

NEW!

Achieving sustainable production of milk

VOLUMES 1, 2 & 3

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IN AGRICULTURAL SCIENCE

Volume 1

Edited by: Nico van Belzen, Director General of the International Dairy Federation (IDF), Belgium

- Summarises latest research on the composition of proteins and other components in milk
- Reviews advances in understanding factors affecting milk quality eg. breeding and nutrition
- Discusses current research on genetic factors affecting dairy cattle growth and health as well as ways to optimise breeding to improve the productivity of dairy cows

Volume 2

Edited by: Nico van Belzen, Director General of the International Dairy Federation (IDF), Belgium

- Reviews ways of measuring and reducing the environmental impact of dairy farming such as better grassland management
- Summarises current research on pathogenic risks affecting milk and ways they can be controlled on the farm
- Assesses the wider role of dairy farming and how it can be improved in the developing world

"As demand for dairy products continues to grow, and with sustainable nutrition and food security at the top of the global agenda, it is imperative that we develop and share the latest knowledge, practices and issues relating to sustainability of dairy chains. With a veritable Who's Who of dairy expertise and an expert editor in IDF Director General Nico van Belzen, Achieving sustainable production of milk will go a long way to achieving this."

Dr Jeremy Hill, President - IDF/Chief Technology Officer - Fonterra Co-operative Group Ltd



Volume 3

Edited by: John Webster, University of Bristol, UK

- Summarises current research on rumen biology, digestion and ways of optimising nutrition of dairy cattle from grazing to feed and feed supplements
- Reviews advances in understanding and improving the welfare of dairy cattle
- Discusses latest developments in maintaining the health of dairy cattle, including the genetics of disease resistance and dairy herd health management

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: *Gisele LaPointe, University of Guelph, Canada*
5. Understanding and measuring the flavour and colour of cow's milk: *Tanoj 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 Claeys, 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 cow's 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*

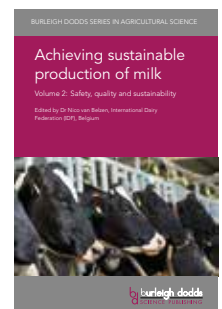
Part 2 Sustainability

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: *Gidi 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*
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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*
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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*
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20. Preventing and managing lameness in dairy cows: *Nick Bell, The Royal Veterinary College, UK*
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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*
25. Dairy herd health management: an overview: *Jonathan Statham, Bishopton Veterinary Group and RAFT Solutions Ltd, UK*



Author Biographies

Volume 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).

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.

“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

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