

Table of contents

Preface	7
General introduction <i>Hans Langeveld, Niels Röling and Janice Jiggins</i>	19
How sustainable can agriculture be in an EU-scenario of free market & social policy? <i>P.H. Vereijken and C.M.L. Hermans</i>	23
Section 1 – Learning as a process	
Introduction to section 1 – Learning as a process: Understanding one’s role in the new learning demands of multifunctional land use systems, working with different actors, tools and scales <i>Nadarajah Sriskandarajah, Marianne Cerf and Egon Noe</i>	27
Where do participatory approaches meet social learning systems in the context of environmental decision making? <i>Chris Blackmore</i>	29
The action researcher as a reflective partner to a core group <i>Dorthe Christensen and Nadarajah Sriskandarajah</i>	35
New futures for traditional regions: A dairy farming systems response to regional development in Australia <i>Anne Crawford, Mark Paine, Howard Smith and Tom Davison</i>	40
Learning from participatory research with organic farmers in the UK and Sweden <i>David Gibbon, Cheney Longville and Karin Eksvärd</i>	45
Setting a research agenda to support change in agriculture: Learning processes, stakeholder participation, R&D policy making <i>Bernard Hubert</i>	49
Sustainable rural development and communicative learning <i>Egon Noe and Anne-Mette S. Langvad</i>	54
Landscapes and sugar boxes for learning in rural areas management <i>Richard Raymond, Salma Loudiyi and Sylvie Lardon</i>	59
Farmer stable schools: A fruitful way for Danish organic dairy farmers with the goal to phase out antibiotics from their herds <i>Mette Vaarst</i>	64
The changing perception of expert advice in nature conservation: A case of the Drentsche Aa <i>Severine van Bommel</i>	69

Lessons learned about instigating change towards an AKIS/RD in Brandenburg, Germany <i>Kirsten von der Heiden</i>	74
Building the capacity of the Australian dairy RD&E continuum: How do we create a learning platform? <i>Jane M. Weatherley and Mark S. Paine</i>	79
The learning potential of farmers' market <i>Lotten Westberg, Johanna Björklund, Ulrika Geber and Rebecka Milestad</i>	84
Project setup and learning processes in participative systems oriented research initiatives <i>J.W.A. Langeveld, A. Crawford, M. Paine, S. Pinheiro, W. de Boef, I.S. Kristensen, J. Hermansen, B. Dedieu, P. Hildebrand, V. Cabrera, D. Jansen and J. Dixon</i>	89
Constructing new appreciative frameworks: Self inspiring from multi-agent systems <i>H. Morales, J.F. Tourrand and P. Bommel</i>	91
Labor market competencies and agricultural extension and education undergraduates <i>Reza Movahedi and Uwe Jens Nagel</i>	92
Building effective learning networks among researchers and stakeholders in the Danish context <i>Nadarajah Sriskandarajah, Dorte Christensen, Sofie Kobayashi and Henrik Sønksen</i>	93
Use of the nutrient cycle tool in developing sustainable dairy production systems <i>Willem van Weperen</i>	94
Section 2 – Agriculture, land use and sustainable development	
Introduction to section 2 – Agriculture, land use and sustainable development <i>Artur Cristóvão, Ken Giller, Luigi Omodei Zorini and Philippe Perrier-Cornet</i>	97
Towards sustainable farming: Regional pilots on changing land use under the European Water Framework Directive <i>Sarie Buijze and Frank van Lamoen</i>	101
Sustainable dairy farming systems for a deregulated market in northern Australia <i>R.G. Chataway, R.G. Walker, M.N. Callow and H.L. Todd</i>	106
Network analysis of farming and non-farming activities for sustainable development <i>Caterina Contini, Luigi Omodei Zorini and Roberto Polidori</i>	111
Local organizations in the Douro-Douro region of Portugal and Spain: Towards a pluralistic local animation system <i>Artur Cristóvão, Alberto Baptista and Raquel Miranda</i>	116
Is there a place for small-scale production and local food systems? <i>Artur Cristóvão, Manuel Luís Tibério, Sónia Abreu and Alberto Baptista</i>	121

Marvão polyculture mosaic's fate: Searching the way for a rural area in transition <i>Milena Andrade Dneboská, Teresa Pinto-Correia and Patricia Pedro-Rêgo</i>	126
Organic manure availability, food security and poverty relationships at farm level in the old cotton basin of Mali <i>M.S. Keita, J.F. Bélières, J. Coulibaly, B. Rapidel and R. Pocard-Chapuis</i>	132
Modelling environmental benefits of silvoarable agroforestry in Europe <i>J.H.N. Palma, A.R. Graves, R.G.H. Bunce, P.J. Burgess, R. de Filippi, K.J. Keesman, H. van Keulen, F. Liagre, M. Mayus, G. Moreno, Y. Reisner and F. Herzog</i>	138
Biomass production, transformation and allocation at the village scale in Southern Mali: Development of a conceptual model <i>Bruno Rapidel, René Pocard-Chapuis, Jean-François Bélières, Bouba S. Traoré, Jacob Coulibaly, Drissa Diallo and Matthieu Lessnoff</i>	144
Institutions for anthropogenic nature: Case study from Brabant <i>Niels Röling and Janice Jiggins</i>	149
The construction of a coherent vision for territorial development <i>Markus Schermer</i>	154
Urban oriented agriculture: The case of Almere (The Netherlands) <i>Derk Jan Stobbelaar, Marleen Warnaar, Jan Eelco Jansma and Walter A.H. Rossing</i>	159
The contribution of non-farm small-medium enterprises to rural development <i>H. Theodoropoulou and S. Kyriakopoulou</i>	164
Agrobiodiversity as driving force of sustainable rural development <i>Menko Wiersema and Frans van Alebeek</i>	169
Reconnecting conservation & livelihood objectives through non-timber forest product certification <i>David S. Wilsey</i>	174
Socio-cultural issues of dairy production systems in the Netherlands: Results of farm visits with six citizen panels <i>B.K. Boogaard, S.J. Oosting and B.B. Bock</i>	179
Socio-cultural values of Dutch dairy systems: Case study in the Krimpenerwaard and the Alblasserwaard on farm and landscape level <i>Daniël de Jong, S.J. Oosting and B.K. Boogaard</i>	180
Carbon stocks in smallholder agroecosystems in Malawi: A farming systems approach <i>Peter Hildebrand and Paul Thangata</i>	181
Evaluation of landscape preferences of Montado in southern Portugal as a contribution for management <i>Diana Ježová and Teresa Pinto</i>	182

Towards a dairy system that produces more than milk <i>Jan J.H.M. Ketelaars, Frits K. van Evert and Ben Rutgers</i>	183
Organic and integrated farming systems in Greece: A comparative analysis <i>Eleni Oxouzi, Athanasios Theocharopoulos, Vasilis Bagiatis and Evangelos Papanagiotou</i>	184
The socioeconomic integration of expatriates in the rural prefecture of Rodopi, Greece <i>H. Theodoropoulou and E. Pastrapa</i>	185
Rural policy in Europe: Experiences with the LEADER approach in the Netherlands <i>Anouk van Gils</i>	186
Sustainable development in Polish agriculture: Main streams and development directions <i>Jadwiga Ziolkowska</i>	188
Section 3 – The future of farming	
Introduction to section 3 – The future of farming <i>Benoît Dedieu, Colin Newsham and Rebecka Milestad</i>	191
Farmer relationship to nature conservation and biodiversity <i>Johan Ahnström and Lars Hallgren</i>	195
Future prospects of the average Norwegian farm <i>Hilde Bjørkhaug</i>	200
Diversity of women’s role and motivation in Norwegian farms <i>Hilde Bjørkhaug, Reidun Heggem and Kjersti Melberg</i>	206
Multifunctional farms and rural development: A study of four Swedish rural areas <i>Johanna Björklund and Rebecka Milestad</i>	212
What is the future for farming inside the agri-food chain? <i>Sylvie Bonny</i>	217
Farming systems under saline conditions <i>Willem A. Brandenburg</i>	223
How do dairy farmers face work problems? Some elements about the adaptation of the technical systems in Central France <i>Sylvie Cournut and Benoît Dedieu</i>	227
Can family farmers be understood as adaptive managers? <i>Ika Darnhofer</i>	232
Interests and policies for becoming farmers: The case of young women farmers in Greece <i>I. Gidarakou, L. Kazakopoulos and A. Koutsouris</i>	237
Exploring the multifunctional role of farming systems <i>John E. Hermansen, Egon Noe and Niels Halberg</i>	242

The labour organization of small-scale breeders in the Brazilian Amazon is a key point for sustainable development <i>Nathalie Hostiou, Jean-François Tourrand, Jonas Bastos da Veiga, Ailce Margarida Negreiros Alves and Tienne Barbosa</i>	247
Commercial flexibility of beef cattle farms <i>Stéphane Ingrand, Eduardo Chia, Charles-Henri Moulin and Julie Cessieux</i>	252
How are European farmers dealing with global environmental changes? <i>C. Macombe</i>	257
The future of farming in Norway: Processes of recruitment and intergenerational transitions <i>Kjersti Melberg and Christin Berg</i>	262
Farmers' new participation in food supply chains: Making horizontal and vertical progress by networking <i>Minna Mikkola and Laura Seppänen</i>	267
Working conditions: A challenge for sustainability of mountain family farming systems diagnosis at farm level and responses designed by farmers in the Alps <i>Sandrine Petit, Laurent Dobremez and Philippe Fleury</i>	272
What technical changes are needed for traditional dairy farming systems in less favoured regions? <i>Vincent Thénard, Jean-Pierre Theau, Olivier Théron and Michel Duru</i>	277
Structure and operation of small scale farming in the oasis in southern Algeria <i>Salah Eddine BenZiouche</i>	282
Developing organic farming in Norway through systemic action research <i>H.W. Carlsen, T.A. Breland, G. Lieblein and C. Francis</i>	283
Farming styles and the future of pig farming in Midi Pyrenees <i>Monica A.M. Commandeur and François Casabianca</i>	284
Transformation of livestock farming in Cameroon: Changes in breeding practices and evolution of farmer profiles <i>Patrice Djamén, Jean Lossouarn and Michel Havard</i>	285
Farming future in China: Has time come for financial transfers? <i>Michel A.C. Fok, Weili Liang, Guiyan Wang and Yuhong Wu</i>	286
Rural transport and development: Case of the agro-pastors of the djebel Amour (Algeria) <i>Bennoui Foudil</i>	287
The LIFESCAPE approach: Identity and landscape as an incentive for economic development <i>Rob Maessen and Peter Nowicki</i>	288

The influence of climatic and socio-economic conditions on farm performance in Europe <i>Pytrik Reidsma and Frank Ewert</i>	289
Greek agricultural sector: Facing the challenges <i>Athanasios Theocharopoulos, Eleni Oxouzi, Venetia Kourkouta and Evangelos Papanagioutou</i>	290
<i>It Frysk Boerespul</i> : Historical farmhouses with modern agrarian functions <i>Luitzen Walstra and Marit de Vries</i>	291
Section 4 – Agricultural knowledge and innovation systems in transition	
Introduction to section 4 – Agricultural knowledge and innovation systems in transition <i>Kirsten von der Heiden, Cees Leeuwis and Uwe Jens Nagel</i>	295
Farming with future: Implementation of sustainable agriculture through a network of stakeholders <i>Harm Brinks and Stefanie de Kool</i>	299
Knowledge development for weed management in organic farm systems in the UK <i>G. Davies, R.J. Turner and D. Gibbon</i>	304
Social construction of knowledge: A leading perspective in a participatory research training programme in Santa Catarina, Brazil <i>Walter S. de Boef and Sergio L.G. Pinheiro</i>	309
Participative approaches and extension practices towards sustainable agriculture: A methodological approach based on sociology of translation <i>Philippe Fleury, Christoph Kirchengast, Valérie Mievillette-Ott, Nathalia Magnani and Sandrine Petit</i>	314
Creating a Nordic regional research network in agroecology: Links to MSc education <i>Charles Francis, Tor Arvid Breland, Geir Lieblein, Lennart Salomonsson, Ulrika Geber, Nadarajah Sriskandarajah, Vibeke Langer, John Porter and Juha Helenius</i>	320
Extension as a knowledge partner in farming systems research: Early lessons from “FutureDairy” Australia <i>Sean Kenny and Ruth Nettle</i>	325
Technological innovation in extension services and institutional change: Learning from a historical comparison between France and the Netherlands <i>Pierre Labarthe</i>	330
(Re)-innovating tools for decision-support in the light of farmers’ various strategies <i>Anne-Mette S. Langvad and Egon Noe</i>	335
New knowledge arrangements in the Dutch agro-ecological innovation system: Tensions between privatisation and innovation discourses <i>Cees Leeuwis and Laurens Klerkx</i>	340

Immaterial resources: A new concept to formalize information mobilized by beef cattle farmers in their husbandry activity <i>M.-A. Magne, S. Ingrand and M. Cerf</i>	345
Farming systems and its cousins: Including and transcending to make a difference <i>C.L. Neely and J.M. Dixon</i>	350
How to lay the golden eggs? Experiences from collaboration between industry and research in socially accepted poultry meat production in The Netherlands <i>Jet Proost, Ferry Leenstra, Kees Lokhorst, Hilde van Dijkhorst and Cees Leeuwis</i>	355
"Ownership" in trans-disciplinary projects <i>S.F. Spoelstra, P.W.G. Groot Koerkamp and A.P. Bos</i>	361
Coupling goal-based modelling to farm innovation <i>Barbara Sterk and Martin K. van Ittersum</i>	366
Chances of success in investing all AKIS/RD's efforts in informal linkages under privatised extension conditions <i>Kirsten von der Heiden</i>	370
Improving leaders' skills and competencies: The challenge for farming systems in the beginning of the millennium <i>Ana Alice Vilas Boas and Milton Bernardes Ferreira</i>	376
Intermediate roles in privatised extension systems: The Dutch case <i>Elke Wielinga</i>	381
The development of a monitoring method for innovation projects <i>Barbara van Mierlo and Cees Leeuwis</i>	386
Applied research for organic dairy farming <i>J.B. Pinxterhuis</i>	387
Section 5 – Management of natural resources	
Introduction to section 5 – Management of natural resources <i>Chris Stoate, Andrea Knierim and Jacques Baudry</i>	391
Can earth observation technology improve efficient water use in irrigation systems? A case study of an irrigation scheme in Chaves <i>Alberto Baptista and Vicente Sousa</i>	393
Supporting discussions on land use: A design instrument that integrates nature conservation, economic performance and landscape quality in agricultural areas <i>Jeroen C.J. Groot, Walter A.H. Rossing, Derk Jan Stobbelaar, Henk Renting and Martin K. van Ittersum</i>	399

Nutrient recycling potential of linked components in wetland and rainfed farming systems of western zone of Tamil Nadu, India <i>C. Jayanthi, S. Marimuthu, G. Vivek and B. Sivakami</i>	405
Improving natural resource management by “thinking industry and acting regionally”: Introduction and successes of dairy Australia’s multi-scaled natural resource management strategy <i>J. Jennings, P. Day, C. Phelps and R. Packham</i>	409
New ways in the management and valorisation of natural resources? Results of a comparative analysis of a sample of agriculture-environment projects of the <i>Regional Action</i> pilot programme in Germany <i>Karlheinz Knickel, Melanie Kröger and Sarah Peter</i>	414
Activating farmers’ interests: Action research for biodiversity conservation and enhancement in Brandenburg <i>Andrea Knierim and Harald Kächele</i>	419
Structural development in Danish agriculture and its implications for farmland nature <i>Gregor Levin, Vibeke Langer and Pia Frederiksen</i>	424
The livestock commodity chain: A lever for monitoring pioneer dynamics in the Brazilian Amazon Region? <i>René Pocard-Chapuis, Marcelo Thales, Adriano Venturieri, Marie-Gabrielle Piketty, Benoit Mertens, Jonas Bastos da Veiga and Jean-François Tourrand</i>	430
Re-inventing sustainable cropping systems in Costa Chica, Mexico <i>Diego Flores Sanchez, Jobert Kleine Koerkamp, Walter A.H. Rossing, Egbert A. Lantinga and Ariena H.C. van Bruggen</i>	435
Differentiation of territories according to the location of agricultural activities: Methods for regional scale approaches <i>V. Souchère, C. Mignolet, C. Schott, E. Bienaimé and M. Benoît</i>	440
Opportunities and constraints of farming styles to meet the landscape preferences of rural inhabitants <i>Derk Jan Stobbelaar, Florian Kuijper, Henk Renting, Jeroen C.J. Groot, André Jellema and Walter A.H. Rossing</i>	445
Farmer-driven protection of meadow birds in the Friesian Woodlands (northern Netherlands) <i>Paul Swagemakers</i>	450
Linking landowner type and landscape functions: A proposal for an integrated approach from southeast Portugal <i>Anne van Doorn</i>	455

Why and how design monitoring processes of farmer practices in European landscape? <i>Marc Benoît, Michel Passouant, Claudine Thenail, Laurence Hubert-Moy, Pierre Dupraz, Christian Brassac, Florence Le Ber, Jean-François Marie, Christian Bockstaller, Olivier Barriere, Dominique King, Christine Le Bas and Pierre Ruelle</i>	461
Interactive Technology Assessment: The ideal and the unruly practice <i>S. Goddijn, M. van Bavel, B. Bos and G. van der Peet</i>	463
Farmer's choice and land productivity between direct seeding and transplanting in rainfed lowlands in Northeast Thailand and Northwest Cambodia <i>A. Kamoshita, S. Hayashi, H. Ikeda, J. Yamagishi, A. Kotchasatid, B. Jongdee, S. Chea, M. Ouk, S. Leang, S. In, C.C. Sophorn, N. Kojima, M. Hamano and K. Tokida</i>	464
Improving nitrogen management on arable farms in a participative project in The Netherlands <i>J.W.A. Langeveld, F.J. de Ruijter, P. Dekker, O.A. Clevering and B.M.A. Kroonen-Backbier</i>	465
Analysing the link between technical practices and social organisations: The example of a French rare breed management set up, the "Landais" sheep breed <i>A. Lauvie, A. Audiot, F. Casabianca and E. Verrier</i>	466
Final section – Perspectives for participative systems oriented research	
Introduction to final section – Perspectives for participative systems oriented research <i>Jan Verhagen, Hans Langeveld and John Dixon</i>	471
A Farmer Field School approach for learning and exchanging knowledge on animal health and production: Results from action research in Kenya, Uganda, Vietnam and Denmark <i>M. Vaarst, J.C. Riise, P. Rasmussen and C.E.S. Larsen</i>	473
Author index	475