

## Application Of Biotechnology To Nutrition Of Animals In Developing Countries

*This book presents biotechnological advances and approaches to improving the nutritional value of agri-foods. The respective chapters explore how biotechnology is being used to enhance food production, nutritional quality, food safety and food packaging, and to address postharvest issues. Written and prepared by eminent scientists working in the field of food biotechnology, the book offers authentic, reliable and detailed information on technological advances, fundamental principles, and the applications of recent innovations.*

Accordingly, it offers a valuable guide for researchers, as well as undergraduate and graduate students in the fields of biotechnology, agriculture and food technology.

With the dramatically rising sophistication of biological methods and products and the increasing use of recombinant DNA technology, now is an apt time to review the status of biotechnology in animal feeding. This book gives succinct yet comprehensive coverage of products of biotechnology and allied sciences used in animal feed and feeding industries. Particular emphasis is placed on: – Conservation and upgrading of feeds and feed components – Increasing the protein value of feeds – Antimicrobials – Microbial feed additives – Increasing the energy value of feeds. Moreover, increasing environmental concerns are reflected in chapters describing dietary products which may help to reduce environmental hazards from animal feeding enterprises. A discussion of social and legislative aspects relating to biotechnology and animal feeding rounds off this useful compilation of timely articles.

Many developing countries are exploring whether biotechnology has a role in addressing national issues such as food security and environmental remediation, and are considering whether the putative benefits of the technology—for example, enabling greater agricultural productivity and stability in the food supply—outweigh concerns that the technology might pose a danger—to biodiversity, health, and local jobs. Some policy leaders worry that their governments are not prepared to take control of this evolving technology and that introducing it into society would be a risky act. Others have suggested that taking no action carries more risk, given the dire need to produce more food. This book reports on an international workshop held to address these issues. *Global Challenges and Directions for Agricultural Biotechnology: Mapping the Course*, organized by the National Research Council on October 24–25, 2004, in Washington, DC, focused on the potential applications of biotechnology and what developing countries might consider as they contemplate adopting biotechnology. Presenters at the workshop described applications of biotechnology that are already proving their utility in both developing and developed countries.

*Food Insecurity, Biotechnology, Food Safety, and Bioterrorism*

*Marketing Nutrition*

*Global Challenges and Directions for Agricultural Biotechnology*

*Application Of Biotechnology To Nutrition Of Animals In Developing Countries Indian Reprint*

*Food and Nutrition at Risk in America*

*Biotechnology and the Food Supply*

*Universities throughout the US and the rest of the world offer Food Biotechnology courses. However, until now, professors lacked a single, comprehensive text to present to their students. Introduction to Food Biotechnology describes, explains, and discusses biotechnology within the context of human nutrition, food production, and food processing. Written for undergraduate students in Food Science and Nutrition who do not have a background in molecular biology, it provides clear explanations of the broad range of topics that comprise the field of food biotechnology. Students will gain an understanding of the methods and rationales behind the genetic modification of plants and animals, as well as an appreciation of the associated risks to the environment and to public health. Introduction to Food Biotechnology examines cell culture, transgenic organisms, regulatory policy, safety issues, and consumer concerns. It covers microbial biotechnology in depth, emphasizing applications to the food industry and methods of large-scale cultivation of microbes and other cells. It also explores the potential of biotechnology to affect food security, risks, and other ethical problems. Biotechnology can be used as a tool within many disciplines, including food science, nutrition, dietetics, and agriculture. Using numerous examples, Introduction to Food Biotechnology lays a solid foundation in all areas of food biotechnology and provides a comprehensive review of the biological and chemical concepts that are important in each discipline. The book develops an understanding of the potential contributions of food biotechnology to the food industry, and towards improved food safety and public health.*

*Maintaining the high standards that made the previous editions such well-respected and widely used references, Food Lipids: Chemistry, Nutrition, and Biotechnology, Third Edition tightens its focus to emphasize lipids from the point of entry into the food supply and highlights recent findings regarding antioxidants and lipid oxidation. Always representative of the current state of lipid science, this edition provides four new chapters reflecting the latest advances in antioxidant research. New chapters include: Polyunsaturated Lipid Oxidation in Aqueous Systems, Tocopherol Stability and the Prooxidant Mechanisms of Oxidized Tocopherols in Lipids, Effects and Mechanisms of Minor Compounds in Oil on Lipid Oxidation, and Total Antioxidant Evaluation and Synergism. The most comprehensive and relevant treatment of food lipids available, this book highlights the role of dietary fats in foods, human health, and disease. Divided into five parts, it begins with the chemistry and properties of food lipids covering nomenclature and classification, extraction and analysis, and chemistry and function. Part II addresses processing techniques including recovery, refining, converting, and stabilizing, as well as chemical interesterification. The third Part has been renamed and expanded to honor the growing data on oxidation and antioxidants. Part IV explores the myriad interactions of lipids in nutrition and health with information on heart disease, obesity, and cancer, and Part V continues with contributions on biotechnology and biochemistry including a chapter on the genetic engineering of crops that produce vegetable oil. Revised and updated with new information and references throughout the text, this third edition of a bestselling industry standard once again draws on the contributions of leading international experts to establish the latest benchmark in the field and provide the platform from which to further advance lipid science.*

*In this work, the authors discuss the sources, biotechnology applications, and health challenges of functional foods. The topics discussed include the health potential of pulses and their bioactivity; health promoting phytonutrients and lactic acid bacteria in olives; health benefits of the Mediterranean diet; European consumers acceptance of healthy food products; fermentation of tomato juice with the probiotic yeast saccharomyces cerevisiae boulardii; and market strategies to maximise consumer acceptance of functional dairy-based foods and beverages.*

*Functional Foods*

*Principles and Applications*

*Applications of Biotechnology in Traditional Fermented Foods*

*Food Biotechnology in Ethical Perspective*

*Animal Biotechnology for Livestock Production 1*

*Engineering Aspects of Food Biotechnology*

*This book is designed to popularize Quinoa cereal among both scientific and food industry. Quinoa is an attractive candidate for protein replacement, has potential for futuristic biotechnological modifications, and is able to grow under many different abiotic stresses. To save the world from animal cruelty, quinoa emerges as a hero for vegans and vegetarians. This book deals with morphological features, life cycle, nutritional qualities, genetics, agronomic manipulations, ecological communications, stress tolerance mechanisms, and food applications of Chenopodium quinoa. Quinoa is a pseudo-cereal native to Andes Region in South America. Over time, it spread to many different regions worldwide and is emerging as protein-rich vegetarian food source. In order to cure malnutrition globally, it is important to channel this lesser-known grain to local cultivators. This can only be done through well-proven scientific data that supports its qualities. This book aims to do the same, while also giving an insight into the vast scope quinoa poses as an experimental crop. Its stress-tolerant abilities can inspire scientists to understand those mechanisms, further exploit them, and even introduce them into other stress-sensitive crops. In future, quinoa can be among the top sources that offer food security. Due to its adaptability, ease of cultivation, and rich output, sustainability can be achieved by regulating its breeding and growth. This book is of interest to researchers, teachers, agronomic cultivators, environmentalists, botanists, microbiologists, geneticists and food technologists. This book covers recent advances, challenges in cultivation, biology, nutrition, and agricultural science topics, suitable for both young learners and advanced scientists. Cultivators who want to know more about quinoa and introduce it into their agronomic applications will find helpful information from the text.*

*This book concentrates on the more recent methods and techniques for separating food components and products of the biotechnology industry. Each chapter deals with a specific type or area of application and includes information on the basic principles, industrial equipment available, commercial applications, and an overview of current research and development. Much of the emphasis is on extraction of macromolecules, increasing the added value of foods and recovering valuable components from by-products and fermentation media. Many of the methods discussed are now in commercial practice, while others are being vigorously researched. Separation and filtration technology is of major importance in food processing and biotechnology. This book provides a very detailed examination of the most important, advanced separation processes now in use.*

*Current Developments in Biotechnology and Bioengineering: Crop Modification, Nutrition, and Food Production provides extensive coverage of new developments, state-of-the-art technologies, and potential future trends, presenting data-based scientific knowledge on agribiotechnology and describing world agriculture and the role biotechnology can play in ensuring food security over the next fifty years. The book discusses the effects of climate change in agriculture and the resultant emergence of new crops, including drought tolerant and more nutritious plants. In addition, the book discusses insect and virus resistance in plants and outlines plant metabolic engineering for agriculture, genetically engineered plants, and microbial diseases. Highlights recent developments in agriculture due to biotechnology Relates the effect of climate change in agriculture to the development of new crops Describes the application of metabolic engineering in the development of new genetically modified plants*

*Challenges of the 21st century*

*Role of Biotechnology in Marine Fish Nutrition*

*Biotechnology in Functional Foods and Nutraceuticals*

*1988 Nutrition Institute : Itasca (Chicago) IL, May 23-25, 1988*

*Advances in Agri-Food Biotechnology*

*Crop Modification, Nutrition, and Food Production*

In the context of South Asian Association for Regional Cooperation countries.

Maintaining the high standards that made the previous editions such well-respected and widely used references, *Food Lipids: Chemistry, Nutrition, and Biotechnology, Fourth Edition* provides a new look at lipid oxidation and highlights recent findings and research. Always representative of the current state of lipid science, this edition provides 16 new chapters and 21 updated chapters, written by leading international experts, that reflect the latest advances in technology and studies of food lipids. New chapters *Analysis of Fatty Acid Positional Distribution in Triacylglycerol Physical Characterization of Fats and Oils Processing and Modification Technologies for Edible Oils and Fats Crystallization Behavior of Fats: Effect of Processing Conditions Enzymatic Purification and Enrichment and Purification of Polyunsaturated Fatty Acids and Conjugated Linoleic Acid Isomers Microbial Lipid Production Food Applications of Lipids Encapsulation Technologies for Lipids Rethinking Lipid Oxidation Digestion, Absorption and Metabolism of Lipids Omega-3 Polyunsaturated Fatty Acids and Health Brain Lipids in Health and Disease Biotechnologically Enriched Cereals with PUFAs in Ruminant and Chicken Nutrition Enzyme-Catalyzed Production of Lipid Based Esters for the Food Industry: Emerging Process and Technology Production of Edible Oils Through Metabolic Engineering Genetically Engineered Cereals for Production of Polyunsaturated Fatty Acids* The most comprehensive and relevant treatment of food lipids available, this book highlights the role of dietary fats in foods, human health, and disease. Divided into five parts, it begins with the chemistry and properties of food lipids covering nomenclature and classification, extraction and analysis, and chemistry and function. Part II addresses processing and food applications including modification technologies, microbial production of lipids, crystallization behavior, chemical interesterification, purification, and encapsulation technologies. The third part covers oxidation, measurements, and antioxidants. Part IV explores the myriad interactions of lipids in nutrition and health with information on heart disease, obesity, and cancer, with a new chapter dedicated to brain lipids. Part V continues with contributions on biotechnology and biochemistry including a chapter on the metabolic engineering of edible oils.

Food biotechnology’s typical developments and applications have occurred in the fields of genetics and in enzyme- and cell-based biological processes, with the goal of producing and improving food ingredients and foods themselves. While these developments and applications are usually well reported in terms of the underlying science, there is a clear lack of information on the engineering aspects of such biotechnology-based food processes. Filling this gap, *Engineering Aspects of Food Biotechnology* provides a comprehensive review of those aspects, from the development of food processes and products to the most important unit operations implied in food biotechnological processes, also including food quality control and waste management. The book focuses on the use of biotechnology for the production of ingredients to be used in the food industry. It addresses two relevant issues—consumer’s awareness of the relation between nutrition and good health and the importance of environmental sustainability in the food chain (i.e. production of polymers and in vitro meat). A chapter on the application of process analytical technology highlights the importance of this tool for satisfying the increasingly sophisticated and strict polices for quality control and monitoring of specific process phases. The book includes a detailed presentation of relevant unit operations developed to extract/purify the ingredients of biotechnological origin intended for food applications. In addition to examining the contributions of biotechnology to producing and improving food ingredients, the book provides a concise description of the role biotechnology plays in adding value to food processing by-products, including post-harvest losses, in relevant industries of the food sector. It builds a foundation for further research and development in the food processing industry.

*The Economic Effects of Genetically Modified Orphan Commodities*

*Hearing Before the Committee on Agriculture, Nutrition, and Forestry, United States Senate, One Hundred Ninth Congress, First Session, June 14, 2005*

*Biotransformation and Analysis of Functional Foods and Ingredients*

*Workshop Report*

*Sustainable Agriculture Reviews 54*

*Biotechnology*

*Food and Nutrition at Risk in America* addresses the major food and nutrition issues of our time. This text offers readers the opportunity to consider the current status of food insecurity, biotechnology, food safety, and bioterrorism in America, as well as the types of assistance and policies needed in the future to ensure the health and welfare of Americans.

*Application Of Biotechnology To Nutrition Of Animals In Developing Countries Indian Reprint**Application of Biotechnology to Nutrition of Animals in Developing Countries**Biotechnology and Nutrition**Proceedings of the Third International Symposium**Elsevier*

Biotechnology in the food processing sector targets the selection and improvement of microorganisms with the objectives of improving process control, yields and efficiency as well as the quality, safety and consistency of bioprocessed products. Biotechnology is a broad term associated with many complex processes involving organisms and technology. They are basically related to food and agriculture. Biotechnology finds use in improvement of nutrition value of various kinds of foods to enhance the quality of human life. The application of recombinant DNA techniques to biological organisms, systems, and processes constitutes an exciting new biology that is being used to increase agricultural productivity and to improve the health of humans and animals. These advances coupled with those resulting from more traditional genetic and chemical approaches are having and will continue to have an enormous impact on the production of food throughout the world. Biotechnology is the use of livelihood systems and organisms to expand or make useful products, or any technical applications that uses organic systems, living organisms or derivatives thereof, to make or transform products or processes for specific use. Depending on the tools and applications, it often overlaps with the fields of bioengineering and biomedical engineering. A number of the applications were identified in this paper to include biotechnology in food fermentation to enhance properties such as the taste, aroma, shelf-life, texture and nutritional worth of food. Biotechnology in the production of enzymes to bring regarding desirable changes in food, biotechnology in the production of food ingredients; flavours, fragrances, food additives and a range of other towering valued-added products, genetically modified starter cultures, genetically modified foods, the use of all these modern technologies in diagnostics for food testing, the role of biotechnology in food production by increasing food production, improved harvesting, storage and nutritional value, better raw materials, better flavour and the production of food containing vaccines, the safety of food produced with biotechnology as well as the risks and benefits of biotechnology in food production. This book focuses on the application of biotechnology to the processing of food. It discusses biotechnological tools and options that are applicable to the study and improvement of the quality, safety and consistency of foods. The contents of the book will be immensely helpful to students and researchers of biotechnology and food science.

To Review the Benefits and Future Developments in Agriculture and Food Biotechnology

Proceedings of the Second International Symposium  
Biotechnology in Animal Feeds and Animal Feeding

Soy, Functional Foods, Biotechnology, and Obesity  
Biology and Biotechnology of Quinoa

*Poultry and pig nutrition: challenges of the 21st century focuses on the important challenges animal production faces in the light of increasing global feed scarcity, climate change and improvements in animal welfare. Animal nutrition plays a critical role in providing answers to these 21st century challenges. Internationally leading authorities in nutrition and nutrition-related disciplines provide their views and solutions. New research areas are discussed and the current gaps in our knowledge are identified. Among the topics discussed are the use of microbes for natural solutions, the importance of individual feed intake determination, technological treatments of feed ingredients, and advances in modelling. In addition, authors provide their insights on the effects of environment/housing on animal functioning and the impact of climate change on the mycotoxin content of feed ingredients as well as the importance of pro- and antioxidant balance in animals. The increasing global demand for feed will increase the search for alternative feed ingredients especially new protein sources while for an environmentally sustainable human diet, life cycle assessment needs to be combined with other modelling techniques that address environmental impacts of dietary choices at the (inter)national level. Future challenges require new solutions and innovations, and this book contains a collection of ideas for our 21st century challenges.*

*In developing countries, traditional fermentation serves many purposes. It can improve the taste of an otherwise bland food, enhance the digestibility of a food that is difficult to assimilate, preserve food from degradation by noxious organisms, and increase nutritional value through the synthesis of essential amino acids and vitamins. Although "fermented food" has a vaguely distasteful ring, bread, wine, cheese, and yogurt are all familiar fermented foods. Less familiar are gari, ogi, idli, ugba, and other relatively unstudied but important foods in some African and Asian countries. This book reports on current research to improve the safety and nutrition of these foods through an elucidation of the microorganisms and mechanisms involved in their production. Also included are recommendations for needed research.*

*Revised and updated to reflect the latest research and advances available, Food Biotechnology, Second Edition demonstrates the effect that biotechnology has on food production and processing. It is an authoritative and exhaustive compilation that discusses the bioconversion of raw food materials to processed products, the improvement of food*

*Human Health and Nutrition : January 1985 - December 1992*

*Biotechnology in Food Processing*

*Super Grain for Food Security*

*Biotechnology and Food Production*

*Chemistry, Nutrition, and Biotechnology, Fourth Edition*

*Application of Biotechnology to Nutrition of Animals in Developing Countries FAO Animal Production and Health*

**The second book of the Food Biotechnology series, Functional Foods and Biotechnology: Biotransformation and Analysis of Functional Foods and Ingredients highlights two important and interrelated themes: biotransformation innovations and novel bio-based analytical tools for understanding and advancing functional foods and food ingredients for health-focused food and nutritional security solutions. The first section of this book provides novel examples of innovative biotransformation strategies based on ecological, biochemical, and metabolic rationale to target the improvement of human health relevant benefits of functional foods and food ingredients. The second section of the book focuses on novel host response based analytical tools and screening strategies to investigate and validate the human health and food safety relevant benefits of functional foods and food ingredients. Food biotechnology experts from around the world have contributed to this book to advance knowledge on bio-based innovations to improve wider health-focused applications of functional food and food ingredients, especially targeting non-communicable chronic disease (NCD) and food safety relevant solution strategies. Key Features: Provides system science-based food biotechnology innovations to design and advance functional foods and food ingredients for solutions to emerging global food and nutritional insecurity coupled public health challenges. Discusses biotransformation innovations to improve human health relevant nutritional qualities of functional foods and food ingredients. Includes novel host response-based food analytical models to optimize and improve wider health-focused application of functional foods and food ingredients. The overarching theme of this second book is to advance the knowledge on metabolically-driven food system innovations that can be targeted to enhance human health and food safety relevant nutritional qualities and antimicrobial properties of functional food and food ingredients. The examples of biotransformation innovations and food analytical models provide critical insights on current advances in food biotechnology to target, design and improve functional food and food ingredients with specific human health benefits. Such improved understanding will help to design more ecologically and metabolically relevant functional food and food ingredients across diverse global communities. The thematic structure of this second book is built from the related initial book, which is also available in the Food Biotechnology Series Functional Foods and Biotechnology: Sources of Functional Food and Ingredients, edited by Kalidas Shetty and Dipayan Sarkar (ISBN: 9780367435226) For a complete list of books in this series, please visit our website at: <https://www.crcpress.com/Food-Biotechnology-Series/book-series/CRCFOOBIOTECH>**

Although encouraging people to eat more nutritiously can promote better health, most efforts by companies, health professionals, and even parents are disappointingly ineffective. Brian Wansink's Marketing Nutrition focuses on why people eat the foods they do, and what can be done to improve their nutrition. Wansink argues that the true challenge in marketing nutrition lies in leveraging new tools of consumer psychology (which he specifically demonstrates) and by applying lessons from other products' failures and successes. The key problem with marketing nutrition remains, after all, marketing.

**Modern food biotechnology is now a billion-dollar industry, producing functional foods and nutraceuticals that offer a whole host of increased health benefits, including prevention against illness, and chronic and degenerative conditions. Written by a team of top-tier researchers and scientists from around the world, Biotechnology in Functional Foo**

**The Use and Regulation of Biotechnology in Agriculture**

**Biotechnology and Its Nutritional Applications**

**Current Developments in Biotechnology and Bioengineering**

**Concepts, Tools, Applications**

**Projections for Sweetpotato in Kenya**

**Chemistry, Nutrition, and Biotechnology, Third Edition**

This revised edition updates Thompson's trail-blazing study of ethical and philosophical issues raised by biotechnology. The 1997 book was the first by a philosopher to address food and agricultural biotechnology, discussing ethical issues associated with risk assessment, labelling, animal transformation, patents, and impact on traditional farming communities. The new edition addresses the debates of the intervening decade, including cloning, the Precautionary Principle, and the biotechnology debate between the United States and Europe.

Biotechnology and Food Safety provides information pertinent to practical biotechnological procedures for detecting and quantifying microbial and chemical contaminants of food. This book focuses on the application of biotechnology to food safety. Organized into five parts encompassing 24 chapters, this book begins with an overview of the tools of biotechnology that have numerous applications throughout the food chain. This text then explains the safety and regulatory issues associated with foods and food ingredients from genetically modified sources. Other chapters explain some considerations regarding the risk of using biotechnology in food and food animal production versus the risks incurred by avoiding such use. This book discusses as well the federal laws governing food and food ingredients, which are rigorously administered and enforced by the Food and Drug Administration. The final chapter deals with the use of transgenic organisms in industry. This book is a valuable resource for molecular biologists, plant and animal physiologists and pathologists, parasitologists, microbiologists, toxicologists, and food scientists.

Major research is now directed at improving the nutritional quality of eggs, and at using eggs in other products. Due to the decline in the consumption of eggs in the past few decades, researchers from many disciplines have been lead to look at the egg beyond its traditional food value, and to focus on economically viable biomedical, nutraceutical and ovo-biotechnologies. Written by international experts, this book is based on proceedings of the Second International Symposium on Egg Nutrition and Newly Emerging Ovo-Biotechnologies, held in Banff, Canada, in April 1998. It includes 39 chapters, covering food fats and health, egg consumption, egg lipids and nutrition, ovo-technologies and food safety.

Separation Processes in the Food and Biotechnology Industries

Role of Biotechnology in Agriculture

Functional Foods and Biotechnology

Egg Nutrition and Biotechnology

Sources, Biotechnology Applications, and Health Challenges

Food Lipids

Protein hydrolysates, otherwise commonly known as peptones or peptides, are used in a wide variety of products in fermentation and biotechnology industries. The term "peptone" was first introduced in 1880 by Nagelli for growing bacterial cultures. However, later it was discovered that peptones derived from the partial digestion of proteins would furnish organic nitrogen in readily available form. Protein hydrolysates, have been used not only for growth of microbial cultures, but also as nitrogen source in commercial fermentations using animal cells and recombinant microorganisms for the production of value added products such as therapeutic proteins, hormones, vaccines, etc. Today, the characterization, screening and manufacturing of protein hydrolysates has become more sophisticated, with throughput screening techniques coupled with statistical design approaches, novel enzymes and efficient downstream processing equipment. This has enabled the introduction of custom-built products for specialized applications in diverse fields of fermentation and biotechnology, such as the following. 1. Protein hydrolysates are used as much more than a simple nitrogen source. For example, the use of protein hydrolysates in animal feed supplements and in the production of animal health products has increased markedly. 2. Protein hydrolysates are used as a source of amino acids for the production of animal health products. 3. Protein hydrolysates and recombinant microorganisms have been markedly increased by use of protein hydrolysates. This is extremely important when capacities are limited. 2. Protein hydrolysates are employed in the manufacturing of vaccines by fermentation processes and also used as vaccine stabilizers.

This book reviews concepts and recent advances of biotechnological approaches for livestock production. Indeed, biotechnologies have recently emerged as powerful tools for animal breeding, genetics, production, nutrition, and animal health. Applications to the production of livestock such as cattle, camel, and poultry are detailed. Chapters also present biotechnological applications for diagnostic and therapeutic purposes. Biotechnology and Nutrition documents the proceedings of the Third International Symposium Biotechnology and Nutrition jointly sponsored by the University of Maryland, the United States Department of Agriculture, and E. I. du Pont de Nemours & Co. The symposium was organized to provide a forum for nutritionists, molecular biologists, animal and plant biochemists, food scientists, policymakers, and others interested in the application of biotechnology to improve human nutrition. The contributions made by researchers at the symposium are organized into five parts. Part I provides a broad consideration of human nutrition and the ability of biotechnology to improve nutrition. Part II presents studies on carbohydrate nutrition, including industry trends and nutritional issues for food uses of starch and human physiological responses to starch. Part III presents studies on improving the nutritional quality of legume seed proteins and increasing the lysine content of maize. The studies in Part IV deal with vitamins and minerals, such as genetic improvement of vegetable carotene content and iron uptake and translocation in plants. Part V examines molecular approaches in the modification and production of edible oils.

Application of Biotechnology to Nutrition of Animals in Developing Countries

Proceedings of the Third International Symposium

Protein Hydrolysates in Biotechnology

Introduction to Food Biotechnology

Biotechnology and Food Safety

Poultry and pig nutrition