

# **RURAL AND FARMING SYSTEMS ANALYSIS European Perspectives**

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## CONTENTS

<b>Contributors</b>	ix
<b>Foreword</b> <i>Janice Jiggins</i>	xiii
<b>Preface</b> <i>Barry Dent and Murray McGregor</i>	xvii
<b>I: CONCEPTUAL BACKGROUND</b>	
<b>1 FARMING SYSTEMS RESEARCH/EXTENSION:</b> Background Concepts, Experience and Networking <i>David Gibbon</i>	3
<b>2 FARMING SYSTEMS RESEARCH/EXTENSION APPROACH AND THE EUROPEAN CONTEXT:</b> INRA Experience in Creating a Research Structure for Agrarian Systems and Development in France <i>Joseph Bonnemaire</i>	19
<b>3 FARMING SYSTEMS RESEARCH/EXTENSION IN THE EUROPEAN CONTEXT</b> <i>Colin Spedding</i>	46
<b>4 THE ROLE OF FARMING SYSTEMS RESEARCH/EXTENSION IN ENCOURAGING LOWER USE OF NON-RENEWABLE RESOURCES IN FARMING</b> <i>David Leaver</i>	53

**II: CONTEXTUAL SETTING**

- 5 FARMING SYSTEMS APPROACH AND ITS RELEVANCE FOR AGRICULTURAL DEVELOPMENT IN CENTRAL AND EASTERN EUROPE** 65  
*Werner Doppler*
- 6 INSTITUTIONALIZATION OF AGRICULTURAL EXTENSION IN ESTONIA: Appraisal and Prospects for Development** 78  
*Ivar Dembovski*
- 7 AGRICULTURE AND FARMING SYSTEMS: Developing and Implementing Policies under Social, Political and Structural Change in Denmark** 93  
*Vagn Østergaard and Poul Eric Stryg*
- 8 OBJECTIVES AND ATTITUDES OF FARM HOUSEHOLDS IN THE REPUBLIC OF IRELAND** 106  
*Jim Phelan*
- 9 FOOD SECURITY OR FARM SUPPORT? A Sketch of Food Policy in the North and South** 116  
*Philip Raikes*

**III: ALTERNATIVE PRODUCTION SYSTEMS**

- 10 ROLE OF FARMING SYSTEMS RESEARCH/EXTENSION IN GUIDING HIGH INPUT SYSTEMS TOWARDS SUSTAINABILITY** 129  
*Javier Calatrava*
- 11 PLANT BIOTECHNOLOGY AND SUSTAINABLE AGRICULTURE** 140  
*Eija Pehu*
- 12 DEINTENSIFICATION STRATEGIES OF CEREAL FARMS IN LOWER SAXONY: A Contribution Towards More Sustainable Farming Systems** 145  
*Cord Stoyke and Hermann Waibel*
- 13 BIOMASS AS AN ALTERNATIVE LAND USE FOR SOUTHERN EUROPEAN AGRICULTURE** 159  
*Spyros Kyritsis and Peter G. Soldatos*

- 14 ENVIRONMENTAL ISSUES: USE OF FARMING SYSTEMS RESEARCH/EXTENSION TO RESOLVE ENVIRONMENTAL AND SPATIAL PROBLEMS** 167  
*Marc Benoit*
- IV: UNDERSTANDING FARM HOUSEHOLDS**
- 15 FARMING SYSTEMS AND THE FARM FAMILY BUSINESS** 181  
*Andrew Errington and Ruth Gasson*
- 16 FARMERS' OBJECTIVES AND THEIR INTERACTION WITH BUSINESS AND LIFE STYLES: Evidence from Berkshire, England** 193  
*Penny Perkin and Tahir Rehman*
- 17 AN INTRODUCTION TO FAMILY AND BUSINESS STRESS IN FARM FAMILIES** 213  
*Ian Deary*
- 18 WORKING KNOWLEDGE CONCERNING TECHNICAL SYSTEMS AND DECISION SUPPORT** 222  
*François Papy*
- 19 GENDER ISSUES IN EUROPEAN AGRICULTURAL SYSTEMS** 236  
*Ruth Gasson*
- 20 INTERACTIONS BETWEEN FARM HOUSEHOLDS AND THE RURAL COMMUNITY: Effects of Non-agricultural Elements in Farm Household Decision Making on Farming Systems** 243  
*John Bryden*
- 21 EDUCATION AND EXTENSION: A PERPETUATING PARADIGM FOR SUCCESS** 255  
*Kate Corcoran and Barry Dent*
- V: SYSTEMS METHODOLOGIES**
- 22 AGRICULTURE: IS THE ART DE LA LOCALITÉ BACK? The Role and Function of Indigenous Knowledge in Rural Communities** 269  
*José Portela*

<b>23</b>	<b>INTERACTION BETWEEN EXTENSION SERVICES AND FARMER DECISION MAKING: New Issues and Sustainable Farming</b>	280
	<i>Niels Röling</i>	
<b>24</b>	<b>PARTICIPATORY RESEARCH: WATER QUALITY AND CHANGES IN FARMING SYSTEMS</b>	292
	<i>Jaques Brossier and Eduardo Chia</i>	
<b>25</b>	<b>THE ROLE OF FARMING SYSTEMS RESEARCH/EXTENSION IN GUIDING LOW INPUT SYSTEMS TOWARDS SUSTAINABILITY: An Agroecological Approach for Andalusia</b>	305
	<i>Eduardo Sevilla Guzmán and ISEC Team</i>	
<b>26</b>	<b>THE CONTRIBUTION OF ACTION-RESEARCH TO THE ORGANIZATION OF AGRARIAN SYSTEMS:</b>	320
	<b>Preliminary Results of Experiments under way in France</b>	
	<i>François Vallerand</i>	
<b>27</b>	<b>THE NECESSITY, THEORY AND REALITY OF DEVELOPING MODELS OF FARM HOUSEHOLDS</b>	338
	<i>Gareth Edwards-Jones and Murray McGregor</i>	
	<b>Index</b>	353

## FOREWORD

The First European Convention on Farming Systems Research and Extension marked the beginning of an exploration and a sharing. Those of us who have participated in the meetings of the Association of Farming Systems Research and Extension (AFSRE) have got to know each other through our work in developing countries. We know relatively little about the efforts to transform agricultural systems that others have been making in Europe itself. And, owing to the accidents of language and history, those based in the northern and western areas of Europe have had until recently little contact with colleagues in central and eastern Europe and the former USSR, and too little contact with colleagues in the south.

The First European Convention marked the first attempt to bring Europeans who have been applying systems approaches to the problems of Third World agriculture together with those applying systems approaches within Europe. The process of mutual discovery of our diverse experiences is paralleled by the emergence of regional farming systems networks in other parts of the world. In collaboration with the AFSRE, some already are formalized as regional associations, as in Asia; others are more loosely constituted, as in Latin America.

What do we have in common? Beyond the specific applications and models we have developed in particular settings, I believe there are shared values, challenges, concerns and experiences underlying our diversity.

We are first and foremost committed to applying the power of the agricultural sciences to the problems of rapid transformation of farming as a system. Farming systems uniquely combine biophysical and socioeconomic phenomena in dynamic enterprises in which change, both reactive and proactive, is a condition for survival. In particular, we share a concern to strengthen the productivity of smallholder farming systems, as the primary

source of livelihood for what is still the larger portion of the world's people.

We have learned that, in order to operationalize a systems approach, it is not enough to build system models and computer simulations of system dynamics. We must engage with members of the rural community, and together explore agricultural reality: in effect, harnessing the power of local, experiential knowledge, mental constructs and values, as well as farmers' experimental capacity, to the strengths of agricultural science.

In moving out of the research station, extension office and the university to work more closely with farmers, we have encountered two challenges, one ecological and one social. The first involves the recognition that the key question is not, or at least not only, 'how do we increase the productivity of agriculture?' but 'how do we sustain the productivity of the natural resources on which all agriculture depends?' The second challenge involves the recognition that there can be no sustainable agriculture, whatever the specific national mix of economic and environmental goals, without sustainable farming communities.

Our individual and collective exploration of these challenges has led us toward two distinctive concerns which serve to define our identity as a like-minded group of theorists, scientists, teachers and practitioners. One is a concern for **method**. The other is a concern for **process**.

There has been in recent years an explosion of interest in methods for working with farmers and other members of rural communities in order to develop agricultural technology and production systems together. We have moved from a somewhat formal and rigid FSR/E method paradigm toward a still-expanding, highly creative, rich and innovative portfolio of participatory methods which engage scientist, extensionist and farmer in joint analysis of problems and opportunities, design of experiments, experimental activity and the evaluation and sharing of results, both in the field and on the research station.

Development of method and exploration of process have gone hand in hand. Much has been learned about the practical steps and procedures required in order to produce reliable and rigorous results, the institutional processes needed to support participatory, field-based systems research and the professional and personal transformations that such a process demands.

The learning of method and process has encompassed a remarkable willingness to reach beyond normal professionalism. It has been accompanied by a spirit which encourages the open exchange of failures as well as successes and which supports critical reflection and peer appraisal of each other's experience of method and process. These characteristics of transparency and risk taking in the practice of our profession are part of our common identity.

However, there is one area in which much still needs to be done. I am prompted to ask whether we are not still undervaluing the talents of women scientists. Is enough being done to provide encouragement and financial support to young women scientists and extension professionals, equal to the

opportunities of young male professionals? Certainly at the field level, we have learned that 'participatory' methods are not sufficient to ensure that women farmers, who in some parts of the world are the major producers of food and everywhere play key roles in farming systems, are adequately, or at all, engaged in the formal processes of system development. We have learned also that, whatever the rhetoric about 'whole farm' analysis and development, many, perhaps most, programmes focus on development of the cropping or livestock components, with too little attention paid to the dynamics of intra-household flows of resources, costs and benefits. Only explicit commitment can overcome these biases and shortcomings.

Engagement with method and process in turn has led us to recognize that we cannot, as agricultural professionals, limit ourselves any more to the crop system or the farm system. We are having to deal with systems on a larger scale, involving unsuspected spatial and threshold effects, multi-year time horizons and time lags and a larger range of actors who typically hold divergent views about the nature of the system to be managed.

We have in this dimension of our work begun to move from thinking about working with or facilitating 'platforms of negotiation' towards 'platforms of creativity.' This is leading in turn to another cycle of exploration and innovation in method and process, in order to generate consensus for action, action which is designed to foster mutual learning about how to manage complex agricultural and natural resource systems on scales larger than the individual farm. An important skill here is the joint exploration of the values and properties which those who have a stake in the management of systems desire to see optimized. 'Making visible' the quantifiable values and measurable properties of existing systems and trying out experimental new designs in reality are further important contributions that the system practitioner is making to wider system management.

Complexity, uncertainty, urgency: we are increasingly driven by the political and public fear that time is running out as the chemical loading on global resources increases and the richness of our biological inheritance disappears. As attitude surveys show, an increasing number of people now believe that reductionist, Cartesian science has contributed to the environmental problems of the world. They have little confidence that the same scientific method and research process can contribute meaningfully to the solution. For better or worse, elite scientific decision making among small professional fraternities is no longer wholly trusted or accepted as legitimate by the public at large.

Farming Systems Research and Extension promotes and is allied with a broader resurgence in civic activism and involvement in the search for solutions to compelling human and environmental problems. In my view, it is this broader engagement which alone will ensure good quality decision making and behavioural change at the societal scale as agriculture meets the challenge of the next century. It is in this context that I hope very much that

a European group will continue to create ideas and to crystallize experience for others around the world to share.

*Janice Jiggins*  
*President*  
*Association of Farming Systems Research and Extension*  
*1993-1994*

## PREFACE

The farming systems research and extension (FSR/E) approach has been widely used in an attempt to bring about rural change in many developing countries. The approach has been less formally used in Europe, where traditionally the research effort has concentrated on reductionist science aimed at increasing commodity production. It is only recently, with the shift in the emphasis of the European Union agricultural policy from production to the restriction of surpluses, and increasing emphasis on environmental and social protection, that circumstances have emerged which might favour FSR/E procedures. In addition, the significant political changes in central and eastern Europe have led to modification of rural infrastructures and agricultural production. Together these circumstances may provide the opportunity in Europe to question research paradigms adopted in the past and, as part of this, promote the FSR/E approach in Europe. Adoption of the FSR/E approach can be viewed as a way of ensuring that the direction of change is supportive of rural people and the overall environment (biophysical, economic and social) in which they live. It is clear that the methods adopted by FSR/E practitioners outwith Europe will not in all cases transfer exactly into the European rural environment. This book is a first attempt to define the issues of farming systems research as they may be applied within a European context, and is based on papers presented at the First European Convention on Farming Systems Research and Extension held in Edinburgh in October 1993.

Part I of the book examines the conceptual background upon which FSR/E is built and discusses those elements which may be valid for analysing rural systems in Europe based on the experience with FSR/E in developing countries. It is clear that the objective in both cases is to improve the state of the farm household, the business it operates, the community it forms part of

and the environment in which it lives by embracing a range of disciplines in a holistic way.

Part II highlights the important changes taking place in rural sectors of European states including the difficult transition that eastern and central European countries are experiencing in moving from a centrally planned to a more market-oriented economy. The increasing role that concerns over the environment are having in the development of farming systems in western European countries is discussed. Finally, attention shifts to an investigation of the link between European Union agricultural policy and the status of farm households and food security issues in a global context.

As western Europe moves out of an extended period of production surpluses and concern for the environment grows, there is an increasing need for the identification of alternative land-use systems which meet both of these issues. Part III highlights some of the options – ranging from the role of organic farming and biomass production, to the role of genetic engineering techniques – which are currently being evaluated. The discussion shows that no single route will be appropriate to meet all the requirements of sustainability.

Change is never easy and negative impacts of rural change in Europe are being felt by farm and other rural households alike. The way in which these households adapt to change will depend on the issues that they face. Change brings with it stress and requirements for new information structures to ensure that the path of change is less stressful. It is becoming obvious that the approaches of traditional science, which concentrate on the farm as a production unit rather than a socioeconomic unit, will need to be replaced. The new research paradigm requires that researchers understand the processes of decision making within farm households and in rural communities. Part IV examines the business and family decision-making processes in farm households and highlights stresses that are occurring as a result of change. There is also discussion of the way in which support services are being withdrawn from rural areas, the changing role of women and the shift to multi-functional households which derive some income from spheres outwith agriculture.

The final section of the book, Part V, attempts to identify the way in which a number of groups within Europe are attempting to develop farming systems research frameworks applicable to European conditions. It is clear that there are major differences of approach. There is an increased recognition that those who have been using resources in rural areas over many years have developed an understanding of the constraints and potentials associated with those resources. This indigenous knowledge, which has been suppressed by the push for improved high science, clearly must not be neglected in the holistic FSR/E context. The French approach to the analysis of rural systems illustrates that progress can be made by adopting a holistic framework including technical issues and socioeconomic and political aspects. However,

on-the-ground research which concentrates on observation and analysis also has a number of deficiencies and arguments are made for modelling to integrate the disciplines. In this sense, it is suggested that the development of new methodologies which utilize both quantitative and qualitative data will be fundamental in achieving the appropriate level of integration.

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*Barry Dent and Murray McGregor*