

Animal Biotechnology And The Quality Of Meat Production

[#Animal biotechnology](#) [#Meat quality improvement](#) [#Sustainable meat production](#) [#Livestock genetic engineering](#) [#Food science innovation](#)

Animal biotechnology is a pivotal field leveraging scientific advancements to enhance the overall quality and efficiency of meat production. This encompasses a range of techniques, from genetic engineering and selective breeding to advanced nutritional strategies, all aimed at improving characteristics like tenderness, flavor, nutritional value, and safety of meat products for consumers worldwide.

All journals are formatted for readability and citation convenience.

We would like to thank you for your visit.

This website provides the document Animal Biotechnology Meat Quality you have been searching for.

All visitors are welcome to download it completely free.

The authenticity of the document is guaranteed.

We only provide original content that can be trusted.

This is our way of ensuring visitor satisfaction.

Use this document to support your needs.

We are always ready to offer more useful resources in the future.

Thank you for making our website your choice.

This is among the most frequently sought-after documents on the internet.

You are lucky to have discovered the right source.

We give you access to the full and authentic version Animal Biotechnology Meat Quality free of charge.

Animal Biotechnology and the Quality of Meat Production

This volume is the first in a series of reports of workshops on The use of animal biotechnology, to improve animal health status and meat quality. This subject covers several points of focus, involving items as diverse as grassland utilization and meat quality perception. Animal biotechnology was defined to include manipulation of reproduction; genetic manipulation of animals (transgenic animals); development of diagnostics and vaccines; and the use of growth promoters (performance enhancers) that manipulate digestion (e.g. probiotics) or tissue metabolism (e.g. somatotropins). The volume adopts a multidisciplinary approach to animal biotechnology and its relation to meat production.

Meat Biotechnology

Meat and meat products constitute one of the most important foods in western societies. However, the area of meat biotechnology is not as comprehensively covered as other areas of food biotechnology. Missing from this area are the recent developments for better sensory and nutritional quality as well as improved safety. The main goal of this book is to provide the reader with the recent developments in biotechnology and their applications in the meat processing chain. To achieve this goal, the book is divided into four parts. The first part deals with the use of modern biotechnology applied to farm animals. The second part focuses on the recent biotechnological developments in starter cultures for better meat fermentation. The third part discusses current approaches to improve the quality and nutritional properties of meats. The final part presents the latest advances in protection against foodborne pathogens, and other recent trends in the field. Written by distinguished international contributors, this book brings together the advances in such varied and different biotechnological topics.

Biotechnology for Control of Growth and Product Quality in Meat Production

Perspectives of introducing biotechnology in meat production; Summarised and adopted conclusions from papers and discussions; Introductory statement; Perspectives in introducing biotechnology in meat production; Technical perspective of biotechnology for control of growth and product quality in meat production; Global approach for the regulation and acceptability aspects of biotechnology; Biotechnologies affecting growth and product quality; Summarised and adopted conclusions from papers and discussions; Genetic impact by advanced breeding technologies and gene transfer; Immunomodulation of hormones of the somatotropin axis; Administration of elements of the somatotropin axis (GH, GRF, IGF'S): - Effects in pig and poultry; - Effects in beef, veal and lamb; The targeted animal: safety, welfare and requirements; Summarised and adopted conclusions from papers and discussions; Animal safety, health and welfare; Effects on energy metabolism and their repercussions; Effects on nutritional requirements; Effects on disease resistance; Human safety; Summarised and adopted conclusions from papers and discussions; Residues; Occurrence of residues in edible tissues; Safety aspects biologically active substances; Nutrients; Changes in the nutritional composition of edible tissues (fat content, fatty acid composition, cholesterol) The repercussions of changes in the animal for human health; Social and consumer acceptance; Summarised and adopted conclusions from paper and discussions; Communication between scientists and consumers; Determinants in public acceptance: - Australasia; - North America; - Europe; Determinants of acceptance in production and processing; Environmental and socio-economic implications; Summarised and adopted conclusions from papers and discussions; Benefits and risks in relation to environment; Benefits and risks in a socio-economic context; Applicability and repercussions related to the animal production system.

Animal Biotechnology

Genetic-based animal biotechnology has produced new food and pharmaceutical products and promises many more advances to benefit humankind. These exciting prospects are accompanied by considerable unease, however, about matters such as safety and ethics. This book identifies science-based and policy-related concerns about animal biotechnology—key issues that must be resolved before the new breakthroughs can reach their potential. The book includes a short history of the field and provides understandable definitions of terms like cloning. Looking at technologies on the near horizon, the authors discuss what we know and what we fear about their effects—the inadvertent release of dangerous microorganisms, the safety of products derived from biotechnology, the impact of genetically engineered animals on their environment. In addition to these concerns, the book explores animal welfare concerns, and our societal and institutional capacity to manage and regulate the technology and its products. This accessible volume will be important to everyone interested in the implications of the use of animal biotechnology.

Red Meat Science and Production

This book comprehensively describes the biological underpinnings of red meat production, discussing the current state of the science in the context of the provision of red meat products perceived by consumers to offer a quality eating experience. Covering advances in the science of red meat production, it focuses on production system elements that affect product quality. The chapters explore the latest developments in the determination of consumer preferences, and interpret of these preferences in terms of quality characteristics of red meat, investigating the science-based orchestration of red meat production to achieve product consistency. The book highlights topics such as consumer preferences, the biological and production system elements affecting red meat safety, and the intrinsic (appearance, aroma, and sensory quality) and extrinsic (humane animal and environmentally friendly production) characteristics of red meat. For each characteristic, it discusses the underlying biological and biochemical processes and examines means of altering production systems to impact consumer eating experiences. The book also features a perspective on creating holistic integrated systems for producing red meats to meet consumers' expectations around the globe. Written by leading authorities in the area of global red meat production systems, it is a comprehensive resource for consumer-oriented red meat producers.

Red Meat Science and Production

This book comprehensively describes the biological underpinnings of red meat production, discussing the current state of the science in the context of the provision of red meat products perceived by consumers to offer a quality eating experience. Covering advances in the science of red meat production,

it focuses on production system elements that affect product quality. The chapters explore the latest developments in the determination of consumer preferences, and interpret of these preferences in terms of quality characteristics of red meat, investigating the science-based orchestration of red meat production to achieve product consistency. The book highlights topics such as consumer preferences, the biological and production system elements affecting red meat safety, and the intrinsic (appearance, aroma, and sensory quality) and extrinsic (humane animal and environmentally friendly production) characteristics of red meat. For each characteristic, it discusses the underlying biological and biochemical processes and examines means of altering production systems to impact consumer eating experiences. The book also features a perspective on creating holistic integrated systems for producing red meats to meet consumers' expectations around the globe. Written by leading authorities in the area of global red meat production systems, it is a comprehensive resource for consumer-oriented red meat producers.

Animal Biotechnology

Genetic-based animal biotechnology has produced new food and pharmaceutical products and promises many more advances to benefit humankind. These exciting prospects are accompanied by considerable unease, however, about matters such as safety and ethics. This book identifies science-based and policy-related concerns about animal biotechnology—key issues that must be resolved before the new breakthroughs can reach their potential. The book includes a short history of the field and provides understandable definitions of terms like cloning. Looking at technologies on the near horizon, the authors discuss what we know and what we fear about their effects—the inadvertent release of dangerous microorganisms, the safety of products derived from biotechnology, the impact of genetically engineered animals on their environment. In addition to these concerns, the book explores animal welfare concerns, and our societal and institutional capacity to manage and regulate the technology and its products. This accessible volume will be important to everyone interested in the implications of the use of animal biotechnology.

Meat Quality

One of the biggest challenges faced by meat producers today is the requirement to improve the quality of meat while maintaining focus on efficiency and higher yields. Numerous studies have shown that consumers are willing to pay premiums for meat products with guaranteed eating quality. This book examines the complicated multistep process of producing high-quality meat, from the growth of the animals to the final product. It discusses specific aspects of meat quality for beef, pork, and sheep. *Meat Quality: Genetic and Environmental Factors* covers key topics such as animal welfare, nutrition, pre-slaughter handling, slaughter technology, breeding strategies, and the influence of common genetic factors on meat quality. It also discusses the latest meat production systems designed to ensure high-quality meat and the role of transgenic animal technology in meat quality. The book devotes separate chapters to beef, pork, and sheep quality, looking at the effects of breed, genetic type, gender, and age on meat quality. The chapters are written by contributors from universities, research institutes, and breeding companies from different countries and continents. The chapters are based on the research and teaching experience of the contributors as well as on a critical evaluation of the current literature. No other book available today covers the key issues regarding meat quality in such a comprehensive way. This book should be of keen interest to students of food technology, nutrition, commodities sciences, and animal sciences, as well as to food scientists and engineers who want to update their knowledge about the determinants of meat quality.

Animal Welfare and Meat Production

"It is essential reading for students and practitioners in animal welfare and animal science, and will also be of interest to readers in meat, veterinary and food sciences, and applied ethology."--BOOK JACKET.

The Role of Biotechnology in Improvement of Livestock

This book examines how biotechnology can improve livestock breeding and farming, and thereby also animal products. In the first chapters the reader will discover which techniques and approaches are currently used to improve animal breeding, animal health and the value of animal products. Particular attention is given to reproduction techniques, animal nutrition and livestock vaccines that not only enhance animal health but also have a significant effect on human health by ensuring safe food procurement and preventing zoonotic diseases. In addition, modern biotechnology can increase not

only productivity but also the consistency and quality of animal food, fiber and medical products. In the second part of the book, issues such as how animal biotechnology could affect the environment and the important topic of animal waste management are explored. In the concluding chapter, the authors discuss future challenges related to animal biotechnology. This work will appeal to a wide readership, from scientists and professionals working in animal production, to those in farm animal management and veterinary science.

Livestock, Ethics, and Quality of Life

The science of animal production has recently become headline news. The cloning of sheep, the use of pig xenotransplants and bovine somatotrophin, as well as mad cow disease, are all examples of how livestock production is related to food safety, human health, ethics and quality of life. The relationship between intensive developed-world animal production and that of the developing world also raises ethical issues. These are just some of the topics addressed in this book, which originated in a special symposium held at the VIII World Congress on Animal Production held in June 1998 in South Korea. Additional chapters have been commissioned for the book to improve its comprehensiveness.

Organic Meat Production and Processing

Organic Meat Production and Processing describes the challenges of production, processing and food safety of organic meat. The editors and international collection of authors explore the trends in organic meats and how the meat industry is impacted. Commencing with chapters on the economics, market and regulatory aspects of organic meats, coverage then extends to management issues for organically raised and processed meat animals. Processing, sensory and human health aspects are covered in detail, as are the incidences of foodborne pathogens in organic beef, swine, poultry and other organic meat species. The book concludes by describing pre-harvest control measures for assuring the safety of organic meats. Organic Meat Production and Processing serves as a unique resource for fully understanding the current and potential issues associated with organic meats.

New Aspects of Meat Quality

New Aspects of Meat Quality: From Genes to Ethics provides a reference source that covers what constitutes meat quality in the minds of consumers, marketers, and producers in the 21st century, using the same scientific authority as texts on traditional meat quality values. Traditional measures in meat quality, such as texture, waterholding, color, flavor/aroma, safety/microbiology, and processing characteristics are still important, however, additional quality attributes now have huge importance in the purchasing intentions of consumers in many countries. These include, amongst others, animal welfare, the impacts of meat on human health, quality assurance schemes, organic/free range, ethical meat production, and the desirability of genetically modified organisms. The book is divided into three main sections, with the first section covering the developments in our understanding of how muscle structure affects the eating qualities of cooked meat. The second section highlights recently developed techniques for measuring, predicting, and producing meat quality, and how these new techniques help us minimize variability in eating quality and/or maximize value. The final section identifies the current qualities of consumer and public perceptions, and what is sustainable, ethical, desirable, and healthy in meat production and consumption. Brings together top researchers in the field to provide a comprehensive overview of the new elements of meat quality Provides a reference source that covers the new aspects of meat quality with the same scientific authority as texts on traditional meat quality values“/li> Edited by an extremely well respected expert in the field who is an Associate Editor of the journal Meat Science (published by Elsevier), the largest global journal within this area

52nd International Congress of Meat Science and Technology

This book contains over 300 offered papers in addition to 4 papers from invited speakers presented at the 52nd International Congress of Meat Science and Technology, held in Dublin, Ireland, from 13-18 August 2006. Under the theme of harnessing and exploiting global opportunities, areas covered in the congress included meat quality encompassing genomics and biotechnology, animal production and production systems, muscle biology and biochemistry; meat safety, meat processing and packaging technology, consumer topics and meat and health. A new approach this year was to address specific hot topics important to the industry and meat scientists, in particular, electrical stimulation and new instrumental methods for evaluation of meat quality characteristics. These proceedings reflect the truly global nature of meat research and give an insight into the current research issues for the industry.

Growth in Animals

Studies in the Agricultural and Food Sciences: Growth in Animals discusses the more advanced concepts of growth, its changes and effects on different animals and systems, and its implications for agriculture. Based on a symposium of the same name, the book defines growth and its effects on the whole body; the biochemical and genetic determinants that affect it; and the effect of thermal environment on growth and its relation with immunity. Growth of bones, muscle nucleic acid and protein, and adipose tissue are also explained. The text also encompasses the relation of growth and gut microflora; the effects of growth-promoting agents in ruminant animals and single-stomach animals; and growth and breeding performance in animals. The growth in mammals and birds for meat production and its effects on the meat quality of animals are also covered in this book. This monograph is recommended for those who would want to start or are currently running animal and poultry farms, as well as for scientists who wish to study the phenomenon of growth for the betterment of agriculture.

Meat Animals

Dramatic shortfalls in crop production in various regions of the world have led some people to question the relatively inefficient use of cereal grains for feeding meat animals instead of their direct use for human food. There is no doubt, however, that meat offers a nutritionally valuable, attractive and widely accepted food, the world demand for which increases daily. Thus it is not enough simply to condemn the consumption of meat as an irresponsible extravagance; rather it is preferable to examine how the demand for meat can be met most efficiently and effectively, which requires a fundamental enquiry into how meat is 'grown'. The importance of fat, for instance, both to the growing animal and to the consumer, needs to be established in view of the 'expense' involved in its deposition by the animal and the extent to which it is discarded at many points in the chain from the slaughterhouse to the consumer. We were aware that there existed a wealth of information on the physiology of growth which, because of its having been collected as part of investigations in many other disciplines and the inevitable communication gap, had not been incorporated into the science of animal production. Similarly there were principles and techniques of animal husbandry which, if known in other disciplines, might enable more pertinent questions to be asked. The biochemical and physiological pathways by which animals utilise feed to produce body protein, fat and other components are intriguing problems which are receiving considerable attention.

Structure and Development of Meat Animals and Poultry

An updated (and re-titled) edition of a major text, Structure and Development of Meat Animals and Poultry serves the information needs of meat science and animal production professionals and meat industry personnel. The book is well illustrated with more than 250 line drawings and photographs. Additionally, it is well organized for study and reference. Throughout the presentation, the basics of meat and poultry science are related to commercial meat production and product development. The Author Prof. Howard Swatland began his career in the meat industry with vocational training at Smithfield College in London. After graduation from the University of London he became a research assistant at the Meat Research Institute in Bristol. He received an M.S. and Ph.D. in Meat and Animal Science from the University of Wisconsin, Madison. He received the Meat Research Award of the American Society of Animal Science, and in 1993, at an award ceremony at the British House of Lords, he was made a Fellow of the Institute of Meat of the Worshipful Company of Butchers. He has published 167 papers in refereed journals, most on topics in the area of meat science and production. He presently

is a professor at the University of Guelph, in the Department of Food Science and the Department of Animal and Poultry Science.

Quality and Grading of Carcasses of Meat Animals

Three main factors affect the quality and composition of meat in farm animals. Production conditions determine the composition of the meat, while marketing and postmortem periods have a major bearing on the visual appearance and ultimate eating experience for the consumer. It is often difficult to compare research results from different countries since meat quality is assessed by a wide variety of procedures. *Quality and Grading of Carcasses of Meat Animals* reviews the development of commercial grading or classification schemes on a world-wide basis, and it provides a broad outline of the most common subjective and objective procedures for the assessment of meat quality. The book provides reviews on: Ante- and post-mortem effects on meat quality Reducing fatness in meat animals Prediction of carcass composition and meat quality World carcass and grading systems Electronic identification of animals

The Science of Animal Growth and Meat Technology

The Science of Animal Growth and Meat Technology, Second Edition, combines fundamental science-based and applied, practical concepts relating to the prenatal and postnatal growth of cattle, sheep and pigs. It provides the necessary components to understand the production and growth of livestock for safe and quality meat products and presents an understanding of the principles of meat science and technology that is needed to understand the meat industry. Information on the slaughter process of animals, muscle structure and meat tenderness, meat quality, meat safety, and microbiology makes this a valuable self-study reference for students and professionals entering the field. Describes principles in muscle metabolism, meat quality and meat safety using case studies Discusses the microbial safety of meat products, primary pathogens of concern, and pathogen detection Offers solutions on how to control bacterial growth to improve the safety and quality of meat Presents a new chapter on packaging for meat and meat products that focuses on flexible film technology, packaging materials and equipment technology Includes new information on inspection systems prior to slaughter, during slaughter, and the inspection of meat processing systems

The Science of Animal Growth and Meat Technology

This book was developed to help provide students with an understanding of the principles of meat science and technology starting with prenatal growth of domestic animals through postnatal growth. It was prepared for students with an animal science interest and relates the science of animal production to technologies and meat quality traits that are important in the meat and animal industries. It provides the student with a unique opportunity to associate animal growth traits, production and marketing traits to carcass quality, meat tenderness, meat color and meat processing characteristics. The first chapter provides a short introduction of the history of the industry. The subsequent chapters provide principles of animal growth and development to carcass composition and meat quality traits. Other chapters provide information on the harvest process of animals, muscle structure and meat tenderness, meat quality, and meat safety and microbiology. The concluding chapters discuss meat processing and technology. The authors have used many colorful illustrations to emphasize important relationships between animal growth and carcass traits, meat quality and processing characteristics. A large percentage of the animal science students are interested in pre-veterinary medicine and many are from an urban background. This book will provide students the concepts and principles that will give them a good background for understanding information on animal agriculture presented in advanced animal science courses.

The Science of Meat Quality

Meat has been a long sought after source of nutrients in human diets. Its nutrient-dense composition of protein, fats, vitamins and minerals makes it an integral part to healthy and balanced diets. As demand for meat continues to increase globally, a better understanding of efficiently producing quality meat products is becoming increasingly important. *The Science of Meat Quality* provides comprehensive coverage of meat quality from the biological basis of muscle development to end-product-use topics such as preparation and sensory analysis. *The Science of Meat Quality* explores the basis of meat quality long before it hits grocery store shelves. The book opens with a look at cellular muscle tissue development, metabolism and physiology. Subsequent chapters look at topics surrounding the development of tenderness, water-holding capacity, lipid oxidation and color in meat products. The final

chapters discuss producing a good-tasting end product from preparing meat to preventing food-borne illness. Each chapter contains not only the theory behind that topic, but also detailed lab methodologies for measuring each meat quality trait. The Science of Meat Quality is an essential resource and reference for animal scientists, meat scientists, food scientists, and food industry personnel. Meat has been a long sought after source of nutrients in human diets. Its nutrient-dense composition of protein, fats, vitamins and minerals makes it an integral part to healthy and balanced diets. As demand for meat continues to increase globally, a better understanding of efficiently producing quality meat products is becoming increasingly important. The Science of Meat Quality provides comprehensive coverage of meat quality from the biological basis of muscle development to end-product-use topics such as preparation and sensory analysis. The Science of Meat Quality explores the basis of meat quality long before it hits grocery store shelves. The book opens with a look at cellular muscle tissue development, metabolism and physiology. Subsequent chapters look at topics surrounding the development of tenderness, water-holding capacity, lipid oxidation and color in meat products. The final chapters discuss producing a good-tasting end product from preparing meat to preventing food-borne illness. Each chapter contains not only the theory behind that topic, but also detailed lab methodologies for measuring each meat quality trait. The Science of Meat Quality is an essential resource and reference for animal scientists, meat scientists, food scientists, and food industry personnel.

Sustainable Meat Production and Processing

Sustainable Meat Production and Processing presents current solutions to promote industrial sustainability and best practices in meat production, from postharvest to consumption. The book acts as a guide for meat and animal scientists, technologists, engineers, professionals and producers. The 12 most trending topics of sustainable meat processing and meat by-products management are included, as are advances in ingredient and processing systems for meat products, techno-functional ingredients for meat products, protein recovery from meat processing by-products, applications of blood proteins, artificial meat production, possible uses of processed slaughter co-products, and environmental considerations. Finally, the book covers the preferred technologies for sustainable meat production, natural antioxidants as additives in meat products, and facilitators and barriers for foods containing meat co-products. Analyzes the role of novel technologies for sustainable meat processing Covers how to maintain sustainability and achieve high levels of meat quality and safety Presents solutions to improve productivity and environmental sustainability Takes a proteomic approach to characterize the biochemistry of meat quality defects

Goat Meat Production and Quality

Written by some of the world's leading goat meat scientists, and drawing from the most recent publications in the field, this book comprehensively covers the most important areas of goat meat production. Chapters discuss the role of genetics, breeding, reproduction, and nutrition in producing good quality, profitable goat meat. The mineral, amino acid and fatty acid composition of goat meat is also addressed, along with a discussion of its nutritive value, aimed at highlighting its health benefits over other red meats.

Animal Sourced Foods for Developing Economies

Animal products are good source of disposable income for many small farmers in developing countries. In fact, livestock are often the most important cash crop in many small holder mixed farming systems. Livestock ownership currently supports and sustains the livelihoods of rural poor, who depend partially or fully on livestock for their income and/or subsistence. Human population growth, increasing urbanization and rising incomes are predicted to double the demand for, and production of, livestock products in the developing countries over the next twenty years. The future holds great opportunities for animal production in developing countries. Animal Sourced Foods for Developing Economies addresses five major issues: 1) Food safety and nutritional status in developing world; 2) the contribution of animal origin foods in human health; 3) Production processes of animal foods along with their preservation strategies; 4) functional outcomes of animal derived foods; and finally, 5) strategies, issues and policies to promote animal origin food consumption. Animal sourced food contain high biological value protein and important micronutrients required for optimal body functioning but are regarded as sources of fat that contribute to the intake of total and saturated fatty acids in diet. The quality of protein source has a direct influence on protein digestibility, as a greater proportion of higher quality proteins is absorbed and becomes available for bodily functions. Animal foods has high quantity and quality of protein that

includes a full complement of the essential amino acids in the right proportion. Land availability limits the expansion of livestock numbers in extensive production systems in most regions, and the bulk of the increase in livestock production will come from increased productivity through intensification and a wider adoption of existing and new production and marketing technologies. The significant changes in the global consumption and demand for animal source foods, along with increasing pressures on resources, are having some important implications for the principal production systems. In this book, contributors critically analyze and describe different aspects of animal's origin foods. Each chapter is dedicated to a specific type of food from animal source, its nutritional significance, preservation techniques, processed products, safety and quality aspects on conceptual framework. Special attention is given to explain current food safety scenario in developing countries and contribution of animal derived food in their dietary intake. Existing challenges regarding production, processing and promotion of animal's origin foods are also addressed with possible solutions and strengthening approaches.

Meat Science

Outlining the core principles of the subject, this introductory-level textbook covers the production of meat, its structure and chemical composition, meat quality and hygiene, and animal welfare, handling and slaughter. The new edition has been updated to cover significant advances such as the process of conditioning, leading to the tenderization of meat, and new coverage of the use of molecular genetic techniques to try to select animals for improved meat quality. It is an essential text for students and professionals in food science and technology, those working in the meat industry, meat inspectors, and vets. * New larger format in two colors throughout * Fully revised and updated including new coverage of genomics * Carefully selected references and titles for further reading

Ensuring Safety and Quality in the Production of Beef Volume 2

Volume 2 reviews developments related to quality, starting with the way breeding and growth affect meat quality. The book then discusses cattle nutrition and management before concluding with an assessment of factors determining individual quality traits such as colour and flavour.

Animal Agriculture

Animal Agriculture: Sustainability, Challenges and Innovations discusses the land-based production of high-quality protein by livestock and poultry and how it plays an important role in improving human nutrition, growth and health. With exponential growth of the global population and marked rises in meat consumption per capita, demands for animal-source protein are expected to increase 72% between 2013 and 2050. This raises concerns about the sustainability and environmental impacts of animal agriculture. An attractive solution to meeting increasing needs for animal products and mitigating undesirable effects of agricultural practices is to enhance the efficiency of animal growth, reproduction, and lactation. Currently, there is no resource that offers specific knowledge of both animal science and technology, including biotechnology for the sustainability of animal agriculture for the expanding global demand of food in the face of diminishing resources. This book fills that gap, giving readers all the necessary information on important issues facing modern animal agriculture, namely its sustainability, challenges and innovative solutions. Integrates new knowledge in animal breeding, biotechnology, nutrition, reproduction and management Addresses the urgent issue of sustainability in modern animal agriculture Provides practical solutions on how to solve the current and future problems that face animal agriculture worldwide

Emerging Issues in Climate Smart Livestock Production

Emerging Issues in Climate Smart Livestock Production: Biological Tools and Techniques furnishes a detailed reference on livestock sustainability and the role of biotechnology for creating more sustainable livestock production systems. The book is a collection of scientific techniques, including genetic engineering used to modify and improve animals, fishes, and microorganisms for human benefit. The book is particularly attractive for scientists, researchers, students, educators, and professionals in agriculture, veterinary, and biotechnology science. This book promotes several biotechnological approaches that can easily be evaluated in the field for quality assurance programs beneficial to producing livestock products and overall public health. Biotechnology has the potential to improve the productivity of animals via increased growth, carcass quality and reproduction, improved nutrition and feed utilization, improved food quality and safety, improved animal health and welfare, and reduced waste through more efficient utilization of resources. Identifies and explores biotechnological approaches for sustainable

livestock and fish production Focuses on strategies for enhancing livestock and fishery productivity and sustainability Presents the latest research on modern methods and technologies

Animal Biotechnology

The advent of biotechnology has the potential to develop a variety of novel or better quality products for the treatment of a large number of diseases in livestock. In addition, as we understand more about the reproductive physiology of animals, the potential exists to dramatically increase the productivity of animals through better therapeutics and diagnostics for the control of many infectious diseases. Productivity can also be increased through animal breeding strategies including gene transfer, micro-manipulation of embryos and gamete sex selection. As well as being a valuable reference to current knowledge in these areas, this first supplement to Comprehensive Biotechnology also looks at societal concerns over the use of antibiotics and chemical residues in meat and milk products, which are forcing biotechnologists to investigate more natural means of controlling infection by stimulating the animal's own immune system to combat infection. The identification of a variety of cytokines which are involved in regulating immune responses provides opportunities to use the animal's natural defence mechanisms to combat many infections or increase the animal's resistance to such infections. These approaches should provide tools for eventual elimination of specific diseases from counties, regions or whole continents.

Improving the Sensory and Nutritional Quality of Fresh Meat

Understanding of the scientific basis of quality attributes in meat is becoming more advanced, providing more effective approaches to the control of meat eating and technological quality. This important collection reviews essential knowledge of the mechanisms underlying quality characteristics and methods to improve meat sensory and nutritional quality. Part one analyses the scientific basis of meat quality attributes, such as texture and tenderness, colour, water-holding capacity and flavour development. Chapters on the nutritional quality of meat and meat sensory evaluation complete the section. Part two discusses significant insights into the biology of meat quality obtained from genomic and proteomic perspectives, with chapters focussing on different types of meat. Parts three and four then review production and processing strategies to optimise meat quality, considering aspects such as production practices and meat nutritional quality, dietary antioxidants and antimicrobials, carcass interventions, chilling and freezing and packaging. Methods of meat grading and quality analysis are also included. With its distinguished editors and international team of contributors, Improving the sensory and nutritional quality of fresh meat is a standard reference for those industrialists and academics interested in optimising meat quality. Reviews methods to improve meat sensory and nutritional quality considering the effects of different production practices such as chilling, freezing and packaging Analyses the scientific basis of meat quality attributes covering texture, tenderness, colour and water-holding capacity Examines production and processing strategies to optimise meat quality, including the current state of development and future potential

Sustainable Animal Agriculture

In order to meet increasing global demand for meat and animal by-products increasingly intensive animal production is necessary. Creating a sustainable system in animal agriculture that works in different production environments is a major challenge for animal scientists. This book draws together themes on sustainability that have emerged as the most pressing in recent years. Addressing practical topics such as air quality, manure management, animal feeds, production efficiency, environmental sustainability, biotechnology issues, animal welfare concerns, societal impacts and an analysis of the.

Indicators of Milk and Beef Quality

The farming and agri-food sectors are faced with an increasing demand by consumers for high-quality products. The current major questions are thus how to define quality, and how to increase the quality of animal products to satisfy these new requirements. This is the reason why the Cattle Commission of the European Association of Animal Production (EAAP) organised a specific session on this topic in September 2004. This session dealt with the manipulation and evaluation of bovine milk and meat composition and quality using various indicators (commercial, physical, biochemical, molecular or other). These indicators are any method, biological trait, or physical property which may be useful to predict a quality trait. Quality includes; sensory traits, nutritional properties of products, their ability to be processed and also any consideration of traceability (genetic, geographic or nutritional traceability).

Thus, the full spectrum of quality attributes is discussed. Indicators may also be considered as predictors. In this respect, contributors discuss the detection early in life of the ability of animals to produce meat or milk of high quality. Indicators may also be useful for consumers when they buy meat or milk, as official or commercial signs of quality.

Advances in Meat Processing Technology

Meat is a unique biological material with a central importance in nutrition and health. Advances in Meat Processing Technology merges the expertise of meat scientists and food engineers in a holistic approach toward the processing of meat. The meat industry strives to deliver consistent high quality and safe meat products. Readers can benefit from knowledge generated by meat science researchers by achieving a greater understanding of the nature of meat, and the engineering technology required for meat processing. This book comprises 17 full chapters that provide up-to-date and fundamental information on current topics in meat processing. This includes novel technologies, such as the application of pulsed electric field, meat stretching and shaping, ultrasound and high pressure. In addition, analytical techniques such as Raman spectroscopy and NMR are enabling considerable advancement of knowledge in meat science and in meat processing. Written by world renowned experts in their fields, this contemporary collective work assembles the state of current knowledge that is of importance to both industry and academia.

Critical Role of Animal Science Research in Food Security and Sustainability

By 2050 the world's population is projected to grow by one-third, reaching between 9 and 10 billion. With globalization and expected growth in global affluence, a substantial increase in per capita meat, dairy, and fish consumption is also anticipated. The demand for calories from animal products will nearly double, highlighting the critical importance of the world's animal agriculture system. Meeting the nutritional needs of this population and its demand for animal products will require a significant investment of resources as well as policy changes that are supportive of agricultural production. Ensuring sustainable agricultural growth will be essential to addressing this global challenge to food security. Critical Role of Animal Science Research in Food Security and Sustainability identifies areas of research and development, technology, and resource needs for research in the field of animal agriculture, both nationally and internationally. This report assesses the global demand for products of animal origin in 2050 within the framework of ensuring global food security; evaluates how climate change and natural resource constraints may impact the ability to meet future global demand for animal products in sustainable production systems; and identifies factors that may impact the ability of the United States to meet demand for animal products, including the need for trained human capital, product safety and quality, and effective communication and adoption of new knowledge, information, and technologies. The agricultural sector worldwide faces numerous daunting challenges that will require innovations, new technologies, and new ways of approaching agriculture if the food, feed, and fiber needs of the global population are to be met. The recommendations of Critical Role of Animal Science Research in Food Security and Sustainability will inform a new roadmap for animal science research to meet the challenges of sustainable animal production in the 21st century.

The Meat Business

The theme running through this collection of essays is that food quality and human health, the welfare of animals and the methods of farming, and the quality of the environment, go hand-in-hand. This theme continues along the lines that the present system is harmful to them all and to our ability to generate enough good food for the whole world. The contributors to the volume offer alternatives - for more humane and moderate methods of farming which produce enough nourishing food without damaging the environment it depends on.

Handbook of Food and Beverage Fermentation Technology

Over the past decade, new applications of genetic engineering in the fermentation of food products have received a great deal of coverage in scientific literature. While many books focus solely on recent developments, this reference book highlights these developments and provides detailed background and manufacturing information. Co-Edited by Fidel

Lawrie's meat science, Seventh Edition

Lawrie's Meat Science has established itself as a standard work for both students and professionals in the meat industry. Its basic theme remains the central importance of biochemistry in understanding the production, storage, processing, and eating quality of meat. At a time when so much controversy surrounds meat production and nutrition, the seventh edition provides a clear guide that takes the reader from the growth and development of meat animals, through the conversion of muscle to meat, to the point of consumption. The seventh edition includes details of significant advances in meat science that have taken place in the past eight years, especially in areas of eating quality of meat and meat biochemistry.

Metabolomic Applications in Animal Science

Metabolomics has been a useful method for various study fields. However, its application in animal science does not seem to be sufficient. Metabolomics will be useful for various studies in animal science: Animal genetics and breeding, animal physiology, animal nutrition, animal products (milk, meat, eggs, and their by-products) and their processing, livestock environment, animal biotechnology, animal behavior, and animal welfare. More application examples and protocols for animal science will promote more motivation to use metabolomics effectively in the study field. Therefore, in this Special Issue, we introduced some research and review articles for "Metabolomic Applications in Animal Science". The main methods used were mass spectrometry or nuclear magnetic resonance spectroscopy. Not only a non-targeted, but also a targeted, analysis of metabolites is shown. The topics include dietary and pharmacological interventions and protocols for metabolomic experiments.

63rd International Congress of Meat Science and Technology

This book contains over 400 offered papers which were presented at the 63rd International Congress of Meat Science and Technology, held in Cork, Ireland, from 13-18 August, 2017. Under the theme of nurturing locally, growing globally, areas covered in the congress included meat sustainability and the role of the of meat science in a challenging global environment, genetics and genomics, the science of meat quality, technological demands in meat processing from an Asian perspective, international best practice in animal welfare, scientific advances underpinning meat safety, emerging technologies in meat processing, meat science and impact, consumer aspects, meat biochemistry, advancements in meat packaging and the congress ended with a session on meat and health, with focus on sustaining healthy protein sources. This year also included a session dedicated to addressing specific hot topics of importance to the industry and meat scientists. These proceedings reflect the truly global nature of meat research and provide an insight into current research issues for the industry.

Animal Agriculture

Animal Agriculture: Sustainability, Challenges and Innovations discusses the land-based production of high-quality protein by livestock and poultry and how it plays an important role in improving human nutrition, growth and health. With exponential growth of the global population and marked rises in meat consumption per capita, demands for animal-source protein are expected to increase 72% between 2013 and 2050. This raises concerns about the sustainability and environmental impacts of animal agriculture. An attractive solution to meeting increasing needs for animal products and mitigating undesirable effects of agricultural practices is to enhance the efficiency of animal growth, reproduction, and lactation. Currently, there is no resource that offers specific knowledge of both animal science and technology, including biotechnology for the sustainability of animal agriculture for the expanding global demand of food in the face of diminishing resources. This book fills that gap, giving readers all the necessary information on important issues facing modern animal agriculture, namely its sustainability, challenges and innovative solutions.