



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



ELSEVIER

Agricultural Economics 28 (2003) 255–262

AGRICULTURAL
ECONOMICS

www.elsevier.com/locate/agecon

Book reviews

Management of Shared Groundwater Resources: The Israeli–Palestinian Case with an International Perspective

Eran Feitelson and Marwan Haddad (Eds.), Kluwer Academic Publishers, Boston, 496 pp., 2001, US\$ 135, ISBN: 0-7923-7254-9

Conflicts between neighboring nations over water resources have resulted in strained relations, leading to difficulty at the negotiating table. Most cases involve surface waters that act as a shared boundary or surface waters that flow from one nation into another. Transnational groundwater management can be even more complex because there is greater uncertainty about supply quantities, hydrology of recharge zones, and movement of water within the aquifer. Issues of hydrology, economic growth, and population growth are all key to a fair resolution.

Nowhere in the world is the resolution of water conflict more central to peace than in the Middle East, especially peace between the Israelis and Palestinians. The political climate makes negotiations on water supplies difficult, yet water allocation and use must be addressed in an equitable manner if a lasting peace is to be found. Complicating negotiations is the lack of solid scientific information on groundwater hydrology in the region, and the lack of sufficient institutional infrastructure to effectively manage the resource.

This recently published compendium by Eran Feitelson and Marwan Haddad represents the culmination of a 7-year study of water management issues in Israel and the West Bank. Negotiators recognize the importance of groundwater management to a lasting solution to the Israeli–Palestinian conflict. This volume looks at methods to manage the Mountain Aquifer that lies under parts of the West Bank and Israel. While the book's focus is the Mountain Aquifer, the authors recognize that any water negotiations will need to include other areas (Gaza) and other supplies

(surface) in the region. Initially, new supplies will need to be developed to meet basic domestic needs. Ultimately, water is necessary for economic growth. And for peace to succeed, there will be a need for prosperity for both the Israelis and the Palestinians.

Using papers from four different workshops, Feitelson and Haddad have assembled a text that covers a broad range of issues in transboundary groundwater management. Many of the chapters provide critical information for setting up groundwater management policies and institutions. However, the overall quality of the book is very uneven. There are large variations in quality between chapters and occasionally within individual chapters. Topics and pieces of many chapters overlap, creating a level of redundancy frustrating to the reader. Several chapters could use additional editing to correct for grammatical and typographical errors (some paragraphs end in mid-sentence and one table is missing the data). That said, for the reader who is willing to pick, choose, and skim, a majority of the chapters provide useful information for the management of transnational groundwater resources.

The book begins with an introductory chapter by the editors that sets the stage for considering groundwater's uniqueness when creating management institutions. The authors then provide the customary overview of the chapters to come. The book itself is divided into six parts that cover groundwater management issues, descriptions of the Israeli–Palestinian case, a look at other international efforts to manage transboundary water resources, technical information on monitoring and modeling groundwater, issues and options for management, and a descriptive action plan on where the specific Israeli–Palestinian process could go from here.

Part 1 of the book begins with a chapter by Haddad, Feitelson, and Shaul Arlosoroff that provides an engineering perspective on groundwater management, promoting the idea of managing for a sustainable yield.

The authors make the case for whole aquifer management, looking beyond withdrawals to include recharge and reuse. While the chapter raises many concerns in groundwater management, such as pollution prevention, overdraft, and aquifer degradation, the authors' definition of sustainable yield seems overly restrictive.

In the following chapter, Haddad provides a look at the significance of water in the writings of the Quran. While I found the discussion of the importance of water, other natural resources, and the environment in the Quran to be quite interesting, there is a lack of balance in the presentation. The chapter provides little guidance on how this information should be used in the creation and implementation of groundwater management policies and institutions. Furthermore, given the book's lack of alternative perspectives of other important religions in the region, inclusion of this chapter causes a lack of balance in the book as a whole.

The specific hydrology of the Israeli–Palestinian case, arguments for greater Palestinian management and for joint management, and a simulation of negotiations to reach a sustainable level of use are laid out in part 2 of the book. This part begins with a chapter by Yoav Harpaz, Haddad, and Arlosoroff that describes the specific hydrology of the Mountain Aquifer, its historic uses, and its uses under the interim agreements of the Oslo B Agreement. This is followed by a chapter by Arlosoroff that provides an excellent review of Israeli water law, along with a broad overview of public policy options. However, Arlosoroff's discussion of water markets is confusing and could probably be left to other chapters in the book that focus specifically on this topic.

The need for Palestinian management of the Mountain Aquifer is put forth by Karen Assaf and Taher Nassereddin in Chapters 5 and 7, respectively. Assaf states that the Palestinian Water Authority needs to set rules and regulations under a whole management system that accounts for water supply, demand, and reuse. She argues that better educational programs and better data collection are needed to manage the resource. Nassereddin provides a good overview of current Palestinian supplies and related shortages. Combining these two chapters would eliminate some redundancy while providing a fuller picture of the Palestinian situation.

The case for joint management of the aquifer, basing management boundaries upon the watershed's

boundaries, is made by Yona Kahane in Chapter 6. Unfortunately, much of the chapter provides generic information on groundwater management, along with details of the Mountain Aquifer's characteristics, most of which can be found elsewhere in the book.

Part 2 ends with a game theoretic model of negotiation by Sinaia Netanyahu, Richard Just, and John Horowitz. This chapter ties together the specific hydrologic features of supply and demand with the allocation and policy constraints that are the focus of the earlier chapters. The Netanyahu, Just and Horowitz simulations assess the impacts of various economic parameters on negotiations to move toward a sustainable level of water use.

The third part of the book considers water management laws and policies at the international, national, and local levels, concluding with a discussion of policies that may be useful at various political levels to help alleviate the impacts of droughts. Aaron Wolf provides an excellent review of international treaties concerning water rights. He finds that most negotiations are over surface waters and that each treaty must address circumstances unique to the particular basin. An important conclusion is that most negotiations focus on the water 'needs' of the parties and less upon the perceived water 'rights'.

Surface water and groundwater issues between the Netherlands and its neighboring states are described by Carel De Villeneuve, who stresses the need to consider both water quantity as well as water quality. In another chapter, Gregory Thomas looks at the geopolitical level at which institutions can effectively manage water. Drawing on experiences in the western United States, he argues that—in terms of sustainability, transferability, administrative efficiency, efficiency of use, and equity—local institutions (a decentralized structure) outperform centralized institutions. Joseph Dellapenna looks at customary international law concerning water conflicts. He finds that most cases incorporate the concept of 'equitable utilization' as the rule to allocate scarce water resources between nations. He explains that this rule does not necessarily imply 'equal use'. Miguel Solanes provides us with a long list of management ideas, many of which are covered elsewhere in the volume in greater detail. Ariel Dinar closes out part 3 by clearly outlining a set of policies that may be used to help institutions prepare for droughts and that may be used when

reacting to droughts. He draws upon an excellent set of case studies to illustrate these policies. The chapter stresses the importance of setting such policies in motion before a drought crisis in order to reduce tension and minimize impacts on the affected parties.

Part 4 turns to the specifics of groundwater modeling and data needs and analysis. Different types of models and their data requirements are discussed by Jac van der Gun. Jad Isaac and Maher Owewi provide an excellent overview of the structure of GIS systems and their data requirements. Unfortunately, their chapter also contains a long section on the politics of the Israeli–Palestinian conflict, which does not seem to fit into a technical chapter. Furthermore, their review of international law provides no new information beyond that already presented in several chapters in part 3.

Part 5 considers issues and options for groundwater management. Several of the chapters offer excellent discussions of economic innovations in groundwater management and the need for politically stable institutions to control groundwater uses. Steve Lonergan uses sound economic principles to assess various economic instruments for water management. He provides clear explanations of water auctions, markets, banking, and tradable permits systems. Starting with the need for secure property rights, Lonergan provides us with an analysis of how these concepts can be used in the Israeli–Palestinian case. K. William Easter and Robert Hearne lay out how to establish water markets under a variety of conditions. Their chapter covers water markets so completely and expertly that descriptions of markets throughout the rest of the book could be deleted, with the reader referred to this chapter. The authors stress that the key to successful markets is a stable (and thus equitable) initial allocation of rights, something that may take place away from the economic system and within the political realm.

Eyal Benvenisti argues that there is a need for an independent international entity to make decisions on water management outside each nation's political process. Benvenisti is concerned that too often the management agencies can be captured by national and sub-national interest groups, causing them to act counter to the long-term interests of the region. Ismail Najjar provides an excellent description of crisis (drought) management techniques. He stresses that the stages of management must include prevention, minimization, mitigation, and finally, compensation.

Different policies are appropriate for different goals, but efforts made before droughts become too severe can significantly reduce tensions and economic impacts that may occur later. Numan Mized stresses that management plans should incorporate the physical features (soil characteristics) of the region. Urban growth, recharge of fresh water, and recharge of treated wastewaters should take place in specific zones to reduce environmental impacts and the risks of contamination.

In part 6, the volume concludes with two chapters that provide recommendations on how the Israeli and Palestinian negotiators could proceed towards creating water management rules and institutions. Feitelson and Haddad do an excellent job of outlining a set of recommendations on how to proceed. Their chapter provides a summary of many of the key points that arise in the book. In Table 1, they provide a good overview of possible management institutions, distinguishing between different management levels (e.g. local, regional, national) and different management needs. The chapter identifies many of the needs—crisis management, aquifer protection, efficiency in supply, efficiency in use—and discusses possible institutions and actions (e.g. markets, auctions, privatization) to manage these needs.

Haddad, Feitelson, Arlosoroff, and Nassereddin provide us with an on-the-ground assessment of how the Israeli–Palestinian water negotiations and the creation of management institutions could proceed. They identify a need for a process that involves all participants, recommending a slow, confidence-building process that begins with data sharing and analysis, and moves towards allocations that must be equitable and sustainable. This process would be followed by the implementation of new institutions and strategies to improve efficiency and add operational flexibility. All of this will require that some new capital projects be funded and built, requiring the assistance and cooperation of the larger international community.

Douglas Parker
*Department of Agricultural and Resource
 Economics, University of Maryland
 College Park, MD 20742, USA*

Tel.: +1-301-405-8042; fax: +1-301-314-9091

E-mail address: dparker@arec.umd.edu (D. Parker)

PII: S0169-5150(02)00040-3

Rural planning and management

Joe Morris, Alison Bailey, R. Kerry Turner and Ian J. Bateman (Eds.), Edward Elgar Publishing, Northampton, MA, 674 pp., US\$ 230, ISBN: 1-84064-220-3

Rural Planning and Management is a collection of 37 recently published articles, the majority from after 1995, that cover a wide range of topics related to rural development and policy. The volume is organized into four parts and it contains an introductory essay, written by Joe Morris and Alison Bailey, which provides an overview of the articles featured in the book. The book focuses primarily on Europe and developing countries and it has a strong emphasis on sustainable development. Some recurring themes in the articles are the fundamental importance of agriculture to rural development, linkages between rural (agricultural) development and the environment, and the poor economic conditions that characterize many rural areas around the world.

In the introductory essay, Morris and Bailey define the concepts of 'rurality', 'development', 'sustainable development' and 'rural environment'. Most of the definitions are fairly standard, although the description of rural development does not explicitly mention the connection between capital formation and rural development that is stressed by other rural economists (Deaton and Nelson, 1992; Castle, 1998). The opening essay also discusses a variety of changes occurring in agriculture and the implications of these structural changes for the future viability of rural areas.

Part 1 of the book discusses some of the issues and challenges facing rural areas in Europe and developing nations. These include rural poverty and deprivation, social isolation of the rural elderly, impacts of globalization and rural land use issues. Part 2 describes some broad concepts and approaches to rural development such as the importance of property rights, the development of natural and social capital, and conservation planning. The articles included in part 3 deal with sustainable agriculture and development, conservation lands and wildlife management, forestry, rural tourism, energy policy, and rural housing and transport. Part 4 examines the importance of institutions for achieving sustainable rural development.

The book would benefit from a final section of conclusions drawn from the articles and additional

editorial remarks, placed between the articles or major sections, which would reiterate the main points of each article and relate them to the book's overall theme. For example, some transitional remarks between parts 1 and 2 of the book could strengthen the connection between the challenges facing rural areas identified in part 1 and the approaches to rural development outlined in part 2. Another general weakness of the book is that some of the topics do not appear to be central to the study of rural development. Although energy policy is an important subject in its own right, the papers on biomass energy and wind power seem out of place in a book about rural planning and management. The section on energy policy could have easily been replaced by a set of articles on rural manufacturing.

Given the book's strong focus on sustainable development, it would be most useful in a graduate-level course on sustainable rural development. In a traditional rural (or community) economic development course, the book could be used alongside a standard textbook (Shaffer, 1989; Blair, 1995) that covers the basics of economic development (e.g. location theory, economic base and input-output analysis, market area analysis, local public finance). The book would not be a particularly good fit for a course on the theories of economic development, since most of the articles are descriptive in nature and tend to focus more heavily on policy issues rather than on the underlying theory.

References

- Blair, J.P., 1995. *Local Economic Development: Analysis and Practice*. Sage Publications, Thousand Oaks, CA, USA.
 Castle, E.M., 1998. A conceptual framework for the study of rural places. *Am. J. Agric. Econ.* 80, 621–631.
 Deaton, B.J., Nelson, G.L., 1992. Conceptual underpinnings of policy analysis for rural development. *Southern J. Agric. Econ.* 24, 87–99.
 Shaffer, R., 1989. *Community Economics: Economic Structure and Change in Smaller Communities*. Iowa State University Press, Ames, IA, USA.

Todd M. Gabe
Resource Economics and Policy
 University of Maine, Orono
 ME 04469-5782, USA
 Tel.: +1-207-581-3307

E-mail address: todd.gabe@umit.maine.edu
 (T.M. Gabe)

Rural Financial Markets in Asia: Policies, Paradigms, and Performance (Study of Rural Asia, Vol. 3)

Richard Meyer and Geetha Nagarajan (Authors), published by Oxford University Press, New York, price: US\$ 29.95 pbk, ISBN: 0195924525

A vast majority of the population in rural Asia are micro-entrepreneurs: farmers, shopkeepers, food processors, traders, and small-scale manufacturers. Despite significant income growth in the last 30 years, many of them remain poor; about 670 million rural Asians still live in poverty and continue to rely, directly or indirectly, on agriculture for their livelihoods.

Like other entrepreneurs, rural Asians, including farmers, require access to dependable and well-designed financial services in order to better manage and expand their businesses. Without this access, many poor entrepreneurs are simply unable to take advantage of new market opportunities that public investments and/or market reforms provide. But conditions conducive to the rapid development of modern financial institutions are generally lacking in rural areas. Farmers are dispersed over wide areas and information on creditworthiness or project-specific risks is costly to collect, making general risk assessment expensive. Poor households lack collateral-suitable assets, transactions are small and expensive to administer, and business risks, especially in agriculture, are highly covariant. Matters are further complicated in transition countries such as those in central Asia where private ownership of capital and market-based production and exchange were introduced only in the 1990s. No wonder, then, that private sector banks have not bothered to set up shop in rural areas, and in cases where they have been arm-twisted by governments to do so, they have done so at considerable financial loss.

Given this situation, how should policy makers go about contemplating rural financial policies in the 21st century in Asia? This is the fundamental question that Meyer and Nagarajan attempt to answer. They do so by considering other important questions: How do agricultural markets interact with financial markets? What have recent country experiences been like, and what can we learn from them? How have policy paradigms emerged, played out, and changed? How have institutions responded, and what lessons do they provide for

the future? While there has been no dearth of writings on the topic of rural finance in the last 20 years or so, this book is clearly unique in attempting an all-Asia generalisation.

The book itself is the third in a five-volume *A Study of Rural Asia* series commissioned by the Asian Development Bank, and draws largely on materials gathered from six country studies conducted specifically for the purpose. Its 12 chapters are divided into two main parts. The five chapters in Part A lay out study objectives, a conceptual framework, and the principal findings from an analytical synthesis of the six country studies, concluding with the chapter “Developing Rural Financial Markets Asia: What Should be Done?”. Readers interested in obtaining an overall assessment, but who prefer not to get into country-level details, can easily stop reading here: the main arguments have been presented, useful evidence has been summarised, and final conclusions have been drawn.

Part B of the book, rather like an annex, presents the country case studies themselves. These studies are rich in detail and will be useful to many readers, especially those seeking information on the selected countries. The countries chosen are: Bangladesh and India in South Asia (“poor, densely populated” countries where “the state has intervened heavily in the their financial sectors”); Kyrgyz Republic and China (Central Asian countries ‘in transition’), and Indonesia and Thailand (rapid growth economies recently hit by a financial and economic crisis, but “known worldwide for having developed rural financial institutions that today serve millions of clients with a minimum of subsidies”). Three ‘flagship’ organisations are singled out as worthy to learn from: Bank for Agriculture and Agricultural Cooperatives (Thailand), Bank Rayat Indonesia (Indonesia), and Grameen Bank (Bangladesh). The book, however, does not address clients’ perspectives anywhere.

The authors suggest that, historically, policy intervention in the Asian rural financial sector was rooted in agricultural finance, responding to the general assessment in the 1960s and the 1970s that credit—frequently subsidised credit—was necessary to enable small farmers to adopt risky new crop technologies and also to push them over to commercial (as opposed to subsistence) agriculture. Most now agree that this type of ‘directed’ and ‘subsidised’ credit

administered through government owned-commercial banks failed miserably, and the authors provide an interesting discussion on whether or not these institutions should now be closed or rehabilitated. However, richer lessons might have been drawn had the authors been able to disentangle the confounding effects of targeting, subsidisation, perverse incentives within government bureaucracies, and the on-the-ground realities of poor small farmers. Rural finance enthusiasts will have no problem embracing, as the authors do, a zero-tolerance position on poor repayment performance, administrative laxity, substandard or opaque accounting practices, and the iniquitous political capture of programs and institutions. But an indiscriminate lumping of these issues with those related to targeting and/or the use of public resources is another matter. Directing financial services to small farmers when market failures are known to abound is not itself an intrinsically bad idea. Throwing this otherwise healthy baby of an idea away with the dirty bath waters of organisational weakness and political corruption has the effect of undermining some of the important conclusions reached in the book. The authors would have done better had they instead investigated and highlighted the main threads linking these problems. The subsidy issue is also somewhat summarily tossed out, leaving the reader with the impression that it naturally and invariably contributes to a lack of discipline on the part of both providers and borrowers. Many will find this assessment not all that helpful in dealing with an industry that would literally vanish if not for public funding. For the authors, though, this is key advice, one that leads to the fundamental conclusion of the book: sustainable rural financial systems have to be market-based, and market reform and strengthening rather than any kind of social engineering is the best way forward. Hammering and re-hammering this central message is what the book does best.

At the core of the authors' recommendation is a three-pronged strategy for building rural financial markets: (1) creation of a conducive policy environment (ensure sound macroeconomic management and un-repress the financial sector), (2) build financial infrastructure (build and implement legal, regulatory and information systems that make financial transactions less risky for both providers and users), and (3) nurture financial institutions that combine good

client outreach with financially sustainable services. All this is genuinely sound advice: competitive and market-based financial institutions are highly unlikely to emerge under any other policy regime. But what is the timeline of such development and what are its practical implications? Why have non-profit institutions taken a more immediate and, by all standards, a totally overwhelming role? What makes them do what they do? Is there a case, in the intermediate stage, to balance market-reform and market-strengthening policies with institutional initiatives that skirt around stubborn market failures? If yes, how? If not, why not? What lessons do the generally buoyant informal financial markets in rural Asia offer in all this? Readers, particularly those working with institutions like the Asian Development Bank, would have benefited significantly more had the book delved deeper into such issues. The book is nonetheless an essential read for those interested in the current state of the Asian rural financial sector, doubly so if you happen to be interested in what is going on in Bangladesh, China, India, Indonesia, the Kyrgyz Republic, or Thailand.

Manohar P. Sharma

International Food Policy Research Institute (IFPRI)

2033 K Street, NW Washington, DC 20006, USA

E-mail address: m.sharma@cgiar.org (M.P. Sharma)

PII: S 0169-5150(02)00050-6

The Biotechnology Revolution in Global Agriculture: Invention, Innovation and Investments in the Canola Sector

Peter W.B. Phillips, George G. Khachatourian (Eds.), CABI Press, Wallington, UK 2001, 360 pp., US\$ 100, Hardback, ISBN: 0-85199-513-6

This book analyses the effects of biotechnology on the Canola sector in Canada. Canola, a selected variety of rapeseed, has become a major oil-seed commodity in Canada. However, the book goes beyond a mere discussion of the impacts of biotechnology on Canola by expanding on the idea that innovation and growth in agriculture are increasingly knowledge-based. Biotechnology is thus a knowledge delivery system that shifts attention away from the effects of traditional factors of production on output. Information-based technologies, be they biotechnol-

ogy or bio-informatics, open new possibilities and present new challenges for promoting and regulating research outputs, and for ensuring that the benefits of the technology outweigh the costs.

The adoption of biotechnology products raises questions beyond those contemplated in traditional innovation impact studies. A core question is whether biotechnology differs fundamentally from other technologies previously released and adopted. This is a critical issue, particularly in light of the dissimilar development path by which biotechnology products have emerged, as compared with other agricultural technologies. The private sector has been the driving force in researching, developing and marketing biotechnology products. In contrast, the Green Revolution wheat and rice varieties were produced primarily through the efforts of the public international agricultural research centres of the Consultative Group on International Agricultural Research (CGIAR) and national agricultural research systems and organisations in developing (and developed) countries. Because the role of the private sector in biotechnology development and marketing is central, issues such as monopoly power and the distribution of benefits have become more important than in the past when public research systems and organisations were dominant. Critical issues include consumer acceptance, effects on biodiversity, intellectual property rights in developing countries, and environmental risks. This book provides a detailed analysis of a very interesting biotechnology product for which the germplasm was developed and promoted by the public sector, but the biotechnology component was produced by a multinational corporation.

This book documents the significant impact that Peter W.B. Phillips has had in the area of the socio-economic analysis of biotechnology at the University of Saskatchewan. Phillips is the author or co-author of every chapter in the book, which lends a coherence and continuity that is sometimes lacking in edited books. At the same time, efforts by other contributing authors help to incorporate a diversity of opinion that enriches the discussion in all areas of the book. The book showcases a comprehensive research program with several examples of empirical work that analyse the use of Canola in Canada.

This book provides an excellent combination of applied commodity research and a clear discussion of the theoretical underpinnings of empirical work. The

chapters can be divided into three major parts (my division and not the authors'). Part 1, which includes Chapters 2 through 9, provides a comprehensive analysis of the Canola sector in Canada. The authors of these chapters provide background material on the recent development of Canola in Canada, the roles of the private and public sectors, and the impact of innovation on the sector's productivity. Part 2, which includes Chapters 10 to parts of 14, provides an excellent introduction to the economics of biotechnology-based products. Part 3, which includes Chapters 14–17, provides a review of the economics of impact assessment and returns to research, which serves as a preface to the estimation of the impacts of Canola research in Canada.

I highly recommend this book for courses in crop sciences, biotechnology issues, and agricultural economics in the areas of productions economics, agro-industrial organisation, and applied economic impact analysis. It provides concrete, applied examples of research in each of these areas. At the same time, research program directors, policy analysts, and policy makers will find the book useful for its comprehensive discussion of the issues that need to be addressed when designing and implementing a rigorous biotechnology research program for a commodity.

José Falck Zepeda

International Service for National Agricultural Research (ISNAR), The Hague, The Netherlands

E-mail address: j.falck-zepeda@cgiar.org

(J. Falck Zepeda)

PII: S0169-5150(02)00042-7

Agricultural Use of Groundwater: Towards Integration Between Agricultural Policy and Water Resources Management

Cesare Dosi (Ed.), Kluwer Academic Publishers, Dordrecht, 2001, 320 pp., € 115, US\$ 100, £70, ISBN 0792368053

Agriculture world-wide is a major user of groundwater, and competition for groundwater between agricultural and non-agricultural uses is increasing. At the same time, agriculture often pollutes groundwater with harmful salts, nitrates, and pesticides. This book is the product of three workshops held as part of the European Union's Concerted Action SAGA, *Sustainable*

Agricultural Use of Aquifers in Southern Europe: Integration Between Agricultural and Water Management Policies. It focuses on France, Greece, Italy, Portugal, and Spain and is part of Kluwer's *Economics, Energy and Environment* series.

The book consists of an introductory chapter by the editor (Cesare Dosi) and 12 other chapters that cover groundwater use and agriculture, valuation of groundwater benefits, groundwater policy, and agricultural policy as it affects groundwater availability and quality. Chapter 2, by Cesare Dosi and Stefania Tonin, provides an overview of freshwater availability and groundwater use in Southern Europe. Chapter 3, by Andrea Giacomelli, Carlo Giupponi and Claudio Paniconi, examines hydrologic and other physical process models for analysing agricultural impacts on groundwater. Chapter 4, by Nir Becker and Stefania Tonin, reviews economic methods for valuing groundwater benefits. Chapter 5, by Nuria Hernández-Mora, Ramón Llamas and Luis Martínez Cortina, discusses the complexity and variability that characterise groundwater management in general and in Southern Europe. Chapter 6, by Cesare Dosi and Naomi Zeitouni, provides an overview of policy instruments for controlling non-point source pollution from agriculture, including groundwater pollution. Chapter 7, by Ingo Heinz, discusses voluntary and mandatory approaches to reducing the agricultural pollution of drinking water. Chapter 8, by Hans Bressers, Stefan Kuks and Geerten Schrama, analyses negotiated agreements between water suppliers and farmers as a tool for reducing agricultural pollution of drinking water. Chapter 9, by Marc Barbier and Eduardo Chia, provides a case study of a negotiated agreement between farmers and a French company that bottles mineral water in order to reduce water pollution from nitrates. Chapter 10, by Giannis Karagiannis and Anastasios Xepapadeas, develops a theoretical model for analysing the impacts of alternative agricultural and environmental policies for reducing environmental damages from agriculture. Chapter 11, by Javier Calatrava and Alberto Garrido, analyses the effects of alternative agricultural and water policies on water usage and nitrogen pollution using a simulation model

for two water districts in Southern Spain. Chapter 12, by Felisa Ceña and Dionisio Ortiz, examines the role of water institutions and the Common Agricultural Policy (CAP) in water resources management in Spain. Chapter 13, by Floor Brouwer, presents an overview of the current state of knowledge and research needs on the environmental impacts of the CAP.

This book attempts to confront two issues, water quantity and water quality, as they relate to agriculture in Southern Europe. When taken as a whole, the book's chapters contain a reasonably comprehensive analysis of agriculture and water quality in Southern Europe. However, the analysis of water quantity is weaker. Chapter 2 notes that many parts of Southern Europe face significant spatial, intra-annual, and inter-annual variability in water supplies. The succeeding chapters in the book generally do not follow up on the issues raised by this variability.

As is the case with any edited volume of workshop or conference papers, some chapters are stronger than others. The overview of freshwater availability and groundwater use in Southern Europe in Chapter 2 is useful. Chapter 4 contains a helpful, if brief, review of several empirical studies (most for the US) on the valuation of groundwater benefits. The case study in Chapter 9 of a negotiated agreement between farmers and a French mineral water company in order to reduce nitrate water pollution is interesting, particularly in light of the fact that agriculture in most countries has been subject to only limited governmental water quality regulation.

Economists and others interested in groundwater in Southern Europe will find this book useful. Its usefulness for those who study groundwater quantity or quality in other parts of the world is more limited.

David Abler
*Agricultural, Environmental and Regional
 Economics, Penn State University
 207 Armsby Building, University Park
 PA 16802, USA*

Tel.: +1-814-863-8630; fax: +1-814-865-3746
 E-mail address: d-abler@psu.edu (D. Abler)

PII: S0169-5150(02)00048-8