

Preface: Sustainable food production and ethics 17
Werner Zollitsch and Christoph Winckler

Keynote papers

On sustainability, dogmas, and (new) historical roots for environmental ethics 21

Ben A. Minteer

How do the ethical values of organic agriculture relate to standards and to current practice? 26

Susanne Padel

Animal welfare and intensive animal production: are they compatible? 31

David Fraser

Animal welfare in intensive and sustainable animal production systems 37

Vonne Lund

Ethics and action: a relational perspective on food trends and consumer concerns 43

Unni Kjærnes

Coexistence? What kind of agriculture do we want? 49

Louise W.M. Luttikholt

Coexistence and ethics: NIMBY-arguments reconsidered 53

Matthias Kaiser

Vertical gene flow in the context of risk/safety assessment and co-existence 57

A. De Schrijver, Y. Devos and M. Sneyers

Part 1 - Theoretical, conceptual and foundational issues: concepts and approaches

Ethical bases of sustainability 63

Paul B. Thompson

Building a sustainable future for animal agriculture: an environmental virtue ethic of care approach within the philosophy of technology 69

Raymond Anthony

Emergence and auto-organisation: revising our concepts of growth, development and evolution toward a science of sustainability 75

Sylvie Pouteau

Values behind biodiversity: ends in themselves or knowledge-based attitudes 81

Arne Sveinson Haugen

Part 2 - Theoretical, conceptual and foundational issues: assessment and models

A structuring pathway to tackling ethical problems 89

Michael Zichy

Standing on the shoulders of a giant: the promise of multi-criteria mapping as a decisionsupport framework in food ethics 95

Volkert Beekman, Erik de Bakker and Ronald de Graaff

Sustainability concept in agricultural scientific papers 101

Matias Pasquali

Part 3 - Theoretical, conceptual and foundational issues: bringing ethics into practice

Practice-oriented ethics 109

S. Aerts and D. Lips

How do stakes and interests shape the discursive strategies for framing (multi-)causality? 115

Laura Maxim and Jeroen P. van der Sluijs

Depoliticizing technological decisions? 121

Bernice Bovenkerk

Implicit normativity in scientific advice - a case study of nutrition advice to the general public 127

Anna Paldam Folker, Hanne Andersen and Peter Sandøe

Trustworthiness: the concrete task to take vague moral ideals seriously 132

Franck L.B. Meijboom

Part 4 - Diversity, resilience, global trade

Using past climate variability to understand how food systems are resilient to future climate change 139

Evan D.G. Fraser, Mette Termansen, Ning Sun, Dabo Guan, Kuishang Feng and Yang Yu

Integration of resilience into sustainability model for analysis of adaptive capacities of regions to climate change: the EASEY model 145

R. Paulesich, K. Bohländer and A.G. Haslberger
Sustainability, corporate social responsibility and food markets: the role of cooperatives 151
Valeria Sodano
A method for construction and evaluation of scenarios for sustainable animal production, with an application on future Swedish dairy farming 157
Stefan Gunnarsson and Ulf Sonesson
Protecting local diversity in scenarios of modern food biotechnology, globalised trade and intellectual property rights 163
A.G. Haslberger, A.H. Gesche, M. Proyer, R. Paulesich and S. Gressler
Does free trade in agriculture promote 'one planet farming'? 169
Tom MacMillan and Neva Frecheville
Constructing sustainable regional food networks: a grounded perspective 174
Dirk Roep and Johannes S.C. Wiskerke
Ethical use of Andean tomato germplasm 180
Bart Gremmen
A legal examination of the requirements relating to developing countries' exports of organic products to the European Union 184
Morten Broberg

Part 5 - Sustainability and animal welfare: animal welfare and basic value

Vegan agriculture: animal-friendly and sustainable 193
Tatjana Visak
Understanding farmers' values 198
Carolien de Lauwere, Sabine de Rooij and Jan Douwe van der Ploeg
Consumers versus producers: a different view on farm animal welfare? 204
Filiep Vanhonacker, Els Van Poucke, Frank Tuytens and Wim Verbeke
Market segmentation based on perceived importance and evaluation of farm animal welfare 210
Filiep Vanhonacker, Els Van Poucke, Frank Tuytens and Wim Verbeke

Part 6 - Sustainability and animal welfare: different practices

Stacking pigs: Dutch pig tower debates and the changing nature of ethical livestock production 219
Clemens Driessen
Towards sustainable livestock production systems 223
John J. McGlone and Mhairi Sutherland
Economic, ecological and societal performance of organic versus conventional egg production in the Netherlands 229
Eddie A.M. Bokkers, Sophia van der Ploeg, Erwin Mollenhorst and Imke J.M. de Boer
Considering the farmer-animal relationship in the development of sustainable husbandry systems for cattle production 233
X. Boivin, S. Waiblinger, A. Brulé, N. L'hotellier, F. Phocas and G. Coleman
From the backyard, through the farm, to the laboratory - changes in human attitudes to the pig 239
Reinhard Huber, I. Anna S. Olsson, Mickey Gjerris and Peter Sandøe
Logistics at transport to slaughter: food and environment-optimised animal transport 244
Sofia Wiberg, Anne Algers, Bo Algers, Ulrika Franzén, Magnus Lindencrona, Olof Moen, Sofia Ohnell and Jonas Waidringer
The ethics of automatic milking systems and grazing in dairy cattle 249
Leonie F.M. Heutinck and Clemens Driessen

Part 7 - Sustainability and animal welfare: implementation and legislation

Conflicting areas in the ethical debate on animal health and welfare 257
Albert Sundrum
The concept of sustainable agriculture necessitates a duty of stewardship in contemporary animal welfare legislation 263
Ian A. Robertson
The Australian Animal Welfare Strategy: sustaining food production drivers within broader societal agendas 269
H.R. Yeatman
Sheep welfare in the welfare state: ethical aspects of the conventionalisation of Norwegian organic production 273
Marianne Kulø and Lill M. Vramo

Animal welfare in assurance schemes: benchmarking for progress 279

S. Aerts

Best Practice in animal production: a grassroots evaluation framework 285

S. Aerts and D. Lips

Part 8 - Sustainability and animal welfare: workshop 'Science and public expectations'

Can animal science meet the expectations in the 'animal welfare' debate? 293

Karel (K.H.) de Greef and Bram (A.P.) Bos

Empirical facts in farm-animal welfare discourses 300

Herwig Grimm

Part 9 - Ethics of organic farming

On the ethical dimension of organic agriculture 309

Tatjana Kochetkova

Organic farming: for the sake of nature? 316

Karsten Klint Jensen

Mutilations in organic animal husbandry: ethical dilemmas? 321

Susanne Waiblinger, Christoph Menke and Knut Niebuhr

The development of organic aquaculture as a sustainable food production system: exploring issues and challenges 328

S. Tomkins and K.M. Millar

Part 10 - Sustainable disease control

Keeping backyard animals as a way of life 337

Nina E. Cohen, Elsbeth N. Stassen and Frans W.A. Brom

Animal disease policy as a moral question with respect to risks of harm 342

Franck L.B. Meijboom, Nina Cohen and Frans W.A. Brom

Avian influenza and media coverage: a qualitative study in four European countries 347

Asterios Tsioumanis

Using participatory methods to explore the social and ethical issues raised by bioscience research programmes: the case of animal genomics research 354

K.M. Millar, C. Gamborg and P. Sandøe

System approach to improve animal health 360

Albert Sundrum, Klaas Dietze and Christina Werner

Will nano-enabled diagnostics make animal disease control more sustainable? 365

Johan Evers, Stef Aerts and Johan De Tavernier

Is it possible to make risk-reduction strategies socially sustainable? 371

Sara Korzen-Bohr and Jesper Lassen

New understanding of epigenetics and consequences for environmental health and sustainability 376

Veronika Sagl, Roman Thaler, Astrid H. Gesche and Alexander G. Haslberger

Local knowledge and ethnoveterinary medicine of farmers in Eastern Tyrol about wild plant species: a potential basis for disease control according to EC Council Reg. 2092/91 in organic farming 382

Brigitte Vogl-Lukasser, Christian R. Vogl, Susanne Grasser and Martina Bizaj

Part 11 - Sustainable food production and consumption

Sustainable value chain analysis 389

David Simons

Sustainable green marketing of SMEs' ecoproducts 395

Maarit Pallari

The role of women in promoting ethical consumerism: an historical perspective 401

Laura Terragni

Waste not want not - the ethics of food waste 407

André Gazsó and Sabine Greßler

Ruminant feeding in sustainable animal agriculture 412

Wilhelm Knaus

What is 'regional food'? The process of developing criteria for regional food in Eastern Tyrol, Austria 416

Julia Kaliwoda, Heidrun Leitner and Christian Vogl

Part 12 - GMO: GM plants

Contested GMO's: how questions of global justice and basic structures matter in the debate on GM plants 425

Kristian Høyer Toft

Benefits at risk: does the motivation of farmers counteract potential benefits of GM plants? 431

Jesper Lassen and Peter Sandøe

Typology of ethical judgements on transgenic plants 436

Catherine Baudoin

Marketing GM Roundup Ready rapeseed in Norway? Report from a value workshop 442

Ellen-Marie Forsberg

GM-food: how to communicate with the public? 450

Ursula Hunger, Brigitte Gschmeidler and Elisabeth Waigmann

Part 13 - GMO: transgenic animals

Ethical concerns related to cloning of animals for agricultural purposes 455

Mickey Gjerris and Peter Sandøe

Animal welfare aspects of creating transgenic farm animals 461

Kristin Hagen

Cloning for meat or medicine? 466

C. Gamborg, M. Gjerris, J. Gunning, M. Hartlev and P. Sandøe

Assessing people's attitudes towards animal use and genetic modification using a web-based interactive survey 472

Catherine A. Schuppli and Daniel M. Weary

Part 14 - Nature conservation and ethics

Environmental values and their impact on sustainability and nature conservation 477

Diana Ehrenwerth and Alexander G. Haslberger

Aspects of ethics and animal protection in animal husbandry under semi-natural conditions, in animals returned to the wild, and in wild animals 483

K.M. Scheibe

The ethics of catch and release in angling: human recreation, resource conservation and animal welfare 489

Cecilie M. Mejdell and Vonne Lund

Part 15 - Other contributions

Why farmers need professional autonomy 495

F.R. Stafleu and F.L.B. Meijboom

Reflections from cultural history: the story of the Bohemian landscape in Romania - a sustainable past? 500

Pavel Klvac and Zbynek Ulcak

Landscape, land use and soul: ecopsychology: mending a troubled relationship 506

Diana Voigt, Thomas Lindenthal and Andreas Spornberger

Organic farmers' experiments and innovations: a debate 512

Susanne Kummer, Racheli Ninio, Friedrich Leitgeb and Christian R. Vogl

Detecting pathogens using real-time PCR: a contribution to monitoring animal health and food safety 515

Sophie Kronsteiner, Konrad J. Domig, Silvia Pfalz, Philipp Nagel, Werner Zollitsch and Wolfgang Kneifel

Analysis of diet-induced changes in intestinal microbiota: microbial balance as indicator for gut health 518

Silvia Pfalz, Konrad J. Domig, Sophie Kronsteiner, Philipp Nagel, Werner Zollitsch and Wolfgang Kneifel

Analysis of food associated bacterial diversity with molecular methods comparing lettuce from organic and conventional agriculture and cheese from pasteurized *versus* unpasteurized milk 521

Jutta Zwielerhner, Michael Handschur, Norbert Zeichen, Selen Irez and Alexander G. Haslberger

Non-physical interaction between humans and plants and its impact on plant development 526

F. Leitgeb, C. Arvay, K. Dolschak, A. Spornberger and K. Jezik

A tailor-made molecular biological strategy for monitoring the gut microbiota of pigs reflecting animal health 532

Agnes Petersson, Konrad J. Domig, Elisabeth Moser, Karl Schedle, Wilhelm Windisch and Wolfgang Kneifel

Evaluating novel protein sources for organic laying hens 537

Heleen A. Van de Weerd and Sue H. Gordon

Authors index 543

Keyword index 547