. Improve Your Knowledge About This Super Grain Covers all areas of oat technology - Single source provides in-depth review of all aspects of oat technology. Provides an excellent source of oat nutritional information - Includes details of oat nutritional studies and potential health claims with a special emphasis on β -glucans. Offers authoritative descriptions of oat composition and functional properties - Provides researchers and food scientists with key chemical and application information. Highlights oat improvement opportunities - Breeding and molecular information provides researchers direction on oat improvement opportunities. Updates our knowledge of oat-processing technology - Provides in-depth

discussion of oat milling and oat fractionation. Demystifies oat phenolics - Provides a peer-reviewed, in-depth discussion of oat phenolic chemistry and functional attributes.

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