

Mycotoxins In Food Detection And Control

Mycotoxins : toxicology and control -- Mycotoxins : method of analysis -- Food allergens : allergic potential and control -- Food allergies : method of analysis.

All relevant toxin producing fungi, their natural occurrence, the possible mycotoxicosis, further the biochemical and physiological effects of mycotoxins, their chemical data and toxicity are treated here comprehensively. For each fungi, reference is given to the food at risk. All foods which have been reported to be contaminated with mycotoxins are listed, including data on the degree of contamination, the concentration of the toxins and the country of origin and/or detection of the contaminated food.

This collection features five peer-reviewed literature reviews on mycotoxin control in agriculture. The first chapter reviews advances in post-harvest detection and control of fungal contaminants in cereals. It examines abiotic factors affecting spoilage, methods for early detection of contamination and the range control measures for preventing toxin growth. The second chapter focuses on post-harvest storage and handling practices of barley grain and how these methods can be used to mitigate mycotoxin issues. The chapter also reviews the various mycotoxins and fungi that are associated with barley. The third chapter considers the current strategies available to prevent mycotoxin contamination in groundnut cultivation, focussing on peanuts. It also covers models that predict contamination, as well as the challenges associated with research and quantification of aflatoxin. The fourth chapter presents an overview of the current understanding of mycotoxin contamination of cocoa. The chapter summarises the various methods available to aid detection of mycotoxins and control further contamination. The final chapter addresses the critical safety issue of mycotoxin contamination of food waste planned for re-use. It reviews factors affecting mycotoxin growth and the particular problem of masked mycotoxins.

This book is broadly divided into five sections and 17 chapters, highlighting recent advances in aflatoxin research from epidemiology to molecular genomics and control measures, biocontrol approaches, modern analytical techniques, economic concerns and underlying mechanisms of contamination processes. This book will update readers on several cutting-edge aspects of aflatoxins research with useful up-to-date information for mycologists, toxicologists, microbiologists, agriculture scientists, plant pathologists and pharmacologists, who may be interested in understanding of the impact, significance and recent advances within the field of aflatoxins with a focus on control strategy.

Immunosensors are widely used and are particularly important for fast diagnosis of diseases in remote environments as well as point-of-care devices. In this book, expert scientists are covering a selection of high quality representative examples from the past five years explaining how this area has developed. It is a compilation of recent advances in several areas of immunosensors for multiple target analysis using laboratory based or point-of-care set-up, for example graphene-, ISFET- and nanostructure-based immunosensors, electrochemical magneto immunosensors and nanoimprinted immunosensors. Filling a gap in the literature, it showcases the multidisciplinary, innovative developments in this highly important area and provides pointers towards commercialisation. Delivering a single, comprehensive work, it appeals to graduate students and professional researchers across academia and industry.

Microbial Toxins: A Comprehensive Treatise, Volume VIII, Fungal Toxins is devoted to topics related to algal and fungal toxins and includes critically reviewed articles from different experts in related fields. The text is divided into three sections. Section A covers coumarins — its isolation, identification, biological action, natural occurrence, and uses. Section B deals with the epizootiology, clinical characteristics, and pathological findings of Stachybotryotoxicosis. Section C talks about phytopathogenic and helminthosporium toxins, toxic peptides found in Amanita species as well as other mushroom toxins, compounds accumulating in plants after an infection, and ergot. The book is recommended for microbiologists and toxicologists, especially those who would like to know more about the toxins produced by algae and fungi and their effects.

Mycotoxins, from the Greek "mukes" referring to fungi or slime molds and toxin from the Latin "toxicum" referencing a poison for arrows, have earned their reputation for being potentially deleterious to the health and well being of a consuming organism, whether it be animal or human. Unfortunately, mycotoxins are a ubiquitous factor in the natural life cycle of food producing plants. As such, control of the potential impact of mycotoxins on food safety relies heavily upon accurate analysis and surveys followed by commodity segregation and restricted use or decontamination through processing. The purpose of this book is to provide the most comprehensive and current information on the topic of mycotoxins and assuring food safety. Chapters represented in the book reflect such diverse topics ranging from occurrence and impact, analysis, reduction through processing and plant breeding, toxicology and safety assessments to regulatory perspectives. Authors represent a range of international perspectives.

This book reviews recent research advances in sustainable agriculture, with focus on crop production, biodiversity and biofuels in Africa and Asia.

Aflatoxins are a group of highly toxic and carcinogenic substances, which occur naturally, and can be found in food substances. Aflatoxins are secondary metabolites of certain strains of the fungi *Aspergillus flavus* and *A. parasiticus* and the less common *A. nomius*. Aflatoxins B1, B2, G1, and G2 are the most important members, which can be categorized into two groups according to the chemical structure. As a result of the adverse health effects of mycotoxins, their levels have been strictly regulated especially in food and feed samples. Therefore, their accurate identification and determination remain a Herculean task due to their presence in complex food matrices. The great public concern and the strict legislation incited the development of reliable, specific, selective, and sensitive analytical methods for pesticide monitoring that are discussed in this book.

Mycotoxins - toxic secondary metabolites produced by mycotoxigenic fungi – pose a significant risk to the food chain. Indeed, they may be the most hazardous of all food contaminants in terms of chronic toxicity and legislative limits on their levels in food and feed continue to be developed worldwide. Rapid and reliable methods for the determination of both mycotoxigenic fungi and mycotoxins in food and feed are therefore essential. This book reviews current and emerging methods in this area. Part one focuses on the essentials of mycotoxin determination, covering sampling, sample preparation and clean-up and key determination techniques, such as chromatographic separation, liquid chromatography-mass spectrometry and immunochemical methods. Part two then goes on to describe quality assurance, official methods and performance criteria for determining mycotoxins in food and feed. Topics covered include laboratory accreditation, method validation and measurement uncertainty. The development and analysis of biomarkers for mycotoxins are discussed in part three. Individual chapters focus on detecting exposure in humans and animals. Part four is concerned with the processes involved in determining mycotoxigenic fungi in food and feed. It also describes the identification of genes and gene clusters involved in mycotoxin synthesis, as well as DNA barcoding of toxigenic fungi. Finally, part five explores some of the emerging methods for mycotoxin analysis, ranging from bio-sensing to spectroscopic techniques. With its distinguished editor and international team of contributors, Determining mycotoxins and

mycotoxigenic fungi in food and feed is a standard reference for all those concerned with reducing mycotoxin contamination in the food chain. Focuses on the essentials of mycotoxin determination, covering sampling, sample preparation, clean-up and key determination techniques Documents quality assurance and official methods and performance criteria for determining mycotoxins in food and feed Explores the processes of determining mycotoxigenic fungi in food and feed including the identification of genes and gene clusters

Mycotoxins are secondary metabolites produced by fungi in a wide range of foods (cereals, peanut, tree nuts, dried fruits, coffee, cocoa, grapes, spices...) both in the field and after harvest, particularly during storage. They can also be found in processed foods of plant origin, or by transfer, in food products of animal (milk, eggs, meat and offal). Mycotoxins are of major concern since they can cause acute or chronic intoxications in both humans and animals which are sometimes fatal. Many countries, particularly in Europe, have set maximum acceptable levels for mycotoxins in food and feed. The book reviews the latest literature and innovations on important aspects of mycotoxins, e.g. mycotoxin producing fungi and the related ecosystems, mycotoxin occurrence, toxicity, analysis and management. Quantitative estimation of impacts of climate change on mycotoxin occurrence have been made recently, using predictive modelling. There is also a growing interest in studying the occurrence and toxicity of multiple mycotoxins in food and feed, including emerging or modified forms of mycotoxins. Innovative tools have also developed to detect and quantify toxinogenic fungi and their toxins. In order to reduce the use of chemicals that are harmful to the environment and health of consumers, alternative methods of prevention and decontamination of mycotoxins were tested in pre- and post-harvest, using microorganisms, natural substances or radiation treatments.

Containing cutting edge research on the hot topic of nanobiosensor, this book will become highly read Biosensor research has recently re-emerged as most vibrant area in recent years particularly after the advent of novel nanomaterials of multidimensional features and compositions. Nanomaterials of different types and striking properties have played a positive role in giving the boost and accelerated pace to biosensors development technology. Nanobiosensors - From Design to Applications covers several aspects of biosensors beginning from the basic concepts to advanced level research. It will help to bridge the gap between various aspects of biosensors development technology and applications. It covers biosensors related material in broad spectrum such as basic concepts, biosensors & their classification, biomarkers & their role in biosensors, nanostructures-based biosensors, applications of biosensors in human diseases, drug detection, toxins, and smart phone based biosensors. Nanobiosensors - From Design to Applications will prove a source of inspiration for research on biosensors, their local level development and consequently using for practical application in different industries such as food, biomedical diagnosis, pharmaceuticals, agriculture, drug discovery, forensics, etc. * Discusses the latest technology and advances in the field of nanobiosensors and their applications in human diseases, drug detection, toxins * Offers a broad and comprehensive view of cutting-edge research on advanced materials such as carbon materials, nitride based nanomaterials, metal and metal oxide based nanomaterials for the fast-developing nanobiosensors research * Goes to a wide scientific and industry audience Nanobiosensors - From Design to Applications is a resource for polymer chemists, spectroscopists, materials scientists, physical chemists, surface chemists, and surface physicists.

This book is an outcome of the MycoGlobe conference in Accra. Most of the chapters are based on invited oral presentations made at the conference. The chapters in this book touch on issues including health, trade, ecology, epidemiology, occurrence, detection, management, awareness and policy. This book serves as a source of information on the occurrence and impact of mycotoxins on everything from trade and health to agricultural production in addition to suggesting opportunities for their management in Africa and elsewhere by researchers, policy makers and development investors.

From contaminated infant formula to a spate of all-too familiar headlines in recent years, food safety has emerged as one of the harsher realities behind China's economic miracle. Tainted beef, horse meat and dioxin outbreaks in the western world have also put food safety in the global spotlight. Food Safety in China: Science, Technology, Management and Regulation presents a comprehensive overview of the history and current state of food safety in China, along with emerging regulatory trends and the likely future needs of the country. Although the focus is on China, global perspectives are presented in the chapters and 33 of the 99 authors are from outside of China. Timely and illuminating, this book offers invaluable insights into our understanding of a critical link in the increasingly globalized complex food supply chain of today's world.

An indispensable reference, this book provides an overview of the main mycotoxins in food. It is the first complete reference dedicated to toxin producing fungi in foodstuff. The book lists the degree of contamination, concentration of the toxins, and the country of origin and/or detection for each case of contamination presented in the book. Moreover, the book discusses whether a foodstuff is predisposed for mycotoxin contamination. It is written for professionals in the food industry, agriculture, control agencies, food processing, food chemistry, microbiology, and mycology.

Mycotoxins are toxins produced by aerobic, microscopic fungus under special conditions of moisture and temperature. They colonize in a variety of foods from harvest to the grocer. Mycotoxins have gained world wide interest in recent years with the revelation of the effect of these toxins on health. A current example is the presence of ochratoxin A, a human carcinogen and nephrotoxin, in wines. The increased concern about fruit safety has led to increased studies throughout the world and enhanced awareness for stringent regulations governing mycotoxin limits in food. Presented in three defined sections, this is the first book to provide comprehensive analysis of the main mycotoxins contaminating fruits and vegetables and their derived products. The first section provides a safety evaluation of mycotoxins in fruits and vegetables, details regarding factors affecting mycotoxin production and diffusion in the fruit tissue, and recent methods for detection of mycotoxigenic fungi and mycotoxins produced by the fungi. The second part takes a critical look at the main individual mycotoxins and the third section focuses on approaches for prevention and control. * The first book dedicated to mycotoxins in fruits and vegetables * Presents mycological, mycotoxicological and phytopathological aspects of fruits and vegetables * Includes an analysis of detection, prevention and control methods for mycotoxigenic fungi and the mycotoxins they produce * Provides a complete risk assessment and safety evaluation of mycotoxins in perishable produce

This thorough volume explores the possibility of detecting and identifying toxigenic fungi, able to produce secondary metabolites known as mycotoxins, which cause severe health problems in humans and animals after exposure to contaminated food and feed, having a broad range of toxic effects, including carcinogenicity, neurotoxicity, and reproductive and developmental toxicity. Beginning with a section on fungal genera and species of major significance along with their associated mycotoxins, the book continues with sections on Polymerase Chain Reaction (PCR)-based methods for the detection and identification of mycotoxigenic fungi, PCR-based methods for multiplex detection of mycotoxigenic fungi, as well as sections on combined approaches and new methodologies. Written for the highly successful Methods in Molecular Biology series, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting

and avoiding known pitfalls. Authoritative and practical, *Mycotoxigenic Fungi: Methods and Protocols* will aid researchers working in this vital field to provide insight into possible actions to reduce mycotoxin contamination of crop plants and the food/feed byproducts.

Leading researchers in the field are discovering that mycotoxins pose a significant health risk in both animal feed and foods for human consumption. However, the pace of distributing current information on their findings has been lagging until now. With its distinguished editors and international team of contributors, this book summarizes the wealth of the world's most recent research on how to assess the risks from mycotoxins, detect particular mycotoxins and control them at differing stages in the supply chain. The contributors address risk assessment techniques, sampling methods, modeling, and detection techniques used to measure the risk of mycotoxin contamination and also provide current regulations governing mycotoxin limits in food. They discuss the use of HACCP systems and mycotoxin control at different stages in the supply chain. Chapters include case studies, which demonstrate how these controls work for particular products. The last section of the book details particular mycotoxins, from ochratoxin A and patulin to zearalenone and fumonisins.

Mycotoxins are secondary metabolites produced by fungi in a wide range of foods (cereals, peanut, tree nuts, dried fruits, coffee, cocoa, grapes, spices...) both in the field and after harvest, particularly during storage. They can also be found in processed foods of plant origin, or by transfer, in food products of animal (milk, eggs, meat and offal). Mycotoxins are of major concern since they can cause acute or chronic intoxications in both humans and animals which are sometimes fatal. Many countries, particularly in Europe, have set maximum acceptable levels for mycotoxins in food and feed. The book reviews the latest literature and innovations on important aspects of mycotoxins, e.g. mycotoxin producing fungi and the related ecosystems, mycotoxin occurrence, toxicity, analysis and management. Quantitative estimations of impacts of climate change on mycotoxin occurrence have been made recently, using predictive modelling. There is also a growing interest in the occurrence and toxicity of multiple mycotoxins in food and feed, including emerging or modified forms of mycotoxins. Innovative tools were also developed to detect and quantify toxinogenic fungi and their toxins. In order to reduce the use of chemicals that are harmful to the environment and health of consumers, alternative methods of prevention and decontamination of mycotoxins were tested in pre- and post-harvest, using microorganisms, natural substances or radiation treatments.

Mycotoxins, common food contaminants produced by molds, are associated with a broad range of serious toxic effects, including carcinogenicity, neurotoxicity, and reproductive and developmental toxicity, are subject to regulatory restrictions in more than 80 countries. In *Mycotoxin Protocols*, a panel of accomplished scientists describe their innovative, cutting-edge methods for determining the levels of various mycotoxins in foods and feeds. Almost half of the methods presented involve molecular-based immunochemical or immunochemical/chromatographic techniques. The necessary equipment, reagents, and procedures are given in great detail for the analysis of a wide variety of significant mycotoxins, including aflatoxins, aflatoxin M1, cyclopiazonic acid, ochratoxin A, trichothecenes, moniliformin, fumonisins, zearalenone, Stachybotrys toxins, citrinin, patulin, ergot alkaloids, and Alternaria toxins. General techniques for mycotoxin analyses, sampling procedures for collecting representative test samples, isolation techniques, and techniques for the detection and identification of toxins and impurities are also included. Up-to-date and highly practical, *Mycotoxin Protocols* provides a comprehensive collection of the latest bioanalytical techniques for determining mycotoxins in foods and feeds.

This book is based on EU-funded project PLANTFOODSEC, covering intentional and unintentional threats to plant biosecurity and to food safety areas. Biosecurity is a strategic and integrated approach for analysing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment. Interest in biosecurity has risen considerably over the last decade in parallel with the increasing trade in food and plant and animal products; higher levels of international travel; new outbreaks of transboundary diseases. Although most diseases outbreaks have natural causes or are the result of inadvertent introductions of pathogens through human activities, the risk of a deliberate introduction of a high consequence plant pathogen cannot be excluded. Vigilance is required to identify, prevent and manage new and emerging issues that could impact on production capacity, plant biosecurity or food safety and food chain resilience. /div

Mycotoxins are increasingly attracting attention at the governmental, public and academic level worldwide, due to more frequent and serious contaminations of food and feedstuffs, which pose a serious threat to human health and animal production. This book reviews the latest research on mycotoxins that directly concern food safety, and especially focuses on detection technologies, risk assessment and control strategies currently being used in China. Gathering contributions from over 20 respected researchers, the book will benefit graduate students, researchers and management groups from various disciplines, including food science and technology, analytical chemistry, plant pathology, public health, etc.

Describes a range of mycotoxins occurring as contaminants in agricultural crops and animal products, and details the implementation of food safety regulations via governmental and international agencies. The book charts the progress made in mycotoxicology since the early 1990s. It also profiles recent advances in mycotoxin analysis methods.

The contents of this book are the proceedings of the ACS symposium, "Fumonisins in Food," which was held April 4-6, 1995, at the American Chemical Society National Meeting in Anaheim, CA. This symposium, which was international in scope, brought together researchers from diverse backgrounds in academia, government, and industry. Thirty-three speakers discussed topics ranging from the analysis of fumonisins to toxicology and regulatory aspects. The fumonisins became the spotlight of mycotoxin research in 1988, when researchers at the South African Medical Research Council isolated and structurally characterized the fumonisins. Since 1988, there has been an explosion in the numbers of papers dealing with fumonisin-related topics. The interest in the fumonisins has arisen for several reasons. First, fumonisins are found in measurable concentrations in corn grown throughout the world. Second, these compounds have been implicated as the causative agents in a variety of naturally occurring animal diseases. Finally, there is speculation that fumonisins may in part be responsible for the high incidence of esophageal

cancer in regions of the world in which corn is the staple grain.

Mycotoxins are made by different biosynthetic pathways, and they have an extremely wide range of pharmacological effects. This book will update readers on several cutting-edge aspects of mycotoxin research, including topics such as: new analytical methods for detection; the adoption of an ancient Mexican process for detoxification of aflatoxins; mycotoxin management in Ireland, Lithuania and South America; mycotoxin reduction through plant breeding and integrated management practices; and natural aflatoxin inhibitors from medicinal plants. Further contributions examine ochratoxins, selected trichothecenes, zearalenone, and aflatoxin-like gene clusters, as well as sclerotial development in *Aspergillus flavus* and *A. parasiticus*. Of particular interest are the chapters on the potential use of mycotoxins as bioweapons. This book will stimulate new thinking on the need to develop therapeutic as well as preventative interventions to reduce the toxicological threat of mycotoxins.

Climate Change and Mycotoxins highlights the importance of the continuous study of climate change impacts on mycotoxigenic fungi and their toxins in food and feed crops. Changing climate conditions across every geographical zone greatly affect rainfall, temperature and concentration of greenhouse gases leading to loss in yield and quality of food crops. In outstanding contributions, the authors compile current evidence on the influence of climate change on mycotoxigenic fungi and mycotoxins in food crops pre- and postharvest and during storage of food and animal feed. The chemistry and biology of toxin production is revised and an outlook on control and prevention of the toxin's impact on food and animal feed is given. The editors recommend this book to mycologists, mycotoxicologists, pathologists, epidemiologists, toxicologists, physicians, veterinarians, nutritionists, the food and feed industries, legislators, analytical chemists, microbiologists, or students of these fields.

- Unique compilation on the impact of climate change on mycotoxins based on observed trends over the last 10 years.
- Special focus on the implications for food and feed safety.
- Latest advances on prediction and prevention of mycotoxin threats to human and animal health.

About the Editors
Luis M. Botana Is a full Professor of Pharmacology at the University of Santiago, from 2004-2012 director of the Department of Pharmacology and former Fogarty Fellow at the School of Medicine of the Johns Hopkins University. He has been director of the European Reference Laboratory for Marine Toxins from 2004 to 2009. He is author of 25 international patents, over 300 scientific papers and editor of 10 international books.
María J. Sainz Is an associate Professor of Agriculture and Forage Production and Conservation at the University of Santiago de Compostela. She has been a visiting scientist at the Rothamsted Experimental Station and for ten years head of the department of Plant Production. Her research interests focus on fungal pathogen detection and diagnostics, mycorrhizal fungi in crop protection and production, and mycotoxigenic fungi and mycotoxins on forage crops and animal feed.

This book presents an overview of up-converting phosphor (UCP), including UCP preparation, development of the rapid detection strips and UCP industrialization. It also discusses the wide clinical applications of this technology, such as in food poisoning, infectious diseases, drug-abuse and disaster rescue, where rapid point-of-care testing is often critical. Conventional testing methods are mainly based on gold immunochromatography, which relies heavily on results being read with the naked eye. However, up-converting phosphor technology (UPT) employs UCP particles as labels for rapid target detection. Unlike other conventional fluorescence techniques, UCP is excited by infrared light and emitted visible light. This anti-stokes phenomenon provides this special label with significant advantages, including zero background detection, high resistance to environmental influences (e.g. pH, salts, sample contamination), high sensitivity and quantitative detection. Systematically summarizing UCP technology and its wide applications, this book is a valuable resource for researchers and technicians in the field.

Aflatoxin: Scientific Background, Control, and Implications discusses general problems posed by mycotoxin contamination in foods and feeds. This book is divided into 15 chapters that summarize the discovery, elaboration, chemistry and assay, effects and metabolic fate, processing to ensure their removal or inactivation, and regulatory aspects of aflatoxins. The introductory chapters cover the discovery, formation by *Aspergillus flavus*, and the chemistry and structure of aflatoxins. The subsequent chapters describe the physicochemical and biological assays for aflatoxin measurement, detection, and analysis. A chapter also describes the metabolic fate and the biochemical alterations associated with aflatoxin administration to animals and other biological test systems. Discussions on the acute toxicity and carcinogenic activity of aflatoxins in laboratory and farm animals are also provided, with emphasis on the recognition of aflatoxicosis, a disease condition caused by the action of the aflatoxin poison. The book goes on examining the role of spoilage molds in destroying stored crops and the tremendous capacity for toxin production of aflatoxins. It also describes successful efforts of food and feed industries to ensure a wholesome food supply, including the utilization of various detoxification processes. The last chapters deal with the regulatory provisions for aflatoxin contamination control and tolerances and the implications of fungal toxins to human health. The book is intended for scientists and manufacturers concerned with the production and processing of foods and feeds, the nutrition, and the animal and public health.

Mycotoxins, toxic compounds produced by fungi, pose a significant contamination risk in both animal feed and foods for human consumption. With its distinguished editors and international team of contributors, *Mycotoxins in food* summarises the wealth of recent research on how to assess the risks from mycotoxins, detect particular mycotoxins and control them at differing stages in the supply chain. Part one addresses risk assessment techniques, sampling methods, modelling and detection techniques used to measure the risk of mycotoxin contamination and the current regulations governing mycotoxin limits in food. Part two looks at how the risk of contamination may be controlled, with chapters on the use of HACCP systems and mycotoxin control at different stages in the supply chain. Two case studies demonstrate how these controls work for particular products. The final section details particular mycotoxins, from ochratoxin A and patulin to zearalenone and fumonisins. *Mycotoxins in food* is a standard reference for all those concerned with ensuring the safety of food. Discusses the wealth of recent research in this important area Covers risk assessment, detection of particular mycotoxins and how to control them throughout the supply chain Describes how the risk of contamination can be controlled, including the use of HACCP systems

Foodborne illnesses are a global public health concern with implications worldwide. Mycotoxins are naturally occurring toxins produced by microfungi that are capable of causing disease and death in living organisms. They are recognized as a major economic problem due to their impact on human health, animal productivity, and domestic and international trade. This book provides updated information about foodborne mycotoxins, their toxicities, new determination methods, prevention strategies, and regulations around the world.

12.2.1.2 Receptor Binding Assay

Legumes are important for the diet of a significant part of the world's population; they are a good source of protein, carbohydrates, minerals and vitamins. The importance of soybean lies in the overall agriculture and trade and in its contribution to food supply. Soybean contains the highest protein content and has no cholesterol in comparison with conventional legume and animal food sources. Furthermore, soybean is a cheap source of food, and at the same time medicinal due to its genistein, photochemical, isoflavones content. Soybean has been found to be extremely helpful in the fight against heart disease, cancer and diabetes, among others. Soybean protein and calories are presently being

used to prevent body wasting often associated with HIV. The importance of soybean nutrition intervention is amplified where medications are unavailable. Its economic potential inherent in a wide range of industrial uses can be harnessed to the benefit of smallholder soybean producers.

Nothing provided

Aflatoxins are a naturally occurring carcinogenic byproduct of common fungi on grains and other crops, particularly maize and groundnuts. They pose a significant public health risk in many tropical developing countries and are also a barrier to the growth of domestic and international commercial markets for food and feed. In recent years the aflatoxin problem has garnered greatly increased attention from both policy and donor communities around the globe. What can be done to reduce the detrimental impacts of aflatoxins? Because growth of the molds that produce aflatoxins is caused by multiple factors, and because they must be controlled along the entire value chain from production to consumption, only a robust multifaceted approach to controlling aflatoxins is likely to be effective. The nineteen briefs in this set thus provide different perspectives on aflatoxin risks and solutions. The analyses fall under four broad themes: (1) what is known about the health risks from aflatoxins; (2) how to overcome market constraints to improved aflatoxin control by building new market channels and incentives; (3) what is the international policy context for taking action in developing countries; and (4) what is the state of research on new aflatoxin control technologies, including new methods for aflatoxin detection, crop breeding, biological control, food storage and handling, and postharvest mitigation. These briefs collectively provide a much clearer picture of the state of current efforts at combatting aflatoxins. They also identify what gaps loom particularly large—including the need for contry-specific risk analysis and for testing integrated solutions for the entire supply chain—in our global efforts to effectively reduce human exposure to aflatoxins and increase the economic returns to smallholders in agriculture.

The first book to cover this fast developing field, *Masked Mycotoxins in Food* will provide a full overview of the issues relating to the toxicology of masked mycotoxins present in food products. Mycotoxins are naturally occurring chemicals produced by moulds that can grow on crops and foodstuffs. Masked mycotoxins are modified mycotoxins, due to this modification many cannot be detected using standard analytical techniques, for example HPLC and ELISA, and further research is needed to understand the health risks and threats from these modified compounds. Masked mycotoxin research is an area of toxicological research that has gained significant interest and momentum in recent years. The aim of this book is to provide a full picture of the topic, from the masked mycotoxin formation in plants to their catabolic fate in humans. The book also provides new insights and will highlight possible gaps in the knowledge base of this relatively new area. Edited and written by World renowned experts working within the field, this book is of interest to toxicologists and biochemists, but also food scientists and agricultural researchers working in industry and academia.

[Copyright: 2d78e5b7a6cabd4e95760550ea025f3f](#)