Milk and Beef titles

**Milk**

- Summarises current research on the composition and components of milk, pathogenic risks, rumen biology, digestion and ways of optimising nutrition
- Reviews advances in milk quality, measuring and reducing the environmental impact of dairy farming and understanding and improving welfare of dairy cattle
- Discusses the latest research on genetic factors affecting dairy cattle growth, health, herd management and productivity, including how dairy farming can be improved in the developing world

**Beef**

- Reviews current research on measuring and optimising quality traits and how breeding, growth and cattle management affects quality attributes and sensory properties
- Summarises the latest research on pathogens affecting beef, best practice in pathogen detection and safety management on the farm
- Discusses methods for ensuring safety in the food chain, from slaughter to consumer handling of fresh beef

“Beef Volume 1 promises to be a valuable resource for the animal science research community.”
Professor John Kennelly, University of Alberta, Canada; also president of the Global Federation of Higher Education Associations for Agriculture and the Life Sciences (GCHERA)
Achieving sustainable production of milk - Vol.1
Milk composition, genetics and breeding
Edited by: Nico van Belzen, Director General of the International Dairy Federation (IDF), Belgium

Part 1 The composition and quality of cow’s milk
1. Chemical composition of cow’s milk: an overview: Ying Ma, Harbin Institute of Technology, China
2. The proteins of milk: Shane V. Crowley, James A. O’ Mahony and Patrick F. Fox, University College Cork, Ireland
3. Bioactive components in cow’s milk: Young W. Park. Fort Valley State University, USA
4. Understanding and preventing spoilage of cow’s milk: Gisèle LaPointe, University of Guelph, Canada
5. Understanding and measuring the flavour and colour of cow’s milk: Tanjö Singh, CSIRO, Australia
6. Sensory evaluation of cow’s milk: Stephanie Clark, Iowa State University, USA
7. Testing the quality of cow’s milk: Frank Welcome, QMPS Cornell University, USA
8. Ingredients from milk for use in food and non-food products: from commodity to value-added ingredients: Thom Huppertz and Inge Gazi, NIZO food research, The Netherlands

Part 2 Genetics and breeding
9. Genetic factors affecting the lipid composition of cow’s milk: Henk Bovenhuis, Wageningen University, The Netherlands
10. Genetic factors affecting fertility, growth, health and longevity in dairy cattle: Joel Ira Weller, Agricultural Research Organization, The Volcani Center, Israel
11. Using genetic selection in the breeding of dairy cattle: Julius van der Werf, University of New England, Australia and Jennie Pryce, La Trobe University, Australia
12. Breeding and management strategies to improve the productivity of dairy cattle: Divakar J Ambrose, University of Alberta, Canada and John P Kastelic, University of Calgary, Canada
13. Nutritional strategies to improve nitrogen efficiency and milk protein synthesis in dairy cows: James D. Ferguson, University of Pennsylvania, USA

Achieving sustainable production of milk - Vol.2
Safety, quality and sustainability
Edited by: Nico van Belzen, Director General of the International Dairy Federation (IDF), Belgium

Part 1 Ensuring the safety and quality of milk on the farm
1. Pathogens affecting raw milk from cows: Claire Verraes, Sabine Cardoen and Wendie Claeyts, Federal Agency for the Safety of the Food Chain; and Lieve Herman, Institute for Agricultural and Fisheries Research, Belgium
2. Routes for pathogen contamination of milk on the dairy farm: Mansel Griffiths, University of Guelph, Canada
3. Detecting pathogens in milk on dairy farms: key issues for developing countries: Delia Grace, Silvia Alonso, Johanna Lindahl, Sara Ahlberg and Ram Pratim Deka, International Livestock Research Institute, Kenya
4. Mastitis, cow’s milk quality and safety: Paolo Moroni, Cornell University, USA
5. Chemical contaminants in milk: Bernadette O’Brien, Teagasc, Ireland
6. Detecting and preventing contamination of dairy cattle feed: Delia Grace, International Livestock Research Institute, Kenya
7. Minimising the development of antimicrobial resistance on dairy farms: appropriate use of antibiotics for the treatment of mastitis: Pamela L. Ruegg, University of Wisconsin-Madison, USA
8. Food safety management systems on dairy farms: Dr Réjean Bouchard, Formerly Dairy Farmers of Canada, Canada
9. Developments in milking machinery: Douglas Reinemann, University of Wisconsin-Madison, USA

Part 2 Sustainability
10. The environmental impact of dairy farming: an overview: Norman Scott, Cornell University, USA
11. Setting environmental targets for dairy farming: Sophie Bertrand, French Dairy Board (CNIEL), France
12. Breeding and nutritional strategies to reduce greenhouse gas emissions in dairy farming: Joanne Knapp, Fox Hollow Consulting LLC, USA
13. Grassland management to minimise the environmental impact of dairy farming: Margaret E. Graves and Ralph C. Martin, University of Guelph, Canada
14. Water and energy management to minimise the environmental impact of dairy farming: John Upton, Teagasc, Ireland
15. Managing manure on dairy farms: Theun Vellinga, Wageningen University, The Netherlands
16. Ensuring biodiversity in dairy farming: Ben Tyson, Central Connecticut State University, USA; Liza Storey and Nick Edgar, New Zealand Landcare Trust, New Zealand; Jonathan Draper, Central Connecticut State University, USA; and Christine Unson, Southern Connecticut State University, USA
17. Organic dairy farming and sustainability: Veronika Maurer, Research Institute of Organic Agriculture (FiBL), Switzerland
18. Trends in dairy farming and milk production: the case of the UK and New Zealand: Alison Bailey, Lincoln University, New Zealand
19. Assessing the overall impact of dairy farming: Jeremy Hill, Fonterra Co-operative Group Ltd, New Zealand

Part 3 Improving quality, safety and sustainability in developing countries
20. Implementing safety, quality and environmental management systems for dairy farming in developing countries: Richard Baines, Royal Agricultural University, UK
21. Improving smallholder dairy farming in tropical Asia: John Moran, Profitable Dairy Systems, Australia
22. Improving smallholder dairy farming in Africa: Julie Ojango, International Livestock Research Institute, Kenya
23. Health and welfare issues in organic dairying: Gigi Smolders, Wageningen University, The Netherlands
Achieving sustainable production of milk - Vol.3
Dairy herd management and welfare
Edited by: John Webster, University of Bristol, UK

Part 1 Welfare of dairy cattle
1. Understanding the behaviour of dairy cattle: Clive Phillips, University of Queensland, Australia
2. Key issues in the welfare of dairy cattle: Jan Hultgren, Swedish University of Agricultural Sciences, Sweden
3. Housing and the welfare of dairy cattle: Jeffrey Rushen, University of British Columbia, Canada
4. Genetic selection, milk yield and welfare of dairy cattle: Jennie Pryce, DEPI-Victoria/La Trobe University, Australia
5. Ensuring the welfare of culled dairy cows during transport and slaughter: Carmen Gallo and Ana Strappini, Universidad Austral de Chile, Chile
6. Ensuring the welfare of lactating cows: Pilar Sepulveda, University of Southern Chile - Austral, Chile
7. Ensuring the health and welfare of dairy calves and heifers: Ken Leslie, University of Guelph, Canada

Part 2 Nutrition of dairy cattle
8. Rumen microbiology and digestion: Leluo Guan, University of Alberta, Canada
9. Biochemical and physiological determinants of feed efficiency in dairy cattle: John McNamara, Washington State University, USA
10. Feed evaluation and formulation to maximise nutritional efficiency in dairy cattle: Pekka Huhtanen, Swedish University of Agricultural Sciences, Sweden
11. The influence of cow’s diet on milk composition and nutritional value: Vern Osborne, University of Guelph, Canada
12. Nutrition management of housed dairy cattle in intensive systems: Michel Wattiaux, University of Wisconsin-Madison, USA
13. Nutrition management of grazing dairy cattle: John Roche, Dairy NZ Ltd, New Zealand
14. The use and abuse of cereals, legumes and crop residues in rations for dairy cattle: Michael Blummel, International Livestock Research Institute, Ethiopia
15. Feed supplements for dairy cattle: Jamie Newbold, University of Wales, Aberystwyth, UK

Part 3 Health of dairy cattle
16. Prevention and management of disorders of digestion and metabolism: Gregory Penner, University of Saskatchewan, USA
17. Management of dairy cows in transition and at calving: Kenneth Nordlund, University of Wisconsin-Madison, USA
18. Causes, prevention and management of infertility: Alexander Evans, University College Dublin, Ireland
19. Detecting and managing mastitis in dairy herds: Paolo Moroni, Cornell University, USA
20. Preventing and managing lameness in dairy cows: Nick Bell, The Royal Veterinary College, UK
21. Control of infectious diseases in dairy cattle: Wendela Wapenaar, University of Nottingham, UK
22. Prevention and control of parasites in dairy cattle: Jacqui Matthews, Moredun Research Institute, UK
23. Genetic variation in immunity and disease resistance in dairy cows and other livestock: Michael Stear, Karen Fairlie-Clarke, and Nicholas Jonsson, University of Glasgow, UK; Bonnie Mallard, University of Guelph, Canada; and David Groth, Curtin University, Australia
24. Use and abuse of medicines in dairy health control: David Barrett, University of Bristol, UK

“…there can be few people in the world better qualified to edit a new book about nutrition, health and welfare of dairy cattle than John Webster. These have been the passions of a long and distinguished academic career. He has assembled a strong team of authors to provide comprehensive coverage of key topics, as well as the wide range of dairy production systems across developed and developing countries.”

Richard Dewhurst, Professor of Ruminant Nutrition and Production Systems, SRUC, Edinburgh, UK

Author Biographies

Milk Volumes 1 & 2

Dr Nico van Belzen is Director-General of the International Dairy Federation (IDF). He has occupied senior roles in both industry and research organisations, both as Head of the Research and Analysis department at the ingredients division of Campina and as Executive Director of the European Branch of the International Life Sciences Institute (ILSI).

Milk Volume 3

Dr John Webster is Emeritus Professor in Animal Husbandry at the University of Bristol, UK. Amongst his many achievements, Professor Webster was recently awarded an honorary degree by the Royal Veterinary College for his research in animal science, as well as the Universities Federation for Animal Welfare (UFAW) Medal for Outstanding Contributions to Animal Welfare. He established the Animal Welfare and Behaviour Group at the University of Bristol, one of the largest and most highly-regarded of its kind in the world, and was a founder member of the Farm Animal Welfare Council which pioneered the Five Freedoms for farm animals.

Beef Volume 1

Dr Gary Acuff is Professor of Food Microbiology and Director of the Center for Food Safety at Texas A&M University, USA and Fellow of the International Association for Food Protection and the American Academy of Microbiology.

Dr James Dickson is Professor in the Department of Animal Science at Iowa State University, USA and Fellow of the International Association for Food Protection and the American Academy of Microbiology.

Beef Volume 2

Dr Michael Dikeman is Emeritus Professor of Meat Science at Kansas State University, USA. He is a past President of the American Meat Science Association and of the Federation of American Societies of Food Animal Sciences (FASFA – now FASS). His many honors include the American Society of Animal Science Fellow Award and induction into the Meat Industry Hall of Fame for his outstanding contribution to meat science. He is joint Editor-in-Chief of the three-volume Encyclopaedia of Meat Science.
Ensuring safety and quality in the production of beef - Vol.1
Safety
Edited by: Gary Acuff, Texas A&M University, USA and James Dickson, Iowa State University, USA

Part 1 Ensuring safety on the farm
1. Pathogens affecting beef: James E. Wells and Elaine D. Berry, US Meat Animal Research Center, USDA-ARS, USA
2. Methods for detecting pathogens in the food chain for beef: an overview: Pina Fratamico, Mick Bosilevac and John Schmidt, USDA-ARS, USA
3. Methods for detecting pathogens in the food chain for beef: detecting particular pathogens: Pina Fratamico, Mick Bosilevac and John Schmidt, USDA-ARS, USA
4. Food safety management on farms producing beef: Peter Paulsen, Frans J. M. Smulders and Friederike Hilbert, University of Veterinary Medicine, Austria
5. Ensuring the safety of feed for beef cattle: Grant Dewell, Iowa State University, USA
6. Detecting veterinary residues in beef cattle: Lynn Post, FDA/Texas A&M University, USA
7. Preventing the development of antimicrobial resistance on farms producing beef: Paula Cray, North Carolina State University, USA

Part 2 Ensuring safety at slaughter
8. Hygienic management of slaughterhouse operations: Jennifer Martin, Colorado State University, USA
9. Beef carcass inspection methods: Dr Bill James, Formerly USDA-FSIS
10. Maintaining the safety and quality of beef carcass meat: James Dickson, Iowa State University, USA
11. Optimizing the microbial shelf-life of fresh beef: Declan J. Bolton, Teagasc Food Research Centre (Ashtown), Ireland
12. Educating consumers in the safe handling of beef: Janet Riley, North American Meat Institute, USA
13. Traceability systems in the food chain for beef: from farm to slaughter: Daniel Buskirk, Michigan State University, USA

Ensuring safety and quality in the production of beef - Vol.2
Quality
Edited by: Michael Dikeman, Kansas State University, USA

Part 1 Breeding and growth
1. Biological types of cattle: carcass and meat quality: M. A. Price, University of Alberta, Canada
2. Traditional animal breeding of cattle to improve carcass composition and meat quality: Matt Spangler, University of Nebraska, USA
3. Muscle fibre types and beef quality: Thierry Astruc, INRA, France
4. Factors affecting fat content and distribution of fat in cattle and carcasses: Stephen B. Smith, Texas A&M University, USA

Part 2 Management of cattle
5. Nutritional management of cattle, with emphasis on ‘finishing’ systems on either pasture, high forage or high grain diets: Chris Richards, Oklahoma State University, USA
6. Effects of metabolic modifiers on growth, carcass composition, marbling, and tenderness: Brad Johnson, Texas Tech University, USA
7. Understanding the effects of handling, transportation, lairage and slaughter of cattle: Mike Cockram - University of Prince Edward Island, Canada
8. The effects of carcass chilling and electrical stimulation on visual beef quality and palatability: Phillip E. Strydom, Agricultural Research Council and University of Stellenbosch, South Africa

Part 3 Quality traits
9. Beef colour development and variation: Ranjith Ramanathan, Oklahoma State University, USA and Richard A. Mancini, University of Connecticut, USA
10. Beef carcass grading and classification: Michael E. Dikeman, Kansas State University, USA
11. Branded beef programs, including natural and organic: Dustin Boles, University of Illinois, USA
12. Ageing, physical and chemical methods for improving tenderness and palatability of beef: D. L. Hopkins, NSW Department of Primary Industries, Centre for Red Meat and Sheep Development, Australia
13. Factors affecting flavour development in beef: Chris R. Kerth, Texas A&M University, USA
14. Packaging systems for beef retailers and their effects on visual quality and palatability: J. W. S. Yancey, University of Arkansas, USA
15. Measuring and assessing beef quality and sensory traits for retailers and consumers: Derek A. Griffing and Christy L. Bratcher, Auburn University, USA
16. Role of beef in human nutrition and health: Chunbao Li, Nanjing Agricultural University, China

Part 4 Emerging trends
17. Future of DNA technology for improving beef quality – marbling, tenderness, and flavour: Elly Ana Navajas, Instituto Nacional de Investigación Agropecuaria, Uruguay
18. The sustainability and ‘carbon footprints’ of conventional and alternative beef production systems: Jude L. Capper, Livestock Sustainability Consultancy, UK
19. Controversies involving fat content of beef and human health: Penny Kris-Etherton, Pennsylvania State University, USA

“Professor Dikeman appears to again have assembled an absolutely outstanding cast of experts to develop a foundational text dealing with beef quality. Beef Volume 2 will no doubt serve as an extremely important reference to students and industry. Congratulations to Professor Dikeman and all of the authors on a marvellous effort!”

Professor Keith Belk, Colorado State University, USA
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